THE IMPACT OF RECENT ECONOMIC CRISIS ON THE CAPITAL STRUCTURE OF TURKISH CORPORATIONS AND THE TEST OF STATIC TRADE-OFF THEORY: IMPLICATIONS FOR CORPORATE GOVERNANCE SYSTEM

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Turkey has experienced two economic shocks, where the second one had devastating effects on the financial sector and real sector. The purpose of this paper is to show the impact of economic crisis on the capital structure of corporations, which are traded in İstanbul Stock Exchange, and the impact of capital structure on the performance of corporations. It is hypothesized that high leverage firms before economic crisis incurred more losses than the low leverage firms after the crisis. In order to test this hypothesis 96 firms, which are representatives of Turkish real sector are used for the quarters of 1999-2001. T-tests and regression analysis are used to test this hypothesis. The findings confirm that this hypothesis is true. The implications of this finding is more important than the finding because if this finding is true than Turkish corporations can immunize themselves to economic crisis, which cannot be anticipated easily, by having low leverage ratios. This is very difficult for Turkish corporations because the ownership structure, which is concentrated, and legal system, which does not solve the agency problems between stakeholders, would not let having low leverage ratios for Turkish corporations. Therefore, a solution set will be presented to change the corporate governance system, which is believed to help firms to immunize themselves against economic crisis, of Turkish corporations which are traded in İstanbul Stock Exchange.

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Introduction

Turkey has experienced two economic shocks, where the second one had devastating effects on the financial sector and real sector. The purpose of this paper is to show the impact of economic crisis on the capital structure of corporations and the impact of capital structure on the performance of corporations, which are traded in İstanbul Stock Exchange. First, due the effects of substantial increases on interest rates and devaluation, it is hypothesized that the leverage of the firms will increase on average after economic crisis. Second, since firms are believed to operate above their optimal capital structure, it is hypothesized that leverage and profitability are expected to be inversely related, which is the rejection of static trade-off theory and acceptance of pecking order theory. Third, since low leverage firms operate near their optimal capital structure when compared with high leverage firms, the profitability and capital structure of low leverage firms will not be affected from the economic crisis as much as the high leverage firms in terms of their profitability. Fourth, as a result of the third hypothesis, it is hypothesized that debt ratio is the major determinant of profitability for high leverage firms. The findings of this study confirm these four hypotheses.

The plan of this paper will be as follows: the literature about capital structure will be reviewed in the first section. The data and variables will be defined in the second section. The empirical findings of the study will be presented in the third section. The implications of these findings will be interpreted for a better governance system with the help of empirical findings about the relationship among corporate governance systems, capital structure, and performance in the fourth section. Finally, conclusion will be presented in the fifth section.

I. Literature Review

As Brigham and Ehrhardt (2002) states in their book, Financial Management, the capital structure is an important instrument where firms can maintain the control of a firm or loose it. Capital structure is also related with the bankruptcy risk that the creditors will face due to the proportion of capital provided by stockholders. By using more leverage equity holders can magnify their return but if things go wrong the opposite would occur, which is the downside risk of having too much debt in the

capital structure. Therefore, it is an important financial instrument that firms should consider carefully in their financial policies.

There are two main theories, static trade-off theory and pecking order, which are related with capital structure. Steward C. Myers (1984) argues in his paper that static trade-off theory is irrelevant regarding capital structure when compared with pecking order theory. Myers adds asymmetric information to pecking order theory and name it as modified pecking order theory. Jonathan Baskin (1989) states in his paper that there are numerous published statistical studies, which showed a prominent negative relationship between debt ratio and profitability of firms conducted over 50 years in five countries. According to Baskin these studies are the proof that show irrelevance of static trade-off theory for capital structure. The results of the recent studies for different countries regarding the performance of firms and leverage are mix. For example, Weill (2002) found a negative relationship between firm performance and debt ratio for Italy and a positive relationship for Germany and France. Campello (2002) found that debt financing has a negative impact on firm (relative-to-industry) sales growth in industries where rivals are relatively unlevered during recessions, but not during booms.

Regarding the emerging markets and leverage usage there are different studies. Gertler and Hubbard (1991) try to figure out why firms designing optimal capital structure would choose a level of debt that leaves them heavily exposed to corporate risk by incorporating corporate control and tax benefits to their model. On the other hand, Bris et. al. (2001) conducted a study for 17 countries and found that firms have an increasing leverage and declining profitability prior to a currency crisis. The findings of this paper also confirms the findings of Bris et. al. for profitability but not for leverage ratios.

II. The Definition of Data and Variables

96 firms, which are believed to be the representatives of the Turkish real sector, from four industries, food beverage industry, non-metal mineral product industry, metal products, machinery industry, and textile, leather industry, are used for the 12 quarters of 1999-2001 to test the hypotheses of this study. T-test and

regression analysis will be used to test the four hypotheses. Stepwise method is employed in the regression analyses. 12 quarters are separated into three periods. The first three quarters of 1999 are defined as the normal period, where there is no systematic risk. Fourth quarter is not included in the normal period because of the earthquake. The first three quarters of 2000 are defined as the boom period, where there is no systematic risk. Fourth quarter is not included in the boom period because of the financial crisis in November 2000. Second, third, and fourth quartes in 2001 are defined as the post-crisis period. First quarter is not included in the post-crisis period because of the economic crisis. Firms are divided into low leverage firms and high leverage firms regarding structures of their debt ratios between 1999 and 2001. Firms have an average of 56% debt ratio between 1999 and 2000. Firms which have debt ratios below 56% are regarded as low leverage firms, and firms which have debt ratios above 56% are regarded as high leverage firms.

Besides testing the effects of debt ratio on the profitability of firms, financial expenses ratio will also be used in the regression analysis models. As a result, three ratios are used to test the four hypotheses that are presented in the beginning of this paper, which are as follow:

Dependent Variable

ROA= Net Income/Average Total Assets

Independent Variables

DEBT=Total Debt/Average Total Assets

FINEX=Total Financial Expenses/Net Sales

III. Empirical Findings

In order to test the first hypothesis, the leverage of the firms is expected to increase on average after economic crisis, ANOVA is used for the twelve periods. The debt ratios, financial expense ratios, and profitability ratios (ROA) are all presented in ANOVA Tables 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 for twelve quarters. The following findings are presented in these ANOVA tables:

1. The debt ratio of firms, which are all significant in these twelve periods, is around 56%, and it jumps to a new level, 65%, after the economic crisis. Thus, regarding this result the first hypothesis is accepted. Thus, economic crisis has a significant impact on the capital structures of firms on average.

2. Average debt ratio of firms varies between 57% and 56,37% in the normal period. Average debt ratio of firms varies between 57,5% and 56,09% in the boom period. Thus, it is concluded that debt ratios did not change too much in the boom period. In other word, average debt ratio is approximately 56% during normal period and boom period.

3. Financial expenses, which are all significant in these twelve periods, varies between 14,21% and 17,73% in the normal period. Financial expenses drops from 10,79% in the first quarter of boom period to 8,08% in the third quarter of boom period. This is a normal result because interest rates were decreasing during these three quarters.

4. The average profitability of firms varies between –0,58% and 3,89% in the normal period. Profitability of firms increases from 1,73% in the first quarter of boom period to 4,72% in the third quarter of boom period. In other words, the profitability of firms almost tripled at the end of the boom period when compared with the beginning of the boom period. This also a normal result due higher sales and lower financial expenses.

5. The average debt ratio increases to 65,87% in the third quarter of 2001 from 65,22% in the first quarter of 2001 and then drops to 64,23% in the fourth quarter of 2001 significantly. On average, firms could not decrease their debt ratios after the impact of economic crisis subsides in terms of interest rates and devaluation of currency.

6. Bris et. al. (2001) conducted a study for 17 countries and found that firms have an increasing leverage and declining profitability prior to a currency crisis. The leverage decreases, ANOVA Tables 7, 8, 9, prior to currency crisis, which is opposite to the findings of Bris et. al. but profitability, ANOVA Tables 7, 8, 9, also decreases prior to currency crisis, which confirms the findings of Bris et. al.

ANOVA Table 1: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the First Quarter of 1999 (Normal Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	96	0,5700	0,1559	35,8341	95	0,0000
FINEX	96	0,1773	0,1559	9,6263	95	0,0000
ROA	96	-0,0058	0,1559	-0,3649	95	0,7160

ANOVA Table 2: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Second Quarter of 1999 (Normal Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	97	0,5637	0,1660	33,4461	96	0,0000
FINEX	97	0,1552	0,1493	10,24218	96	0,0000
ROA	97	0,0389	0,1500	2,552568	96	0,0123

ANOVA Table 3: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 1999 (Normal Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	97	0,5678	0,1687	33,1595	96	0,0000
FINEX	97	0,1421	0,1333	10,4958	96	0,0000
ROA	97	0,0375	0,1256	2,9396	96	0,0041

ANOVA Table 4: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Fourth Quarter of 1999(Earth Quake Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	99	0,5765	0,1877	30,5611	98	0,0000
FINEX	99	0,1555	0,1521	10,1696	98	0,0000
ROA	99	0,0262	0,1103	2,3609	98	0,0202

ANOVA Table 5: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the First Quarter of 2000 (Boom Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	100	0,5751	0,1848	31,11691	99	0,0000
FINEX	100	0,1079	0,0997	10,8195	99	0,0000
ROA	100	0,0173	0,1511	1,144566	99	0,2551

ANOVA Table 6: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Second Quarter of 2000(Boom Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	96	0,5609	0,1885	29,1597	95	0,0000
FINEX	96	0,0923	0,0922	9,8098	95	0,0000
ROA	96	0,0383	0,1320	2,8389	95	0,0055

ANOVA Table 7: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 2000 (Boom Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	96	0,5694	0,1873	29,7884	95	0,0000
FINEX	96	0,0808	0,0824	9,6131	95	0,0000
ROA	96	0,0472	0,1120	4,1242	95	0,0001

ANOVA Table 8: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Fourth Quarter of 2000(First Economic Crisis)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	95	0,5570	0,1768	30,7058	94	0,0000
FINEX	95	0,0726	0,0632	11,2032	94	0,0000
ROA	95	0,0323	0,0942	3,3406	94	0,0012

ANOVA Table 9: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the First Quarter of 2001(Second Economic Crisis)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	95	0,6522	0,2148	29,5962	94	0,0000
FINEX	94	0,4621	0,4330	10,3481	93	0,0000
ROA	94	-0,1677	0,3099	-5,2480	93	0,0000

ANOVA Table 10: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Second Quarter of 2001(First Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	95	0,6502	0,2466	25,6959	94	0,0000
FINEX	94	0,3272	0,2798	11,3379	93	0,0000
ROA	95	-0,1025	0,2736	-3,6532	94	0,0004

ANOVA Table 11: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 2001 (Second Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	93	0,6587	0,2644	24,0246	92	0,0000
FINEX	92	0,2922	0,2491	11,2507	91	0,0000
ROA	93	-0,0705	0,2412	-2,8171	92	0,0059

ANOVA Table 12: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Fourth Quarter of 2001 (Third Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	93	0,6423	0,2856	21,6878	92	0,0000
FINEX	93	0,2418	0,2507	9,3024	92	0,0000
ROA	93	-0,0483	0,2068	-2,2548	92	0,0265

Correlation and regression results of DEBT, FINEX, and ROA can be seen in Tables 13,14 in below. It can be seen that there is an inverse relationship between leverage and profitability of firms. Both DEBT and FINEX are significant. Since the condition index and tolerance values, 7,97, is below the threshold value,15, and tolerance, 62,19%, is above its threshold value, 50%, then it can be concluded that there is no major multicollinearity problem among the independent variables. In order to accept the second hypothesis, which states that there is an inverse relationship between profitability and leverage, it is believed that regression analysis for each period, namely normal period, boom period, crisis period, and post-crisis period, will be more conclusive than a single regression analysis for all periods.

Table 13: Pearson Correlation Matrix (1999-2001)

		ROA	DEBT	FINEX
ROA	Pearson Correlation	1,0000	-0,6055	-0,6562
	Sig. (2-tailed)	,	0,0000	0,0000
	N	8630	863	861
DEBT	Pearson Correlation	-0,6055	1,0000	0,6148
	Sig. (2-tailed)	0,0000	,	0,0000
	N	863	863,0000	861
FINEX	Pearson Correlation	-0,6562	0,6148	1,0000
	Sig. (2-tailed)	0,0000	0,0000	,
	N	861	861,0000	861

Table 14: Regression Coefficients for All Periods(1999-2001) Period and Multicollinearity Results (ROA Dependent Variable)

	Unstandardized Coefficients	Standardized Coefficients			Tolerance	Condition Index	R Square	Adjusted R Square
	B	Beta	t	Sig.				
(Constant)	0,0484		2,8977	0,0039		1		
FINEX	-0,3803	-0,4640	-15,0309	0,0000	0,6219	2,4444		
DEBT	-0,3494	-0,3127	-10,1297	0,0000	0,6219	7,9771	0,4914	0,4902

(Stepwise Method)

The results of these regression analyses and correlation matrices can all be seen in Tables 15,16,17,18,19,20,21,22. To meet the assumptions such as normality and linearity financial expenses ratio and debt ratio are transformed before regression analysis. For normal period regression analysis, financial expense is transformed by taking the square root of this variable. For boom period, crisis period, and post-crisis period regression analyses, financial expense is transformed by taking the square root of this variable and DEBT ratio is transformed by taking the natural log of this variable. The four regression analyses results in Tables 16, 18, 20, 22, which can be seen in below, also show that there is an inverse and significant relationship between debt ratio and profitability. Therefore, the second hypothesis is also accepted. There is also no major multicollinearity problem in these regression equations due to acceptable tolerance and condition index values. Besides, the correlation between FINEX and DEBT is not very high, which can be seen in Tables 15,17,19,21. Finally, when the standardized beta coefficients in Tables 16,18,20,22 are examined, it can be seen that the impact of DEBT on the profitability increases when compared with FINEX, especially during normal period and boom period.

Table 15: Pearson Correlation Matrix (I,II,III/1999)

		DEBT	FINEX	ROA
DEBT	Pearson Correlation	1,0000	0,6542	-0,5470
	Sig. (2-tailed)	,	0,0000	0,0000
	N	290	290	290
FINEX	Pearson Correlation	0,6542	1,0000	-0,6848
	Sig. (2-tailed)	0,0000	,	0,0000
	N	290	290	290
ROA	Pearson Correlation	-0,5470	-0,6848	1,0000
	Sig. (2-tailed)	0,0000	0,0000	,
	N	290	290	290

Table 16: Regression Coefficients for Normal Period(I,II,III/1999) and Multicollinearity Results (ROA Dependent Variable)

	Unstandardized Coefficients	Standardized Coefficients				Condition Index	R Square	Adjusted R Square
	B	**Beta**	**t**	**Sig.**	**Tolerance**			
(Constant)	0,2617		11,5948	0,0000		1,0000		
FINEX	-0,1542	-0,1730	-3,0915	0,0022	0,5720	4,7238		
DEBT	-0,4325	-0,5717	-10,2176	0,0000	0,5720	10,0918	0,4861	0,4825

(Stepwise Method)

Table 17: Pearson Correlation Matrix (I,II,III/2000)

		ROA	DEBT	FINEX
ROA	Pearson Correlation	1,0000	-0,4893	-0,5440
	Sig. (2-tailed)	,	0,0000	0,0000
	N	292	292	292
DEBT	Pearson Correlation	-0,4893	1,0000	0,5766
	Sig. (2-tailed)	0,0000	,	0,0000
	N	292	292	292
FINEX	Pearson Correlation	-0,5440	0,5766	1,0000
	Sig. (2-tailed)	0,0000	0,0000	,
	N	292	292	292

Table 18: Regression Coefficients for Boom Period (I,II,III/2000) and Multicollinearity Results (ROA Dependent Variable)

	Unstandardized Coefficients	Standardized Coefficients				Condition Index	R Square	Adjusted R Square
(Constant)	**B**	**Beta**	**t**	**Sig.**	**Tolerance**	1,0000		
DEBT	-0,3713	-0,3923	-6,7173	0,0000	0,6676	2,7657		
FINEX	-0,2416	-0,2631	-4,5050	0,0000	0,6676	8,6478	0,3421	0,3375

(Stepwise Method)

Table 19: Pearson Correlation Matrix (IV/2000 & I/2001)

		ROA	DEBT	FINEX
ROA	Pearson Correlation	1,0000	-0,5561	-0,6791
	Sig. (2-tailed)	,	0,0000	0,0000
	N	189	189	189
DEBT	Pearson Correlation	-0,5561	1,0000	0,5126
	Sig. (2-tailed)	0,0000	,	0,0000
	N	189	191	190
FINEX	Pearson Correlation	-0,6791	0,5126	1,0000
	Sig. (2-tailed)	0,0000	0,0000	,
	N	189	190	190

Table 20: Regression Coefficients for Crisis Period (IV/2000 & I/2001) and Multicollinearity Results (ROA Dependent Variable)

	Unstandardized Coefficients	Standardized Coefficients				Condition Index	R Square	Adjusted R Square
	B	**Beta**	**t**	**Sig.**	**Tolerance**			
Constant	0,0072		0,1755	0,8609		1,0000		
DEBT	-0,4464	-0,5345	-9,0329	0,0000	0,7373	2,3248		
FINEX	-0,4629	-0,2822	-4,7699	0,0000	0,7373	6,4900	0,5199	0,5147

(Stepwise Method)

**Table 21: Pearson Correlation Matrix
(II,III,IV/2001)**

		ROA	DEBT	FINEX
ROA	Pearson Correlation	1,0000	-0,6881	-0,6372
	Sig. (2-tailed)	,	0,0000	0,0000
	N	281	281	279
DEBT	Pearson Correlation	-0,6881	1,0000	0,6551
	Sig. (2-tailed)	0,0000	,	0,0000
	N	281	281	279
FINEX	Pearson Correlation	-0,6372	0,6551	1,0000
	Sig. (2-tailed)	0,0000	0,0000	,
	N	279	279	279

Table 22 : Regression Coefficients for Crisis Period (IV/2000 & I/2001) and Multicollinearity Results (ROA Dependent Variable)

	Unstandardized Coefficients	Standardized Coefficients			Tolerance	Condition Index	R Square	Adjusted R Square
	B	**Beta**	**t**	**Sig.**				
(Constant)	-0,0456		-1,2560	0,2102		1,0000		
DEBT	-0,5523	-0,4617	-8,4317	0,0000	0,5708	2,2397		
FINEX	-0,3017	-0,3348	-6,1140	0,0000	0,5708	8,1925	0,5277	0,5243

(Stepwise Method)

In order to test the third and fourth hypotheses, firms are divided into two groups as low leverage firms, with a sample of 43 firms, and high leverage firms, with a sample of 48 firms. 56%, which was the approximate average debt ratio of the firms in the sample during the normal period and boom period, is used as a cutoff value to separate firms into two groups, namely low leverage and high leverage. To see whether the ratios of DEBT, FINEX, and ROA of these two groups are different than zero again ANOVA test is implemented. It can be seen in ANOVA Tables 23, 24, 25, 26, 27, 28, 29, 30 that DEBT and FINEX are different from zero significantly for both high leverage firms and low leverage firms .It can also be seen in all the ANOVA tables, below, that the debt ratio increases from 43,03% in the third quarter of boom period, Table 23, to 49,16% in the third quarter of post-crisis period, Table 27, but then drops to 46,59% in the fourth quarter of post-crisis period, table 29. This means that low leverage firms can turn near to their previous capital structures after the impact of crisis subsides. On the other hand, the results are different for high leverage firms during the same period, which can also be seen in ANOVA tables in below. The debt ratio jumps from 70,31% in the third quarter of boom period, Table 24, to 84,48% in the third quarter of post-crisis period, Table 28, but then only drops

to 83,87% in the fourth quarter of post-crisis period, Table 30. This shows that high leverage firms cannot turn to their previous capital structures after the impact of economic crisis subsides.

The only period where the mean values of both DEBT and ROA are significant for both low leverage firms and high leverage firms is the fourth quarter of post-crisis period, Tables 29, 30. This is also the period where the impact of economic crisis subsides and therefore the ANOVA test in Tables 29, 30 gives us the chance to test the third hypothesis. It can be seen in Table 29 that the DEBT ratio is 46,59% for low leverage firms, which is a value that is very near to its boom period level, and ROA is 3,27%, which shows that low leverage firms can have significant positive profitability after the impact of economic crisis subsides. On the other hand, it can be seen in Table 30 that the DEBT ratio is 83,87%, which is still approximately 20% higher than its boom period, 70,33, and ROA is –13,86%, which shows that high leverage firms cannot return to their previous profitability level, 2,02%, insignificant. Therefore, according to these results, it can be concluded that low leverage firms nearly immunize themselves against economic crisis by having low leverages. Thus, third hypothesis, the profitability and capital structure of low leverage firms will not be affected from the economic crisis as much as the high leverage firms, is accepted after the impact of economic crisis subsides.

In order to test the fourth hypothesis, DEBT ratio, FINEX ratio, and ROA ratio should all be different from zero at the same time period for both low leverage firms and high leverage firms. The only time that this holds is the fourth quarter of the post-crisis period, Table 29. Since all the mean values of the three ratios, DEBT ratio, FINEX ratio, and ROA, are significant for both high leverage firms and low leverage firms, the sample in this period is used for examining the relationship between ROA, independent variable, and variate, FINEX and DEBT, by running a regression analysis. In order to meet the basic assumptions, such as normality or linearity, FINEX and DEBT ratios are transformed. Square root of financial expenses gives good results for low leverage firms. Natural log of debt and square root of financial expenses give good results for high leverage firms.

The regression result of high leverage firms, which can be seen in Table 34, confirm our fourth hypothesis that debt ratio is the major determinant of profitability for high leverage firms. With stepwise regression method only DEBT enters the equation and it is significant. Moreover, 71,09% of the variation of ROA is explained by the DEBT. This is a very important finding because DEBT ratio by itself explains a high proportion of ROA significantly. The negative sign also shows that there is an inverse relationship between leverage and profitability.

ANOVA Table 23: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 2000 (Boom Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	49	0,4303	0,0946	31,8414	48	0,0000
FINEX	49	0,0503	0,0475	7,4075	48	0,0000
ROA	49	0,0853	0,0748	7,9830	48	0,0000

(For Low Leverage Firms)

ANOVA Table 24: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 2000 (Boom Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	44	0,7031	0,1056	44,1729	43	0,0000
FINEX	44	0,1055	0,0712	9,8369	43	0,0000
ROA	44	0,0202	0,0865	1,5469	43	0,1292

(For High Leverage Firms)

ANOVA Table 25: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Second Quarter of 2001(First Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	49	0,4833	0,1519	22,2705	48	0,0000
FINEX	49	0,2163	0,2086	7,2557	48	0,0000
ROA	49	0,0063	0,1883	0,2325	48	0,8172

(For Low Leverage Firms)

ANOVA Table 26: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Second Quarter of 2001(First Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	43	0,8353	0,2027	27,0169	43	0,0000
FINEX	42	0,4615	0,3039	9,8402	43	0,0000
ROA	43	-0,2264	0,3095	-4,7979	43	0,0000

(For High Leverage Firms)

ANOVA Table 27: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 2001(Second Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	49	0,4916	0,1608	21,4057	48	0,0000
FINEX	49	0,1921	0,1808	7,4387	48	0,0000
ROA	49	0,0194	0,1604	0,8445	48	0,4026

(For Low Leverage Firms)

ANOVA Table 28: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Third Quarter of 2001(Second Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	44	0,8448	0,2313	24,2300	43	0,0000
FINEX	43	0,4062	0,2685	9,9200	43	0,0000
ROA	44	-0,1705	0,2763	-4,0930	43	0,0002

(For High Leverage Firms)

ANOVA Table 29: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Fourth Quarter of 2001(Third Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	49	0,4659	0,1708	19,0926	48	0,0000
FINEX	49	0,1393	0,1274	7,6518	48	0,0000
ROA	49	0,0327	0,1309	1,7489	48	0,0867

(For Low Leverage Firms)

ANOVA Table 30: Debt, Total Financial Expense, and Return on Assets Mean Ratios by the Fourth Quarter of 2001(Third Post-Crisis Period)

	Sample	Mean	Std. Deviation	t	df	Sig. (2-tailed)
DEBT	44	0,8387	0,2589	21,4873	43	0,0000
FINEX	44	0,3559	0,3017	7,8263	43	0,0000
ROA	44	-0,1386	0,2377	-3,8677	43	0,0004

(For High Leverage Firms)

Table 31: Pearson Correlation Matrix
(IV/2001) (For Low Leverage Firms)

		DEBT	FINEX	ROA
DEBT	Pearson Correlation	1,0000	0,5442	-0,5730
	Sig. (2-tailed)	,	0,0001	0,0000
	N		49	49	49
FINEX	Pearson Correlation	0,5442	1,0000	-0,5590
	Sig. (2-tailed)	0,0001	,	0,0000
	N	49	49	49
ROA	Pearson Correlation	-0,5730	-0,5590	1,0000
	Sig. (2-tailed)	0,0000	0,0000	,
	N	49	49	49

Table 32 : Regression Coefficients for Post-Crisis Period (IV/2001) and Multicollinearity Results (ROA Dependent Variable) (For Low Leverage Firms)

	Unstandardized Coefficients	Standardized Coefficients			Tolerance	Condition Index	R Square	Adjusted R Square
	B	Beta	t	Sig.				
(Constant)	0,2539		5,7799	0,0000		1		
DEBT	-0,3035	-0,3960	-2,8985	0,0057	0,6980	4,9381		
FINEX	-0,2412	-0,3220	-2,3572	0,0227	0,6980	7,3019	0,4007	0,3746

(Stepwise Method)

Table 33: Pearson Correlation Matrix
(IV/2001) (For High Leverage Firms)

		ROA	DEBT	FINEX
ROA	Pearson Correlation	1	-0,8432	-0,6138
	Sig. (2-tailed)	,	0,0000	0,0000
	N	44	44	44
DEBT	Pearson Correlation	-0,8432	1	0,6876
	Sig. (2-tailed)	0,0000	,	0,0000
	N	44	44	44
FINEX	Pearson Correlation	-0,6138	0,6876	1
	Sig. (2-tailed)	0,0000	0,0000	,
	N	44	44	44

Table 34 : Regression Coefficients of High Leverage Firms for
Post-Crisis Period (IV/2001) (For High Leverage Firms)

	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	R Square	Adjusted R Square
	B	Beta				
(Constant)	-0,2939		-11,866	0,0000		
DEBT	-1,6549	-0,8431	-10,164	0,0000	0,7109	0,7040

(Stepwise Method)

IV. The Implications of Empirical Findings

There are three important findings of this study. First, it has been seen that static trade-off theory is irrelevant. Since static trade-off theory is irrelevant, modified pecking order is more appropriate for Turkish corporations. As Myers (1984) argues in his paper that firms only issue equity when it is overpriced under asymmetric information and investors will not buy these equities due the signaling effect of equity issuance. Therefore, a firm will be forced to follow the pecking order and will only issue when it is inevitable.

It has been found that low leverage firms almost turned to their pre-crisis profitability patterns. On the other hand, high leverage firms could not turn to their pre-crisis profitability patterns. Therefore, second important finding of this study is that firms can immunize themselves against the economic crisis by having low debt ratio. This is the most important finding of this study because if firms can have low leverage they may immunize themselves against the shocks of economic crisis.

Third, high leverage firms in the post-crisis period are expected to increase most of their profitability by only decreasing their leverage. Since high leverage firms incur losses, which are significant, in the post-crisis period, which can be seen in Table 26, 28, 30, then high leverage firms can only increase their profitability by issuing equity, which is closely related with the corporate governance system of Turkey. But as Shleifer and Vishny (1997) argues in their paper firms with virtually no legal protection for minority investors cannot raise equity finance in developing countries easily. According to them reputation in the short run and legal protection in the long run will solve this problem. Empirical tests of Klapper and Love (2002) show that better corporate governance is highly correlated with better operating performance of firms.

There is an important problem when the corporate governance system is examined in Turkey, which is also the problem of developing countires. Since the capital markets are underdeveloped and there is not enough legal protection for the stakeholders of the firm, highly concentrated ownership structure is an inevitable dominant factor in Turkey. The findings of Özer and Yamak (2001) indicate the presence of a highly concentrated ownership structure in the Turkish market.

There also may be other solutions for the development of capital markets in Turkey, regarding the corporate governance system, which are as follows:

1. As Jensen and Meckling (1976) stated in their famous paper, managers may deviate from value maximizing financing decisions and pursue their own self-interest. The legal system should enforce the Turkish firms to be as transparent as possible. The requirement of rating, which reflects the financial risk of a firm, and auditing for each firm would enhance transparency. The

recent accounting scandals in U.S. showed that the accounting figures presented by auditing firms is not very countable. Thus, the accounting figures of firms presented by auditing firms should be confirmed by government institutions. This would reduce the asymmetric information and solve the confidence problem in capital markets.

2. Courts, which are specialized in the agency problems, should be established. Since courts are overloaded and do not know the agency problems, they cannot produce efficient results for the stakeholders. This specialized legal protection would ease the control problems over firms and thus it can, in turn, lead to the improvement of capital and debt markets.

3. Creditors should have rights to pursue the implementation of the projects, which are financed with their funds, not only ex-post but also *ex ante*. Any divergence from the project by managers should be reported to the shareholders and specialized courts as a last resort. In return, monitoring costs should be incurred by creditors rather than by shareholders. The trade off between the benefits of overseeing their projects ex-ante and incurring monitoring costs is expected to be beneficial for creditors. This solution may also solve the problem of free cash flows, which is a term first stated by Jensen (1986). Thus, Turkish firms can finance their projects with positive value creating residual retained earnings, which is the cheapest fund for firms and spent free cash flows for the future payments of debt. Thus, this solution would increase the transparency of firms and prevent the agency cost of managers to both shareholders and creditors.

4. The legal system should not give superior voting rights to majority shareholders. Therefore, majority shareholders would not expropriate the voting rights of minority shareholders.

V. Conclusion

The most important finding of this research is that firms in Turkey may immunize themselves against economic crisis by having a low leverage. Since capital market in Turkey is underdeveloped, issuance of equities is very difficult. Strengthening the legal protection and increasing transparency of firms, via changes in the legal system and the *ex-ante* rights of creditors, may solve the agency

problems among stakeholders of the firm, which can in turn ease the development of capital market in Turkey. The development of capital markets is extremely important for high leverage firms because they are near to financial distress, and therefore the cost of debt for high leverage firms in the post-crisis period would be higher than the cost of debt in the pre-crisis period. The findings of this study also showed that high leverage firms can increase their profits significantly by issuing equity or decreasing their debt. High leverage firms cannot decrease their debt because they cannot generate profit via their normal operations in the post-crisis period. Thus, high leverage firms have no choice other than equity financing. Besides, high leverage firms should also decrease their leverage in order to immunize themselves against future economic shocks. Again, this can only be achieved by issuing equity.

Low leverage firms have still some potential to increase their leverage but this is not an efficient solution for them because a low leverage is a very critical factor in order to immunize themselves against economic crisis. Since anticipating economic crisis is very difficult then low leverage firms should not increase their leverage. Low leverage firms have two financial strategies in order to finance their projects and at the same time keep their capital structure in the same level: 1) Since retained earnings is the cheapest source of capital then low leverage firms would be first expected to finance their projects by positive value creating residual cash flows and spend their free cash flows for the future payments of debts. This may be achieved by giving ex-ante monitoring rights to creditors. 2) When retained earnings are not enough to finance a new project then low leverage firms may increase debt and equity in the same proportion in order to keep their leverage in the same level and immunize themselves against future economic shocks. The second strategy can only be implemented easily via the development of capital and debt markets. If capital and debt markets cannot be developed then low leverage firms may forgo very profitable projects or finance projects by issuing debt and face the problem of financial distress after an unexpected economic crisis.

The development of capital and debt market, especially in developing countries, is closely related with confidence problem. When investors have doubt about the accounting figures of firms, the capital and debt markets in developing countries would not develop due to asymmetric information and thus higher financial

risk. As a result, transparency is the main problem in developing countries such as Turkey. Recently, confidence and transparency have also become important issues for developed countries such as U.S. Therefore, improving legal system, giving ex-ante monitoring rights to creditors, and establishing specialized courts about corporate governance would enforce firms to be more transparent and solve the agency problem among managers, shareholders, and creditors.

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