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THE DYNAMICS OF ENTRY AND EXIT IN TURKISH MANUFACTURING INDUSTRY*

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Abstract

Entry and exit are crucial elements of market selection process which leads to the restructuring, adaptation and evolution of an industry. While the importance of entry and exit has been recognised, attention has focused almost exclusively on quantifying barriers to them, rather than on investigating the determinants of entry and exit and measuring the magnitude of these processes. This paper analyses the entry and exit dynamics of Turkish manufacturing industry defined at the 4-digit ISIC level for the period 1981-1997. While, on the one hand, it focuses on the determinants of entry and exit and their sectoral variation, on the other hand, it verifies the link between entry and exit. This paper employs a dynamic panel data estimation procedure to investigate the relationship between entry and exit and to estimate the models of entry and exit. Our empirical findings suggest that rates of entry and exit are determined by profit margin, growth rate of output, concentration ratio, labor productivity, average wage rate, advertisement intensity, capital intensity and wage and productivity differentials as explanatory variables.

Keywords: entry, exit, manufacturing, dynamic panel data

JEL Classification: L11

I. INTRODUCTION

There has been a long-standing interest in analyzing the determinants of entry and exit processes and the relationship between them. Both entry and exit are crucial elements of market selection process which leads to the restructuring and evolution of industry. Therefore, the process of entry and exit of firms and plants has long been held to play an important role in the evolution and adaptation of industry to change. Entry and exit are inherent parts of the dynamic competitive process that lead to some firms to grow and others to decline. While the importance of entry and exit has been recognized, attention has focused almost exclusively on quantifying barriers to them, rather than on investigating the determinants of entry and exit and measuring them.

Entry and exit rates are the linked parts of an industry evolution process where large numbers of new entrants may displace large numbers of older firms without changing totals. That brings a difference between net and gross entry rates. However, these two rates do not seem to follow highly diverging patterns if one looks at the empirical studies. There seems to be a positive relationship between gross and net entry rates. On the other hand, entry and exit seem to present significant amounts of sectoral variation, although this does not appear to persist in the long-run (Fotopoulos and Spence, 1999: 1219).

According to the traditional view in industrial organization, a level of profitability in excess of equilibrium induces entry into the industry. And this is why the entry of new firms became interesting and important in the field of industrial organization- the new entrants provided an equilibrating function in the market, in that levels of profitability and price are restored to their long-run competitive levels (Audretsch and Mata, 1995: 414). However, the survival and post-entry performance of new entrants are at least as important as the entry process itself. Therefore, a body of literature oriented towards the dynamics of exit process and the link between entry and exit.

This paper investigates the entry and exit dynamics of Turkish manufacturing industry defined at the 4-digit ISIC level for the period 1981-1997. While, on the one hand, it focuses on the determinants of entry and exit and their sectoral variation, on the other hand, it examines the link between entry and exit. The outline of the paper is as follows: Section II briefly summarizes the literature on the entry and exit dynamics and the main empirical

studies on this field. Section III describes the data on Turkish manufacturing industry and the methodology used in this study with a descriptive analysis. Section IV, includes the model specification. In section V, estimation results are reported. Finally, section VI concludes.

II. LITERATURE SURVEY

There is a broad literature which analyzes the entry process and post-entry conditions of firms. Empirical studies on this field, examined the growth and survival of new firms as well as their entry process. Later, a literature that incorporates the exit process and investigates the cumulative effect of both entry and exit developed.

The importance of actual patterns of firm entry and exit may be first recognized by a study done by Dunne et al. in 1988. They constructed a new data set from the individual plant-level data which is used to summarize the basic patterns of firm entry, growth and exit in the four digit U.S manufacturing industries over the period 1963-1982. They examined the relative importance of different types of entrants, the persistence of industry entry and exit patterns over time, the correlation between industry entry and exit rates across industries and over time, and the post-entry performance of entrants (Dunne et. al., 1988: 495). They found that there is a significant variation in the entry, exit and size patterns of different categories of entrants (Dunne et. al., 1988: 513). They also verified the heterogeneity in entry and exit patterns across industries. Their findings suggested new areas of further research on identifying industry specific characteristics that cause variation in entry and exit rates and also in their determinants.

The publication of *Market Dynamics and Entry* by Paul Geroski (1991) and *Entry and Market Contestability*, edited by Geroski and Joachim Schwalbach (1991), marked the culmination of a wave of research in the field of industrial organization devoted towards shedding light on the process of entry. Ever since Joe Bain's (1956) treatise, *Barriers to New Competition*, research on the process of entry had been justified by economic welfare concerns. Entry became seen as one of the main mechanisms by which long-run equilibrium levels of profitability and price are restored (Audretsch and Mata, 1995: 413).

Geroski (1995) points out seven stylized facts about entry, which are worth highlighting. According to Geroski (1995), first of all, entry is common. Large number of firms enters most markets in most years, but entry rates are far higher than market penetration

rates. On the other hand, although there is a very large cross-section variation in entry, differences in entry between industries do not persist for very long. In fact, most of the total variation in entry across industries and over time is 'within' industry variation rather than 'between' industry variation. Another fact that Geroski mentioned is that entry and exit rates are highly positively correlated, and net entry rates are a modest fraction of gross entry rates. Moreover, the survival rate of most entrants is low, and even successful entrants may take more than a decade to achieve a size comparable to the average incumbent. De novo entry is more common but less successful than entry by diversification. Entry rates vary over time, coming in waves which often peak early in the life of many markets. Different waves tend to contain different types of entrant. Lastly, costs of adjustment seem to penalize large-scale initial entry and very rapid post-entry penetration rates (Geroski, 1995: 426).

Geroski (1995) also addressed eight stylized results which seem to have emerged from the empirical literature on entry. Empirical studies show that entry seems to be slow to react to high profits. Differences in profitability between industries are extremely stable and persistent, meaning that most of the variation in profitability across industries and over time is 'between' industry variation. Entry, on the other hand, varies much more over time and differences in entry rates between industries are unstable and do not persist for very long. This means entry exhibits far more 'within' industry variation than profits do (Geroski, 1995: 429).

Econometric estimates of the height of entry barriers suggest that they are high. Costs of entry rise with advertising intensity, capital intensity, and minimum efficient scale, and falls with industry size and industry growth. On the other hand, entry rates are hard to explain using conventional measures of profitability and entry barriers. Entry seems to have only modest effects on average industry price-cost margins. Entry has traditionally been thought of as an error-correction process, occurring when excess profits are high and causing them to fall subsequently. This view carries a fairly strong implication for the dynamics of market performance, namely that profits are likely to be auto-correlated over time: high profits will be bid down by entrants until they reach a long-run equilibrium level which depends, on the height of entry barriers. The short-run dynamics of profits are fairly smooth, and profits are not equalized even across firms within the same industry in the long run. Profit differences are very stable over time within and between industries (Geroski, 1995: 430).

Another result about entry implies that high rates of entry are often associated with high rates of innovation and increases in efficiency. The response by incumbents to entry is selective and prices are not usually used by incumbents to block entry (Geroski, 1995: 434). Perhaps the most striking thing that we know about entry is that small-scale, de novo entry seems to be relatively common in most industries, but that small-scale, de novo entrants generally have a rather short life expectancy. That is, entry appears to be relatively easy, but survival is not. Since entry is easy but survival is not, it is not difficult to believe that the response by most incumbents to entry is likely to be rather selective (Geroski, 1995: 436).

Geroski (1995) states that entry can be episodic in character, playing an important role in shaping industry structure in certain phases of the product life cycle and a more minor role at other times. Furthermore, the role that entry plays in shaping industry structure seems to be bound up with the fact that entry is often used as a vehicle for introducing new innovations, while the absence of entry is often associated with technological stagnation (Geroski, 1995: 436).

What all of this adds up to is a presumption that entry is generally a poor substitute for active rivalry amongst incumbent firms in a market. While it is common that entry can be an important influence on the evolution of industry structure and performance, also, it is so only selectively. Further, entry seems to play an important role in stimulating industry evolution at precisely those times when the current activities of incumbent firms are most out of line with exogenous changes in costs and demand. In short, not only is entry an imperfect mechanism for getting prices right in markets, it is a mechanism for getting product and process specifications right (Geroski, 1995: 437).

Virtually every empirical study examining entry behavior has considered the entry either of all new firms in an industry (generally approximated by the changes in the numbers of firms over a specific period or net entry) or else only of larger firms. While the results of these studies have not been unequivocal, certain tendencies have emerged. Theoretical models have predicted entry to be positively induced by high profits and growth and deterred in the presence of structural barriers such as capital intensity and behavioral barriers such as advertising intensity (Acs and Audretsch, 1989: 256).

In fact, entry has been found to be positively related to growth in most studies. Most of these studies also found lagged profits to exert a positive influence on subsequent entry. While Duetsch (1984) and Khemani and Shapiro (1987) found capital intensity to exert a negative influence on the entry of firms of all sizes. Similarly, Khemani and Shapiro (1987) found advertising to be a significant barrier to entry of firms of all sizes. While market concentration is generally predicted to exert a negative influence on entry, most studies have not substantiated this. Similarly, the existence of a high technological opportunity class has been hypothesized to induce entry. Based on a number of empirical studies, it can reasonably be concluded that the entry of all firm sizes appears to take place in rapidly growing industries with relatively high price-cost margins and low advertising intensity, and where there is a relatively high level of technological opportunity or R&D intensity (Acs and Audretsch, 1989: 257).

A study done by Baldwin and Gorecki (1991) investigates first the size of entry and exit for a broad cross-section of industries, the different methods of entry and exit and lastly some aspects of the dynamics of the entry and exit process by measuring both the instantaneous and the cumulative rates of entry. The contribution of this paper lies in the construction of entry and exit measures and the associated data set that permit both the instantaneous and the cumulative effects of entry and exit in the Canadian manufacturing sector. They revealed that the importance of entrants depended upon the probability of entry, on the size of entrants, and on their growth rate after birth (Baldwin and Gorecki, 1991: 320).

There has been increasing interest in understanding the determinants of entry and exit of firms according to their size. Adopting the view that 'size matters' in understanding entry (exit) patterns, the aim of the study done by Fotopoulos and Spence (1998), is to discover the determinants of net entry patterns of various size-defined groups of establishments in the case of a less industrialized country-Greece. The hypothesis to be tested is that proposed by Acs and Audretsch (1989) that "determinants of entry are not independent of firm size". They formulated the entry equation as a function of price cost margin, industry growth, product differentiation, capital requirements and an index of relative efficiency (defines as the ratio of size class specific value-added to employment ratio over the industry's value-added to employment ratio) (Fotopoulos and Spence, 1998: 136).

Evidence is offered that small firms are different in that they manage to overcome entry barriers, perhaps adopting different survival strategies, and that large firms are well aware of market conditions and are in an advantageous position to overcome many of the problems imposed by entry barriers. Past industry profits do not have unequivocal effects on small firms, entry barriers are hardly significant and when they become significant this applies to small rather than larger entrants. Industry growth, on the other hand, plays a significant role in determining entry rates, but again it is not universally accepted whether this role is more significant for smaller rather than larger firms (Fotopoulos and Spence, 1998: 127).

Another important aspect is that entry process involves trial and error. Firms have to develop basic skills before they can survive- and large numbers are appear not to have these skills at birth. Firms that fall by the wayside generally start off smaller, pay lower wages, and have lower labor productivity. Nevertheless, a subset of new entrants survives and grows- and the growth of this group is substantial. The successful entrants that grow most are those that develop one or other type of innovative activity- either with respect to the introduction of new products, an emphasis on technology, or human resources. It is in the area of innovation that entrants make a widespread contribution (Baldwin and Johnson, 1999: 74).

What emerges from the studies of the entry process is that it is what happens to firms subsequent to their entry that is at least as important as the entry process itself. Understanding the post-entry performance of firms is important because it sheds light on the selection process of markets enabling some of the new entrants to survive and prosper, while others stagnate and ultimately exit (Audretsch and Mata, 1995: 416).

The empirical literature on the determinants of the post-entry performance of new plants has typically focused on the role played by structural factors, such as the degree of market concentration, the height of entry barriers, the shape of average costs and the size of entrants relative to the minimum efficient scale of production, as well as on the characteristics and speed of technological progress in various industries. Theoretical models of entry and growth of the firm also suggest that, in addition to the age of firms, a proper specification of exit and growth equations needs to include variables capturing the market structure, the dynamism of various industries, and the technological regime (Boeri and Bellmann, 1995: 489).

The study done by Wagner in 1999, contributes to the literature on exits by exploring a rich longitudinal data set that was collected by annual personal interviews in some 1000 establishments from German manufacturing between 1994 and 1996. He mentioned that as one of the stylized facts that have emerged from the studies examining exit that the likelihood of a firm exiting apparently declined with both age and size, suggesting that the bulk of firms exiting from the industry tended to be new and small enterprises (Wagner, 1999: 259).

Turning to the role of innovation in shaping the risk of failure, he found that being a product innovator was no way to insure against exit. Labor productivity was lower in exits than in surviving firms. When he looked at profit situation, there was a link between the profit situation and the propensity to exit, but it was not too strong. Bad profits could be tolerated for a while, especially if there was hope for change in the near future but good profits today were by no means a guarantee for good profits in the future (Wagner, 1999: 260).

Recent theoretical models suggest that the order of exit determined by market forces is not necessarily welfare optimal. In these models, plant and firms size, and relative costs influence exit from declining industries. Firm characteristics should not matter in exit from a competitive industry: plants earning lowest quasi-rents drop out until the remaining, most efficient, plants are able to earn a normal return (Gibson and Harris, 1996: 522).

A number of studies have indicated that entry and exit are often highly positively correlated, implying that underlying structural differences across industries produce similar inter-industry patterns for both entry and exit. The relationship is related to the question whether or not entry and exit are positively related due to the possibility that the determinants of entry function the same way as the determinants of exit (Fotopoulos and Spence: 1998, 245).

Conventional wisdom views entry as taking place when super-normal profits are positive and exit when they are negative. Logically this should mean that the relation between entry and exit should be negative. However, Dunne and Roberts (1991) find that high profits attract both entry and exit and the same signs were found in Rosenbaum and

Lamort (1992), although profits were not always significant in the exit formulations (Fotopoulos and Spence: 1998, 246).

An early initiative to examine, empirically, the interdependence between entry and exit, along with the testing of the symmetry hypothesis, was carried out by Shapiro and Khemani (1987). The entry and exit equations differ in the incentives used for exit where industry growth and price cost margin measures were taken in phase with exit. The result of these formulations revealed considerable degrees of symmetry in the behavior of entry barriers as determinants of both entry and exit (Fotopoulos and Spence: 1998, 248).

A somewhat different approach to the set up of the empirical entry and exit equation was put forward by Rosenbaum and Lamort (1992). Whereas the entry equation closely follows the tradition established in the empirical literature, the exit equation is quite different. Instead of putting the same barrier to entry variables used in the entry equation also in the exit one, these authors used variables that are more closely related to the notion of sunk costs. The barriers to exit variables deployed were the advertising to sales ratio, assets liquidity, and the primary product specialization ratio. The entry and exit equations differ also in the usual formulation of structural characteristics, such as profits and market growth. The overall conclusion was that markets that enjoy high entry rates have also high exit rates, but entry and exit do not respond to each other (Fotopoulos and Spence: 1998, 249).

The empirical research accumulated so far pertaining to the possible interdependence of entry and exit in manufacturing industries does not offer unequivocal evidence of the processes involved. Furthermore it seems to point to two different hypotheses about the high positive correlation observed between entry and exit in manufacturing industries. The first assumes that entry and exit are part of system of equations where there is feedback mechanism running from entry to exit and vice versa. High levels of entry might lead to displacement of existing firms by new entrants, and hence to exit. But also high levels of exit may create room for more entry to take place. Thus, high levels of entry and exit might be simultaneously determined. The second hypothesis is that of natural churning, which is higher industry turbulence due to underlying business conditions. Entry and exit can be highly positively correlated in time across industries but the ‘causality’ is not clear as the concept of turbulence is broader than that of the displacement-vacuum effect (Fotopoulos and Spence: 1998, 249).

In order to determine the possible interdependence between entry and exit, Fotopoulos and Spence made a study concerning the Greek manufacturing industries between 1982 and 1988. They formulated the entry equation as a function of an industry's price cost margin (defined as annual value added from industrial activity minus payroll over sales, taken with one year lag and expected to have a positive influence), minimum efficient size over industry cost-disadvantage ratio as a proxy for economies of scale in industry (expected to have negative influence), capital requirements (defined as the capital to labor ratio, expected to have negative effect), product differentiation effort (defined as sum of advertising expenditure over sales and expected effect is ambiguous), deflated industry sales used for industry size and expected to have positive effect and lagged industry growth. The exit equation was formulated as a function of price cost margin (taken with zero lag and expected effect is ambiguous), the measure of extent of small firm presence in an industry (expected to have positive effect), industry growth (expected to have negative effect), capital requirements and a proxy for product differentiation (Fotopoulos and Spence: 1998, 254).

The results of this research reveal that firm entry and exit are highly linked in the Greek manufacturing industries between 1982 and 1988. Symmetry appears to be demonstrated and extended beyond traditional barriers to entry measures. As in other studies, entry and exit appear to be positively correlated with each other and with price cost margins. This in turn indicates that turbulence might be characterizing more profitable industries in that these offer both the attractions and also the impediments leading to both higher entry and exit. Overall the conclusion to be drawn is that when both entry and exit equations are estimated separately the results support that entry and exit are linked (industries that experience high entry also experience high exit and entry and exit are both affected by the same structural conditions), but when entry and exit are estimated within simultaneous equation framework, the empirical evidence does not offer sufficient grounds to support the notion that entry and exit are simultaneously linked. Entry and exit seem to be two facets of the same coin and the occurrence of symmetry might mask the real relationship (Fotopoulos and Spence: 1998, 261)(for a similar study see, e.g, Evans and Siegfried, 1992).

To sum up, empirical studies have examined several factors to explain the difference between entry and exit rates across industries. These factors consist of four categories (Carree and Thurik, 1999: 2). The first category is the industry's environmental characteristics that

restrict entry and exit rates. These environmental characteristics consist of demand and cost conditions. The second category is the stage of industry life cycle that consists of waves of entry and exit. These waves are verified through the height of barriers namely, advertising intensity, capital requirements and cost advantages of incumbents. The third category is the strategic behavior of incumbents that is verified by concentration rate of the industries. The last factor is the business cycle verified by profitability and growth rate. Entry and exit are interrelated in that they are both affected by the factors aforementioned. Entry and exit may however also be causally related: exit may cause entry and entry may cause exit (Carree and Thurik, 1999:3).

III) ENTRY AND EXIT IN MANUFACTURING INDUSTRIES: A DESCRIPTIVE ANALYSIS

In this section, we will look at the Turkish manufacturing industries at the most detailed level (ISIC 4-digit level) to determine industry characteristics that explain differences in entry and exit rates.

The data source is the Censuses of Manufacturing Industry (1980, 1985 and 1992) and the Annual Surveys of the Manufacturing Industry (all other years) conducted by the State Institute of Statistics (SIS). The survey covers all public establishments, all private establishments employing 10 or more people. The data consists of 77 industries in the period 1981-1997. Ten industries had to be omitted from the analysis because these industries consist of less than two firms in certain years and because of some missing data.

When we look at the data, it shows huge deviations in survey years of 1985 and 1992. In 1980, Turkish economy switched into a liberal outward-oriented development strategy through the elimination of barriers to trade. We made a periodization for the post 1980 period. The 1981-83 can be called as the adjustment period. Between 1984-89, Turkish economy implemented trade liberalization that has far reaching effects on the manufacturing sector. 1989-93 period can be called as the financial liberalization period. In 1994, Turkey experienced a severe economic crisis. So, it is meaningful to divide the post 1990 period into two sub-periods, as pre-crisis period and post-crisis period.

Table 1 presents data on the number of entrants and exitors in accordance with the periodization at the four digit ISIC level.

Table 1. Entry & Exit Among Sectors (ISIC4)

Sic4	1981-1983 entry	1984-1989 entry	1990-1993 entry	1994-1997 entry	1981-1983 exit	1984-1989 exit	1990-1993 exit	1994-1997 exit
3111	6	36	22	23	0	10	11	19
3112	10	18	15	26	0	11	22	33
3113	21	43	43	57	12	39	38	41
3114	5	5	0	0	0	12	3	0
3115	33	34	12	28	17	32	24	20
3116	49	92	55	51	26	107	71	59
3117	92	85	55	68	80	87	58	52
3118	0	10	0	0	4	0	0	0
3119	10	14	17	19	12	13	10	7
3121	39	69	52	40	39	37	41	37
3122	28	42	28	29	4	17	53	25
3131	0	0	0	0	0	0	0	0
3132	0	0	0	0	0	0	0	0
3133	0	0	0	0	0	0	0	0
3134	14	12	10	4	0	0	3	10
3140	12	7	3	3	0	6	14	0
3211	131	260	221	353	107	255	148	204
3212	19	39	41	126	0	23	18	53
3213	59	139	121	145	43	69	69	88
3214	22	10	24	32	26	26	14	14
3215	0	0	0	0	0	0	0	0
3219	3	0	0	7	0	0	0	0
3221	20	110	89	48	4	41	101	59
3222	128	587	536	634	53	268	337	489
3231	27	44	37	61	13	41	41	29
3233	3	10	8	0	0	0	0	0
3240	13	26	33	48	9	13	21	22
3311	32	55	43	60	18	43	36	57
3319	0	0	0	0	0	0	0	0
3320	31	47	52	74	25	45	36	35
3411	5	3	4	4	0	4	0	3
3412	15	24	17	24	7	17	8	8
3419	11	7	0	0	6	8	0	3
3421	39	68	43	46	23	51	46	36
3511	7	17	0	0	6	14	11	3
3512	0	0	0	0	0	0	6	0
3513	0	10	3	0	0	4	0	0
3521	7	17	5	13	13	4	13	0
3522	9	6	13	3	8	8	7	0
3523	14	14	6	10	12	18	15	3
3529	10	19	18	21	0	17	11	10
3530	0	0	8	0	0	0	5	0
3543	0	0	0	0	0	0	0	0
3544	0	0	0	3	3	0	0	0
3551	0	0	0	0	0	0	0	0
3559	52	51	16	23	38	50	19	20
3560	108	119	89	128	82	94	66	67
3610	11	12	48	24	0	8	26	12
3620	15	6	12	28	12	7	7	4
3691	63	171	73	78	81	88	86	95
3692	6	22	64	20	0	9	38	17
3699	27	65	40	99	7	48	44	48

3710	80	120	66	88	56	111	66	68
3720	40	53	46	34	29	42	47	15
3811	41	57	32	50	17	47	46	19
3812	23	11	32	28	11	13	23	4
3813	40	49	40	87	23	38	40	61
3819	95	100	82	89	65	99	66	42
3821	0	0	34	0	0	0	19	0
3822	26	14	3	22	16	14	11	14
3823	16	20	11	24	11	13	19	4
3824	34	49	22	65	20	43	24	26
3825	0	0	17	0	0	0	0	0
3829	70	95	52	85	35	77	45	48
3831	24	36	54	30	11	35	31	21
3832	12	32	26	23	4	27	28	18
3833	11	20	29	18	0	12	21	9
3839	40	48	13	58	32	49	18	24
3841	13	10	15	9	7	8	10	3
3842	0	0	0	0	0	0	0	0
3843	90	86	100	94	55	89	52	40
3844	0	0	0	5	0	0	0	0
3851	3	4	4	18	0	8	0	7
3852	0	0	3	0	0	0	0	0
3854	3	3	3	3	0	0	0	3
3901	3	0	6	3	0	0	0	0
3909	21	20	21	25	0	22	20	17

The number of entrants and exitors exhibits sectoral variations, however, these values are relatively low in 1991 for most of the sectors. This may be due to the real wage increases observed in Turkish economy. On the other hand, the number of entrants and exitors are relatively high in spinning and weaving (3211), wearing apparel (3222), bakery products (3117), motor vehicles (3843), fabricated metal products (3819) and plastic products sectors (3560) (significantly textile industry) whereas, they exhibit relatively low patterns in basic industrial chemicals (3511) and petroleum refineries (3530) sectors. This relatively high number of entrants and exitors decrease in the 1990-1993 financial liberalization period. The only increase that has been seen in the motor vehicles sector may be attributed to the after financial liberalization period characteristic. High number of entrants and exitors observed in plastic product, bakery products and spinning and weaving sectors can be explained by low capital requirements in those industries. In the same way, high capital requirements deter entry in relatively more capital-intensive industries (entry rate is zero for all years in petroleum industry). The low or even zero entry rate in spirits sector (3131) can occur as a result of high market concentration.

Graph 1 and Graph 2 present the number of entrants and exitors for the 1981-1997 period at the industry level. When we look at the data through industry specific variation,

more than 50% of the entry and exit occurs in textile and engineering industries. Thus, the trend of entry and exit dominantly determined by these sectors. Another industry that also determines the pattern of entry and exit is food and tobacco industry. The number of entrants increases in the adjustment period. In the trade liberalization period, entry follows a declining pattern except textile industry in which the number of entrants displays an increase. Textile is an export intensive industry and trade liberalization and export promotion which took place in this period, explains the increase in entry in this sector. Between 1990-93, depending on the demand expansion of the pre-crisis period and following the increase in real wages, the number of entrants increased in all industries but this increase is smaller in magnitude than the one seen in the trade liberalization period. Although the number of entrants declines in 1994, it follows an increasing trend in the post-crisis period for most of the industries.

When we look at the number of exitors, there is a slight increase both in the adjustment period and trade liberalization period for most of the industries. However, the number of exitors increases significantly in textile industry for both periods. The data points that textile industry is a highly dynamic sector in which entry and exit continuously occur. In the 1990-1993 period, although the number of exitors falls significantly in most of the industries, this slow down is the smallest in the food and tobacco and engineering industries. Moreover, we see an increase in the number of entrants in textile and non-metallic mineral products industries. In the post-crisis period, exit follows an decreasing trend in all of the industries including the engineering and food and tobacco industries. The number of exitors increases only in the textile industry for this period.

Table 2 undertakes cross-industry comparisons that suggest that there is wide variation in entry and exit rates both within and across industries according to two digit ISIC level.

Table 2. Entry & Exit Rate Among Industries (ISIC2)

Sic2	1981-1983 entry rate	1984-1989 entry rate	1990-1993 entry rate	1994-1997 entry rate	1981-1983 exit rate	1984-1989 exit rate	1990-1993 exit rate	1994-1997 exit rate
31	0,120925	0,081729	0,080475	0,089322	0,073541	0,064928	0,08976	0,077772
32	0,148757	0,165317	0,163139	0,166247	0,089254	0,099325	0,110082	0,109536
33	0,148936	0,106695	0,132497	0,156909	0,101655	0,09205	0,100418	0,107728
34	0,133843	0,086587	0,075829	0,081949	0,068834	0,067912	0,063981	0,055371
35	0,144351	0,085329	0,079597	0,087467	0,112971	0,070489	0,077078	0,044822
36	0,106924	0,100693	0,112911	0,110667	0,087642	0,058373	0,09576	0,078222
37	0,159363	0,10029	0,103896	0,116746	0,112882	0,088696	0,104824	0,079426
38	0,169168	0,090365	0,115719	0,124102	0,095997	0,081528	0,091645	0,060123
39	0,1875	0,062696	0,121076	0,110236	0	0,068966	0,089686	0,066929

The trend of entry and exit rates exhibits industrial variations, however, these rates are relatively low in 1991 for most of the industries. This may be due to the real wage increases observed in Turkish economy. On the other hand, entry and exit rates are relatively high in textile, basic metal and engineering industries whereas, they exhibit relatively low patterns in non-metallic mineral products industry. The entry and exit rates exhibit a higher pattern for the textile industry through the whole period, whereas the high values of entry and exit rates for basic metal and engineering industries starts to decrease with the 1984-1990 period and keeps the same pattern afterwards.

IV. MODEL SPECIFICATION

In this study, the calculation of entrants, exitors and stayers is complicated by the forward and backward looking nature of the calculation (Disney et. al., 1999: 4). Let us consider an establishment observed in *t*. If it is present in *t-1* but absent in *t+1* it is an exitor. Likewise, if it were absent in *t-1* but present in *t+1* it is an entrant. However, it is also possible to be absent in *t-1* and *t+1*, i.e. an entrant that exits after one year. This latter category is thus both put in the calculation of entry as an entrant and in the calculation of exit as an exitor.

The dependent variables to be estimated are the entry and exit rates. The determinants of these variables are profit margin, concentration rate, growth rate, labor productivity, wage and productivity differentials, average wage rate, advertisement intensity and capital intensity which will be explained in this section. The data forms a balanced panel with 1233 observations. The data is deflated by the output deflator based on 1990. Table 3 shows the summary statistics of these variables and Table 4 presents the correlation matrix.

The first dependent variable that is to be explained is the entry rate: the proportion of new entrants to total number of firms (that is entrants plus one year stayers divided by total establishments). Entry can be specified as a function of profit margin (profmar), growth rate (grate), concentration ratio (qherf), labor productivity (labpro), wage (wdif) and productivity (prodif) differentials, average wage rate (awrate), advertisement intensity (advint) and capital intensity (capint). The econometric model is as follows:

$$Entry_{i,t} = \alpha\, profmar_{i,t} + \beta\, grate_{i,t} + \delta\, qherf_{i,t} + \phi\, labpro_{i,t} + \gamma\, wdif_{i,t} + \eta\, prodif_{i,t} + \theta\, awrate_{i,t} + \rho\, advint_{i,t} + \lambda\, capint_{i,t} + u_{i,t}$$

Table 3. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	1310	1989.002	4.899681	1981	1997
sic4	1310	3492.521	282.8596	3111	3909
Entry	1308	.0834814	.0909932	0	.5
Exit	1308	.0553904	.0652303	0	.5714286
Profmar	1310	.2726305	.1717308	-4.220935	.8168772
Advint	1310	.0068121	.0124192	0	.1209182
Awrate	1310	16431.97	10941.29	2690.792	93256.75
Capint	1310	8.63682	1.109972	5.054658	14.92668
Labpro	1310	11.02197	.8537609	8.765345	14.96629
Prodif	1310	-5.751534	1.14003	-8.941719	-2.587647
Wdif	1310	-6.178095	1.097088	-9.39514	-2.885532
Qherf	1310	.1350516	.1131362	.0046677	.6429099
Grate	1233	.1440214	.3803689	-.8916734	3.615346

Table 4. Correlation Matrix

	Entry	exit	profmar	advint	awrate	labpro	capint	prodif	wdif	qherf	grate
Entry	1.0000										
exit	0.3177	1.0000									
Profmar	-0.0685	-0.1101	1.0000								
Advint	-0.0060	-0.0325	0.1204	1.0000							
Awrate	-0.1213	-0.1021	0.1617	0.0443	1.0000						
Labpro	-0.1300	-0.1496	0.3910	0.1235	0.7067	1.0000					
Capint	-0.0510	-0.0277	0.1197	0.0764	0.5351	0.5714	1.0000				
Prodif	-0.4288	-0.5074	0.1308	0.0403	0.1813	0.2016	-0.0557	1.0000			
wdif	-0.3975	-0.4725	0.1072	0.0774	0.2328	0.1826	0.0341	0.9178	1.0000		
Qherf	-0.3848	-0.4109	0.1076	0.0649	0.1444	0.2048	-0.0394	0.7505	0.7075	1.0000	
Grate	0.1494	-0.0033	0.0430	0.0763	0.0443	0.0797	0.0378	0.0238	0.0333	0.1056	1.0000

Profit margin is the sectoral profit margin at time of entry. Profit margin is formulated as the ratio of the difference between value added and payroll to the total sales. We defined payroll as the sum of total payments (social security premiums, severance payments etc.) made to wage earners. We used total output as a proxy for total sales due to the lack of data. It is expected that the profitability of a sector determine its attractiveness for new firms to enter into the industry (Ilmakunnas and Topi, 1999:285).

Previous empirical studies do not indicate a significant relationship between entry rate and profit margin. Conventional view regards entry as an error-correction process, which acts as an equilibrating mechanism in the market. New firms are motivated to enter to the market and cause excess profits to fall subsequently. Therefore, entry and exit are expected to be negatively correlated. Conversely, data shows a positive relationship between entry and exit (see Geroski, 1995). Regarding this controversy, empirical studies explain the modest effect of profit margin on entry rate. Although there is a strong theoretical argument explaining the positive impact of the profit margin on the entry rate, empirical studies usually fail to find any support for the hypothesis (Taymaz, 1997: 106).

Growth is the growth rate of sectoral output. It is calculated as one-year growth rate of total output. We expect that new firms will prefer to enter into rapidly growing industries. Thus, the expected sign of the coefficient of the growth variable is positive. (Taymaz, 1997: 106 and Ilmakunnas and Topi, 1999:285).

The growth rate of an industry and its profitability reveal its attractiveness for potential firms. But entry is not a costless process: there are sunk costs and risks involved. Entry barriers should be taken into consideration in the model of entry process. Capital intensity is closely related to entry costs, because if the industry uses capital-intensive technology, the cost of the initial investment could be substantial. If the investment is indivisible and if capital markets are not perfect, the entry rate will be lower (Taymaz, 1997: 106). Therefore, *capital intensity* is included into the model as an explanatory variable. We calculated capital intensity as the logarithm of the ratio of depreciation to the average number of employees. Since it is difficult for new firms to enter to a highly capital intensive sector, we expect negative relationship between entry and capital intensity.

The level of *labor productivity* is relatively high in industries where investment requirements are indivisible and massive. This discourages potential firms from entering. Moreover, the level of productivity may reflect the performance of existing firms. Potential firms avoid entering into those sectors in which existing firms are very productive because of the risks of severe post-entry competition (Taymaz, 1997: 107). Therefore, we expect a negative sign for the coefficient of labor productivity. Labor productivity is defined as the logarithm of the ratio of value added to the average number of employees.

The *level of concentration* is also important. It is easier to enter perfectly competitive industries in which many small firms produce standard products. The Herfindahl index is used to measure the level of concentration. The Herfindahl index varies between 0 and 1 and is equal to one for a monopolist market (Taymaz, 1997: 107). We used herfindahl index which is calculated regarding the output to represent market concentration. We expect a negative relationship between market structure and entry (Ilmakunnas and Topi, 1999:285).

The *advertisement intensity* is another source of entry barriers, because new firms need to match the advertisements level of the incumbent firms to be known and tested by consumers. Therefore the cost of entry is increased by the advertisement intensity of existing firms (Taymaz, 1997: 107). Here, advertisement intensity is calculated as the ratio of total expenditures on advertisement to total output. We expect a negative relationship between advertisement intensity and entry as it is a source of entry barrier (Ilmakunnas and Topi, 1999:285).

The *average wage rate* in an industry is expected to be negatively correlated to the entry rate. The average wage rate reflects the demand for industry-specific skills. In high wage industries, new firms will face problems in hiring the workers they need (Taymaz, 1997: 107). The average wage rate is defined as the ratio of the sum of total payments made to wage earners to the average number of employees.

Finally, we use the *wage rate differential* and *productivity differential* variables to test for the possibilities of creating niche markets. The wage rate differential is defined as the coefficient of variation of the wage rate in the industry. It measures the intra-industry wage disparity. Here, the wage rate differential is approximated with the logarithm of the ratio of the standard deviation of total wage payments to the mean of total wage payments. The productivity differential is defined in a similar way. It is formulated as the logarithm of the ratio of the standard deviation of value added to the mean of value added. High values of wage rate and productivity differential indicate the existence of a diverse set of establishments in an industry in which new plants can establish a niche for their products (Taymaz, 1997: 107). The wage rate differential and productivity differential are expected to be positively related with entry.

Graph 3 presents the negative relationship between the entry and exit rates verified by the data. Also we can see the positive relationship between the entry rate and profit margin and growth rate and also the negative relationship between the entry rate and capital intensity and concentration ratio in the following graphs.

The second dependent variable that is to be explained is the exit rate: the proportion of exitors to total number of firms (that is exitors plus one year stayers divided by total establishments). If the mobility of barriers hypothesis is correct, then the traditional determinants of entry such as advertising intensity, capital intensity, profits, concentration rate and industry growth are also determinants of exit (Doi, 1999: 332). In order to estimate the exit equation, we used the same set of explanatory variables just by adding entry rate. The econometric model is as follows:

$$\mathbf{Exit}_{i,t} = \alpha\,\mathbf{profmar}_{i,t} + \beta\,\mathbf{grate}_{i,t} + \delta\,\mathbf{qherf}_{i,t} + \phi\,\mathbf{labpro}_{i,t} + \gamma\,\mathbf{wdif}_{i,t} + \eta\,\mathbf{prodif}_{i,t} + \theta\,\mathbf{awrate}_{i,t} + \rho\,\mathbf{advint}_{i,t} + \lambda\,\mathbf{capint}_{i,t} + \Omega\,\mathbf{entry}_{i,t} + \mathbf{u}_{i,t}$$

Empirical studies show a positive relationship between entry and exit rates. Therefore, we expect a positive sign for the coefficient of entry variable in the exit equation. We expect a negative relationship between exit and profit margin as losses stimulate the decision to exit (Dio, 1999:333). Since capital intensity indicates sunk cots, the relationship between exit and capital intensity is negative. The relationship between exit and growth rate is expected to be negative as new firms prefer to stay in rapidly growing industries. Moreover, the life stage of industry demand may exert influence on exit; lower demand growth may increase exit (Dio, 1999:333). Lastly, the relationship between exit and concentration ratio is also expected to be negative due to the fact that firms may be protected from competition if they exist in concentrated industries (Dio, 1999:333).

Graph 8 presents the negative relationship between the exit rate and profit margin, verified by the data. The negative relationship between exit rate and growth rate, capital intensity and concentration ratio is presented in the following graphs.

We used Arellano-Bond GMM estimation technique in order to estimate our dynamic panel data model. We introduced the lagged variables of entry and profit margin into the model as we expect that entry is highly correlated with the past entry rates and profit margin. As entry may influence the profit margin, concentration and the past entry rate, these

variables seem to be endogenous in the model. Thus, due to such a two-way causality, we may confront an endogeneity problem. In order to solve this problem, we used the instrumental variables of profit margin, concentration rate, the growth rate and the past entry rate. The same method is also applied to the estimation of exit equation.

VI. ESTIMATION RESULTS

We have estimated three models in order to verify the determinants of entry. Model1 consists of the first differences of all explanatory variables namely, growth rate, profit margin, capital intensity, concentration ratio, labor productivity, productivity and wage differentials, average wage rate. We have included lagged values of entry into the estimation in order to capture the link between de novo entry and its past values. We used entry and profit margin as GMM instruments to capture the endogenous link between entry and its determinants.

According to the estimation results of the first model, the coefficients of growth rate, profit margin and productivity differential are positive as we expected and they are significant. The relationship between the entry rate and capital intensity, concentration ratio, lagged values of the entry rate and labor productivity are all negative and their coefficients are significant.

Model 2 again consists of the first differences of all explanatory variables. But this model also incorporates the lagged values of both entry and profit margin in order to capture the link between entry and its barriers. We again used the same GMM instruments.

According to the estimation results, the coefficients of growth rate, profit margin and productivity differential are positive as we expected and they are significant. The coefficients of capital intensity, concentration ratio, labor productivity are all negative as expected and they are all significant. The relationship between the entry rate and the lagged values of entry and profit margin are both negative and their coefficients are significant. As we expected high profit margin in the previous period deters the entry of existing period.

The last model again consists of the first differences of all explanatory variables. But this model also incorporates the lagged values of growth rate in order to capture the link between entry and its barriers. We again used the same GMM instruments.

According to the estimation results, the coefficients of growth rate, profit margin and productivity differential are positive as we expected and they are significant. The coefficients of capital intensity, concentration ratio, labor productivity are all negative as expected and they are all significant. The relationship between the entry rate and the lagged values of entry and profit margin are both negative as we expected. Moreover, the coefficient of the lagged values of growth rate is positive. High values of growth rate in the previous period leads to high values of entry rate in the existing period.

The most meaningful model we have estimated in order to verify the determinants of exit consists of the first differences of all explanatory variables including the entry rate. This model incorporates the lagged values of entry rate in order to capture the link between the exit and the entry. We used the growth rate and profit margin as GMM instruments to capture the endogenous link between exit and its determinants.

Our estimation result for the determinants of exit rate goes in line with our expectations. The coefficient of the growth rate, profit margin and concentration ratio are all negative and significant. What comes out as a result beyond the expectations is the positive relationship between the exit and the capital intensity. Our only reasoning for this positive relationship can be that if an industry is highly capital intensive, the survival of entrants will be difficult and they have to exit the sector. The relationship between exit and the lagged values of entry is positive as the theory suggests.

Table 2. Estimation Results

	ENTRY									EXIT		
	MODEL 1			MODEL 2			MODEL3			MODEL1		
	Coefficients	Std. Error	t-value	Coefficients	Std. Error	t-value	Coefficients	Std. Error	t-value	Coefficients	Std. Error	t-value
Exit(-1)										-0,195177	0,02033	9,6
Exit(-2)										-0,11493	0,01581	7,27
Entry										-0,0282733	0,0183	1,54
Entry(-1)	-0,137808	0,02113	6,52	-0,144198	0,02331	6,19	-0,254575	0,02999	8,49	0,0433883	0,01931	2,25
Entry(-2)	-0,124136	0,01167	10,6	-0,122835	0,01193	10,3	-0,200395	0,01524	13,2			
Grate	0,0830658	0,006574	12,7	0,0838368	0,007313	11,5	0,1034	0,009223	11,2	-0,0050391	0,002611	1,93
Profmar	0,217892	0,03231	6,74	0,229262	0,0349	6,57	0,157809	0,02937	5,37	-0,18902	0,02901	6,52
Capint	-0,0170469	0,004897	3,48	-0,0179566	0,004897	3,67	-0,0261986	0,005852	4,48	0,00705295	0,003084	2,29
Labpro	-0,103424	0,01193	8,67	-0,105601	0,0121	8,73	-0,0836594	0,01352	6,19	0,0540004	0,01054	5,12
Advint	1,31209	0,2555	5,14	1,30684	0,2553	5,12	0,979678	0,2719	3,6	0,218345	0,1112	1,96
Qherf	-0,213234	0,1077	1,98	-0,199909	0,1043	1,92	-0,273202	0,06708	4,07	-0,0490662	0,03056	1,61
Awrate	0,0010107	0,000353	2,86	0,00109442	0,000356	3,07	0,000342643	0,00031	1,11	0,00046081	0,000222	2,08
Prodif	0,00022707	0,000106	2,14	0,00021745	0,000105	2,07	0,00029225	7,48E-05	3,91	-0,0001755	8,59E-05	2,04
Wdif	-0,0001174	0,0001	1,17	-0,00010692	0,0001	1,07	-0,000189086	7,14E-05	2,65	0,00013122	8,28E-05	1,59
Profmar(-1)				-0,0277463	0,001959	14,2	-0,0322041	0,001561	20,6			
Profmar(-2)				-0,0203715	0,001852	11	-0,0221868	0,001381	16,1			
Grate(-1)							0,04748	0,01144	4,15			
Grate(-2)							0,036196	0,008706	4,16			
Constant	0,00795394	0,000858	9,27	0,00818612	0,000886	9,24	0,00944327	0,001173	8,05	-0,0053359	0,000906	5,89

VII. CONCLUSIONS

Entry and exit dynamics have been central to any study that analyses the structure of industries. The reason behind the importance given to entry and exit issues comes from the fact that entry and exit dynamics have a significant impact on the characteristics of industries. While, on the one hand, entry and exit are the actors of the mechanism that equilibrates the excess profits in the market, on the other hand, they are the source for entrepreneurialship and innovation process. New firms should have some kind of entrepreneurialship in order to sustain their survival and their survival probability rises with their innovative capacity. Hence, these firms are also important for the innovation process of industries.

Any study on entry and exit issues should answer some crucial questions like why firms enter, what determines their entry decisions and whether they manage to survive. So, at this point, the determinants of entry and exit deserve some attention. Entry and exit rates show sectoral variations and also differ over time.

In this study, we tried to investigate the main determinants of entry and exit and their variations between industries and over time. We used the data on Turkish manufacturing industry for the period 1981-1997. We took profit margin, capital intensity, concentration ratio, growth rate, advertisement intensity, labor productivity, average wage rate, wage and productivity differentials as the main determinants of entry. Our findings report that entry highly affected by profit margin, capital intensity, concentration ratio and growth rate. We used the same set of explanatory variables including entry in order to explain the determinants of exit. According to our results, entry, growth rate, capital intensity and concentration ratio seem to be the main determinants of exit.

Studies that analyze the entry and exit behaviors for various countries could not support the expected relationship between entry and profit margin with the data. Theory predicts that profit margin positively affects entry rate while it has ambiguous influence on exit rate. This is reasonable because profit margin includes costs that can be thought as entry barriers. However, previous studies did not find a positive profit margin entry relationship. On the other hand, according to our estimation results, there is a strong and positive correlation between these two variables. We also found a negative correlation between exit and profit margin which is consistent with the theory.

Capital intensity which represents an entry barrier in the model, seems to be negatively and significantly related to the entry rate. This is also consistent with the theory. Moreover, there is a positive correlation between exit rate and capital intensity. One can infer that the entry barriers in Turkish manufacturing industry are strong enough to inhibit entry.

The coefficient of growth rate, as expected, has a positive sign in entry equation. This positive sign implies that high growth rates in the industry attract new entrants. On the other hand, the relationship between exit and growth rate is strong and negative.

The concentration ratio is an important determinant of entry and exit as entry and exit will be much harder in a concentrated industry. The level of concentration variable is negatively correlated with the entry rate, whereas, the sign of this coefficient is positive if the exit rate is the dependent variable. Our findings are consistent with the theory in the sense that the level of concentration seems to have a strong explanatory power in both entry and exit equations. The entry rate also seems to be an important determinant of exit as there is a strong and positive relationship between these two variables.

As some of our explanatory variables like profit margin and concentration ratio may be endogenous in the model, we introduced the instrumental variables of them. Estimation results show that these instruments are also meaningful and there seems to exist no serious autocorrelation.

As 1985 and 1992 were the years of special firm-by-firm surveys, the entry and exit rates are more higher for these years. On the other hand, entry rate seems to be lowest for most industries in 1991. The reason for this decline may be the increases in the real wage rate. Entry and exit rates are higher for textile and food and tobacco industries due to the low capital requirements in these industries. These rates even become zero in highly capital-intensive industries like petroleum industry. Entry and exit rates are also low in concentrated industries like basic chemical industry.

To sum up, entry and exit rates in an industry is largely determined by the variables that represent the concentration level, profitability, the capital requirements and the cost structure and lastly the growth rate of the industry. The characteristics of new firms and the

determinants of their probability of survival are also important issues. A further study with firm level data can be done in order to analyze these related issues.

REFERENCES

Acs, Z. and D. Audretsch, (1989), "Small-firm Entry in US Manufacturing", *Economica*, Vol.56, 255-265.

Audretsch, D. and J. Mata, (1995), "The Post-Entry Performance of Firms: Introduction", *International Journal of Industrial Organization*, Vol.13, 413-419.

Baldwin, J. and P. Gerocki, (1991), "Firm Entry and Exit in the Canadian Manufacturing Sector, 1970-1982", *Canadian Journal of Economics*, Vol.24, 300-323.

Baldwin, J. and J. Johnson, (1999), "Entry, Innovation and Firm Growth", in Z. Acs ed, *Are Small Firms Important? Their Role and Impact*, p 51-77, SBA, London.

Boeri, T. and L. Bellmann, (1995), "Post-entry Behavior and the Cycle: Evidence from Germany", *International Journal of Industrial Organization*, Vol.13, 483-500.

Carree, M. A. and A.R. Thurik (1999), "The Carrying Capacity and Entry and Exit flows in Retailing", *International Journal of Industrial Organization*, Vol. 17, 985-1007.

Dio, N. (1999), "The Determinants of Firm Exit in Japanese Manufacturing Industries", *Small Business Economics*, Vol. 13, 331-337.

Disney, R. , J. Haskel and Y. Heden, (1999), "Entry, Exit and Establishment Survival in UK Manufacturing", *Working Paper*, Queen Mary & Westfeld College, available on www.qmw.ac.uk.

Dunne, T., M. J. Roberts and L. Samuelson, (1988), " Patterns of Firm Entry and Exit in U.S Manufacturing Industries", *The RAND Journal of Economics*, Vol. 19, No.4, 495-515.

Evans, L.B. and J. Siegfried, (1992), " Entry and Exit in United States Manufacturing Industries from 1977 to 1982", in D.B Audretsch and J.J. Siegfried eds., *Empirical Studies in Industrial Organization: Essays in Honor of Lonard W. Weiss*, 253-273, Kluwer academic Publishers, The Netherlands.

Fotopoulos, G. and N. Spence, (1998), "Entry and Exit from Manufacturing Industries: Symmetry, Turbulence, and Simultaneity- Some Empirical Evidence from Greek Manufacturing Industries, 1982-1988", *Applied Economics*, Vol.30, 245-262.

Fotopoulos, G. and N. Spence, (1998), "Accounting for Net Entry into Greek Manufacturing by Establishments of Varying Size", *Small Business Economics*, Vol.11, 125-144.

Fotopoulos, G. and N. Spence, (1999), "Net Entry Behaviour in Greek Manufacturing: consumer, Intermediate and Capital Goods Industries", *International Journal of Industrial Organization*, Vol.17, 1219-1230.

Gibson, K. and R. Harris, (1996), "Trade Liberalisation and Plant Exit in New Zealand Manufacturing", *The Review of Economics and Statistics*, Vol.78, 521-529.

Geroski, P. (1991), *Market Dynamics and Entry*, Blackwell, Oxford.

Geroski, P. and J. Schwalbach, (1991), *Entry and Market Contestability*, Blackwell, London.

Geroski, P. (1995), "What do We Know about Entry?", *International Journal of Industrial Organization*, Vol.13, 421-440.

Ilmakunnas, P. and J. Topi, (1999) " Microeconomic and Macroeconomic Influences on Entry and Exit of Firms", *Review of Industrial Organization*, Vol. 15, 283-301.

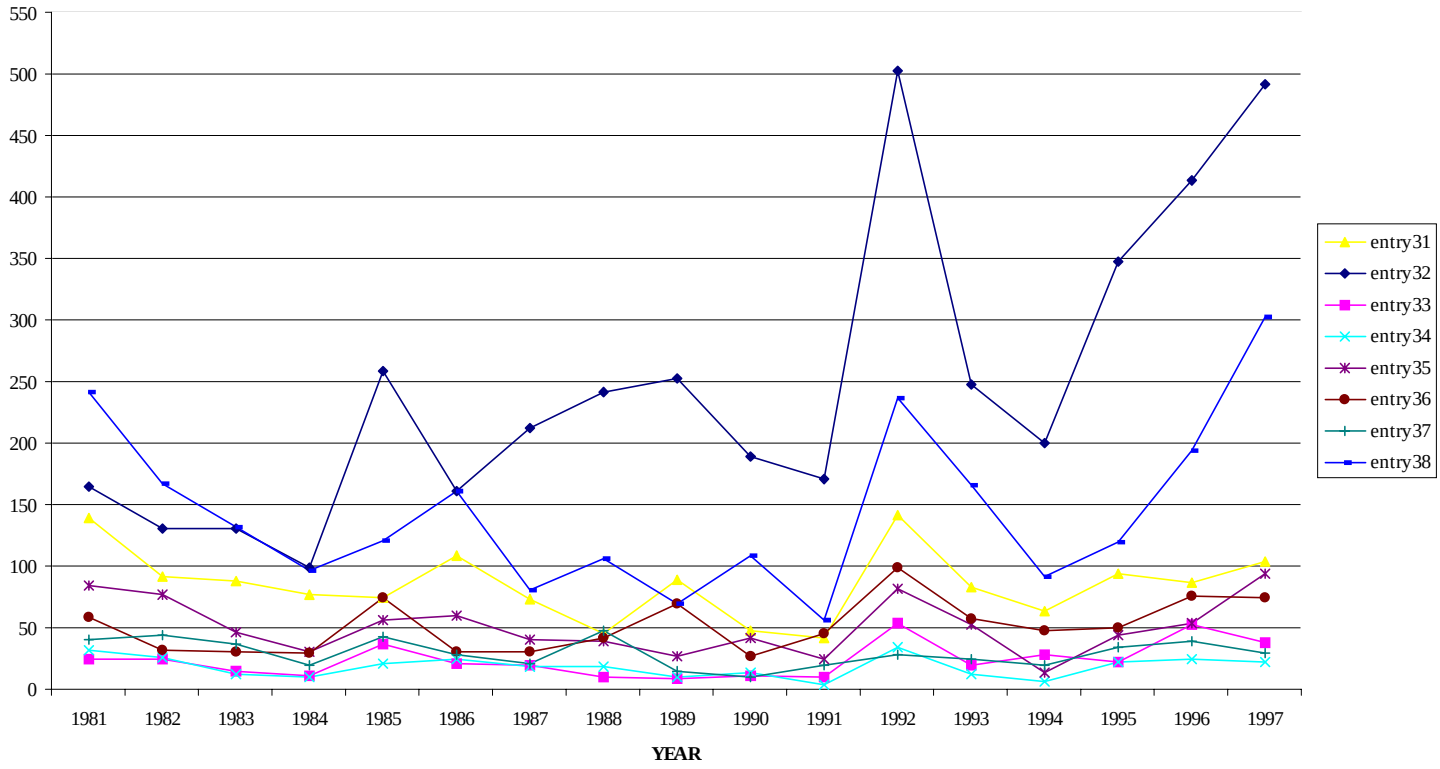
Rosenbaum, D. and F. Lamort, (1992), "Entry, Barriers, Exit, and Sunk Costs: An Analysis", *Applied Economics*, Vol.24, 297-304.

Shapiro, D. and S. Khemani, (1987), "The determinants of Entry and Exit Reconsidered", *International Journal of Industrial Organization*, Vol.9, 15-26.

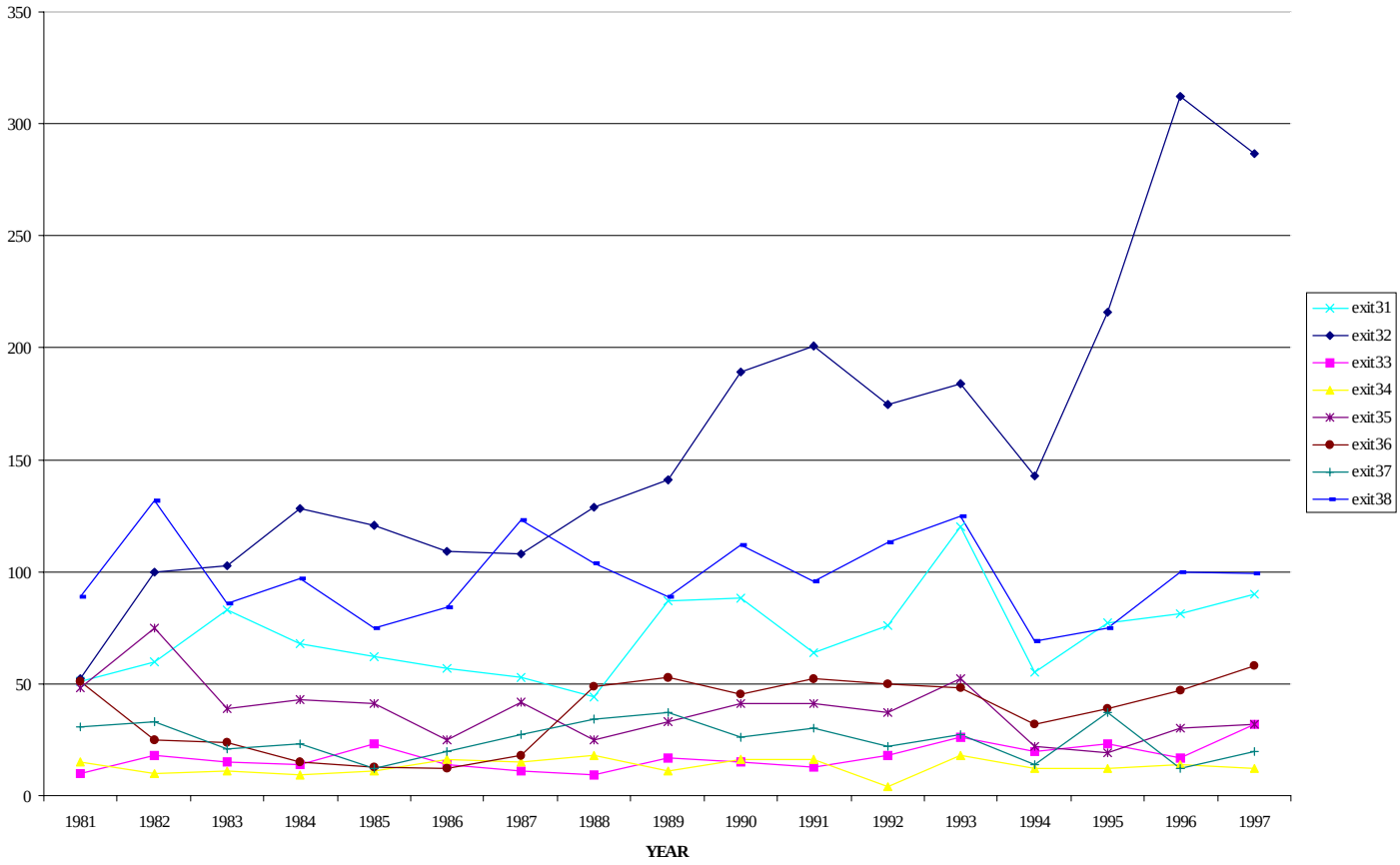
Taymaz, E. (1997), *Small and Medium-sized Industry in Turkey*, SIS, Ankara.

Wagner, J. (1999), "Who Exits from German Manufacturing Industries and Why? Evidence from the Hannover Firm Panel Study", in Audretsch, D. and R. Thurik eds., *Innovation, Industry Evolution, and Employment*, 253-264, Cambridge University Press, London.

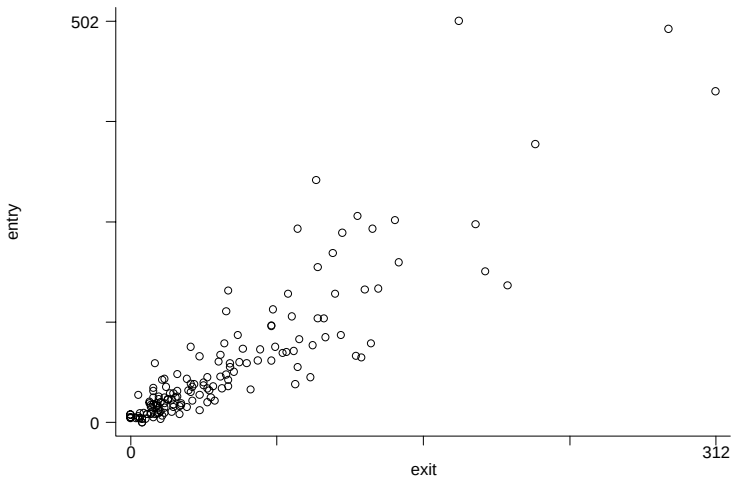
Graph 1. The Number of Entrants (ISIC2)



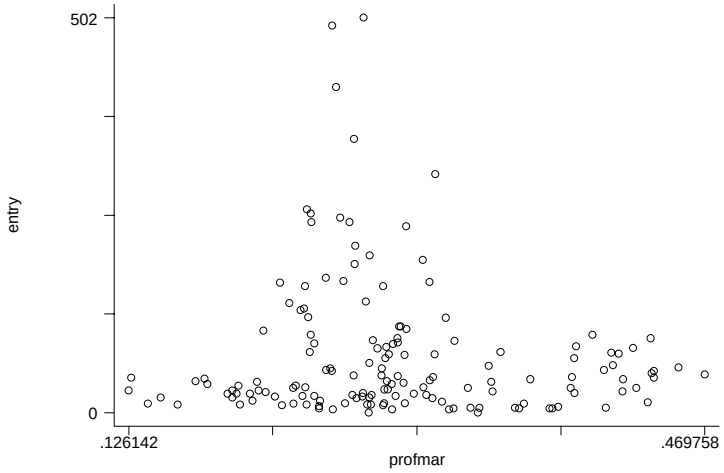
Graph 2. The Number of Exitors (ISIC2)



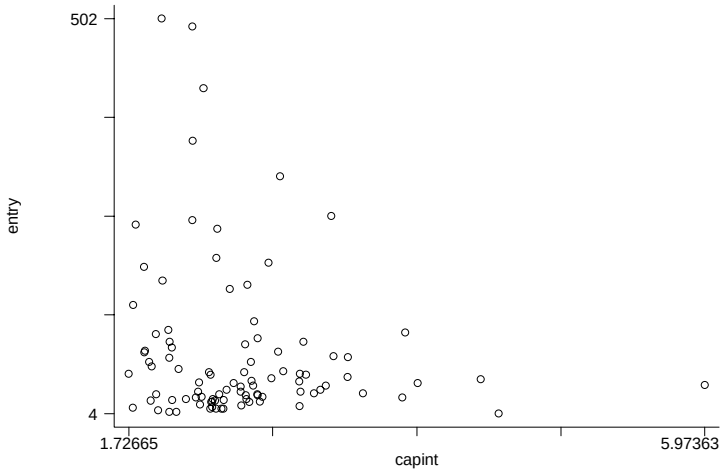
Graph 3. Entry and Exit Relationship (ISIC2)



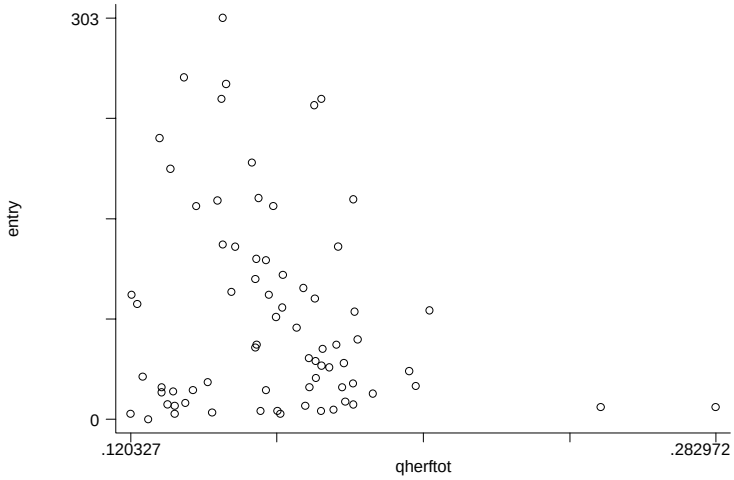
Graph 4. Entry and Profit Margin Relationship (Profmar > 0.04)



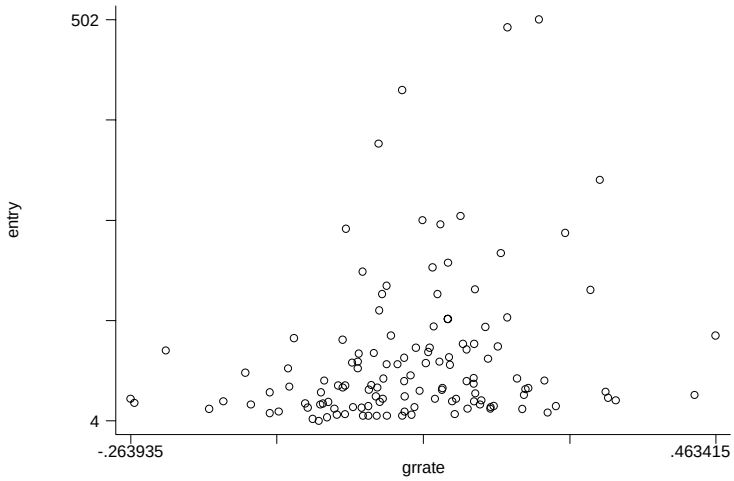
Graph 5. Entry and Capital Intensity Relationship (Capint >1.7& year >1983)



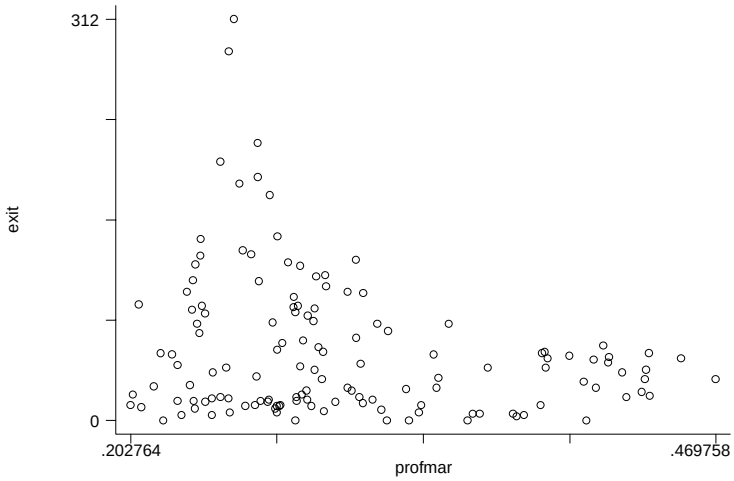
Graph 6. Entry and Concentration Rate Relationship (Qherf >0.12)



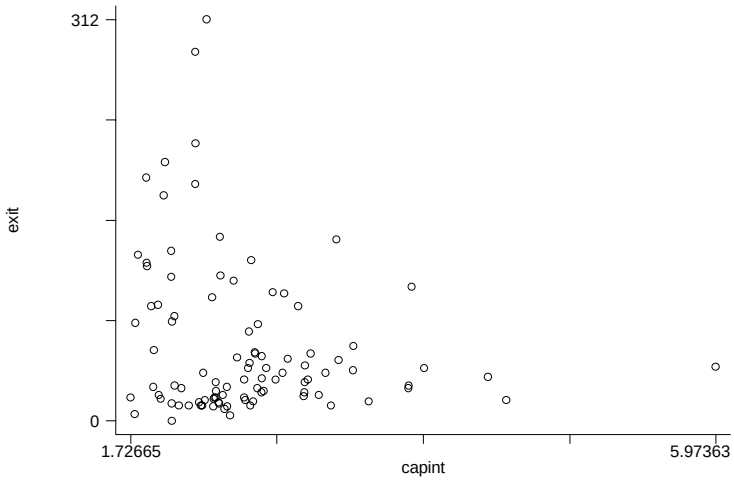
Graph 7. Entry and Growth Rate Relationship (ISIC2=39 excluded)



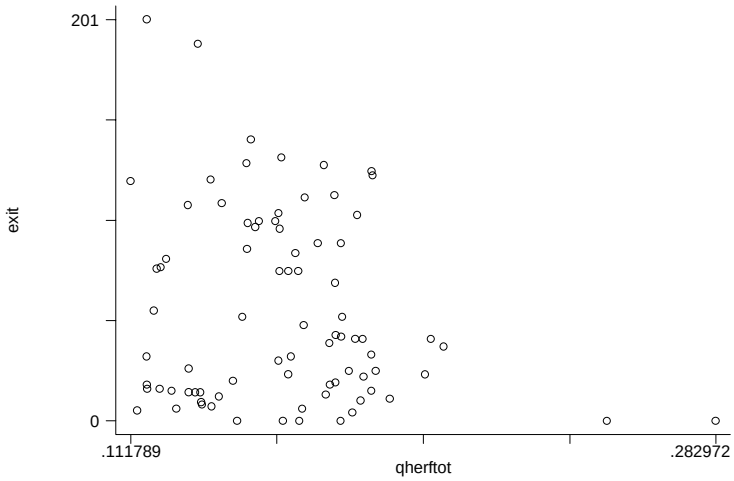
Graph 8. Exit and Profit Margin Relationship (Profmar >0.2)



Graph 9. Exit and Capital Intensity Relationship (Capint >1.7 & 1983 excluded)



Graph 10. Exit and Concentration Rate Relationship (Qherf >0.11)



Graph 11. Exit and Growth Rate Relationship (Grate >0.09)