THE EFFECTS OF PUBLIC OWNERSHIP ON CORPORATE PERFORMANCE AND LEVERAGE IN EMERGING MARKETS: EVIDENCE FROM TURKISH MANUFACTURING INDUSTRY

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This paper provides an empirical analysis of the changes in operating performance and certain financial characteristics of firms as they make the transition from private to public ownership through initial public offerings (IPOs). The changes are analyzed on a sample of 81 Turkish manufacturing firms that went public between 1990 through 1998 inclusive. Eight-year-data of each firm around IPO year are included in the sample.

The findings show that firms exhibit a substantial decline in post-IPO operating performance, assets turnover and capital expenditures on assets. There is an increase in leverage and decrease in cost of borrowing. The findings regarding the borrowing confirm the expectations that the leverage tends to grow because of the increase in the perceived value of the firm, overcoming borrowing constrains, greater bargaining power with banks, and lower cost of borrowing.

Although the findings seem to verify the early studies, the decline in operating performance and capital expenditures cannot actually be explained by the agency theory approach in the Turkish context because of the much lower proportion of the capital owned by public compared to the western counterparts, family-controlled governance and different socio-cultural infrastructure. These changes, therefore, should be attributable to window dressing and/or successful timing.

Key Words: IPO, corporate ownership structure, public ownership, firm performance

HALKA AÇIKLIĞIN ŞİRKET PERFORMANSI ÜZERİNDEKİ ETKİLERİ: TÜRK İMALAT ŞİRKET-LERİ ÜZERİNE GÖRGÜL BİR ÇALIŞMA

Bu çalışma, firmaların, halka açıldıktan sonra faaliyet performansındaki ve belirli finansal göstergelerindeki değişimi görgül olarak analiz etmektedir. Analizler Türkiye'de 1990 ve 1998 arasında halka açılan 81 imalat firmasını kapsamaktadır. Örnek kütledeki her bir firmanın halka arzdan üç yıl öncesi, arz yılı ve arzdan sonraki dört yılı olmak üzere sekiz yılına ait veriler incelenmektedir.

Analiz sonucunda, halka arz sonrası faaliyet karlılığında, varlıkların devir hızında, sabit sermaye yatırımlarının varlıklara oranında ve borçlanma maliyetinde önemli ölçüde düşüş olduğu, borç oranında bir artış olduğu kanıtlanmaktadır. Borçlanmayla ilgili beklentiler doğrulanmakta ve firmanın algılanan değerindeki artış, borçlanma önündeki zorlukların kalkması, bankalar karşısında artan pazarlık gücü ve düşen borçlanma maliyeti nedenleriyle finansal kaldıraç yükselme eğilimi göstermektedir.

Bulgular her ne kadar önceki çalışmalar paralelinde ise de, faaliyet performansındaki ve sabit sermaye yatırımlarındaki düşüş Türkiye bağlamında tam olarak temsil (agency) teorisi yaklaşımıyla açıklanamamaktadır zira Türkiye'deki firmaların halka açıklık oranı Batı'daki firmalara göre çok daha düşük, ailenin sahiplik yapısındaki ve yönetimdeki ağırlığı hala önemli ölçüde yüksek ve sosyo-kültürel yapı da oldukça farklıdır. Dolayısıyla bu değişimler, daha ziyade vitrin süsleme ve/veya başarılı zamanlama faktörleri ile açıklanabilir.

INTRODUCTION

This paper attempts to investigate the change in operating performance and leverage of firms as they make the transition from private (closely held) to public ownership through initial public offerings (IPOs) by providing empirical evidence to the hypotheses related to the public ownership issue from the Turkish manufacturing industry . Although going public has usually been an interesting discussion topic in Turkey, there are not a sufficient number of empirical studies exploring the real motives behind the IPOs and the consequences of IPOs of Turkish firms. Therefore, "why Turkish firms go public?" and "what happens after they go public?" are two crucial questions to be scientifically answered.

Studies related to IPOs usually focus on the post-issue stock price performance rather than accounting performance. A few papers based on the U.S. or European firms put aside, this is the first comparative study that attempts to empirically investigate the operating performance of Turkish manufacturing firms before and after IPOs.

This paper is organized as follows: Section 2 constitute a brief theoretical framework and review of recent empirical studies on this topic. The empirical work is presented in sections 3, 4, and 5. Finally, chapter 6 discusses the conclusions and the implications.

1. PUBLIC OWNERSHIP: DETERMINANTS AND CONSEQUENCES

Most businesses begin life as proprietorship or partnerships, and then, as the more successful ones grow, at some point, they usually find it desirable to convert into corporations. Initially, these new corporations' stocks are generally owned by the firm's founders, officers, key employees, and/or a very few investors who are not actively involved in management. However, if growth continues, at some point the company may decide to go public (Brigham, 1994). The conventional wisdom is that going public is simply a stage in the development of a firm. Nevertheless, Pagano et.al. indicate that going public is not a stage that all firms eventually reach, but instead a choice that they make. In any case, going public usually means a fundamental change in the corporate ownership structure, causing a more diffused characteristic.

The basic advantages of going public are recognized as permitting founder diversification, increased liquidity, facilitating to raise new corporate cash, establishing value for the firm, increased credibility, improved bargaining position with banks and contribution to the development of the security markets. Cost of reporting, disclosure, self-dealings, the probability of inactive low market price, and the concerns of insiders regarding the control are known as the disadvantages.

1.1. An Overview of Recent Empirical Studies

Singh and Hamid (1992) investigated the links that might exist between corporate capital structure and the types of financial markets and institutions that are supportive of long-term growth. To that end, the authors examined the accounting and stock market information for the top fifty listed manufacturing corporations in nine less developed countries (LDCs) including Turkey. The results of their study showed that LDC corporations in general rely heavily on external finance, to a greater extent than their counterparts in advanced economies.

Singh (1995) tried to test the robustness of his first study's results by increasing the size of the firm samples and by including an additional country, Brazil. He explored the initial hypotheses to identify the reasons why LDC firms apparently resort to new equity funds to such a large degree to finance their growth. He concluded that the reason that developing country firms rely heavily on equity funds is for investment.

Pagano et. al. (1998) found that Italian companies appeared to go public not to finance future investments and growth, but to deleverage, or to adjust their balance sheet after a period of abnormally high investment and growth. Using the financial data of private firms in Italy from 1982 to 1992, the authors analyzed the determinants of IPOs by comparing the ex ante and ex post characteristics of IPOs with those of private (closely held) firms. The likelihood of an IPO increased with a company's size and the industry's market-to-book ratio. Companies appeared to go public not to finance future investments and growth, but also to adjust their debt ratios after a period of high investment and growth. Pagano et.al. observed that the leverage, capital expenditures, and profitability declined after the IPO. Although profits may decline after a firm chooses to go public, given a firm's characteristics, the overall benefits of going public outweigh the costs, including, for instance, lower costs of credit.

In the long-run, Ritter (1991) reported that stock issuing firms during 1975-1984 substantially underperformed a sample of matching firms from the period of the closing price on the first day of public trading to their three-year anniversaries. The patterns are consistent with an IPO market in which firms take advantage of these "windows of opportunity".

Mayer and Alexander (1991) made a comparative study of "quoted" (public) and "unquoted" (private) companies. The study found that growth rates of sales, investment, and employment of quoted firms are greater

than unquoted. Profits for both types of firm have risen over the sample period, but profit margins are higher for quoted than unquoted firms. Unquoted firms have higher investment to profit ratios but this can be attributed to the lower dividend to profit ratios.

Evans, Hay and Morris (1995) set out to determine which form of governance structure provides economic efficiency. They attempted to find out an explanation for the superior performance of Japan and Germany during late 1980s and early 1990s. They found that the unquoted firms are definitely more profitable then quoted firms. Their results confirm the Berle and Means hypothesis that diffuse ownership may lead to inefficient performance.

Some studies focus on the relationship between economic development and stock market. Atje and Jovanovic (1993) provide a model in which financial markets have a greater stimulating effect on economic growth than just financial intermediation. Their study of 40 countries found a significant correlation between economic growth over the 1980-88 period and the value of stock market trading divided by Gross Domestic Product (GDP). They concluded that stock markets are more helpful to the development of venture capital and, hence, technical progress than banks.

Levine and Zervos (1995) studied the links between stock market and development and growth, and then analyzed measures of both the stock market and banking development predict growth. They found that, after allowing for a host of other factors associated with growth, the level of stock market development, especially market liquidity, is robustly correlated with current and future economic growth, capital accumulation, and productivity growth.

UNCTAD 1993 report revealed that, for several industrializing countries, new issues on the stock market have been important in financing a considerable proportion of their total gross domestic investment.

In Turkey, the development and performance of stock market and the economy reveals meaningful relationship. The Turkish capital market has significantly expanded since the 1980s, the period during which the country experienced a series of fast and fundamental changes towards a market economy. Despite the extreme volatility in the securities market due to crises, a considerable progress took place in terms of public offerings of private firms and privatization of state enterprises *(KIT*s). Some major *KIT*s have been privatized; a considerable number of private companies have gone public. Thus, the security market has somehow revealed a progress. However, both the public's stake in Turkish firms and the market capitalization-to-GNP ratio is still below the sufficient level, as empirically proven this study.

1.2. Determinants and Consequences of Going Public

Pagano et. al. (1998) summarized theories related to the costs and benefits of going public as described in Table 1. In these theories, each cost or benefit is associated with the most representative model and with empirical predictions of these models on the variables affecting the probability and likely consequences of an IPO. According to these theories, the variables affecting probability of an IPO are a firm's financial characteristic such as size of the firm, leverage, R&D, cost of financing, growth rate, risk and organizational characteristics such as concentration of ownership and control, and external factors like the stock market index.

If there are periods in which stocks are mispriced, as suggested by Ritter (1991), firms recognizing that other firms in their industry are overvalued have incentive to go public. One would also expect a company to be more likely to go public when the market for comparable firms is particularly buoyant (Ritter, 1984).

Pagano et al., by relying on their ex-post evidence, suggest that if newly listed firms invest an abnormal rate and earn large profits, then the relationship between M/B and IPOs is likely to be driven by expectations of future growth opportunities. Otherwise, it is likely to reflect the desire to exploit a "window of opportunity."

Cho (1994) reported that the growth rate of assets and the amount of fixed assets after IPO increased the probability of an IPO. On the other hand, the ration of bank loans to total liabilities, the ratio of land value to sales, and the degree of leverage reduced the probabilities for IPO.

The theory and previous research done on the basis of U.S. and European firms have showed that IPO firms exhibit a decline in post-issue operating performance relative to their pre-IPO levels. Surprisingly enough, however, these firms exhibit high growth in sales and capital expenditures relative to those firms in the same industry in the post-IPO period. Thus, declining operating performance of IPO firms cannot be attributed to lack of sales growth opportunities or cutbacks in post-IPO capital expenditures. The expectations and interpretations on the case of Turkey, however, may be somewhat different than the previous studies done in the West due to the macroeconomic conditions and firm behaviors both peculiar to Turkey. While the expectation of this study on the operating performance is the same, that is, a decline is expected, other indicators may well behave differently than those found in the western literature. First of all, the low public stake in corporations and different socio-cultural and economic infrastructure makes it hard to apply agency theory to the Turkish case. The instable and high-inflationary economy makes it difficult to take rational

financial decisions and to do long-term planning. Capital expenditures, for instance, is unlikely to increase in the post-IPO period, because firms tend to perceive IPO as a short-term financing opportunity and they go public not to finance future investments and growth, but to deleverage, or to adjust their balance sheet after a period of abnormally high investment and growth.

2. DATA

2.1. Source of Data

The main data sources are the firm's balance sheets, income statements, cash flow statements, yearbooks, stock market and other macroeconomic statistics.

As many empirical research done in Turkish context encounter, this study as well had to cope with the difficulties to find the accurate firm data especially belonging to pre-IPO period. The main problem is that the firms in Turkey do not provide sufficient information to public unless they apply for the Stock Exchange to trade their shares. Therefore, there are not accurate and detailed data available of those firms that do not go public. Although certain institutions such as Chambers and banks hold this information, they are reluctant to provide them pronouncing the confidentiality issue as an excuse. Another difficult task is finding the accurate and detailed ownership structure data.

All difficulties put aside, the best data provider institutions appear to be the Istanbul Stock Exchange (ISE) in firm-specific data, The Central Bank (TCMB), The State Planning Organization (DPT) and the Treasury in macro economic data. In addition, some private financial portals on the Internet provide useful database to the researchers.

The pre-IPO data is obtained mostly from the ISE bulletins from the ISE Library. While in some cases data are available on the CD or Internet, most data belonging to pre-IPO period and ownership structure are not available in digital format, and most of them are obtained from the monthly bulletins and entered manually.

As for the industry-specific data, the Industry Sector Financial Statements published the TCMB provide the necessary information. The old data are available in the books and last five years are on the CD. Other macroeconomic data are obtained from the Internet sites of TCMB, DPT and Treasury.

2.2. Sample Selection Process and Time Span

The first criterion to select the firms is their industry. Because the manufacturing industry is considered the most important component of the economy, only manufacturing firms in Turkey constitute the first-step prospective sample. Second step in the selection process is a result of the fact that necessary data are available for ISE-quoted firms only. That is, only those manufacturing firms traded in ISE are selected. Among these, only those firms of which IPOs occurred between 1990 and1998 inclusive are considered because the earliest and latest periods where pre-IPO and post-IPO data are available require this interval. The last requirement for a firm to be included in the sample is to have at least one year OROA data prior to IPO and four subsequent years after the IPO year (year −1 through +4). Although most observations have the other financial data for year −3 through year +4 (Eight-year-data), there are some firms lacking the other financial data for year −3 and −2. The final sample is consisted of 81 firms.

The distribution of 81 IPOs throughout the research period prevents the study from prospective bias of timing and industry. That is, there are sufficient number of IPOs occurred each year. This makes the sample consisting of different time windows each have at least six-year-data (from the year prior to IPO through fourth year after IPO). Thus, the effects of peculiar macro economic conditions are balanced with other periods. The distribution of industry, however, looks more uneven compared to that of IPO year. This prospective bias is eliminated by also taking industry-adjusted values of all variables throughout the analysis. The industry means represent both public and non-public companies selected by TCMB.

Table 2 shows the summary statistics for the sample. The number of IPOs in manufacturing industry per year shows a various trend depending mostly on the macroeconomic conditions. The distribution of IPOs shows the same trend. In panel A the distribution of IPOs are classified by industry sector and year. This sample exhibits a representative distribution of the weights of each sector in the Turkish manufacturing industry.

Table 1

Empirical Predictions of the Main Theories Concerning the Decisions to Go Public

The following table illustrates the main costs (Panel A) and benefits (Panel B) of the decision to go public. Each cost or benefit (first column) is associated with the most representative models capturing it (second column) and with the empirical predictions of these models on the variables affecting the probability of an IPO (third column) and the likely consequences of the IPO (fourth column).

	Model	Empirical Predictions	
		Effects on the Probability of IPO	**Consequences after IPO**
Panel A: Cost of Going Public			
Adverse selection and moral hazard	Leland and Pyle (1977), Chemmanur and Fulghieri (1995)	Smaller and younger firms less likely to go public	Negative relation between operating performance and ownership
Fixed costs	Ritter (1987)	Smaller firms less likely to go public	
Loss of confidentiality	Campbell (1979), Yosha (1995)	High-tech firms less likely to go public	
Panel B: Benefits of Going Public			
Overcome borrowing constraints		IPO more likely for high-debt and/or high-investment firms	Deleveraging / high-investment
Diversification	Pagano (1993)	Riskier firms more likely to go public	Controlling shareholder decreases his stake
Liquidity	Market microstructure models	Smaller firms less likely to go public	Diffuse stock ownership
Stock market monitoring	Holmstrom and Tirole (1993), Pagano and Rolell (1998)	High investment firms more likely to go public	Large use of stock-based incentive contracts
Enlarge set of potential investors	Merton (1987)		Diffuse stock ownership
Increase bargaining power with banks	Rajan (1992)	IPO more likely for firms paying higher interest rates	Decrease in borrowing interest rates
Optimal way to transfer control	Zingales (1995)		Higher turnover of control
Exploit mispricing	Ritter (1991)	High M/B ratio in the relevant industry	Underperformance of IPOs; no increase in investments

Table 2

Sample Summary Statistics

Frequency distribtuions and characteristics of a sample of 81 public offerings through Istanbul Stock Exchange (ISE). The sample consist of those manufacturing firms that have sufficient data for at least one year prior to IPO and three years after IPO. The data is collected and compiled from print and digital sources of ISE, Central Bank, Treasury and State Planning Organization of Turkey. ISE classification is used to classify the sample with respect to industry sectors.

Panel A: Number of IPOs per year
(Manufacturing Industry)

Year	Number of IPOs
1990	14
1991	8
1992	5
1993	8
1994	13
1995	10
1996	9
1997	8
1998	6
Total	**81**

Industry Sector *	1990	1991	1992	1993	1994	1995	1996	1997	1998	**Total**
DGD	1	3		2	1	4	5	3	3	**22**
GIT	1		1	1	5		2	1	2	**13**
TTS	3	1	1	2		4		1		**12**
MMG	3		2	2	2		1	1		**11**
PKM	3	2			1	1	1	1		**9**
KBY	1	1	1	1	2				1	**7**
MET	1				2					**3**
OTO		1				1		1		**3**
ORM	1									**1**
Total	**14**	**8**	**5**	**8**	**13**	**10**	**9**	**8**	**6**	**81**

Industry Sector Codes

DGD	Textile, wearing apparel and leather sector
GIT	Food, bevarage and tobacco sector
TTS	Non-metalic mineral products
MMG	Fabricated metal products and machinery equipment
PKM	Chemicals, petroleum, rubber and plastic products
KBY	Paper and paper products, printing and publishing sector
MET	Basic metal industries
OTO	Automotive sector
ORM	Wood products and furniture

Table 3

Some Key Macroeconomic Indicators Throughout The Sampling Period

Table represents the macroeconomic environment in Turkey during the sampling period of the research. All IPOs in the sample fall into the period between 1990 and 1998. However, due to the requriements of the research that pre-IPO and post-IPO data are used, the overall data frame stretch from 1987 to 2002. The macroeconomic data are obtained from digital sources of The Treasury, State Planning Organization and The Central Bank. The year-to-year percentage changes in the items are in italic fonts shown below the respective level-data .

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GNP Levels-87 pr (000.000.000TL)	75.019	76.108	77.347	84.592	84.887	90.323	97.676	91.733	99.028	106.080	114.874	119.303	112.044	119.144	107.783	116.165
GNP Levels-Curr Pr (000.000.000TL)	75.020	129.175	230.371	397.178	634.393	1.103.843	1.997.323	3.887.903	7.854.887	14.978.067	29.393.262	53.518.332	78.282.967	125.596.129	176.483.953	273.463.168
GDP Levels-Curr Pr (000.000.000TL)	74.722	129.223	227.325	393.060	630.117	1.093.368	1.981.868	3.868.430	7.762.456	14.772.110	28.835.883	52.224.945	77.415.272	124.583.458	178.412.438	276.002.988
GNP (87 prc) % change	*9,8*	*1,5*	*1,6*	*9,4*	*0,3*	*6,4*	*8,1*	*-6,1*	*8,0*	*7,1*	*8,3*	*3,9*	*-6,1*	*6,3*	*-9,4*	*7,8*
Empolyment Rate %	91,50	91,30	91,10	91,80	91,90	91,70	91,20	91,60	92,53	93,52	93,27	93,23	92,40	85,74	83,64	89,40
Empl Rate % chng	*-0,44*	*-0,22*	*-0,22*	*0,77*	*0,11*	*-0,22*	*-0,55*	*0,44*	*1,01*	*1,07*	*-0,27*	*-0,04*	*-0,89*	*-7,21*	*-2,45*	*6,89*
Wholesales Price Index (TEFE)	100	171	280	426	662	1.073	1.702	3.757	7.065	12.335	22.366	38.067	58.599	89.240	144.862	216.712
Whls Pr Indx % chng	*32,98*	*70,38*	*63,87*	*52,23*	*55,45*	*62,10*	*58,66*	*120,81*	*88,04*	*74,59*	*81,32*	*70,20*	*53,94*	*52,29*	*62,33*	*49,60*
Interest Rate % (St Domstc Borrw)	N/A	N/A	59,82	54,02	80,46	87,68	87,56	164,40	121,86	135,18	127,20	122,50	109,50	38,00	96,20	63,79
Interest Rate % chng	*N/A*	*N/A*	*N/A*	*-9,70*	*48,95*	*8,97*	*-0,14*	*87,75*	*-25,88*	*10,93*	*-5,90*	*-3,69*	*-10,61*	*-65,30*	*153,16*	*-33,69*
Exchange rate TL/USD (Monthly Avrg)	856	1.421	2.121	2.608	4.170	6.888	10.986	29.704	45.673	81.084	151.429	260.040	417.581	623.685	1.222.921	1.504.598
Exchange rate % chng	*27,83*	*66,04*	*49,27*	*22,96*	*59,91*	*65,17*	*59,51*	*170,38*	*53,76*	*77,53*	*86,76*	*71,72*	*60,58*	*49,36*	*96,08*	*23,03*

Table 4

The Turkish Stock Market: Summary Data

The key indicators of Istanbul Stock Exchange (ISE) during the sampling period. All IPOs in the sample fall into the period between 1990 and 1998. However, due to the requriements of the research that pre-IPO and post-IPO data are used, the overall data frame stretch from 1987 to 2002. The data are obtained from print and digital sources of ISE, The Treasury, State Planning Organization and The Central Bank.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
ISE Market Cap (000.000.000TL)	3.182	2.048	15.553	55.238	78.907	84.809	546.316	836.118	1.264.998	3.275.038	12.654.308	10.611.820	61.137.073	46.692.373	68.603.041	56.370.247
ISE Market Cap (000.000.USD)	3.125	1.128	6.756	18.737	15.564	9.922	37.824	21.785	20.565	30.329	61.348	33.473	112.276	68.635	47.189	33.773
ISE Markt Cap / GDP %	4,26	1,58	6,84	14,05	12,52	7,76	27,57	21,61	16,74	22,17	43,88	20,56	78,97	37,48	38,45	20,42
Trading Vol. (000.000.000TL)	105	149	1.736	15.313	35.487	56.339	255.222	650.864	2.374.055	3.031.185	9.048.721	18.029.966	36.877.335	111.165.396	93.118.834	106.302.343
Trading Vol. (000.000 USD)	118	115	773	5.854	8.502	8.567	21.770	23.203	52.357	37.737	58.104	70.396	84.034	181.934	80.400	70.756
No.of IPOs per year	N/A	N/A	N/A	34	21	13	16	25	28	27	29	20	9	35	1	3
No.of Firms traded in ISE	82	79	76	110	134	145	160	176	193	213	244	262	256	287	279	262
ISE-100 USD Index (1986=100)	385	169	199	184	197	281	305	671	749	643	481	536	385	120	449	357

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2.3. Economic Environment and the Stock Market in Turkey throughout the Sampling Period

Table 3 and Table 4 explore the overall picture of Turkish economy and Turkish stock market during the sampling period of the study. This period captures almost all characteristic episodes of the Turkish economy. These two tables, when analyzed simultaneously, also give an idea on the correlation between the development of the stock market and the general performance of the economy. For example, a correlation analysis for the relationship of GNP with the basic stock market indicators reveals significant positive relationships, as expected. The *Pearson* correlation coefficients for the relationship of GNP with ISE market capitalization, number of firms traded in ISE, trading volume of ISE and ISE-100 Index are 0,7392, 0,9711, 0,8217, and 0,3169, respectively.

The market capitalization, however, is still not at a significant level in Turkey compared to other developing economies. Total market capitalization of ISE companies in 2002 equals 20 percent of the GDP. It was 17 percent in 1995, a very low ratio, compared to 40 percent of Korea in the same year.

2.4. The Variables and the Models

This study prefers the operating return on asses (OROA) as the primary dependent variable to measure the firm performance because it is better than ROA to measure the real performance in such countries as Turkey. Abnormally high non-operating income limits the efficiency of ROA to measure the real efficiency. OROA provides more robust measure of the efficiency of asset utilization.

OROA is the operating income deflated by total assets as of the end of the year. Operating income equals net sales less cost of goods sold and all operating expenses. Change in OROA is measured as the mean change in levels, i.e., the mean value of $\{OROA_{i\,t} - OROA_{i\,(-1)}\}$ where i represents the firm, t represents a post-IPO fiscal year end and -1 represents the fiscal year prior to IPO.

Also attempted to measure are the growths in other key accounting measures such as sales, (SALES) asset turnover (ATO), capital expenditures (CAPEX), capital expenditures on assets (COA), leverage (LEV) and cost of borrowing (COB). The cost of borrowing is computed as the financial expenses divided by short and long term financial debts.

The following is the list of all variables explained above:

OROA = Operating income / Total assets as of the year-end
SALES = Sales in real prices (1987=100)
ATO = Sales / Total assets
CAPEX = Capital expenditures
COA = Capital expenditures / Total assets
LEV = Total (long and short term) debts / Total assets
COB = Financial expenditures / Total (long and short term) financial debts

In order to eliminate the industry bias or to see the performance relative to the industry, the industry-adjusted changes in OROA, ATO, COA, LEV and COB (percentage variables) are also calculated by matching each IPO firm with its industry. The industry-adjusted performance of a firm is the difference between its change in these variables and the mean change in those variables in its industry. The industry adjustments for the currency level variables are not included in the analysis due to the lack of appropriate data.

3. THE FINDINGS

3.1. Operating Performance Measures

This study first attempts to find out whether there is a significant difference in certain indicators of firms before and after going public and how these variables changes throughout the post-IPO period. First, an aggregate analysis is done by comparing the average of three consecutive years prior to IPO and the average of four consecutive years after IPO. The comparison is followed by the charts illustrating the trends in the variables. Finally, each of the four consecutive years in the post-IPO period is compared with pre-IPO period. The base period for comparison is the year −1, that is, all variables are expressed as the difference relative to the year prior to IPO. T-tests are applied for all comparative analyses.

The findings show that IPO firms exhibit a decline in post-issue operating performance relative to their pre-IPO levels, as expected. This result is consistent with most of the previous studies. Table 5 and Figure 1 illustrate the facts that are consistent with the expectations. The OROA makes an upward move just before IPO and it declines significantly throughout the post-IPO period. The four-year-average OROA in the post-IPO period is 20 percent, significantly lower than three year-average OROA of 24 percent in pre-IPO period ($p= 0,001$).

The upward move in OROA just before the IPO and the consistent decline following the IPO seem to verify the "window dressing" and/or "windows of opportunity" hypotheses. The OROA levels show an obvious decline, from 0,27 in year −1, to 0,25 in IPO year, 0,24 in year +1, 0,20 in year +2, 0,21 in year +3 and 0,15 in year +4. The changes are significant at 0,05 level for year +1 and 0,01 level for the following years.

Table 5

Operating Performance, Leverage and Cost of Borrowing Levels of IPO Firms

Table values are for the mean or median levels for 81 IPO firms during 1987 through 2002. The sample consists of those publicly traded firms of which financial data are available. Operating return on assets equals operating income *(esas faaliyet karı)* divided by total assets at year-end. Sales and capital expenditures are deflated by the manufacturing industry price index with the base year 1987. Due to the scale problem, the industry means for these two variables are not considered meaningful to report. Instead, their firm-level median values are presented. Asset turnover equals net sales over total assets. Capital expenditures data are obtained from the cash flow statements for the period 1989-1997 and from the balance sheet footnotes for the following years. Leverage equals the total debt divided by the total assets. Cost of borrowing equals the financial expenditures divided by the total of short and long term financial debts. The year columns indicate the years relative to the year in which the firm goes public.

	Year Relative to Completion of IPO							
	?3	?2	?1	0	+ 1	+ 2	+ 3	+ 4
Panel A: Operating Return on Assets								
IPO issuing firms -Mean (%)	24,33	22,54	27,22	25,16	23,77	20,07	20,56	16,11
Matched industry -Mean (%)	15,88	16,48	17,25	15,85	15,99	14,09	14,07	14,22
Standard Deviation	0,15	0,16	0,13	0,13	0,13	0,12	0,15	0,23
Number of observations	74	79	81	81	81	81	81	81
Panel B: Sales (1987=100 Real Prices, Million TL)								
IPO issuing firms -Mean	74.063	76.499	119.459	122.219	127.644	131.812	128.871	123.901
IPO issuing firms - Median	33.032	35.350	39.200	44.100	48.534	51.863	49.437	49.009
Standard Deviation	265.094	249.453	388.662	362.617	362.741	380.102	364.825	357.506
Number of observations	71	77	79	79	79	79	79	79
Panel C: Asset Turnover								
IPO issuing firms -Mean	1,58	1,52	1,66	1,51	1,44	1,41	1,36	1,32
Matched industry -Mean	1,24	1,25	1,29	1,28	1,26	1,19	1,16	1,18
Standard Deviation	0,79	0,72	1,25	1,20	1,10	1,07	1,14	1,24
Number of observations	73	78	79	79	79	79	79	79
Panel D: Capital Expenditures (1987=100 Real Prices, Million TL)								
IPO issuing firms -Mean	4.431	5.085	5.013	6.444	6.345	7.701	5.505	6.103
IPO issuing firms - Median	2.133	2.149	3.060	4.325	4.420	4.759	2.995	3.449
Standard Deviation	6.544	7.519	4.957	6.555	6.355	10.902	8.149	9.206
Number of observations	14	33	56	56	56	56	56	56
Panel D1: Capital Expenditures over Total Assets								
IPO issuing firms -Mean (%)	12,82	13,18	13,60	15,02	12,61	12,83	9,86	10,26
Matched industry -Mean (%)	25,58	25,88	26,67	26,50	25,96	26,19	24,42	24,68
Standard Deviation	0,11	0,13	0,11	0,11	0,09	0,11	0,10	0,10
Number of observations	16	36	59	60	60	60	60	60
Panel E: Leverage								
IPO issuing firms -Mean (%)	55,07	58,01	55,30	50,48	52,95	55,55	59,33	64,90
Matched industry -Mean (%)	60,56	61,62	54,06	61,26	60,94	63,22	64,09	64,13
Standard Deviation	0,18	0,17	0,16	0,15	0,15	0,17	0,22	0,49
Number of observations	74	78	81	81	81	81	81	81
Panel F: Cost of Borrowing								
IPO issuing firms -Mean (%)	89,91	69,82	87,34	70,55	68,03	57,20	57,65	52,89
Matched industry -Mean (%)	48,02	50,69	45,38	47,18	47,03	43,54	43,09	46,52
Standard Deviation	2,24	1,26	2,08	1,33	1,17	0,62	0,58	0,40
Number of observations	52	62	65	66	66	66	66	64

Industry adjusted numbers show a similar pattern of significant underperformance especially for year +2, +3 and +4. Figure 2 illustrates the comparison of IPO firms' level of operating performances with their industry counterparts. The mean level of OROA for IPO firms decline over time, while the corresponding levels for their industry counterparts show a slight decline. Further, in each of the seven years examined the IPO firms outperform the industry, although this difference declines with time. These findings suggest that the industry effect in explaining the decline in performance is limited.

Table 6 compares each of the five years, including the IPO year, subsequent to IPO with the pre-IPO levels. Panel A presents the mean change in OROA both before and after industry adjustment for different time windows. The changes in operating performance are –2,06 percent, –3,46 percent, –7,15 percent, –6,67

percent and –11,10 percent for year 0, +1, +2, +3 and +4, relative to year –1. The declines are significant at 0,05 level for year +1 and 0,01 level for the following years. Industry adjusted changes, that is, the changes relative to the respective industry show a similar pattern of significant underperformance especially for year +2, +3 and +4. However, the significances somewhat weaken when industry effect is considered. Hence, the inferior operating performance of IPO firms cannot be solely attributed to industry effects, yet cannot be ignored at all.

The most obvious decline in OROA is in the fourth year of IPO, revealing such a level at which there is almost no difference with the industry level. This trend implies that the OROA levels of IPO firms are likely to decrease even below their industry counterparts after the fourth year of going public.
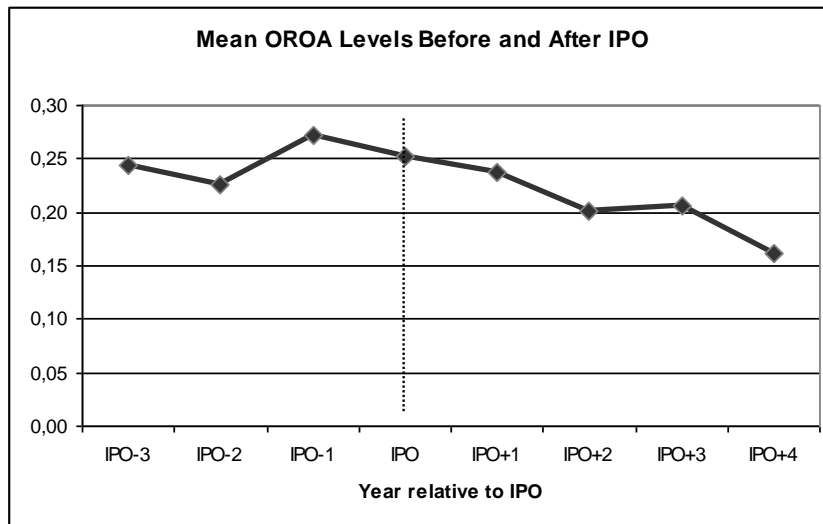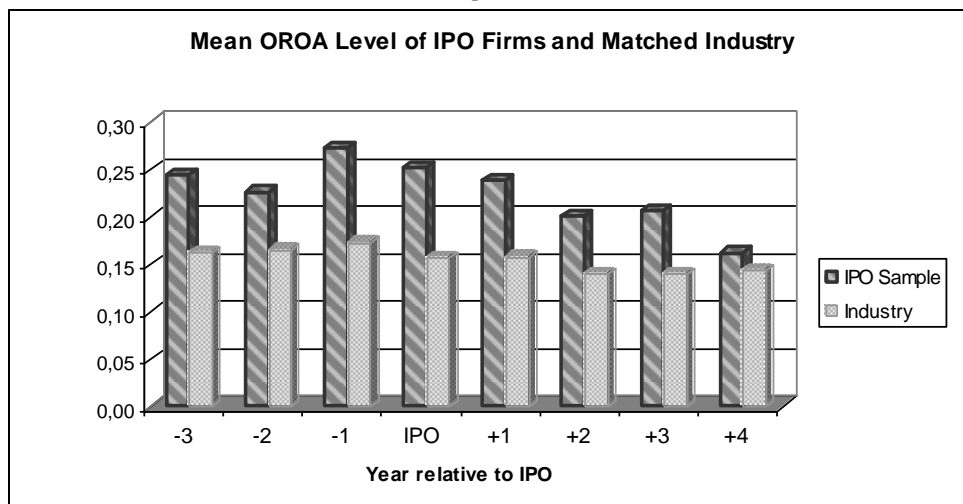
Figure 1

Figure 2

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There are a number of potential explanations for the decline in the post-IPO operating performance of IPO firms. One explanation is related to the potential for increased agency costs when a firm makes the transition from private to public ownership. A second reason could be that managers attempt to window-dressing their accounting numbers prior to going public. This will lead to pre-IPO performance being overstated and post-IPO performance being understated. A third explanation is related to the management's failure to generate pre-IPO levels of positive NPV projects or failure to maintain the required levels of capital expenditures. In other words, declines in post-issue performance is expected if managers cannot generate pre-IPO levels of positive NPV projects or fail to maintain the required levels of capital expenditures. To examine this issue, trend in capital expenditures is also studied to determine if they can explain the decline in OROA. A fourth reason could be that entrepreneurs may time their issues to coincide with unusually high profitability, which may be a result of either their firms' efficiency or the good industrial or market conditions.

Lee (1993) reported that because IPO market was driven by the government to stimulate the capital market and owners were usually reluctant to go public for fear of losing control, the government provided that an owner could retain a majority control by limiting the number of shares to be sold. This meant that an IPO would not have a serious impact on voting control and that the agency cost was not likely to be related to the firm's profitability in Korea, as in Mikkelson, Partch and Shah (1997). In Turkey, a similar pattern is observed in IPOs as well. That is, the original owners of firms that go public are eager to retain the control and they in fact ensure their control no matter what proportion of shares are sold. Moreover, the average proportion of shares sold to public is 19 percent in Turkey, still well below the other capitalist economies. In sum, most IPOs do not result in losing control of insiders. Therefore, it seems difficult, in the case of Turkey, to explain the decline in operating performance with the agency theory.

The trends in sales, asset turnover, and capital expenditures also help understand the underlying reason for the decline in the profitability. Table 6 indicates a jump in mean sales in year −1 and a slow growth thereafter. However, the median sales show a steady and insignificant growth throughout the entire time window. T-Test reveals a significant difference between before and after IPO periods at 0.01 level ($p = 0,005$). Although Ln values exhibits also the similar pattern with that of the real amounts trend, the changes relative to year −1 are significant until year +3, inclusively.

The obvious increase of sales in year −1 also coincides with the increase in OROA. Prior to IPO year the mean sales goes up to 119.459 from 76.499, meaning some 150 percent increase. However, the growth in sales slows down with the IPO and shows usually insignificant increase in the following years. The increase in sales is 15, 26, 31, 38 and 31 percent for year 0, +1, +2, +3, and +4 relative to year −1. It reaches a significant level in year three and shows a decline afterwards. The change relative to year −1 in Ln values of sales are 0,92, 1,75, 1,99, 2,44 (all three with significant t values) and 1,34 for the year 0, +1, +2, +3, and +4, respectively.

Panel C in Table 5 and Table 6 reports the mean levels and percentage changes in asset turnover. The only increase is observed in year −1, where the most significant increase in OROA and Sales take place. It shows a declining trend in all other periods, each being significant at 0,01 level. When compared to the industry, IPO firms show better performance over all the periods, although their decrease is faster than their industry counterparts. Despite the growth in sales, the decline in asset turnover is indicative of the fact that IPO firms increase their assets faster than their sales. Confirming the research hypotheses, the significant decline in ATO is also consistent with the OROA trend.

In panel D and D1 the trend in capital expenditures and capital expenditures relative to total assets are exhibited respectively. There is a significant increase relative in the first three years following IPO to year −1, when capital expenditures are solely considered. Using the median and Ln values of CAPEX seems to unveil a more realistic picture. Even a more contrary yet realistic pattern is revealed when the capital expenditures are deflated by the total assets. Except for year +1 where an insignificant increase occurs, COA declines in each of the other following years, being significant in year +3 and +4. Industry adjusted figures also show similar trend, though not significant. The weakening significance in the decline of COA when compared to the industry indicates that the industrial conditions also seem to explain in part the decrease of COA. Despite the matched industry firms also have a declining trend parallel to IPO firms; IPO firms have lower COA ratios in each period. When the significant increases in sales, asset turnover and capital expenditures in year −1 are taken into account simultaneously, the decline in operating performance of IPO firms is consistent with (1) managers attempting to "window-dress" by overstating pre-IPO performance, and (2) managers timing their issues to coincide with periods of unusually good performance and/or with buoyant market conditions, in other words, "windows of opportunity approach". Although capital expenditures show a significant increase in the IPO year and the two subsequent years, they exhibit a decline when deflated

by the total assets beginning from the year +1 in the post IPO period, being significant in the last three years.

The decline in COA implies that managers do not maintain sufficient level of investment so that positive returns cannot be generated. The industry-adjusted COA change in year +2, however, seems to be the result of the industry effect. There is a positive change of 5,3 percent in the adjusted figures, while the raw change is negative 7 percent. Figure 7 also indicates that the COA ratios of IPO firms are far below relative to the industry counterparts.

Whether the decline in the operating performance in the post-IPO period can be explained by the poor sales performance and insufficient investment level is analyzed through the correlation and regression analyses modeled in the previous chapter. Table 7 reveals the correlations analysis and Table 8 the findings of regression models.

The relationship between OROA and other variables are further analyzed in the regressions of which the findings are displayed in Table 8 and 8a. Despite their low levels, all R-squares in Table 8 and most R-squares in Table 8a are significant, as revealed by F ratios. The low values should not be a surprising result because the goal set forth is not to explain the entire variation in OROA, but to see whether the selected variables can constitute a meaningful model to explain it. As a matter of fact, all coefficients are significant in Model (1) and (2a). Sales and asset turnover has always significant explanatory power in explaining the decline in operating return on assets ratio while capital expenditures can explain the variation in OROA in Model (1) and (4) only.

Using lagged data for capital expenditures apparently leads reverse results. LNCAPEX has negative and significant impact on OROA when using the contemporaneous data, while the effect happens to be positive yet insignificant when using the lagged values. The coefficient of COA in contemporaneous panel data analysis is negative-insignificant, while it turns to be positive and significant when lagged data are used.

As the variables are split on the basis of year relative to IPO and separate regressions are run for each year, capital expenditures seem to show more consistent results. First, it is always negatively related to OROA except for year +2. The significance of the relationship increases when the lagged data are used.

If the lagged analysis on the panel data is considered, the decline in OROA is explained by the

decrease in COA, implying that managers do not maintain sufficient level of investment so that positive returns cannot be generated.
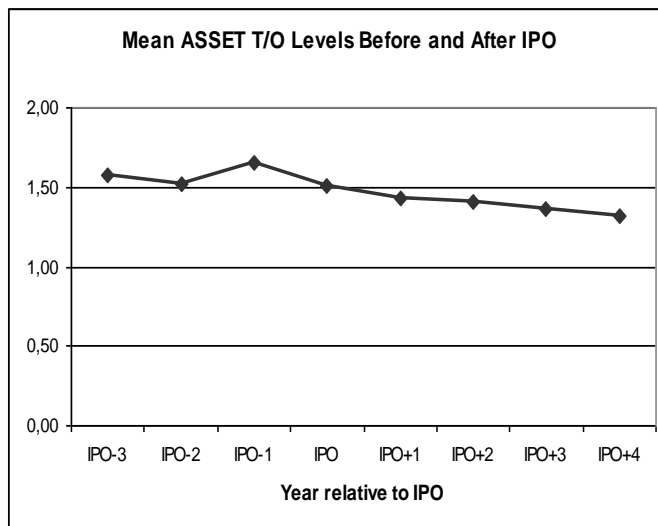
Figure 4

Mean ASSET T/O Levels Before and After IPO

Figure 5

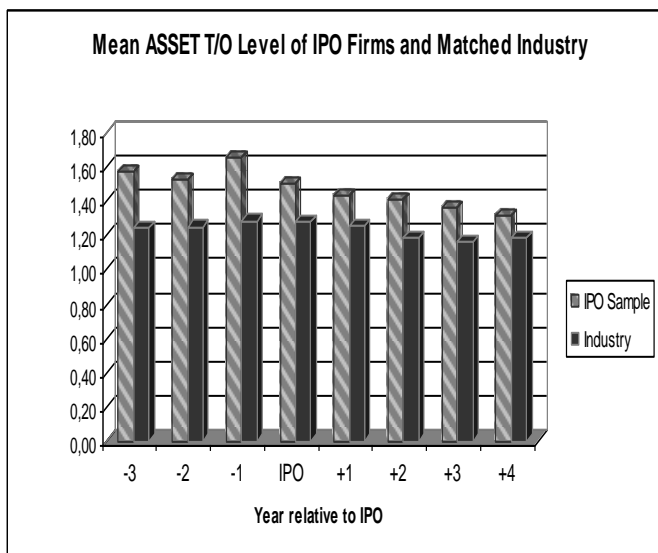Mean ASSET T/O Level of IPO Firms and Matched Industry

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Table 6

Operating Performance, Leverage and Cost of Borrowing of Turkish Manufacturing Firms that Went Public Between 1990-1998

Table values are for the mean change/growth expressed as a percentage for 81 IPO firms during 1987 through 2002. The sample consists of those firms of which financial data are available. OROA equals operating income (*esas faaliyet karı*) divided by total assets at year-end. Sales growth equals the net growth in sales with respect to year -1. ATO equals net sales over total assets. Capital expenditures data are obtained from the cash flow statements for the period 1989-1997 and from the balance sheet footnotes for the following years. Cost of borrowing equals the financial expenditures divided by the total of short and long term financial debts. The industry-adjusted change/gowth for a given firm is the deviation from the contemporaneus industry mean. Year -1 is the fiscal year preceding the year during which the firm goes public. The significance tests are based on the paired sample T-Tests.

	Year Relative to IPO Year				
Measure of Operating Performance	From - 1 to 0	From - 1 to +1	From - 1 to +2	From - 1 to +3	From - 1 to +4
Panel A: Operating Return on Assets					
Mean Level in Year -1 (%):					
IPO issuing firms = 28,58					
Matched industry = 17,25					
Mean Change (%)	- 2,06	- 3,46**	- 7,15***	- 6,67***	- 11,10***
Mean Industry-Adjusted Chng (%)	- 0,66	- 2,20	- 3,99**	- 3,48*	- 7,37***
Number of observations	81	81	81	81	81
Panel B: Sales					
Level in Year -1 (1987=100 Real Prices, Million TL):					
Mean = 116.597					
Median = 38.827					
Mean percentage change (%)	14,81	25,83	30,73	37,88*	31,18
Median percentage change (%)	13,84	18,19	27,41	21,37	14,53
Ln-Sales Mean percntg chng (%)	0,92***	1,75***	1,99***	2,24***	1,34
Number of observations	79	79	79	79	79
Panel C: Asset Turnover					
Mean Level in Year -1 (%):					
IPO issuing firms = 1,66					
Matched industry = 1,29					
Mean percentage change (%)	- 6,30***	- 9,73***	- 10,59***	- 14,16***	- 17,85***
Mean Industry-Adj'd percntg chng (%)	- 4,01**	- 7,48**	- 4,46**	- 6,01**	- 10,56*
Number of observations	79	79	79	79	72
Panel D: Capital Expenditures					
Level in Year -1 (1987=100 Real Prices, Million TL):					
Mean = 5,013					
Median = 2.974					
Mean percentage change (%)	75,64**	80,00*	129,09*	75,52	92,44
Median percentage change (%)	7,72	30,39	4,33	- 16,83	- 19,15
Ln Cap.Exp. Mean percnt chng (%)	2,32	1,26	2,41	- 2,01	- 4,35*
Number of observations	59	59	59	59	59
Panel D1: Capital Expenditures over Total Assets					
Mean Level in Year -1 (%)					
IPO issuing firms = 14,41					
Matched industry = 26,67					
Mean change (%)	1,45	- 0,86	- 0,70	- 3,62**	- 3,20*
Mean Industry-Adjusted chng (%)	1,95	- 0,53	0,53	- 0,04	- 1,01
Number of observations	59	59	59	59	59

Table 6 (continued)

	Year Relative to IPO Year				
	From - 1 to 0	From - 1 to +1	From - 1 to +2	From - 1 to +3	From - 1 to +4
Panel E: Leverage (Debt over Total Assets)					
Mean Level in Year -1 (%):					
IPO issuing firms = 55,28					
Matched industry = 60,55					
Mean Change (%)	- 3,93***	- 2,39	0,36	4,02*	9,64*
Mean Industry-Adjusted Chng (%)	- 10,78***	- 8,93***	- 8,35**	- 5,51	0,39
Number of observations	81	81	81	81	81
Panel F: Cost of Borrowing					
Mean Level in Year -1 (%):					
IPO issuing firms = 87,34					
Matched industry = 45,37					
Mean Change (%)	- 16,00	- 18,89	- 30,24	- 29,86	- 38,06*
Mean Industry-Adjusted Chng (%)	- 25,68	- 21,44	- 41,83	- 37,53	- 46,79*
Number of observations	65	65	65	65	64

*   The difference is significant at 0,01 level

**   The difference is significant at 0,05 level

***   The difference is significant at 0,10 level
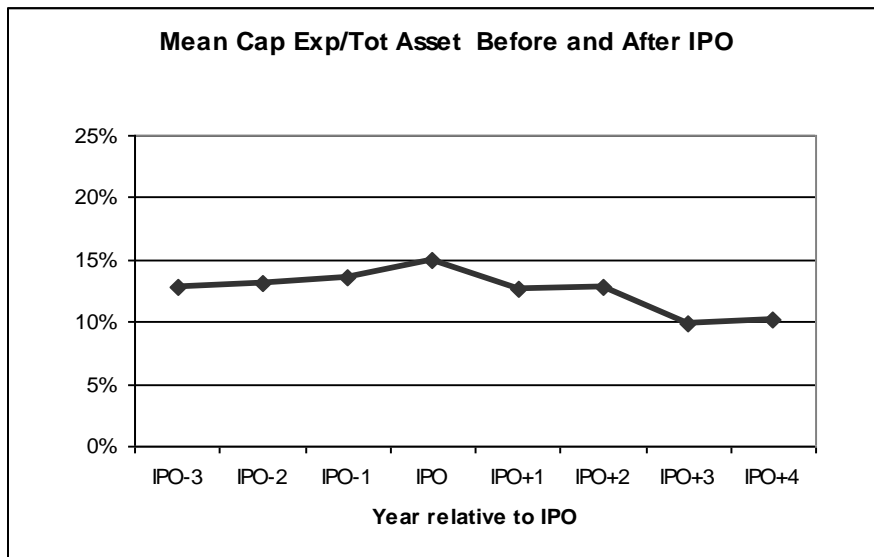
Figure 6

Mean Cap Exp/Tot Asset Before and After IPO

Year relative to IPO

Figure 7

Mean Cap.Exp. / Assets of IPO Firms and Matched Industry
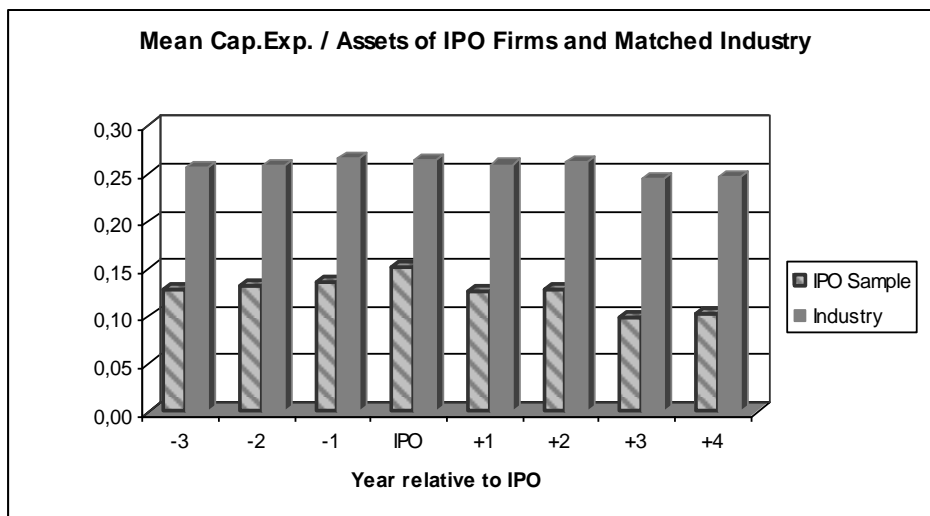

Year relative to IPO

Table 7

Correlation Matrix for All Variables in the Analysis

Table values displays the bivariate pearson correlation coefficients, significances of correlations and number of observations for 81 IPO firms during 1987 through 2002. The sample consists of those firms of which financial data are available. OROA equals operating income (*esas faaliyet karı*) divided by total assets at year-end. Sales growth equals the net growth in sales with respect to year -1. ATO equals net sales over total assets. Capital expenditures data are obtained from the cash flow statements for the period 1989-1997 and from the balance sheet footnotes for the following years. Cost of borrowing equals the financial expenditures divided by the total of short and long term financial debts.

		OROA	SALES	LNSALES	ATO	CAPEX	LNCAPEX	COA	LEVERG
				Panel A: Panel Data					
SALES	Pearson Corr.	**-0,03**							
	Significance	0,348							
	N	976							
LNSALES	Pearson Corr.	**0,102*****	0,702***						
	Significance	0,001	0,00						
	N	976	976						
ATO	Pearson Corr.	**0,248*****	0,472***	0,3***					
	Significance	0,00	0,00	0,00					
	N	981	976	976					
CAPEX	Pearson Corr.	**-0,017**	0,369***	0,418***	-0,239***				
	Significance	0,735	0,00	0,00	0,00				
	N	411	410	410	411				
LNCAPEX	Pearson Corr.	**0,063**	0,439***	0,553***	-0,206***	0,719***			
	Significance	0,205	0,00	0,00	0,00	0,00			
	N	410	409	409	410	410			
COA	Pearson Corr.	**-0,041**	-0,073	-0,056	-0,101	0,534***	0,546***		
	Significance	0,404	0,136	0,253	0,041	0,00	0,00		
	N	414	413	413	414	410	410		
LEVERG	Pearson Corr.	**-0,282*****	-0,023	-0,272***	-0,085***	-0,111**	-0,155***	-0,093*	
	Significance	0,00	0,474	0,00	0,007	0,024	0,002	0,058	
	N	981	976	976	981	411	410	414	
COB	Pearson Corr.	**0,203*****	-0,046	0,056	0,143***	-0,02	-0,048	-0,119**	-0,08**
	Significance	0,00	0,166	0,092	0,00	0,698	0,346	0,018	0,015
	N	913	910	910	913	390	389	393	913

***	Correlation is significant at the 0.01 level (2-tailed).
**	Correlation is significant at the 0.05 level (2-tailed).
*	Correlation is significant at the 0.10 level (2-tailed).

Table 7 (Continued)

Panel B: Correlation Between the Levels Split With Respect to IPO year

Table values are for the bivariate pearson correlation coefficients, signficances of correlations and number of observations between the <u>levels</u> split with respect to the year -1. Each variable is matched with OROA in the respective year and calculated the bivariate correlations.

		Year –1	Year 0	Year +1	Year +2	Year +3	Year +4
		OROA	OROA	OROA	OROA	OROA	OROA
LNSALES	Pearson Corr.	**0,058**	**0,063**	**0,003**	**0,12**	**0,054**	**0,211***
	Significance	0,609	0,58	0,976	0,293	0,639	0,062
	N	79	79	79	79	79	79
ATO	Pearson Corr.	**0,067**	**0,2***	**0,212***	**0,203***	**0,229****	**0,192***
	Significance	0,56	0,08	0,06	0,071	0,041	0,089
	N	79	80	80	80	80	80
LNCAPEX	Pearson Corr.	**-0,116**	**-0,149**	**0,034**	**0,223***	**0,119**	**0,07**
	Significance	0,395	0,27	0,81	0,10	0,38	0,61
	N	56	56	55	56	56	56
COA	Pearson Corr.	**-0,231***	**-0,378****	**-0,06**	**0,069**	**0,087**	**-0,165**
	Significance	0,081	0,003	0,648	0,599	0,506	0,21
	N	58	59	60	60	60	60
LEVERG	Pearson Corr.	**-0,056**	**-0,055**	**-0,157**	**-0,202***	**-0,32****	**-0,624****
	Significance	0,62	0,627	0,16	0,071	0,004	0,00
	N	81	81	81	81	81	81
COB	Pearson Corr.	**0,205***	**0,268****	**0,188**	**0,203***	**0,275****	**0,199**
	Significance	0,10	0,03	0,131	0,10	0,03	0,116
	N	65	66	66	66	66	64

***	Correlation is significant at the 0.01 level (2-tailed).
**	Correlation is significant at the 0.05 level (2-tailed).
*	Correlation is significant at the 0.10 level (2-tailed).

Table 7 (Continued)

Panel C: Correlation of The Changes for Each Year With Respect to IPO Year

Table values are for the bivariate pearson correlations between the <u>changes</u> in the levels with respect to the year -1. Each variable is matched with OROA in the respective year and calculated the bivariate correlations.

		−1 to 0	−1 to +1	−1 to +2	−1 to +3	−1 to +4
		OROA Chng	OROA Chng	OROA Chng	OROA Chng	OROA Chng
LNSALES Change	Pearsn Corr.	**0,478*****	**0,337*****	**0,419*****	**0,386*****	**0,488*****
	Significnc.	0,00	0,00	0,00	0,00	0,00
	N	79	79	79	79	79
ATO Change	Pearsn Corr.	**0,427*****	**0,45*****	**0,475*****	**0,525*****	**0,488*****
	Significnc.	0,00	0,00	0,00	0,00	0,00
	N	79	79	79	79	79
LNCAPEX Change	Pearsn Corr.	**-0,183**	**0,026**	**-0,188**	**-0,028**	**-0,026**
	Significnc.	0,178	0,85	0,16	0,84	0,85
	N	56	55	56	56	56
COA Change	Pearsn Corr.	**-0,048**	**0,003**	**-0,272****	**-0,016**	**0,01**
	Significnc.	0,715	0,98	0,037	0,906	0,937
	N	59	59	59	59	59
LEVERG Change	Pearsn Corr.	**0,076**	**0,187***	**-0,02**	**-0,276****	**-0,661*****
	Significnc.	0,50	0,095	0,861	0,013	0,00
	N	81	81	81	81	81
COB Change	Pearsn Corr.	**0,326*****	**0,063**	**-0,026**	**0,162**	**0,132**
	Significnc.	0,01	0,62	0,839	0,199	0,299
	N	64	65	65	65	64

***	Correlation is significant at the 0.01 level (2-tailed).
**	Correlation is significant at the 0.05 level (2-tailed).
*	Correlation is significant at the 0.10 level (2-tailed).

Table 8a

The table reveals the unstandardized Beta coefficients, t values and significances of the listed independent variables in the regressions for each year relative to IPO. In the alternative models t-1 values are considered for LNCAPEX and COA. Also reported are the R-squared, F and p values for the each model.

Panel A. **Regression Results for Model (1) -Yearwise Data**

		Year 0	Year +1	Year +2	Year +3	Year +4
	Dependent v.	OROA	OROA	OROA	OROA	OROA
Independent v.						
LNSALES	Beta	0,083***	0,038	0,041	0,085*	0,149***
	t- value	3,250	1,100	1,180	2,660	3,165
	Significnc.	0,000	0,270	0,240	0,010	0,003
LNCAPEX	Beta	-0,042***	-0,008	0,006	-0,011	-0,033
	t- value	-2,790	-0,450	0,393	-0,653	-1,515
	Significnc.	0,000	0,650	0,696	0,510	0,136
The model	R-Squared	0,180	0,020	0,070	0,130	0,163
	F Value	6,01***	0,630	2,120	3,97**	5,161***
	Significance	0,000	0,530	0,130	0,020	0,009

Panel B. **Regression Results for Lagged Model (1a) -Yearwise Data**

		Year 0	Year +1	Year +2	Year +3	Year +4
	Dependent v.	OROA	OROA	OROA	OROA	OROA
Independent v.						
LNSALES	Beta	0,086***	0,067*	0,047	0,113***	0,175***
	t- value	3,342	1,981	1,550	3,409	4,263
	Significnc.	0,002	0,053	0,127	0,001	0,000
LNCAPEX (t-1)	Beta	-0,051***	-0,032*	0,001	-0,032*	-0,080***
	t- value	-2,908	-1,808	0,080	-1,919	-3,178
	Significnc.	0,005	0,076	0,937	0,060	0,002
The model	R-Squared	0,194	0,078	0,069	0,180	0,267***
	F Value	6,369***	2,255	1,939	5,834***	9,630
	Significance	0,003	0,115	0,154	0,005	0,000

Panel C. **Regression Results for Model (2) -Yearwise Data**

		Year 0	Year +1	Year +2	Year +3	Year +4
	Dependent v.	OROA	OROA	OROA	OROA	OROA
Independent v.						
ATO	Beta	0,057*	0,094***	0,043	0,145***	0,129**
	t- value	1,787	3,178	1,389	4,172	2,198
	Significnc.	0,079	0,002	0,170	0,000	0,032
COA	Beta	-0,400**	-0,072	0,090	0,170	-0,460
	t- value	-2,595	-0,410	0,623	0,958	-1,399
	Significnc.	0,012	0,683	0,536	0,342	0,167
The model	R-Squared	0,189***	0,154***	0,037	0,240***	0,103**
	F Value	6,517	5,171	1,107	8,987	3,282
	Significance	0,003	0,009	0,337	0,000	0,045

3.2. Leverage

Leverage (total debts over total assets ratio) shows usually a declining trend in the pre-IPO period and increasing trend after IPO, as illustrated on Figure 16. The mean leverage decreases by 3,93 percent from the year −1 to 0, significantly at 0,01 level. It reaches the minimum level of 50 percent in the IPO year. Then it begins to increase gradually in the post-IPO period, up to such a level above the pre-IPO period. The change in the debt ratio represents a statistically significant difference in year +3 and +4, relative to year −1, the base year. However, the four-year-average leverage in the post-IPO period is 58 percent, a very close ratio to the three year-average leverage of 56 percent in pre-IPO period. The sharp decline just before the IPO and in IPO year supports the hypothesis that firms substitute their source of funds from debt to equity in order to deleverage. However, IPO firms do not maintain their new financial structure featuring low leverage after the IPO. Therefore, the IPO also seems to serve as a deleveraging tool for a certain period.

Figure 17 illustrates the comparison between leverage trends of IPO firms with that of the matched industry averages. In general IPO firms seem to use less debt compared to the industry except for year −1 and +4. The most significant difference occurs in the IPO year, as expected.

The industry-adjusted change from year −1 to 0 is −11 percent, significant at 0,01 level. Unlike the non-industry-adjusted numbers, the low leverage level relative to pre-IPO period maintains its significance until year +2. However, the leverage of IPO firms increase faster than that of the industry and exceeds the mean industry leverage in year +4.

Overall, the findings confirm the expectations that the leverage tends to increase because of the increase in the perceived value of the firm and credibility, overcoming borrowing constrains, greater bargaining power with banks, decreasing cost of borrowing.
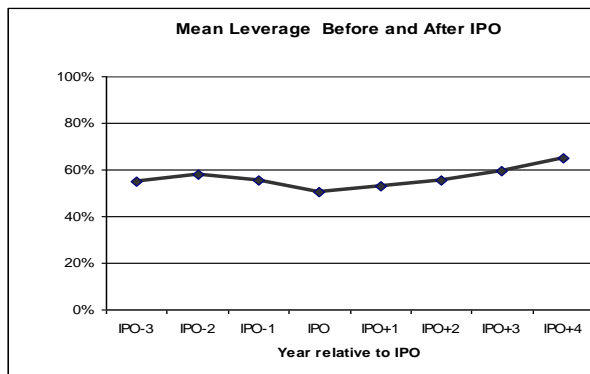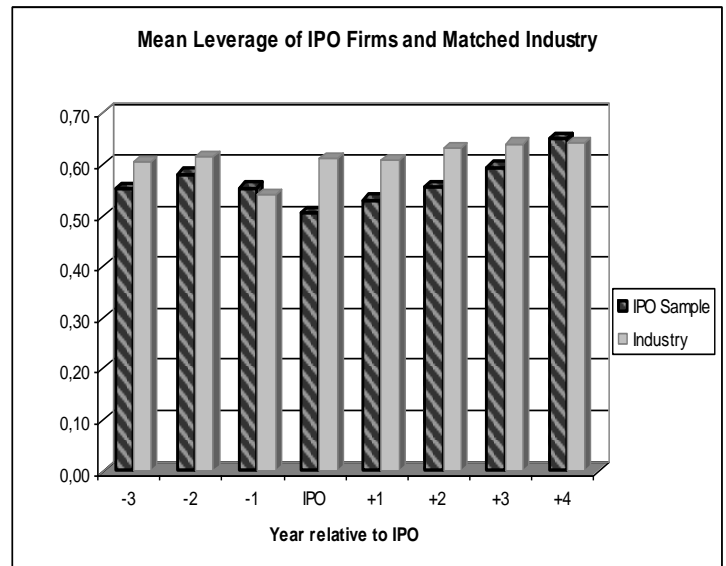
Figure 8

Figure 9

2.3. Cost of Borrowing

Gaining access to capital markets and disseminating information to investors may reduce the cost of credit, possibly because of the firm's improved bargaining position with banks (Rajan, 1992). Pagano *et al.* (1998) describes three possible reasons why the cost of borrowing may fall after IPO. First, upon listing, companies may become safer borrowers because they reduce their leverage. Second, more information becomes publicly available, so lenders have more information about their creditworthiness. The well-known ground to determine the interest charged on the credit is the risk of the borrower. The primary cause of the risk is the lack of perfect information on the borrower. The lender also bears a cost to obtain sufficient information on the firm that want to borrow. As the firm provides more information on itself, the cost of information for the lender declines. Lower information costs, therefore, are rebated to borrowers in the form of lower interest rate. Third, being listed on the stock market offers a company an outside financing option that limits the bargaining power of a bank. Also, a successful IPO might help to build the firm's credibility.

As shown in the Table 6 and Figure 18, cost of borrowing (COB) indeed declines throughout the time as the firm goes public. It makes an upward move just before the IPO and maintains a declining trend after IPO. The four-year-average OROA in the post-IPO period is 60 percent, significantly lower than three year-average OROA of 89 percent in pre-IPO period (*p*=

0,09). COB ratios relative to the matched industry also exhibit similar patterns. The change in the fourth year is statistically significant like in the unadjusted figures.

IPO firms obviously bear higher interest rates compared to the industry mean in general. However, the difference begins to decline after the IPO and approaches to zero in year +4. The findings confirm the expectation that cost of borrowing declines as firms begin to publicly trade. Whether the level of leverage is a function of cost of borrowing is further analyzed in the regression model of which the results are displayed on Table 9.

CONCLUSIONS AND IMPLICATIONS

In this study, the changes in certain performance measures and financial characteristics of firms as a result of their transition from private to public ownership (quoted/listed) status are investigated.
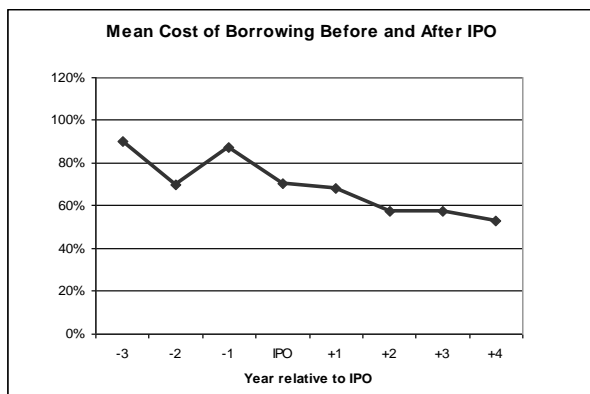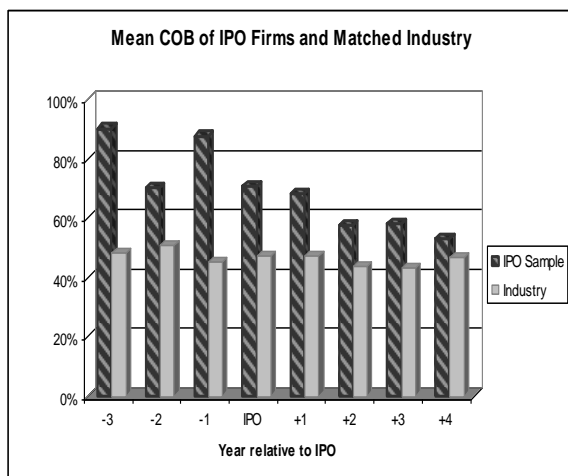
Figure 10

Mean Cost of Borrowing Before and After IPO

Figure 11

Mean COB of IPO Firms and Matched Industry

Following an analysis of the corporate ownership concept and impact of ownership type on performance, the study focused on the dimension of public ownership and tested the relevant hypotheses on a sample constructed of 81 Turkish manufacturing firms that went public between 1990 and 1998, capturing the relevant data from 1987 through 2002.

The findings show that the firms going public exhibit a substantial decline in post-issue operating performance. Over a six-year-period extending from the year prior to the IPO until the four years after the offering, the performance of IPO firms declines significantly, based on several performance measures. Despite an increase in sales and capital expenditures, however, the pre-IPO performance levels are not sustained, leading to a decline in expectations. In fact, asset turnover and capital expenditures on assets decrease significantly. In other words, the growth in sales and capital expenditures relative to the growth in total assets actually represent declining trend. Asset turnover always partially explains the decline in OROA, whereas COA explains the decline in OROA only when lagged panel data are used.

The sharp decline in leverage just before the IPO and in IPO year proves that firms substitute their source of funds from debt to equity in order to deleverage. However, IPO firms cannot maintain their new financial structure featuring low leverage after the IPO. Leverage displays a consistent increase after IPO, reaching significant differences in third and fourth year of IPO relative to the year just before IPO. Overall, the findings confirm the expectations that the leverage tends to grow because of the increase in the perceived value of the firm and credibility, overcoming borrowing constrains, greater bargaining power with banks, and decreasing cost of borrowing.

The cost of borrowing shows a consistent decline after the IPO, reaching a significant level in the fourth year subsequent to IPO. This finding also confirms the expectations. The increase in leverage beginning from the second year subsequent to IPO is partially explained by the declining cost of borrowing.

Although the findings seem to verify the early studies, the decline in operating performance and capital expenditures cannot actually be explained by the agency theory approach in the Turkish context because of the much lower proportion of the capital owned by public compared to the western counterparts, family-controlled governance and different socio-cultural infrastructure. These changes, therefore, should be attributable to window dressing and/or successful timing.

It should be also noted that a future study with a larger sample size and wider time horizon is believed to provide more robust outcomes.

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APPENDIX;THE NAMES, INDUSTRY CATEGORIES AND IPO YEARS OF THE FIRMS INCLUDED IN

THE SAMPLE (Sorted by the IPO Year)

Firm	Industry	IPO Year
BOSCH PROFİLO	Fabricated metal products and machinery equipment	1990
YÜNSA	Textile, wearing apparel and leather	1990
SABAH YAYINCILIK	Paper and paper products, printing and publishing	1990
ECZACIBAŞI İLAÇ	Chemicals, petroleum, rubber and plastic products	1990
VESTEL	Fabricated metal products and machinery equipment	1990
PETKİM	Chemicals, petroleum, rubber and plastic products	1990
ASELSAN	Fabricated metal products and machinery equipment	1990
KELEBEK MOBİLYA	Wood products and furniture	1990
FENİŞ	Basic metal industries	1990
MARSHALL	Chemicals, petroleum, rubber and plastic products	1990
KONYA ÇİMENTO	Non-metalic mineral products	1990
KENT GIDA	Food, bevarage and tobacco	1990
TRAKYA CAM	Non-metalic mineral products	1990
ÜNYE ÇİMENTO	Non-metalic mineral products	1990
EDİP İPLİK	Textile, wearing apparel and leather	1991
ADANA ÇİMENTO	Non-metalic mineral products	1991
PETROL OFİSİ	Chemicals, petroleum, rubber and plastic products	1991
TÜPRAŞ	Chemicals, petroleum, rubber and plastic products	1991
TİRE KUTSAN	Paper and paper products, printing and publishing	1991
TOFAŞ OTO	Automotive	1991
SÖNMEZ FİLAMENT	Textile, wearing apparel and leather	1991
ALTINYILDIZ	Textile, wearing apparel and leather	1991
ALARKO CARRIER	Fabricated metal products and machinery equipment	1992
HÜRRİYET GAZETECİLİK	Paper and paper products, printing and publishing	1992
ÇİMENTAŞ	Non-metalic mineral products	1992
BEKO	Fabricated metal products and machinery equipment	1992
BANVİT	Food, bevarage and tobacco	1992
KONİTEKS	Textile, wearing apparel and leather	1993
EGE SERAMİK	Non-metalic mineral products	1993
NETAŞ	Fabricated metal products and machinery equipment	1993
RAKS ELEKTRONİK	Fabricated metal products and machinery equipment	1993

TAT KONSERVE	Food, bevarage and tobacco	1993
MİLLİYET GAZETECİLİK	Paper and paper products, printing and publishing	1993
BURSA ÇİMENTO	Non-metalic mineral products	1993
AKSU İPLİK DOKUMA	Textile, wearing apparel and leather	1993
EGE PLASTİK	Chemicals, petroleum, rubber and plastic products	1994
TUKAŞ KONSERVE	Food, bevarage and tobacco	1994
IŞIKLAR AMBALAJ	Paper and paper products, printing and publishing	1994
KEREVİTAŞ	Food, bevarage and tobacco	1994
DARDANEL	Food, bevarage and tobacco	1994
MUTLU AKÜ	Fabricated metal products and machinery equipment	1994
MERKO GIDA	Food, bevarage and tobacco	1994
VİKİNG KAĞITÇILIK	Paper and paper products, printing and publishing	1994
ANADOLU EFES	Food, bevarage and tobacco	1994
BORUSAN	Basic metal industries	1994
RAKS EV ALETLERİ	Fabricated metal products and machinery equipment	1994
SÖNMEZ PAMUKLU	Textile, wearing apparel and leather	1994
ÇEMTAŞ ÇELİK MAKİNE	Basic metal industries	1994
GÖLTAŞ ÇİMENTO	Non-metalic mineral products	1995
BATI ÇİMENTO	Non-metalic mineral products	1995
SÖKTAŞ	Textile, wearing apparel and leather	1995
OTOKAR	Automotive	1995
ÇBS BOYA	Chemicals, petroleum, rubber and plastic products	1995
ESEM SPOR	Textile, wearing apparel and leather	1995
ECZACIBAŞI YAPI	Non-metalic mineral products	1995
TÜM TEKSTİL	Textile, wearing apparel and leather	1995
BOSSA	Textile, wearing apparel and leather	1995
UKI KONFEKSİYON	Textile, wearing apparel and leather	1996
AKIN TEKSTİL	Textile, wearing apparel and leather	1996
MUDURNU TAVUKÇULUK	Food, bevarage and tobacco	1996
İHLAS EV ALETLERİ	Fabricated metal products and machinery equipment	1996
BİRLİK MENSUCAT	Textile, wearing apparel and leather	1996
YATAŞ	Textile, wearing apparel and leather	1996
AKÇANSA	Non-metalic mineral products	1996
ANADOLU GIDA	Food, bevarage and tobacco	1996
BİSAŞ TEKSTİL	Textile, wearing apparel and leather	1996
SASA	Chemicals, petroleum, rubber and plastic products	1996

BERDAN TEKSTİL	Textile, wearing apparel and leather	1997
GÜMÜŞSUYU HALI	Textile, wearing apparel and leather	1997
ANADOLU ISUZU	Automotive	1997
BAYRAKLI BOYA	Chemicals, petroleum, rubber and plastic products	1997
UZEL MAKİNE	Fabricated metal products and machinery equipment	1997
KRİSTAL MEŞRUBAT	Food, bevarage and tobacco	1997
MENSA MENSUCAT	Textile, wearing apparel and leather	1997
ÇİMBETON HAZIR BETON	Non-metalic mineral products	1997
VANET	Food, bevarage and tobacco	1998
VAKKO	Textile, wearing apparel and leather	1998
PASTAVİLLA	Food, bevarage and tobacco	1998
BAK AMBALAJ	Paper and paper products, printing and publishing	1998
IDAŞ	Textile, wearing apparel and leather	1998
ARSAN	Textile, wearing apparel and leather	1998

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