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AN ANALYSIS OF T-BILL AND EURODOLLAR FUTURES AS HEDGING INSTRUMENTS FOR LOANS BASED ON PREVAILING T-BILL AND CD RATES

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The purpose of this study was to determine the effectiveness of two different interest rate futures instruments in hedging interest rate changes in short-term loans. In this case, the hedge ratio was obtained by using the empirical method of regressing changes in the price of the spot instrument against changes in the price of the futures. The interest rates on each of the short term loans to be hedged were based on the prevailing 90-day T-Bill or CD rates. The terms of the loans were one month or three months. The hedging instruments used were T-Bill futures and Eurodollar futures contracts. This resulted in eight different types of hedges.

Three methods were used to compare and assess the performance of the various hedging instruments: the Standard Distance from Optimal Method, the Percentage Hedged Classification Method, and the Variation/Percentage Hedged Matrix. The Standard Distance from Optimal Method measures the average number of basis points that the hedging instrument leaves exposed in the 35-month period. The Percentage Hedged Classification Method assigns points to a hedge by classifying its performance as Good, Satisfactory, Marginal or Unsatisfactory. The Variation/Percentage Hedged Matrix takes the results from the Percentage Hedged Classification method and relates them to the variability of the cash instrument.

Given these means of evaluation, its was determined that the optimal hedging strategy with the studied hedging and cash instruments is as follows.

Type of Loan	Hedging Instrument*
One-Month T-Bill-Based Loan	T-Bill, 1 month
Three-Month T-Bill-Based Loan	Eurodollar, 3 months
One-Month CD-Based Loan	Eurodollar, 3 months
Three-Month CD-Based Loan	Eurodollar, 3 months

* Futures contract, minimum period until maturity

The results of this study indicate that further research is warranted to investigate the relatively higher performance of longer-term hedging instruments with short-term loans.

PROJECT OBJECTIVE

The purpose of this project is to determine the effectiveness of two different interest rate futures instruments in hedging interest rate changes in short-term loans.

METHODOLOGY

Obtaining Hedge Ratios

A hedge ratio can be obtained by using the empirical method of regressing changes in the price of the spot instrument against changes in the price of the futures. The regression equation would be as follows.

$$\Delta P_s = \alpha + H(\Delta P_f) + \varepsilon$$

P_s = Price of the spot instrument

P_f = Price of the futures instrument

H = Hedge Ratio

The hedge ratio calculated by the regression method is optimal in the sense that it minimizes the total variance of a spot-futures position where the spot position is determined in advance. The negative sign of H indicates that the futures position should be opposite that in the spot market.

Hedge ratios for the futures instruments were calculated by regressing twelve monthly changes in the spot interest rates of the cash instruments against monthly changes in the futures indices. For each different hedge ratio the t-statistics and corresponding R-sq were examined for significance and hedging power of the regressions respectively.

Using the estimated hedge ratio for an actual hedge assumes that the relationship between the price changes on the futures and cash instruments does not change between the sample period and the

actual hedging period (*Understanding Futures Markets*, Robert W. Kolb). Our results show that this assumption does not hold very well in most of the cases.

INSTRUMENTS

Instruments Being Hedged

Four different short term loans are being hedged. The interest rates on each of the short term loans to be hedged are based on the prevailing 90-day T-Bill or CD rates. The terms of the loans are one month or three months.

Hedging Instruments

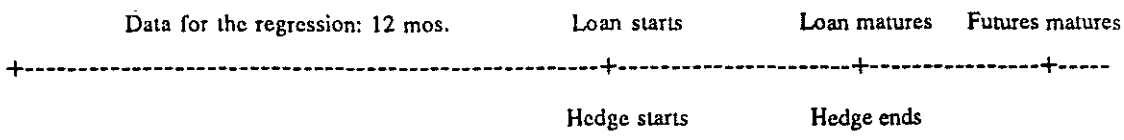
The hedging instruments used are T-Bill futures and Eurodollar futures contracts. The combinations of futures instrument, type of loan and loan term yield eight different types of hedges.

DATA GATHERING

The data for the spot instruments was obtained from the *Chicago Mercantile Exchange Yearbook* for the 1984-1987 period. The Bankers Discount Rates (BDR) were taken at the close of trading, and it was assumed that the loan would be engaged on or near the 15^{th} of each month. Changes in the spot BDR's were calculated for each monthly period.

The data for the interest rate futures was gathered from the *Chicago Mercantile Exchange Yearbook*, years 1984 to 1987. The future indices are taken at the settlement date.

The data used for each regression was obtained from the previous twelve-month period and the hedge was put in place for the following month. The general time line looks as follows.



In order to avoid any periods of unhedged exposure, the futures selected must mature after the loan matures; the futures selected should differ, depending on the term of the loan. Therefore, the changes in futures indices were calculated using the following schedule.

	For One-Month Loans	For Three-Month Loans
Δ Month	Init./Mat.	Init./Mat
Δ Jan	Jan/Mar - Dec*/Mar	Jan/June - Dec*/June
Δ Feb	Feb/Mar - Jan/Mar	Feb/June - Jan/June
Δ Mar	Mar/June - Feb/June	Mar/June - Feb/June
Δ Apr	Apr/June - Mar/June	Apr/Sept - Mar/Sept
Δ May	May/June - Apr/June	May/Sept - Apr/Sept
Δ June	June/Sept - May/Sept	June/Sept - May/Sept
Δ July	July/Sept - June/Sept	July/Dec -June/Dec
Δ Aug	Aug/Sept - July/Sept	Aug/Dec - July/Dec
Δ Sept	Sept/Dec - Aug/Dec	Sept/Dec - Sept/Dec
Δ Oct	Oct/Dec - Sept/Dec	Oct/Mar+ - Sept/Mar+
Δ Nov	Nov/Dec - Oct/Dec	Nov/Mar+ - Oct/Mar+
Δ Dec	Dec/Mar+ - Nov/Mar+	Dec/Mar+ - Nov/Mar+

Δ Feb = Feb/Mar - Jan/Mar means that the change in the index for February is the index in February for the futures contract maturing in March (Feb/Mar) minus the index in January for the futures contract maturing in March (Jan/Mar). The Dec*/Mar is the previous December's index for a future maturing this March, and Dec/Mar+ is this December's index for a future maturing in the following March. This process was used to ensure that changes of instruments are consistently measured and that the hedging instrument would mature after the debt matures.

REGRESSION GENERATION

Monthly changes in the Cash Instrument's Spot Banker's Discount Rate for a twelve-month period were regressed against changes in the futures index for the same period to determine a hedge ratio for a given month immediately following the regression period. The following regression equations were generated each corresponding to one of the eight possible hedge types:

$$\Delta\text{T-Bill} = \alpha + H(\Delta TBF_1) + \varepsilon$$

$$\Delta\text{T-Bill} = \alpha + H(\Delta TBF_3) + \varepsilon$$

$$\Delta\text{T-Bill} = \alpha + H(\Delta Euro_1) + \varepsilon$$

$$\Delta\text{T-Bill} = \alpha + H(\Delta Euro_3) + \varepsilon$$

$$\Delta CD = \alpha + H(\Delta TBF_1) + \varepsilon$$

$$\Delta CD = \alpha + H(\Delta TBF_3) + \varepsilon$$

$$\Delta CD = \alpha + H(\Delta Euro_1) + \varepsilon$$

$$\Delta CD = \alpha + H(\Delta Euro_3) + \varepsilon$$

TBF_i = T-Bill Future Maturing in at least *i* months, where i = 1 or 3

$Euro_i$ = Eurodollar Future Maturing in at least *i* months, where i = 1 or 3

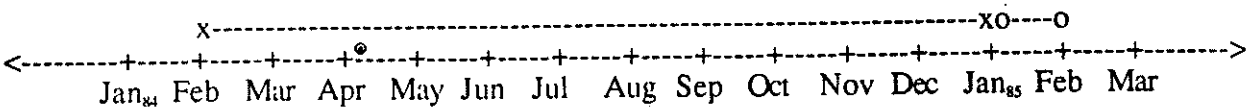
H = Hedge Ratio using a T-Bill (Eurodollar) Future on a T-Bill (CD) rated 1(3) Month Loan

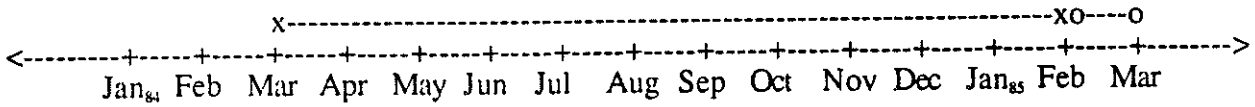
The twelve monthly changes in the Cash Instrument's Spot Banker's Discount Rate were regressed against changes in the futures index for the same period to determine a hedge ratio for a given month immediately following the regression period. This process was performed for each of the 35 twelve-month periods between January 85 and November 87 and for each of the eight possible combinations. This yielded a total of 280 regressions which produced 280 corresponding hedge ratios.

The results of the regression analysis are presented in Appendix I. All but two t-ratios were significant. Those that were significant ranged from -2.10 to -15.13 and corresponded to a range of R-sqs from 30.6% to 95.8%.

HEDGE IMPLEMENTATION

The hedge ratios were applied to hedge the loans at the beginning of each month in monthly intervals from January 1985 to November 1987. For example, the time lines for one-month loans beginning Jan. 15, 1985 and Feb.15, 1985 are as follows.





x---x is the regression period

o---o is the loan period

xo the hedge is put in place

-o the hedge is removed

HEDGE EVALUATION

In order to determine and compare the efficiency of each of the eight different types of hedges two methods of evaluation were performed, the Net Exposure and the Percentage of Change Hedged.

Net Exposure

The Net Exposure is the number of basis points not covered by the hedge. It is calculated by multiplying the hedge ratio by the change in the futures index from the present month to the following month. This value was then subtracted from the change in the cash instrument Banker's Discount Rate to reveal the Net Exposure from the hedge. The Net Exposure was calculated for the eight different hedges for each of the 35-month periods under consideration. The equation is as follows.

$$\text{Net Exposure} = \Delta\text{Spot} - (H\Delta\text{Fut})$$

Percentage of Change Hedged

As a second means of evaluation, for each of the different types of hedges in each of the 35-month period, the product of the hedge ratio and the change in futures index was divided by the changes in the spot rate of the cash instrument to reveal the Percentage of Change Hedged. The equation is as follows.

$$\%\ \text{Hedged} = \left((H\Delta\text{Fut}) / (\Delta\text{Spot})\right) \times 100$$

Any hedge that generated a percentage less than 0% or greater than 200% created more variability than it hedged.

RESULTS

The results of the regression analyses and the Net Exposure and Percentage Hedged calculations are presented in tabular form in Appendix I. Three methods were used in assessing the performance of the various hedging instruments. The first method is the Standard Distance from Optimal Method. The second is the Percentage Hedged Classification Method. The third method uses the Variation/Percentage Hedged Matrix.

Standard Distance from Optimal

The Standard Distance from Optimal Method measures the average number of basis points that the hedging instruments leaves exposed in the 35-month period. The method involves taking the mean of the absolute values of the differences between the net exposure and the optimal value, in this case zero. The equation is as follows.

$$SDO = \frac{\sum_{i=1}^{N} abs\,(NE_i - 0)}{N}$$

This method allows for comparisons between results generated from the same loan base within the same time period. The following SDOs were generated.

	Hedging Instrument				
Loan Base	T-Bill$_1$	T-Bill$_3$	Euro$_1$	Euro$_3$	Unhedged
T-Bill	0.178	0.176	0.197	0.188	0.323
CD	0.246	0.231	0.214	0.212	0.437

T-Bill$_i$ = T-Bill Futures with a Maturity to suit of loan of *i* months

Euro$_i$ = Eurodollar Futures with a Maturity to suit of loan of *i* months

These results point out that the hedges reduced the variability in interest rates. Further, the results show that the best hedge for a T-Bill-based loan is a T-Bill future, and the best hedge for a CD-based loan is a Eurodollar future. Surprisingly, however, for both loan bases and both futures, the hedge involving the instrument with the longer time to maturity outperformed that with the shorter maturity. This implies that whether the loan is for one month or three months, the maturity of the hedging instrument should not be less than three months.

In order to compare the hedging success between the T-Bill-based loans and the CD-based loans, the data must be normalized, as the volatilities of CDs and T-Bills differ. This can be accomplished by dividing the SDO by the standard deviation of the changes in the cash instrument. The equation is as follows:

$$\frac{SDO_{ab}}{\sigma_a}$$

SDO_{ab} = SDO for the hedge with loan base *a* and future *b*

σ_a = standard deviation of the changes in the rates of loan base *a*

Since all values come from within the same time period, cross-loan base comparisons can now be made. The following normalized SDOs were generated.

	Hedging Instrument				
Loan Base	T-Bill1	T-Bill3	Euro1	Euro3	Std. Dev.
T-Bill	0.427	0.423	0.474	0.450	0.416
CD	0.431	0.404	0.374	0.371	0.572

These results indicate that, on average, the best hedge occurs with CD-based loan and the Eurodollar future that has enough maturity to cover a three month loan. In fact, three out of four of the CD-based loan hedges outperform all four T-Bill-based loan hedges. A graph of the Net Exposure for the CD/Euro$_3$ hedge is presented in Appendix II.

In summary, the Standard Distance from Optimal Method ranks the hedging instruments for each loan base as follows.

Loan Base	
CD	T-Bill
Eurodollar, 3-month	T-Bill, 3-month
Eurodollar, 1-month	T-Bill, 1-month
T-Bill, 3-month	Eurodollar, 3-month
T-Bill, 1-month	Eurodollar, 1-month

Percentage Hedged Classification

The second method for evaluating hedging performance is the Percentage Hedged Classification Method, which classifies the performance of a hedge by the following standards.

% Hedged	Classification
75% to 125%	Good
50% to 75% or 125% to 150%	Satisfactory
0% to 50% or 150% to 200%	Marginal
Less than 0% or More than 200%	Unsatisfactory

Assigning a value of 3 pts for every Good hedge, 2 pts for every Satisfactory hedge, 1 pts for every Marginal hedge and 0 pts for every Unsatisfactory hedge, a score for each hedging combination is generated. That with the highest score is rated the best hedge. The scores for the selected loan bases and futures are as follows. Pie charts for the best, worst and mean performance are presented in Appendix III.

Loan/Future	# Good	# Satisfactory	# Marginal	# Unsatisfactory	Score
CD/Euro$_3$	10	5	13	7	53
CD/T-Bill$_3$	9	8	9	9	52
T-Bill/Euro$_3$	8	8	10	9	50
T-Bill/T-Bill$_1$	8	7	11	9	49
CD/Euro$_1$	7	7	14	7	49
T-Bill/Euro$_1$	6	9	12	8	48
CD/T-Bill$_1$	6	9	12	8	48
T-Bill/T-Bill$_3$	6	7	15	7	47

These results again show the hedge involving the CD spot and the Eurodollar future that has enough maturity to cover a three-month loan to be the best hedge. Again, with the exception of the T-Bill/T-Bill combinations, the best hedges involve futures with longer maturities. The Percentage Hedged Classification Method ranks the hedging instruments for each loan base as follows.

Loan Base	
CD	T-Bill
Eurodollar, 3-month	Eurodollar, 3-month
T-Bill, 3-month	T-Bill, 1-month
Eurodollar, 1-month	Eurodollar, 1-month
T-Bill, 1-month	T-Bill, 3-month

Variation/Percentage Hedged Matrix

The Variation/Percentage Hedged Matrix takes the results from the Percentage Hedged Classification method and relates them to the variability of the cash instrument. The matrix is as follows.

% Hedged Classification

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High			Yellow	pink
Med. High			Yellow	pink
Med. Low	Yellow	Yellow		pink
Low	pink	pink	pink	pink

The cells shaded in yellow are the classified as the Very Relevant Zone. Those shaded in blue are in the Relevant Zone. The cell in white is the Marginally Relevant Zone. The cells in pink make up the Irrelevant Zone.

Boundaries for the Percentage Hedged classification are stated before. Boundaries for the variation of the loan base are as follows.

D Spot	T-Bill	CD
High	> .37	> .55
Medium High	.25 - .37	.33 - .55
Medium Low	.12 - .23	.15 - .32
Low	< .12	< .15

The Variation/Percentage Hedged Matrices for the hedging combinations studied in this project presented.

One-Month T-Bill / T-Bill Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	1	4	4	0
Med. High	3	2	2	2
Med. Low	2	1	5	1
Low	2	0	0	6

Three-Month T-Bill / T-Bill Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	1	4	4	0
Med. High	3	2	4	0
Med. Low	0	0	8	1
Low	2	0	0	6

One-Month T-Bill / Eurodollar Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	1	3	4	1
Med. High	4	3	1	1
Med. Low	1	2	5	1
Low	0	1	2	5

Three-Month T-Bill / Eurodollar Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	0	3	5	1
Med. High	5	2	1	1
Med. Low	1	3	3	2
Low	1	0	2	5

One-Month CD / T-Bill Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	3	1	5	0
Med. High	2	4	2	0
Med. Low	0	4	3	3
Low	1	0	3	4

Three-Month CD / T-Bill Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	2	3	3	1
Med. High	5	2	1	0
Med. Low	2	2	3	3
Low	0	0	4	4

One-Month CD / Eurodollar Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	2	2	5	0
Med. High	5	2	1	0
Med. Low	0	3	6	1
Low	0	0	2	6

Three-Month CD / Eurodollar Hedge

Δ Loan Base	Good	Satisfactory	Marginal	Unsatisfactory
High	1	2	5	0
Med. High	7	1	1	0
Med. Low	2	2	6	0
Low	0	0	2	6

Hedges are assigned points depending on which zone they fall into. The scoring criteria and results are as follows.

Zone	Points
Very Relevant	2
Relevant	1
Marginally Relevant	1/2
Irrelevant	0

Loan/Future	# Very Rel.	# Relevant	# Marg. Rel.	# Irrelevant	Score
CD/Euro$_3$	11	10	6	8	35
CD/Euro$_1$	11	9	6	9	34
CD/T-Bill$_3$	12	8	3	12	33.5
T-Bill/Euro$_1$	11	8	5	11	32.5
CD/T-Bill$_1$	10	11	3	11	32.5
T-Bill/T-Bill$_3$	10	8	8	9	32
T-Bill/Euro$_3$	10	10	3	12	31.5
T-Bill/T-Bill$_1$	10	9	5	11	31.5

These results once again show that the hedge involving the CD spot and the Eurodollar future that has enough maturity to cover a three-month loan is the best hedge. Further, the futures with the longer maturities are again more effective with CD-based loans. However, for T-Bills, the longer maturities are only advantageous with the T-Bill futures. A summary of how the Variation/Percentage Hedged Matrix ranks the hedging instruments for each loan base as follows.

Loan Base	
CD	T-Bill
Eurodollar, 3-month	Eurodollar, 1-month
Eurodollar, 1-month	T-Bill, 3-month
T-Bill, 3-month	Eurodollar, 3-month*
T-Bill, 1-month	T-Bill, 1-month*

* Tied for third place

SELECTION OF THE HEDGING INSTRUMENTS

A side-by-side comparison of the results of the three methods can assist in the choice of the optimal hedging instrument for a given loan base. The results of the three methods for CD-based loans is as follows.

CD Loan Base

SDO Method	% Hedged Method	V/PH Matrix
Eurodollar, 3-month	Eurodollar, 3-month	Eurodollar, 3-month
Eurodollar, 1-month	T-Bill, 3-month	Eurodollar, 1-month
T-Bill, 3-month	Eurodollar, 1-month	T-Bill, 3-month
T-Bill, 1-month	T-Bill, 1-month	T-Bill, 1-month

Since all three methods rank the Eurodollar future with a maturity of at least three months as the best, it is selected as the optimal instrument of those examined to hedge either the one- or three-month CD-based loan.

The results of the three methods for T-Bill-based loans is as follows.

T- Bill Loan Base

SDO Method	% Hedged Method	V/PH Matrix
T-Bill, 3-month	Eurodollar, 3-month	Eurodollar, 1-month
T-Bill, 1-month	T-Bill, 1-month	T-Bill, 3-month
Eurodollar, 3-month	Eurodollar, 1-month	Eurodollar, 3-month*
Eurodollar, 1-month	T-Bill, 3-month	T-Bill, 1-month*

These results couldn't conflict more in the selection of a hedging instrument for either loan term. This suggests that there is no clear-cut choice for the optimal hedging instrument on a T-Bill-based loan. However, if a choice must be made, a closer look at the differences in scores shows that the

Matrix does not draw much of a distinction between the four possible combinations. Thus, the selection will be based on the remaining two methods.

Because the % Hedged Method ranks the SDO's choice ($T\text{-}Bill_3$) last and the SDO Method rank's the % Hedge's choice ($Euro_3$) third, the Eurodollar Future is considered the optimal hedging instrument for a 3-month loan.

The optimal hedging choice for a 1-month T-Bill-based loan is the T-Bill Future with a maturity of at least one-month, because it is selected as the second choice on both lists.

Thus, the optimal hedging strategy with the given hedging and cash instruments is as follows.

Type of Loan	Hedging Instrument
One-Month T-Bill-Based Loan	T-Bill, 1 month
Three-Month T-Bill-Based Loan	Eurodollar, 3 months
One-Month CD-Based Loan	Eurodollar, 3 months
Three-Month CD-Based Loan	Eurodollar, 3 months

ADDITIONAL OBSERVATIONS

Variability of Hedge Ratios

It was hypothesized that variability in hedge ratios might negatively impact hedging performance. However, it was discovered that shifts in hedge ratios follow poor performance, rather than vice-versa. Thus, variability of the ratios does not have significant predictive power.

October, 1987

The greatest shift in spot interest rates occurred from October 1987 to November 1987. Every hedging combination examined in this project was able to hedge some of this shift away. The performance of each is presented below in terms of percentage hedged.

One-Month CD Loan, Eurodollar Hedge	81.1%
One-Month CD Loan, T-Bill Hedge	75.4%
Three-Month CD Loan, Eurodollar Hedge	67.7%
Three-Month CD Loan, T-Bill Hedge	64.5%
One-Month T-Bill Loan, T-Bill Hedge	63.8%
One-Month T-Bill Loan, Eurodollar Hedge	58.4%
Three-Month T-Bill Loan, T-Bill Hedge	51.5%
Three-Month T-Bill Loan, Eurodollar Hedge	47.7%

So successful was the One-Month CD/Euro that it even outperformed the lower-variability One-Month T-Bill/T-Bill in terms of Net Exposure, 33 basis points to 43 basis points. The performance of all the hedges in terms of Net Exposure is as follows.

One-Month CD Loan, Eurodollar Hedge	-0.33
One-Month CD Loan, T-Bill Hedge	-0.43
One-Month T-Bill Loan, T-Bill Hedge	-0.43
One-Month T-Bill Loan, Eurodollar Hedge	-0.49
Three-Month CD Loan, Eurodollar Hedge	-0.56
Three-Month T-Bill Loan, T-Bill Hedge	-0.58
Three-Month CD Loan, T-Bill Hedge	-0.62
Three-Month T-Bill Loan, Eurodollar Hedge	-0.62

These results show that in this isolated case, the lower maturity futures were more successful hedging instruments.

Unusual Interest Rate Changes

In several cases the implied interest rate of the futures instrument shifted in the opposite direction as the Spot rate of the loan base. The result was a negative value for Percentage Hedged. The following are tables of such occurrences.

T-Bill/T-Bill1	T-Bill/T-Bill3	T-Bill/Euro1	T-Bill/Euro3
September '85	September '85	September '85	August '85
October '85	November '87	October '85	September '85
November '87		July '87	October '85
			October '86
			July '87

CD/T-Bill1	CD/T-Bill3	CD/Euro1	CD/Euro3
August '85	August '85	February '87	October '86
February '87	November '86	July '87	February '87
November '87	February '87		July '87
	November '87		

Implications for Further Research

The suggestion that longer maturity futures make better hedging instruments is interesting. A possible project for future FBE 559 students would be to investigate the hedging power of Eurodollar futures of varying maturities on CD based loans.

APPENDIX I

Individual Results

One-Month T-Bill Loan/T-Bill Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-0.9215	-5.86	77.5%	0.46	-0.13	0.34	26.0%
Feb	-0.9495	-5.86	77.5%	0.25	-0.54	-0.26	205.1%
Mar	-0.8599	-5.08	72.0%	-0.36	1.02	0.52	243.6%
Apr	-0.7623	-4.44	66.3%	-0.67	0.68	-0.15	77.4%
May	-0.8182	-4.27	64.6%	-0.69	1.14	0.24	135.2%
June	-0.7916	-4.75	66.6%	0.32	-0.21	0.15	51.9%
July	-0.7945	-4.66	68.5%	0.22	-0.11	0.13	39.7%
Aug	-0.8179	-6.06	78.6%	-0.09	0.1	-0.01	90.9%
Sept	-0.8016	-6.45	80.6%	0.01	0.16	0.14	-1282.6%
Oct	-0.808	-6.74	81.9%	0.16	0.02	0.18	-10.1%
Nov	-0.6895	-6.09	78.8%	-0.28	0.5	0.06	123.1%
Dec	-0.676	-5.95	78.0%	0.12	-0.32	-0.10	180.3%
Jan '86	-0.634	-6.15	79.1%	-0.16	0.19	-0.04	75.3%
Feb	-0.5978	-6.76	82.0%	-0.48	0.57	-0.14	71.0%
Mar	-0.6532	-6.52	80.9%	-0.71	0.69	-0.26	63.5%
Apr	-0.80529	-8.34	87.4%	0.34	-0.67	-0.20	158.7%
May	-0.69844	-8.18	87.0%	-0.05	0.22	0.10	307.3%
June	-0.748	-7.00	83.0%	-0.36	0.31	-0.13	64.4%
July	-0.7331	-6.81	82.3%	-0.21	0.1	-0.14	34.9%
Aug	-0.7034	-6.61	81.4%	-0.38	0.03	-0.36	5.6%
Sept	-0.6777	-5.14	72.5%	0	0.21	0.14	ERR
Oct	-0.6709	-5.01	71.5%	0.2	-0.24	0.04	80.5%
Nov	-0.6779	-5.78	77.0%	0.13	-0.07	0.08	36.5%
Dec	-0.7288	-5.95	78.0%	-0.15	0.12	-0.06	58.3%
Jan '87	-0.7432	-5.74	76.7%	0.32	-0.5	-0.05	116.1%
Feb	-0.7498	-6.50	80.9%	-0.01	0.1	0.06	749.8%
Mar	-0.7475	-5.76	76.8%	0.02	-0.49	-0.35	1831.4%
Apr	-0.5511	-3.65	57.2%	0.23	-0.13	0.16	31.1%
May	-0.5591	-2.83	44.5%	-0.27	0.89	0.23	184.3%
June	-0.4234	-2.87	45.1%	-0.08	0.2	0.00	105.8%
July	-0.3797	-2.23	42.6%	0.41	-0.02	0.40	1.9%
Aug	-0.3775	-2.28	34.2%	0.37	-0.94	0.02	95.9%
Sept	-0.35062	-3.55	57.7%	0.7	-0.86	0.40	43.1%
Oct	-0.4341	-4.13	63.0%	-1.19	1.75	-0.43	63.8%
Nov	-0.5825	-7.06	83.3%	0.09	0.1	0.15	-64.7%

Three-Month T-Bill Loan/T-Bill Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-0.702	-3.72	58.1%	0.46	-0.08	0.40	12.2%
Feb	-0.7248	-3.63	56.8%	0.25	-0.54	-0.14	156.6%
Mar	-0.6702	-3.43	54.0%	-0.36	1.05	0.34	195.5%
Apr	-0.5989	-3.15	49.8%	-0.67	0.72	-0.24	64.4%
May	-0.7058	-3.12	49.3%	-0.69	1.14	0.11	116.6%
June	-0.6985	-3.33	52.6%	0.32	-0.13	0.23	28.4%
July	-0.7214	-3.48	54.7%	0.22	-0.14	0.12	45.9%
Aug	-0.8173	-5.35	74.1%	-0.09	0.1	-0.01	90.8%
Sept	-0.8004	-5.62	76.0%	0.01	0.16	0.14	-1280.6%
Oct	0.8099	-5.92	77.8%	0.16	0.31	-0.09	156.9%
Nov	-0.6684	-5.08	72.0%	-0.28	0.5	0.05	119.4%
Dec	-0.6536	-4.97	71.2%	0.12	-0.38	-0.13	207.0%
Jan '86	-0.6028	-5.18	72.8%	-0.16	0.43	0.10	162.0%
Feb	-0.5662	-5.62	76.0%	-0.48	0.57	-0.16	67.2%
Mar	-0.6252	-5.31	73.8%	-0.71	0.85	-0.18	74.8%
Apr	-0.7558	-8.30	87.3%	0.34	-0.69	-0.18	153.4%
May	-0.6438	-6.65	81.6%	-0.05	0.22	0.09	283.3%
June	-0.6428	5.51	75.2%	-0.36	0.46	-0.06	82.1%
July	-0.6263	-5.69	76.4%	-0.21	0.11	-0.14	32.8%
Aug	-0.5958	-5.22	73.1%	-0.38	0.03	-0.36	4.7%
Sept	-0.5637	-4.13	63.0%	0	0.19	0.11	ERR
Oct	-0.5616	-4.10	62.7%	0.2	-0.12	0.13	33.7%
Nov	-0.6121	-5.59	75.8%	0.13	-0.07	0.09	33.0%
Dec	-0.6415	-5.63	76.0%	-0.15	0.1	-0.09	42.8%
Jan '87	-0.6657	-5.47	75.0%	0.32	-0.47	0.01	97.8%
Feb	-0.706	-6.67	81.7%	-0.01	0.1	0.06	706.0%
Mar	-0.6933	-6.03	78.0%	0.02	-0.74	-0.49	2565.2%
Apr	-0.439	-3.02	47.8%	0.23	-0.74	-0.09	141.2%
May	-0.3867	-2.76	43.3%	-0.27	0.89	0.07	127.5%
June	-0.3477	-3.03	47.8%	-0.08	0.28	0.02	121.7%
July	-0.305	-2.69	42.1%	0.41	-0.02	0.40	1.5%
Aug	-0.2893	-2.10	30.6%	0.37	-0.94	0.10	73.5%
Sept	-0.28933	-3.09	48.8%	0.7	-0.7	0.50	28.9%
Oct	-0.3586	-3.50	55.0%	-1.19	1.71	-0.58	51.5%
Nov	-0.53709	-5.59	75.8%	0.09	0.1	0.14	-59.7%

One-Month CD Loan/T-Bill Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-1.2035	-7.41	84.6%	0.56	-0.13	0.40	27.9%
Feb	-1.2491	-7.57	85.1%	0.62	-0.54	-0.05	108.8%
Mar	-1.2132	-7.47	84.8%	-0.75	1.02	0.49	165.0%
Apr	-1.163	-7.31	84.2%	-0.54	0.68	0.25	146.5%
May	-1.0749	-6.65	81.6%	-0.66	1.14	0.57	185.7%
June	-0.9905	-6.14	79.0%	0.15	-0.21	-0.06	138.7%
July	-0.9038	-6.46	80.6%	0.32	-0.11	0.22	31.1%
Aug	-0.9345	-7.14	83.6%	0.18	0.1	0.27	-51.9%
Sept	-0.9481	-7.11	83.5%	-0.08	0.16	0.07	189.6%
Oct	-0.9497	-8.97	88.9%	-0.02	0.02	0.00	95.0%
Nov	-0.8996	-7.46	84.8%	-0.33	0.5	0.12	136.3%
Dec	-0.8601	-7.80	85.9%	0.36	-0.32	0.08	76.5%
Jan '86	-0.83506	-9.97	90.9%	-0.26	0.19	-0.10	61.0%
Feb	-0.79697	-11.09	92.5%	-0.55	0.57	-0.10	82.6%
Mar	-0.7821	-9.31	89.7%	-0.62	0.69	-0.08	87.0%
Apr	-0.80487	-8.61	87.6%	0.25	-0.67	-0.29	215.7%
May	-0.6861	-6.92	82.7%	-0.08	0.22	0.07	188.7%
June	-0.7502	-6.17	79.2%	-0.37	0.31	-0.14	62.9%
July	-0.7713	-5.96	78.1%	-0.35	0.1	-0.27	22.0%
Aug	0.7216	-5.46	74.9%	-0.23	0.03	-0.25	-9.4%
Sept	-0.6993	-6.32	80.0%	-0.02	0.21	0.13	734.3%
Oct	-0.6921	-5.81	77.2%	0.05	-0.24	-0.12	332.2%
Nov	-0.679	-6.01	78.3%	0.25	-0.07	0.20	19.0%
Dec	-0.7341	-5.46	74.9%	-0.17	0.12	-0.08	51.8%
Jan '87	-0.6723	-5.14	72.6%	0.25	-0.5	-0.09	134.5%
Feb	-0.6718	-5.76	76.8%	0.07	0.1	0.14	-96.0%
Mar	-0.631	-4.63	68.2%	0.43	-0.49	0.12	71.9%
Apr	-0.619	-3.97	61.2%	0.42	-0.13	0.34	19.2%
May	-0.7713	-3.55	55.7%	-0.11	0.89	0.58	624.1%
June	-0.4568	-2.47	37.8%	-0.23	0.2	-0.14	39.7%
July	-0.4264	-2.36	35.7%	0.02	-0.02	0.01	42.6%
Aug	-0.4404	-2.60	40.3%	0.74	-0.94	0.33	55.9%
Sept	-0.5037	-4.30	64.9%	1.53	-0.86	1.10	28.3%
Oct	-0.7542	-3.87	59.9%	-1.75	1.75	-0.43	75.4%
Nov	-0.9325	-6.93	82.8%	0.85	0.1	0.94	-11.0%

Three-Month CD Loan/T-Bill Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-1.031	-6.37	80.2%	0.56	-0.08	0.48	14.7%
Feb	-1.0746	-6.19	79.3%	0.62	-0.54	0.04	93.6%
Mar	-1.059	-6.27	79.7%	-0.75	1.05	0.36	148.3%
Apr	-1.0258	-6.28	79.8%	-0.54	0.72	0.20	136.8%
May	-1.0037	-5.18	72.9%	-0.66	1.14	0.48	173.4%
June	-0.9355	-5.01	71.5%	0.15	-0.13	0.03	81.1%
July	-0.8646	-5.01	71.5%	0.32	-0.14	0.20	37.8%
Aug	-0.9447	-6.46	80.7%	0.18	0.1	0.27	-52.5%
Sept	-0.9589	-6.47	80.7%	-0.08	0.16	0.07	191.8%
Oct	-0.9667	-8.20	87.0%	-0.02	0.31	0.28	1498.4%
Nov	-0.9041	-7.07	83.3%	-0.33	0.5	0.12	137.0%
Dec	-0.8655	-7.49	84.9%	0.36	-0.38	0.03	91.4%
Jan '86	-0.83068	-10.44	91.6%	-0.26	0.43	0.10	137.4%
Feb	-0.79836	-15.13	95.8%	-0.55	0.57	-0.09	82.7%
Mar	-0.79592	-11.30	92.4%	-0.62	0.85	0.06	109.1%
Apr	-0.80085	-10.46	91.6%	0.25	-0.69	-0.30	221.0%
May	-0.66305	-7.61	85.3%	-0.08	0.22	0.07	182.3%
June	-0.6868	-6.62	81.4%	-0.37	0.46	-0.05	85.4%
July	-0.6973	-6.57	81.2%	-0.35	0.11	-0.27	21.9%
Aug	-0.6452	-5.47	75.0%	-0.23	0.03	-0.21	8.4%
Sept	-0.6114	-5.75	76.8%	-0.02	0.19	0.10	580.8%
Oct	-0.6113	-5.53	75.4%	0.05	-0.12	-0.02	146.7%
Nov	0.6973	-6.60	81.3%	0.25	-0.07	0.30	-19.5%
Dec	-0.6671	-5.92	77.8%	-0.17	0.1	-0.10	39.2%
Jan '87	-0.6157	-5.35	74.1%	0.25	-0.47	-0.04	115.8%
Feb	-0.6364	-6.05	78.5%	0.07	0.1	0.13	-90.9%
Mar	-0.5969	-5.13	72.4%	0.43	-0.74	-0.01	102.7%
Apr	-0.5711	-4.67	68.5%	0.42	-0.74	0.00	100.6%
May	-0.6265	-5.44	74.7%	-0.11	0.89	0.45	506.9%
June	-0.4547	-3.79	58.9%	-0.23	0.28	-0.10	55.4%
July	-0.4331	-3.59	56.3%	0.02	-0.02	0.01	43.3%
Aug	-0.41084	-4.15	63.2%	0.74	-0.94	0.35	52.2%
Sept	-0.48296	-5.76	76.8%	1.53	-0.7	1.19	22.1%
Oct	-0.66	-3.30	52.1%	-1.75	1.71	-0.62	64.5%
Nov	-0.8678	-5.74	76.7%	0.85	0.1	0.94	-10.2%

One-Month T-Bill Loan/Euro$ Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-0.6765	-4.36	65.5%	0.46	-0.17	0.34	25.0%
Feb	-0.6916	-4.40	66.0%	0.25	-0.65	-0.20	179.8%
Mar	-0.637	-4.06	62.2%	-0.36	1.35	0.50	238.9%
Apr	-0.5453	-3.55	55.8%	-0.67	0.8	-0.23	65.1%
May	-0.6423	-3.53	55.5%	-0.69	1.32	0.16	122.9%
June	-0.6422	-3.79	59.0%	0.32	-0.29	0.13	58.2%
July	-0.6378	-4.00	61.5%	0.22	-0.12	0.14	34.8%
Aug	-0.6662	-5.16	72.7%	-0.09	-0.03	-0.11	-22.2%
Sept	-0.6538	-5.77	76.9%	0.01	0.23	0.16	-1503.7%
Oct	-0.657	-5.83	77.2%	0.16	0.28	0.34	-115.0%
Nov	-0.5451	-5.13	72.5%	-0.28	0.49	-0.01	95.4%
Dec	-0.5329	-5.13	72.5%	0.12	-0.38	0.40	168.8%
Jan '86	-0.49869	-5.13	72.4%	-0.16	0.15	-0.09	46.8%
Feb	-0.46514	-5.27	73.5%	-0.48	0.66	-0.17	64.0%
Mar	-0.5026	-4.95	71.0%	-0.71	0.68	-0.37	48.1%
Apr	-0.6659	-6.01	78.3%	0.34	-0.52	-0.01	101.8%
May	-0.62767	-6.28	79.8%	-0.05	0.24	0.10	301.3%
June	-0.7019	-5.41	74.5%	-0.36	0.46	-0.04	89.7%
July	-0.6891	-5.21	73.0%	-0.21	0.15	-0.11	49.2%
Aug	-0.6593	-4.88	70.5%	-0.38	0.12	-0.30	20.8%
Sept	-0.6574	-4.70	64.6%	0	0.17	0.11	ERR
Oct	-0.6637	-4.42	66.1%	0.2	-0.13	0.11	43.1%
Nov	-0.7169	-6.30	79.9%	0.13	-0.1	0.06	55.1%
Dec	-0.7582	-6.64	81.5%	-0.15	0.12	-0.44	60.7%
Jan '87	-0.8162	-6.86	82.5%	0.32	-0.52	-0.10	132.6%
Feb	-0.7824	-7.54	85.0%	-0.01	0.02	0.01	156.5%
Mar	-0.8113	-7.09	83.4%	0.02	-0.67	-0.52	2717.9%
Apr	-0.5088	-3.56	55.8%	0.23	-0.39	0.03	86.3%
May	-0.4841	-3.30	52.2%	-0.27	0.75	0.09	134.5%
June	-0.4408	-3.58	56.1%	-0.08	0.24	0.03	132.2%
July	-0.3949	-3.15	49.7%	0.41	0.17	0.48	-16.4%
Aug	-0.3226	-1.93	27.2%	0.37	-1	0.05	87.2%
Sept	-0.2941	-2.68	41.8%	0.7	-1.05	0.39	44.1%
Oct	-0.3799	-2.59	40.2%	-1.19	1.83	-0.49	58.4%
Nov	-0.53274	-6.36	80.2%	0.09	-0.05	0.06	29.6%

Three-Month T-Bill Loan/Euro$ Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-0.5385	-3.13	49.5%	0.46	-0.17	0.37	19.9%
Feb	-0.5531	-3.11	49.2%	0.25	-0.65	-0.11	143.8%
Mar	-0.5161	-2.98	47.1%	-0.36	1.42	0.37	203.6%
Apr	-0.4394	-2.68	41.9%	-0.67	0.74	-0.34	48.5%
May	-0.5369	-2.58	39.9%	-0.69	1.32	0.02	102.7%
June	-0.5481	-2.82	44.2%	0.32	-0.2	0.21	34.3%
July	-0.5649	-2.97	46.9%	0.22	-0.1	0.16	25.7%
Aug	-0.6565	-4.36	65.5%	-0.09	-0.03	-0.11	-21.9%
Sept	-0.6465	-4.81	69.8%	0.01	0.22	0.15	-1422.3%
Oct	-0.6495	-4.84	77.2%	0.16	0.54	0.51	-219.2%
Nov	-0.5085	-4.11	62.8%	-0.28	0.49	-0.03	89.0%
Dec	-0.4957	-4.08	62.5%	0.12	-0.4	-0.08	165.2%
Jan '86	-0.4659	-4.27	64.6%	-0.16	0.33	-0.01	96.1%
Feb	-0.4342	-4.31	65.0%	-0.48	0.66	-0.19	53.7%
Mar	-0.4702	-3.98	61.3%	-0.71	0.82	-0.32	54.3%
Apr	-0.6372	-4.94	70.9%	0.34	-0.58	-0.03	108.7%
May	-0.5823	-5.42	74.6%	-0.05	0.24	0.09	279.5%
June	-0.5992	-4.41	66.1%	-0.36	0.54	-0.04	89.9%
July	-0.5806	-4.36	65.5%	-0.21	0.23	-0.08	63.6%
Aug	-0.554	-4.12	62.9%	-0.38	0.12	-0.31	17.5%
Sept	-0.5461	-3.59	56.2%	0	0.19	0.10	ERR
Oct	-0.5474	-3.63	56.8%	0.2	0.01	0.21	-2.7%
Nov	-0.6576	-6.01	78.3%	0.13	-0.1	0.06	50.6%
Dec	-0.6807	-6.12	79.3%	-0.15	0.11	-0.08	49.9%
Jan '87	-0.7342	-6.31	79.9%	0.32	-0.49	-0.04	112.4%
Feb	-0.7268	-7.19	83.8%	-0.01	0.02	0.00	145.4%
Mar	-0.7295	-6.65	81.6%	0.02	-0.92	-0.65	3355.7%
Apr	-0.3798	-2.78	43.6%	0.23	-0.84	-0.09	138.7%
May	-0.3251	-2.71	42.3%	-0.27	0.75	-0.03	90.3%
June	-0.3268	-3.07	48.6%	-0.08	0.27	0.01	110.3%
July	-0.2879	-2.68	41.8%	0.41	0.08	0.43	-5.6%
Aug	-0.2466	-1.79	24.4%	0.37	-1	0.12	66.6%
Sept	-0.2418	-2.42	36.8%	0.7	-0.78	0.51	26.9%
Oct	-0.3126	-2.59	40.2%	-1.19	1.81	-0.62	47.5%
Nov	-0.49928	-5.23	73.2%	0.09	-0.05	0.07	27.7%

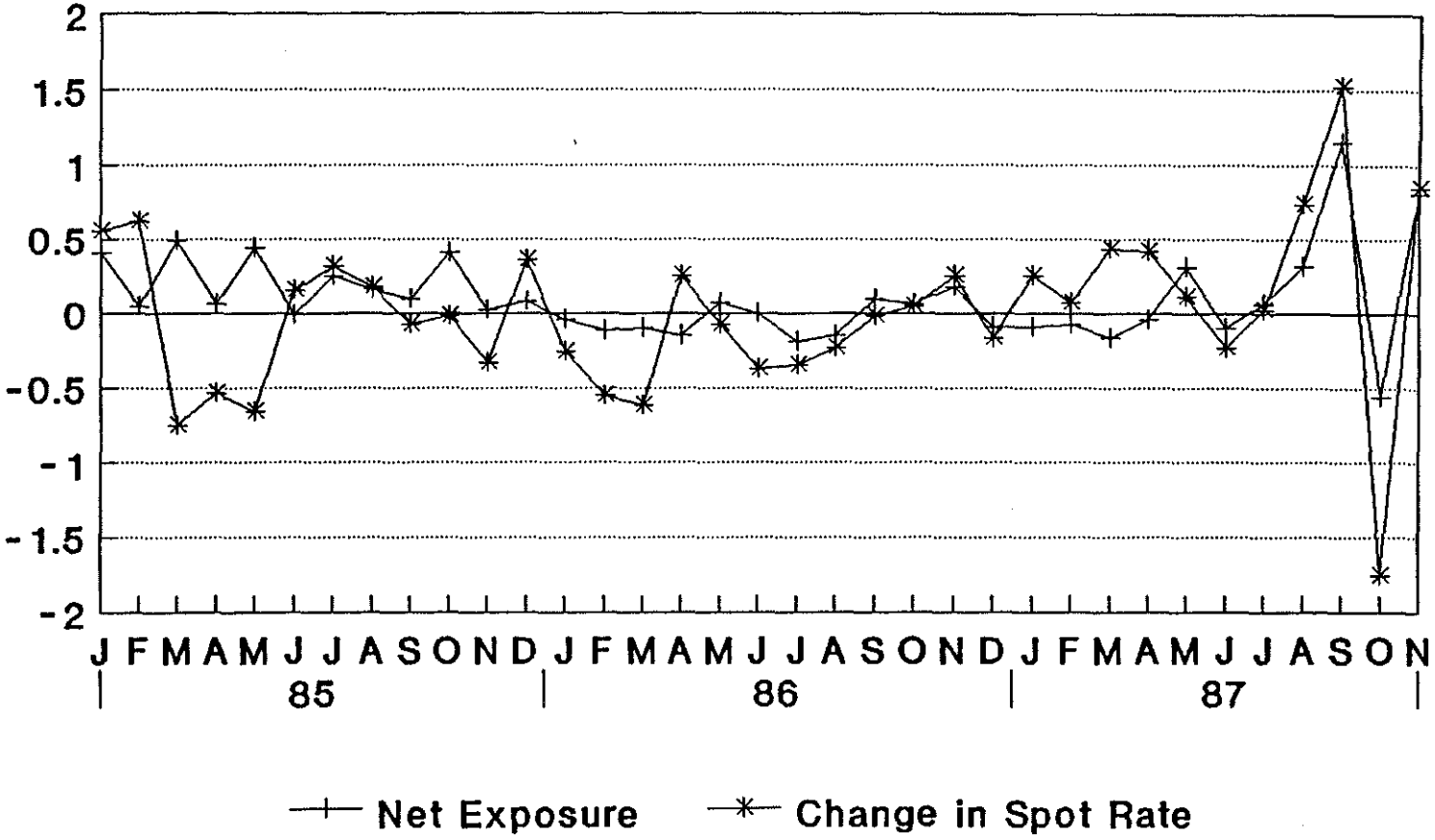
One-Month CD Loan/Euro$ Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-0.9662	-7.71	85.6%	0.56	-0.17	0.40	29.3%
Feb	-0.9874	-7.64	85.1%	0.62	-0.65	-0.02	103.5%
Mar	-0.9707	-7.67	85.5%	-0.75	1.35	0.56	174.7%
Apr	-0.9045	-7.18	83.8%	-0.54	0.8	0.18	134.0%
May	-0.8919	-5.99	78.2%	-0.66	1.32	0.52	178.4%
June	-0.8447	-5.85	77.4%	0.15	-0.29	-0.09	163.3%
July	-0.7574	-6.12	78.9%	0.32	-0.12	0.23	28.4%
Aug	0.787	-6.90	82.7%	0.18	-0.03	0.20	-13.1%
Sept	-0.7955	-7.32	84.3%	-0.08	0.23	0.10	228.7%
Oct	-0.79089	-8.54	87.9%	-0.02	0.28	0.20	1107.2%
Nov	-0.74197	-7.50	84.9%	-0.33	0.49	0.03	110.2%
Dec	-0.71451	-8.82	88.6%	0.36	-0.38	0.09	75.4%
Jan '86	-0.69045	-10.68	91.9%	-0.26	0.15	-0.16	39.8%
Feb	-0.65395	-10.85	92.2%	-0.55	0.66	-0.12	78.5%
Mar	-0.64003	-9.00	89.0%	-0.62	0.68	-0.18	70.2%
Apr	-0.69426	-7.62	85.5%	0.25	-0.52	-0.11	144.4%
May	-0.64973	-7.32	84.3%	-0.08	0.24	0.08	194.9%
June	-0.7657	-7.27	84.1%	-0.37	0.46	-0.02	95.2%
July	-0.8048	-7.65	85.4%	-0.35	0.15	-0.23	34.5%
Aug	-0.7575	-6.60	81.3%	-0.23	0.12	-0.14	39.5%
Sept	-0.7222	-6.47	80.7%	-0.02	0.17	0.10	613.9%
Oct	-0.7276	-6.44	80.6%	0.05	-0.13	-0.04	189.2%
Nov	-0.74013	-7.95	86.3%	0.25	-0.1	0.18	29.6%
Dec	-0.7939	-7.40	84.6%	-0.17	0.12	-0.07	56.0%
Jan '87	-0.7524	-6.53	81.0%	0.25	-0.52	-0.14	156.5%
Feb	-0.71547	-7.29	84.2%	0.07	0.02	0.08	-20.4%
Mar	-0.7083	-6.17	79.2%	0.43	-0.67	-0.04	110.4%
Apr	-0.6519	-5.91	77.7%	0.42	-0.39	0.17	60.5%
May	-0.7302	-5.97	78.1%	-0.11	0.75	0.44	497.9%
June	-0.5523	-4.16	63.4%	-0.23	0.24	-0.10	57.6%
July	-0.5309	-3.85	59.7%	0.02	0.17	0.11	-451.3%
Aug	-0.4898	-4.25	64.4%	0.74	-1	0.25	66.2%
Sept	-0.54079	-6.28	79.8%	1.53	-1.05	0.96	37.1%
Oct	-0.776	-5.11	72.3%	-1.75	1.83	-0.33	81.1%
Nov	-0.8952	-8.47	87.8%	0.85	-0.05	0.81	5.3%

Three-Month CD Loan/Euro$ Hedge

Month	Hedge	T-Stat.	R-sq	Spot Ch.	Fut. Ch.	Exposure	%Hedged
Jan '85	-0.8534	-6.24	79.5%	0.56	-0.17	0.41	25.9%
Feb	-0.8778	-6.08	78.7%	0.62	-0.65	0.05	92.0%
Mar	-0.8709	-6.19	79.3%	-0.75	1.42	0.49	164.9%
Apr	-0.8121	-5.95	78.0%	-0.54	0.74	0.06	111.3%
May	-0.8347	-4.88	70.5%	-0.66	1.32	0.44	166.9%
June	-0.7937	-4.85	70.2%	0.15	-0.2	-0.01	105.8%
July	-0.725	-4.86	70.2%	0.32	-0.1	0.25	22.7%
Aug	-0.8007	-6.21	79.4%	0.18	-0.03	0.16	13.3%
Sept	-0.8108	-6.59	81.3%	-0.08	0.22	0.10	223.0%
Oct	-0.8042	-7.34	84.3%	-0.02	0.54	0.41	2171.3%
Nov	-0.7236	-6.40	80.4%	-0.33	0.49	0.02	107.4%
Dec	-0.69649	-7.22	83.9%	0.36	-0.4	0.08	77.4%
Jan '86	-0.67681	-9.65	90.3%	-0.26	0.33	-0.04	85.9%
Feb	-0.64804	-10.56	91.8%	-0.55	0.66	-0.12	77.8%
Mar	-0.6391	-8.34	87.4%	-0.62	0.82	-0.10	84.5%
Apr	-0.69822	-7.69	85.5%	0.25	-0.58	-0.15	162.0%
May	-0.62174	-7.19	83.8%	-0.08	0.24	0.07	186.5%
June	-0.6806	-6.49	80.8%	-0.37	0.54	0.00	99.3%
July	-0.6985	-6.58	81.3%	-0.35	0.23	-0.19	45.9%
Aug	-0.6599	-5.96	78.0%	-0.23	0.12	-0.15	34.4%
Sept	-0.6231	-5.60	75.8%	-0.02	0.19	0.10	591.9%
Oct	-0.6261	-5.54	75.4%	0.05	0.01	0.06	-12.5%
Nov	-0.6939	-8.73	88.4%	0.25	-0.1	0.18	27.8%
Dec	-0.73096	-8.01	86.5%	-0.17	0.11	-0.09	47.3%
Jan '87	-0.6947	-6.91	82.7%	0.25	-0.49	-0.09	136.2%
Feb	-0.67283	-7.52	85.0%	0.07	0.02	0.08	-19.2%
Mar	-0.65305	-6.63	81.5%	0.43	-0.92	-0.17	139.7%
Apr	-0.55313	-6.04	78.5%	0.42	-0.84	-0.04	110.6%
May	-0.55652	-6.64	81.5%	-0.11	0.75	0.31	379.4%
June	-0.47093	-5.15	72.6%	-0.23	0.27	-0.10	55.3%
July	-0.45654	-4.80	69.7%	0.02	0.08	0.06	-182.6%
Aug	-0.42322	-5.28	73.6%	0.74	-1	0.32	57.2%
Sept	-0.47953	-6.71	81.8%	1.53	-0.78	1.16	24.4%
Oct	-0.6549	-3.54	55.7%	-1.75	1.81	-0.56	67.7%
Nov	-0.832	-6.10	78.8%	0.85	-0.05	0.81	4.9%

3-Month CD-Based Loan
Eurodollar Hedged



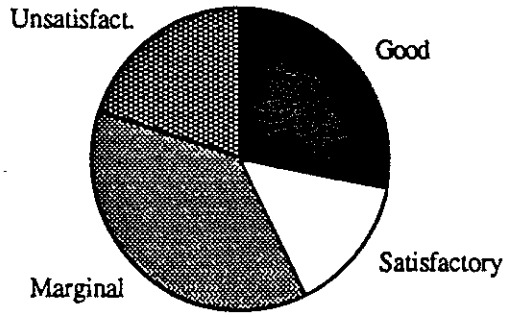
APPENDIX II

Net Exposure Vs. Δ Spot

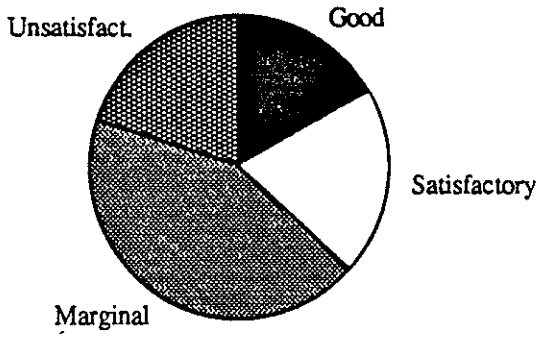
APPENDIX III

Percentage Hedged Classification

Best Hedge -- CD/Euro3



Worst Hedge -- T-Bill/T-Bill3



Mean Hedge