subgroup contains 33 firms that received permanent waivers with no renegotiation, the third subgroup contains 18 firms that received temporary waivers with no renegotiation. Group II, also, includes three subgroups the fourth subgroup contains 12 firms that received no waiver after renegotiation, the fifth subgroup incorporates 28 firms that received permanent waivers after renegotiation. the last subgroup includes 15 firms that received temporary waivers after renegotiation.

The T-test and Z-test are paramteric tests used to examine the differences among means of the subgroups. Since NVCOV, NDBT, and SECUR variables are dichotomous variables, their means are the proportion with an observation of 1 in those variables and the entries for the T-statistics are the Z-statistics testing whether the proportions are the same for the two groups. The Z-test is significant at the 0.01 level.

Moreover, the Mann-Whitney is a non-parametric test that is also used for the same end. The Mann-Whitney test can be used without making the assumption that the observations are normally distributed and have equal variances (Canavos, 1984). Therefore, the Mann-Whitney test gives more accurate results than parametric tests. The comparison between subgroups 1 and 4 (from the T-test, Mann-Whitney, and the Z-test) shows that the two subgroups do not have statistically different mean values for the nine variables, suggesting that the firms receiving no waiver with no renegotiation have the same financial profile as those receiving no waiver with negotiation. Also, the same conclusion could be reached from comparing subgroups 2 versus 5, and 3 versus 6.

These results suggest that the firms receiving permanent and temporary waiver without renegotiation have the same financial profiles as those receiving permanent and temporary waivers after renegotiation. These results are surprising, since it was expected that there would be differences among the various groups with and without renegotiation. The comparison shows that, except for those groups that did not renegotiate and received no waiver, the groups which did not enter the negotiation process had relatively better financial

positions than those which negotiated the violation, but the differences are not significant as mentioned above. Accordingly, subgroups 1 and 4, 2 and 5, and 3 and 6 are combined for the purpose of the next comparison.

There is significant reasons and consequences of the renegotiation process. Changes in interest rates, covenants levels, and new ABDCs are the most important consequences of the renegotiation process (see table 15). Firms that received no waiver without renegotiation (16 firms) suffered from a serious deterioration in the operating performance, along with major violations of the negative and affirmative covenants. These firms violated 15 negative covenants and 51 affirmative covenants. Whilst, the firms that received no waiver following the renegotiation (12 firms) suffered from less deterioration in performance, and violated less negative and affirmative covenants. These firms breached 10 negative covenants and 26 affirmative covenants.

Firms that received permanent waivers without renegotiation (33 firms) have unimportant covenant violations (breaching 33 affirmative covenants), while the firms that received permanent waivers subsequent to the renegotiation process (28 firms) violated 35 affirmative covenants. Regarding the firms that received permanent waivers post to renegotiation, there 40 constraints (40 out of 112) are relaxed and 72 are tightened or left unchanged.[1]

[1] To identify the changes in covenants boundaries, the violated covenants are investigated by reading the management discussion and financial footnotes pre and post violation. Thirty two covenant levels could not be traced post the violation.

Table (4/12)

The Financial Profiles of The Sample Firms

	NVCOV*	IACCT	DLEVG	OCASH	Variables PROBKR	NCRD	NDBT*	SECUR*	MATUR
Group I: No Renegotiation									
Subgroup 1: No waiver with no renegotiation (N=16)									
Mean	0.0000	5.2500	0.5536	-8151	0.8990	4.375	0.6251	0.1875	23.7500
Median		5.0000	0.5163	-196.5	0.9999	4.000			35.5000
Standard Deviation		1.8929	0.2729	1727.1	0.0024	2.680			13.9095
Subgroup 2: Permanent waiver with no renegotiation (N=35)									
Mean	0.9697	6.2143	0.0701	9542.4	0.6568	1.031	0.6591	0.9643	18.4545
Median		6.0000	0.0735	3801.0	0.7362	1.000			13.0000
Standard Deviation		6.6299	0.0509	2556.3	0.0615	0.522			12.9537
Subgroup 3: Temporary waiver with no renegotiation (N=15)									
Mean	0.8906	1.6001	0.0798	7991.3	0.7834	2.111	0.6640	0.9001	19.2664
Median		2.0000	0.0832	5885.5	0.8854	1.000			11.0000
Standard Deviation		1.0589	0.0361	2997.3	0.0281	1.697			11.1274
Group II: Renegotiation									
Subgroup 4: No waiver with renegotiation (N=12)									
Mean	0.0002	4.6250	0.4691	-2167	0.8321	4.000	0.6661	0.0833	23.4167
Median		5.5000	0.4995	-339.0	0.9997	3.000			16.000
Standard Deviation		1.1382	0.1252	3458.6	0.0029	2.696			15.8025
Subgroup 5: Permanent waiver with renegotiation (N=78)									
Mean	0.9286	0.3879	0.0705	9321.3	0.6857	1.280	0.6401	0.9091	20.4321
Median		0.0000	0.0686	6532.0	0.6163	1.000			8.0000
Standard Deviation		1.8299	0.0319	10213	0.0420	0.000			12.9425
Subgroup 6: Temporary waiver with renegotiation (N=15)									
Mean	0.8000	1.7222	0.0869	7123.1	0.8734	2.533	0.6474	0.8890	21.5607
Median		2.0000	0.0728	4110.0	0.7011	1.000			12.0000
Standard Deviation		0.7368	0.0412	5321.1	0.0023	2.199			12.5895
Test of the differences between subgroups 1 & 4									
Parametric P-value**		0.2880	0.2860	0.2000	0.0150	0.718			0.1090
Nonparametric P-value***		0.3320	0.3240	0.9170	0.0530	0.795			0.1020
Z-test (differences of 2 proportions)	0.2109						-0.480	0.7795	
Test of the differences between subgroups 2 & 5									
Parametric P-value**		0.0990	0.2250	0.4630	0.3890	0.325			0.1760
Nonparametric P-value***		0.3950	0.5680	0.2570	0.1300	0.231			0.4640
Z-test (differences of 2 proportions)	0.7402						1.095	-1.367	
Test of the differences between subgroups 3 & 6									
Parametric P-value**		0.7020	0.7690	0.4220	0.1080	0.552			0.5280
Nonparametric P-value***		0.7850	0.7660	0.4320	0.1380	0.541			0.2910
Z-test (differences of 2 proportions)	-0.927						0.774	1.112	

Note: Definition of Variables: NVCOV is equal to 1 if the violated covenants is affirmative, 0 otherwise; IACCT is the voluntary and early adoption of the income increasing accounting procedures; DLEVG is the book value of the debts divided by the book of total assets; OCASH is the operating cash flows as calculated according to SFAS-95; PROBKR is the probability of bankruptcy calculated from model 3 in Ohlson (1980); NCRD is defined as the number of creditors granting the debt; NDBT is equal 1 if the debt is private, 0 otherwise; SECUR is equal to 1 if the debt is secured, 0 otherwise; MATUR is the debt's issued time to maturity (in month).

*Since NVCOV, NDBT, and SECUR variables are dichotomous variables, their means are the proportion with an observation of 1 in those variables and the entries for t-statistics are the Z-statistics testing whether the proportions are the same for the two groups. The Z-test is significant at 0.01 level.

** The parametric *P*-value is a two-tailed t-tests, at the 0.05 level.

*** Nonparametric *P*-value is a two-tailed Mann-Whitney, at the 0.05 level.

Boundaries on the net worth (20 constraints), the debt-equity ratio (14 constraints), the working capital or current ratio (16 constraints) are reduced to accommodate violators' financial positions. These covenants, as shown in table (4/13), are the most violated covenants. Along with the changes in boundaries of the ABDCs, creditors increased their control over violators' operations by restricting the financing and investing activities. Financing activities are controlled by limiting the additional debt (10 cases) and requiring prior permission for new financing (16 cases). Investing opportunities are restricted by new constraints on the sale of assets (8 cases), capital expenditures (5 cases), merger activities (9 cases), and stock repurchase (12 cases). In addition to 15 new dividend covenants

Firms that received temporary waivers without renegotiation (18 firms) violated 40 affirmative covenants, while firms that received waivers after renegotiation (15 firms) violated 10 negative covenants and 53 affirmative covenants. Concerning these firms that received temporary waiver post to renegotiation, 35 constraints are relaxed, 10 are tightened, and 12 are left unchanged.[1] Fifteen boundaries on the net worth covenants, 9 on the debt-equity ratio, 7 on the working capital or the current ratio, and 4 on the or the cash flows or cash flow coverage are decreased to accommodate the violators' financial position. Creditors increased their monitoring of the violators' activities by adding 12 dividends covenants, 15 new financing covenants (9 limiting additional debt, and 6 requiring permission for new financing), 25 new investing covenants (7 assets sales prohibition, 10 capital expenditure limitation , 3 merger activities prohibition and 5 stock repurchase prohibition). In addition, the creditors increased the interest for 10 of the 15 firms, decreased the interest for 2 firms, and kept 3 unchanged for 3 firms. The incremental interest expense for one year is $100, 230 and the median is $55,123 As a fraction of the firms' equity, the mean is 0.00087 and the median is 0.0037.

[1] Eight covenants could not be traced post the violation.

Table (4/13)

Reasons and Consequences of the Renegotiation Process*

	No waiver with no renegotiation (N=16)	No waiver post to renegotiation (N=12)	Permanent waiver with no renegotiation (N=33)	Permanent waiver post to renegotiation (N=28)	Temporary waiver with no renegotiation (N=18)	Temporary waiver post to renegotiation (N=15)
Panel A: Violated Covenants						
Negative						
Limit on Borrowing	9	6				3
Assets Sales	3	3				2
Merger Activities	2	1				2
Capital Expenditure	1					3
Total	**15**	**10**				**10**
Affirmative						
Debt-equity Ratio	14	7	4	8	8	10
Net Worth,	20	14	11	9	12	18
Net Income	2	1	2	7	5	3
Cash Flow or Cash Flow Coverage	3	2	5	2	4	2
Fixed Charge or Interest Coverage	3	1	1	5	6	12
Working Capital or Current Ratio	9	1	10	4	5	8
Total	**51**	**26**	**33**	**35**	**40**	**63**
Panel B: Relaxed Covenants						
Net worth				20		15
Debt-equity Ratio				14		9
Working Capital or Current Ratio				16		7
Cash Flow						4
Tightened or left unchanged				72		22
Total				122		57
Panel C: New Covenants						
Dividend				15		12
Exceeded Borrowing Limit				26		15
Assets Sales				8		7
Merger Activities				5		3
Capital Expenditure				9		10
Stock Repurchase				12		5
Increase Interest						10
Mean Increase						0.00087
Median Increase						0.0037
Total				75		62

* Based on a sample of 122 debt agreements taken from the Compact Disclosure data base.

The overall evidence from table (4/13) suggests that although creditors deal differently with different firms in technical default differently, creditors tend to renegotiate firms that violated any kind of the negative covenants. The evidence also suggests that increasing in the restrictiveness of accounting constraints occur on dividends, which are not the source of violation in the sample, but this is consistent with creditors' intention to save the asset base to prevent further disposition of their claims in the future. Finally, most of the covenants in which boundaries are relaxed are those that have been violated. Conversely, the covenants that are tightened are the other covenants which are not violated.

The breakdown of table (4/14) shows the combined subgroups. The non-waiver group (group I) combines subgroups 1 and 4, the permanent waiver group (group II) combines subgroups 2 and 5, and temporary waiver group (group III) combines subgroups 3 and 6. The comparison between groups I versus II (no waiver vs. permanent waiver) shows that firms receiving permanent waiver have higher significant means values for NVCOV, OCASH, and SECUR, consistent with hypotheses H1, H4, and H8. In addition, they have lower significant means values for IACCT, DLEVG, PROBKR, and NCRD consistent with hypotheses H2, H3,H5, H6. The results from the parametric (t-test), non parametric (Mann-Whitney test), and the Z-test show that all the variables are significant except NDBT and MATUR variables. This suggests that the nature of the violated covenants (NVCOV), the income-increasing accounting changes (IACCT), the operating cash flows (OCASH), the deviation from optimal leverage (DLEVG), the probability of bankruptcy (PROBKR), the number of creditors (NCRD), and the security of the debt (SECUR) are the most important factors that affect the wavier decision. Also, the same inference could be reached from comparing groups I versus III (no waiver versus temporary waiver). The comparison between groups II and III (temporary versus permanent waiver) shows that the covenant variable, the income-increasing accounting changes variable, the operating cash flows variable, and the number of creditors variable are the significant variables that differentiate between the temporary and the permanent waiver. The deviation from optimal leverage, and the probability of bankruptcy are found not to be significant in the permanent waiver

decision. This is consistent with the creditors' cautious; creditors will not waive or grant any kind of waiver for high-risk debtors.

Table (4/14)
Financial Profiles of the Sample Firms

	Variables								
	NVCOV*	IACCT	DLEVG	OCASH	PROBKR	NCRD	NDBT*	SECUR*	MATUR
Group I: No Waiver (N=28)									
Mean	0.4643	3.000	0.4239	-2340.5	0.8653	2.679	0.7900	0.3929	15.0212
Median		3.000	0.4915	-615	0.3948	3.000			16.0001
Standard Deviation		2.143	0.1948	47988	0.0603	1.249			14.4700
Group II: Permanent Waiver (N=61)									
Mean	0.5180	1.0656	0.0941	12680.3	0.7112	1.0491	0.8716	0.8361	13.3607
Median		0.0000	0.0715	4000	0.7211	1.0000			10.0987
Standard Deviation		1.6918	0.0939	32238.9	0.0913	0.3003			10.8069
Group III: Temporary Waiver (N=33)									
Mean	0.8763	1.6667	0.1374	9986.12	0.7889	1.7880	0.8088	0.8182	14.7580
Median		2.0000	0.0728	3321	0.7981	1.0000			14.0000
Standard Deviation		1.3047	0.0968	19296.3	0.0623	1.2750			12.243
Test of the differences between group I vs. group II									
Parametric P-value**		0.0000	0.0001	0.0330	0.0012	0.000			0.1620
Non-parametric P-value***		0.0000	0.0003	0.0000	0.0004	0.000			0.0716
Z-test (differences of 2 proportions)	-5.743						-1.454	-4.4680	
Test of the differences between group I vs. group III									
Parametric P-value**		0.0000	0.4600	0.0000	0.0000	0.004			2.8630
Non-parametric P-value***		0.0000	0.4600	0.0000	0.0000	0.000			0.0404
Z-test (differences of 2 proportions)	-7.810						-1.521	-6.8290	
Test of the differences between group II vs. group III									
Parametric P-value**		0.0000	0.6321	0.6060	0.6080	0.0010			0.3100
Non-parametric P-value***		0.0000	0.5400	0.6461	0.5060	0.0022			0.5604
Z-test (differences of 2 proportions)	-6.051						1.3930	-5.8510	

Note: Definition of Variables: NVCOV is equal to 1 if the violated covenants is affirmative, 0 otherwise; IACCT is the voluntary and early adopted income increasing accounting procedures; DLEVG is the book value of debt divided by the book of total assets; OCASH is the operating cash flows as calculated according to SFAS-95; PROBKR is the probability of bankruptcy calculated from model 3 in Ohlson (1980); NCRD is defined as the number of creditors grant the debt; NDBT is equal 1 if the debt is private, 0 otherwise; SECUR is equal to 1 if the debt is secured, 0 otherwise; MATUR is the debt issued time to maturity (in month).
*Since NVCOV, NDBT, and SECUR variables are dichotomous variables, their mean is the proportion with an observation of 1 in those variables and the entries for t-statistics are the *Z*-statistics testing whether the proportions are the same for the two groups.
** The parametric *P*-value is a two-tailed t-tests, at 0.05 level.
*** Non-parametric *P*-value is a two-tailed Mann-Whitney, at 0.05 level.

Overall, table (4/14) shows that firms that were granted permanent waivers had relatively better financial positions than the firms in the temporary and non-waiver groups. Moreover, firms that were granted temporary waiver had relatively better financial positions

than their counterparts in the non waiver group. The NDBT in the permanent waiver group have higher average of private debt, but it is not significantly different from that in the temporary group and in the non waiver group. In addition, the debts in the permanent waiver group have shorter average maturity, but it is not significantly different from that of the temporary waiver group and the non waiver group.

In summary, the findings of the comparison between the non-waiver group and temporary group, from one side, and the non-waiver and the permanent waiver from the other side, show that creditors are more likely to grant a waiver to the debtor who is violating affirmative covenants, having more cash flows, having less income-increasing changes and less number of creditor, having a lower deviation from leverage and a lower estimated probability of bankruptcy. Moreover, debt issues that are secured is more likely to be associated with a waiver than that in the case of an unsecured debt. The nature of the debt and the maturity variables, however, are not found to be a significant determinant of the waiver decision. The same results can be obtained from comparing the permanent waiver to the temporary waiver except for the deviation from leverage and the probability of bankruptcy. The reason is that creditors tend not to waive any violation for the debtor who is in high risk.

4/3/2. Multivariate Test: Binary Logistic Regression

So far, the previous section dealt with a single criterion variable. Logistic analysis can be generalized to include multiple criteria, and to provide appropriate multivariate tests of significance. Using the univariate ananlysis, it becomes increasingly likely that one or more variables may be found significant by chance. Therefore, a multivariate analysis is necessary. It is assumed that the same significant variables will affect the different kinds of the waiver probabilities. To assess these probabilities the multivariate binary logistic regression is employed. A multivariate binary logistic regression provides an estimate of the explanatory ability of each of the independent variables in the prediction equation, if severe multi-collinearity between the independent variables is not present. A test of multi-collinearity is performed and the final regression model will omit those independent variables that are

highly correlated ($R^2 > .80$) (Lee and Hsieh, 1985). The test of multi-collinearity is used to regress each of the independent variables on all othre independent variables, as done in Daley and Vigeland (1983). Excluding the highly correlated variables from the model allow the interpretation of the results without any "noise".

Table (4/15) shows that PROBKR is highly correlated with DLEVG (with a coefficient of 0.82), which may cause a high noisy interpretation of the result of the logistic regression. The high correlation between PROBKR and DLEVG is not surprising since leverage is involved in calculating of both of them. For this reason, the logistic model presented below employ these two variables separately. All other bivariate correlation coefficients are not particularly high, which allow a less noisy interpretation of the remaining variables.

Table (4/15)
Correlation Matrix of the Waiver Variables

	NVCOV	IACCT	DLEVG	OCASH	PROBKR	NCRD	NDBT	SECUR
NVCOV	1.000							
IACCT	-0.01	1.000						
DLEVG	-0.29	0.36	1.000					
OCASH	0.12	-0.10	-0.13	1.000				
PROBKR	-0.22	0.22	**0.82**	-0.21	1.000			
NCRD	-0.17	0.27	0.30	-0.19	0.39	1.000		
NDBT	-0.03	-0.05	-0.31	-0.10	0.07	-0.18	1.000	
SECUR	0.10	-0.10	-0.34	-0.05	-0.26	-0.28	0.13	1.000
MATUR	-0.28	-0.07	0.21	-0.12	0.26	0.22	0.04	-0.28

Note: The variables are defined under table (4/12).

Bold: $R^2 > .80$ have been highlighted by printing in bold.

The binary logistic regression (BLOGIT) model of choice when the dependent variables is dichotomous and the explanatory variables are not normally distributed is logistic (Maddala, 1991).[1] Both logistic and a related model, probit, were designed to overcome the

[1] Technically, the term logistic is a name for transformation. The logit transformation takes a number p between 0 and 1 transforms it to log [p/(1-p)]. The logistic transformation (x) on the real line and transforms it to $e^x/(1+e^x)$. Note that the logit transformation and the logistic transformation are inverse of each other. The logistic transformation applied to log [p/(1-p)] gives p and the logit trasformation applied to=

violation of the homoskedasticity assumption of the error terms in the ordinary least squares (OLS) regression models which occurs when the dependent variable is dichotomous (Aldrich and Nelson, 1986), as is the case here. The logistic regression assumes that the dependent variable is an estimate of the probability that an observation belongs to one of the two groups. The logistic regression assumes that the probability density function that describes the relation between the dependent and independent variables is logistic rather than normal (Aldrich and Nelson, 1986).

4/4. Results of The Binary Logistic Regression

To identify the variables that explain the waiver decision, and to assess the probability of the permanent and temporary waiver, the binary logistic regression is used. To this end, four comparisons are performed, non-waiver versus waiver, temporary waiver versus permanent waiver, non-waiver versus temporary waiver, and non-waiver versus permanent waiver. The nine hypotheses can be tested by the following two binary logistic regression models:

Model I (PROBKR)

$$\log\left[\frac{P_x}{1-P_x}\right] = \beta_0 + \beta_1 NVCON + \beta_2 IACCT + \beta_4 OCASH + \beta_5 PROBKR - \beta_6 NCRD + \beta_7 NDBT + \beta_8 SECUR - \beta_9 MATUR$$

Model II (DLEVG)

$$\log\left[\frac{P_x}{1-P_x}\right] = \beta_0 + \beta_1 NVCON + \beta_2 IACCT + \beta_3 DLEVG + \beta_4 OCASH - \beta_6 NCRD + \beta_7 NDBT + \beta_8 SECUR + \beta_9 MATUR$$

where: Px is the probability of the positive action, $(1-Px)$ is the probability of the negative action. For example: P (waiver) is the probability that the creditor will waive the violation,

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$=e^x/(1+e^x)$ gives x. Performing an analysis of data requires both of these transformations. It is largely a matter of personal preference as to which name is associated with the model (for more details, see appendix 2).

[1- *P(waiver)*] is the probability that the creditor will not waive the violation, and all other variables are as previously defined. Model I employs PROBKR and excludes DLEVG, while Model II applies DLEVG and excludes PROBKR. According to hypotheses H1 through H8, the signs of the coefficients are expected to be: $\beta 1 > 0$, $\beta 2 < 0$, $\beta 3 < 0$, $\beta 4 > 0$, $\beta 5 < 0$, $\beta 6 < 0$, $\beta 7 > 0$, $\beta 8 > 0$, and $\beta 9 < 0$.

Table (4/16) shows the results of the BLOGISTIC regression model, along with the hypotheses corresponding to each explanatory variable and the expected sign of the coefficient. In addition, the table shows the results of the goodness-of-fit tests for the models. Three methods are used to test the overall power of the BLOGISTIC regression model, these methods are: the Pearson-Chi-Square method, the Deviance-Chi-Square method, and the Homser-lemeshow-Chi-Square method.

The results from model I-1 suggest that the waiver decision is negatively related to the income-increasing accounting changes (IACCT) and the probability of bankruptcy (PROBKR) variables, and positively related to the nature of the violated covenants (NVCOV), the operating cash flows (OCASH), the number of creditors (NCRD), and the security of the debt (SECUR) variables. On the other hand, the nature of the debt variable (NDBT) and the maturity date (MATUR) are not found to be significant determinants in the waiver decision. Accordingly, the logistic regression takes the following form:

$$\log\left[\frac{P(waiver)}{1-P(waiver)}\right] = 19.515 + 1.371 NVCON - 2.4896 IACCT + 1.1901 OCASH + -22.760 PROBKR$$
$$- 0.0853 NCRD + 0.0287 NDB 2.318 SECUR - 0.0219 MATUR$$

The results from model I-2 suggest that the probability of a permanent waiver is negatively related to the income-increasing accounting changes (IACCT), and positively related to the nature of the violated covenants (NVCOV), the operating cash flows (OCASH), and the number of creditors (NCRD). On the other hand, the probability of bankruptcy (PROBKR), the nature of the debt (NDBT), the security of the debt (SECUR), and the maturity debt (MATUR) variables are not found to be significant determinants in the permanent waiver's decision. Accordingly, the model can be reformatted as follows:

Table (4/16)

The Binary Logistic Regression Explaining the Probability of the Waiver Decision
Model 1 (PROBKR)
(*P*-values in parentheses)

	1-1 No Waiver vs. Waiver	1-2 Temporary Vs. Permanent Waiver	1-3 No Waiver Vs. Temporary Waiver	1-4 No Waiver vs. Permanent Waiver	Expected Signs of the Hypothesis
Panel A: Independent Variables*					
Intercept	19.515	4.396	18.512	21.17	
	(0.007)	*(0.089)*	(0.048)	(0.072)	
NVCOV	1.371	1.3498	2.2000	2.613	+
(H1)	(0.012)	*(0.026)*	(0.052)	(0.050)	
IACCT	-2.4896	-0.5543	-0.6661	-0.9853	-
(H2)	(0.001)	*(0.003)*	(0.046)	(0.019)	
OCASH	1.1901	0.9096	0.8010	0.7 022	+
(H4)	(0.004)	*(0.039)*	(0.043)	(0.048)	
PROBKR	-22.760	-5.888	-21.310	-18.420	-
(H5)	(0.007)	*(0.118)*	(0.035)	(0.025)	
NCRD	-0.0853	-0.6861	0.9249	-1.7367	-
(H6)	(0.019)	*(0.024)*	(0.047)	(0.051)	
NDBT	0.287	1.3550	0.0001	5.169	+
(H7)	(0.062)	*(0.077)*	(0.990)	(0.166)	
SECUR	2.318	0.0387	2.537	2.979	+
(H8)	(0.036)	*(0.064)*	(0.051)	(0.049)	
MATUR	-0.0219	0.0512	-0.06756	0.0333	_
(H9)	(0.091)	*(0.068)*	(0.222)	(0.641)	
Panel B: Goodness-of-Fit Tests*	**chi-square**	**chi-square**	**chi-square**	**chi-square**	
Pearson	89.123	23.230	13.530	17.844	
	(0.006)	*(0.040)*	(0.018)	(0.050)	
Deviance	33.444	21.493	8.494	14.774	
	(0.030)	*(0.034)*	(0.050)	(0.049)	
Hosmer-Lemeshow	11.29	1.259	2.084	0.263	
	(0.016)	*(0.023)*	(0.048)	(0.033)	
Panel C : Number of Observations					
Number of Permanent Waiver	61	61		61	
Number of Temporary Waiver	33	33	33		
Number of No Waiver	28		28	28	

Note: The dependent variable is defined as 1 if the action is positive, and 0 if there is no waiver. The independent variables are defined under table 4/14.
*Significant at the 0.05 level (two-tailed test).

below those in models I-1 and I-2. Therefore, the two-step model (models I-1 and I-2) has more explanatory power than the one step-model (model I-3 or I-4).

By solving the first two equations of model I, the probabilities of the permanent waiver, temporary waiver, and non-waiver could be calculated. Suppose that in Feb 1998, MMX corporation is planning to enter a new debt agreement (amount of $ 12 million) with City bank to finance a new project. If the company implements this debt contract, the company will violate its debt equity ratio in the current debt agreement with other three banks (First Nation Bank, Signet Bank, and Corestate Bank). Before completing the new debt agreement, the company is interested in knowing its chance to have a waiver for the violation, and the kind of waiver it might receive.

In 1997, the company changed its depreciation methods from accelerated deprecation to straight-line and changed its inventory valuation method from LIFO to FIFO. The company's 1997 financial statements show that the operating cash flow of the company is equal to $2 million, the probability of bankruptcy as calculated using Ohlson's model 3 (1980) is equal to 10 percent, and the company's current debt agreement with the three creditors is secured.

The industry leverage is 90 percent and the company leverage is 110 percent. By using the suggesting model (I-1), the probability that the company will receive a waiver is 45 percent, and the probability of the non-waiver is 55 percent.[1] Having these probabilities in mind, the company may take its decision not to violate its current agreement and go forward and comply with its debt agreement, or exhibit more accounting changes. Since the probability of the non waiver is higher than the probability of the waiver, the debtor may use the income 'bath' strategy to circumvent the ABDCs.

[1] It is possible to jump directly to model I-2 to calculate the probability of the permanent waiver and temporary waiver, without applying model I-1. However, it is better to use the two-step model, since the explanatory power of model I-1 is higher than that of model I-2.

Based upon the results of model I, the covenant variable, the accounting variable, the cash flow variable, the bankruptcy variable, the creditors variable, and the security variable, are the significant determinants for the probabilities of the waiver decision. Moreover, model I-2 indicates the same results (with different coefficients) as in model I-1 except for the PROBKR and SECUR variables. Using the nominal logistic regression, the results are virtually identical (see Appendix 3)

Table (4/17) represents the results for model II. Model II-1 shows the same results as in model I-1(waiver compared to non-waiver), but with less significant level for each coefficient and with less overall power for the model (refer to the goodness-of-fit test). Accordingly, the model could be reformatted as follows:

$$\log\left[\frac{P(waiver)}{1-P(waiver)}\right] = -11.259 + 0.493\,NVCON - 1.905\,IACCT - 32.49\,\text{DLEVG} + 0.0827\,OCASH$$
$$-1.0622\,NCRD + 0.287\text{NDBT} + 1.590\,SECUR - 0.0219\text{MATUR}$$

Model II-2 (temporary vs. permanent) give the same results as in model I-2 with less overall significant level. Model II-2 could be reformatted as follows:

$$\log\left[\frac{P(permenant)}{1-P(permenant)}\right] = 6.924 + 1.5497\,NVCON - 0.4632\,IACCT + 0.0614OCASH$$
$$-0.9862\,NCRD + 2.5150\text{NDBT} + 1.0387\,SECUR - 0.9512MATUR$$

Model II-3 (non-waiver vs. temporary) gives the same results as in model I-3, but with less significant level of all the goodness-of-fit tests. Considering these results the model can be rewritten as follows:

$$\log\left[\frac{P(temporary)}{1-P(temporary)}\right] = 21.74 + 1.202\,NVCON - 3.330\,IACCT - 35.817\,\text{DLEVG} + 0.0536\,OCASH$$
$$-1.786\,NCRD - 2.187NDBT + 0.883\,SECUR + 0.0389MATUR$$

Finally, model II-4 (non-waiver vs. permanent) shows the same results as in model I-4, but ,also, with less significant power for all the goodness-of-fit tests. Based upon these results, model II-4 can be reformatted as follows:

Table (4/17)
Binary Logistic Regression Explaining the Probability of the Waiver Decision
Model II (DLEVG)
(*P*-values in parentheses)

	II-1 No Waiver vs. Waiver	II-2 Temporary Vs. Permanent Waiver	II-3 No Waiver Vs. Temporary Waiver	II-4 No Waiver vs. Permanent Waiver	Expected Signs of the Hypothesis
Panel A: Independent Variables*					
Intercept	11.259	6.924	21.74	3.600	
	(0.024)	*(0.087)*	(0.258)	(0.758)	
NVCOV	0.493	1.5497	1.202	0.087	+
(H1)	(0.049)	*(0.051)*	(0.049)	(0.048)	
IACCT	-1.905	-0.4632	-3.330	-3.023	-
(H2)	(0.009)	*(0.041)*	(0.039)	(0.0421)	
DLEVG	-32.49	-11.046	-35.812	-31.690	+
(H3)	(0.023)	*(0.849)*	(0.043)	(0.050)	
OCASH	0.08276	0.0614	0.0536	0.0333	+
(H4)	(0.019)	*(0.046)*	(0.051)	(0.047)	
NCRD	-1.0622	-0.9862	-1.786	-1.686	-
(H6)	(0.020)	*(0.024)*	(0.501)	(0.047)	
NDBT	3.263	2.5150	-2.187	5.472	+
(H7)	(0.626)	*(0.089)*	(0.978)	(0.619)	
SECUR	1.590	1.0387	0.883	1.4231	+
(H8)	(0.037)	*(0.068)*	(0.054)	(0.048)	
MATUR	0.0573	0.9512	0.0389	0.2419	-
(H9)	(0.708)	*(0.160)*	(0.457)	(0.051)	
Panel B: Goodness-of-Fit Tests*	**chi-square**	**chi-square**	**chi-square**	**chi-square**	
Pearson	14.117	20.130	10.950	6.815	
	(0.034)	*(0.041)*	(0.052)	(0.051)	
Deviance	14.321	18.921	10.735	7.065	
	(0.040)	*(0.049)*	(0.051)	(0.050)	
Hosmer-Lemeshow	0.495	0.954	0.711	0.221	
	(0.041)	*(0.045)*	(0.049)	(0.049)	
Panel C : Number of Observations					
Number of permanent waiver	61	61		61	
Number of temporary waiver	33	33	33		
Number of non-waiver	28		28	28	

Note: The dependent variable is defined as if the action is positive, and 0 if there is no waiver. The independent variables are defined under table 4/14.

* Significance at the 0.05 level (two-tailed test