VALUATION OF SMALL AND MEDIUM SIZED MANUFACTURING COMPANIES IN TURKEY: EFFECT OF INTERNATIONALIZATION, EARNINGS, CASH FLOWS, DIVIDENDS, BOOK VALUE AND LEVERAGE

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Valuation of Small and Medium Sized Manufacturing Companies in Turkey: Effect of Internationalization, Earnings, Cash flows, Dividends, Book Value and Leverage

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Thesis Abstract

Buğra İsmail Asfuroğlu, "Valuation of Small and Medium Sized Manufacturing Companies in Turkey: Effect of Internationalization, Earnings, Cash flows, Dividends, Book Value and Leverage"

Small and medium enterprises (SMEs) play an important role for both national and global economies. They create employment and added value, have flexible structure, less bureaucracy, ability to take fast decisions and they are more responsive to changes. In the world, 95% of the firms hold SME characteristic; they carry 66% of the employment and 55% of the production. In Turkey SMEs constitute 76.7% of country's employment, 26.5% of investment. They form 95% of the manufacturing sector, 61.1% of the employment and 27.3% of the added value in this sector.

Despite the obvious importance of SMEs for the economy of Turkey, the existing valuation literature fails to narrow its focus to this specific area. Thus, with the aim of contributing the valuation efforts of small and medium manufacturing companies in Turkey, following the steps of Ohlson (1995) we developed three linear models in order to reveal the effect of internationalization, earnings, cash flows, dividends, book value and leverage on the value of the small and medium manufacturing companies in Istanbul Stock Exchange. This study contributes the international trade literature by first realizing a broad analysis of the effects of certain variables on the market value of the Turkish small and medium manufacturing companies, which may be useful for the foreign investors, foreign companies that seek acquisitions or mergers as well as SME owners and managers in Turkey who look for a more effective value management for their companies. Secondly it seeks the effect of internationalization, which shows the international activity of the company, on the value of the small and medium manufacturing companies in Turkey.

The results show that our earnings based linear model explains 51.2% of the variance of small and medium sized manufacturing companies' (in ISE) firm value. Moreover while leverage and degree of internationalization have no significant effect on the dependent variable, dividends and book value have significant and positive effect. As for the earnings pooled regressions show that it has a significant but negative relation with firm value but this result is not confirmed by cross sectional or sector analysis.

Tez Özeti

Buğra İsmail Asfuroğlu, “Küçük ve Orta Ölçekli İmalat Şirketlerinin Değerlemesi: Uluslaralılaşma, Kar, Nakit Akışı, Temettü, Defter Değeri ve Kaldıraç Etkisi”

Küçük ve orta ölçekli işletmeler (KOBİ) hem ulusal hem de küresel ekonomiler için önemli bir rol oynamaktadır. KOBİ’ler istihdam ve katma değer yaratmaktadır. Esnek yapıları, daha az bürokrasi içermeleri ve hızlı kararlar alma becerileriyle sahip ve değişikliklere daha iyi uyum sağlama yeteneğine sahiptirler. Dünya’da, firmaların %95’i KOBİ özelliğine sahip olup, istihdamın % 66’sı ve üretimin % 55'ini KOBİ’ler oluşturur. Türkiye'de KOBİ'ler ülke istihdamının % 76.7 'sını, yatırımının % 26.5’ini teşkil eder. İmalat sektörünün % 95’ini , istihdamın % 61.1’ini ve bu sektörde katma değerin % 27.3 'ünü KOBİ’ler oluşturur.

Türkiye, ekonomisinde KOBİ'lerin sahip olduğu büyük bir önem rağmen, mevcut değerleme literatüründe bu özel alana eğilmekte yetersiz kalmaktadır. Bu sebeple, Türkiye’de küçük ve orta ölçekli üretim şirketlerinin değerleme çalışmalarına katkıda bulunmak amacıyla, Ohlson’un (1995) adımlarını izleyerek, uluslarararalılaşma, kar, nakit akışı, temettü, defter değeri ve kaldıraç etkisi bağımsız değişkenlerinin İstanbul Menkul Kıymetler Borsasında küçük ve orta ölçekli üretim şirketlerinin piyasa değerleri üzerindeki etkisini ortaya çıkarmak amacıyla üç doğrusal model geliştirdik. Bu çalışma, uluslaralılaşma ve yukarda belirtilen diğer bağımsız değişkenlerin küçük ve orta boyutlu imalat şirketlerinin değeri üzerindeki etkisinin geniş bir analizini yaparak, bir yandan yabancı yatırımcıların, satın alma ya da ortaklık arayan yabancı şirketlerin daha etkin kararlar vermesine, öte yandan Türk KOBİ sahiplerinin ve yöneticilerinin daha efektif değer yönetimi politikaları yaratmalarına katkıda bulunarak uluslararası ticaret literatürüne katkı sağlayacaktır.

Sonuçlar, kara dayalı doğrusal modelimizin, İMKB’ de faaliyet gösteren KOBİ’lerin firma değerlerinin varyansının % 51,2’sini açıklar nitelikte olduğunu göstermektedir. Buna ek olarak, panel data ile yapılan analizlerde kaldıraç etkisi ve uluslarararalılaşma derecesinin bağımlı değişken üzerinde anlamlı bir etkisi olmadığını öte yandan temettüler ve defter değerinin anlamlı ve pozitif bir etkiye sahip olduğunu göstermektadir. Panel data ile yapılan analizler, karın şirket değeri ile anlamlı ama negatif bir ilişkisi olduğunu göstermiştir ama bu sonuçlar kesitsel analiz veya sektör analizi tarafından teyit edilmemiştir.

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CHAPTER 1

INTRODUCTION

Small and medium sized enterprises (SMEs) play an important role for both national and global economies. They create employment and added value, have flexible structure, less bureaucracy, ability to take fast decisions and they are more responsive to changes (Ar and Iskender, 2005). In the world, 95% of the firms hold SME characteristics, they carry 66% of the employment and 55% of the production (Business Europe, 2000). In the European Union, SMEs comprise approximately 99% of all firms and employ between them about 65 million people (European Commission, 2003).

In Turkey especially after 1980s, the improvements in the manufacturing sector constituted the driving force behind the economic growth performance. With the necessary reforms realized, this sector became more compatible to the global and liberal world. On the other hand when evaluated with an international competition perspective, despite the fact that the manufacturing sector in Turkey records important improvements, it still is outperformed by some other emerging countries' manufacturing sectors (KSEP, 2007).

According to Turkish Statistical Institute, SMEs constitute 76.7% of country's employment, 26.5% of investment and 38% of added value. They form 95% of the manufacturing sector, 61.1% of the employment and 27.3% of the added

value in this sector (KSEP, 2007). These numbers clearly states the importance of SMEs in Turkey's economy and manufacturing sector.

Efficient distribution of limited resources is crucial for the economies. In order to maintain a sustainable growth, existing resources should be directed to constitutions that can create added value. Countries effectively distribute the capital to the companies and projects that can create value, have efficient markets and strong economic infrastructure. Therefore it is very important to guide idle resources to borrowing instruments and stocks that have growth opportunities, instead of speculators.

Investors, when face to multiple investment alternatives, seek, according to their risk perception, maximum profit. On that point in order to understand the risk and returns it is crucial to be able to value the different investment options in the real sector projects as well as money and capital markets. Therefore, valuation has a significant importance in directing the capital to companies and projects that can create added value.

In this dissertation we aim to contribute the existing valuation literature of Turkey in a very specific area, valuation of small and medium manufacturing companies. Despite the obvious importance of SMEs for the economy of Turkey the existing valuation literature fails to narrow its focus to this specific area. Thus, with the aim of contributing the valuation efforts of small businesses in Turkey, we tested the effects of a number of independent variables on market value of small and medium manufacturing firms in Turkey. Understanding the valuation and the effect of different variables on the value of SMEs is not only important for the local investors but also for the foreign investors, foreign companies that seek acquisitions or merging, as well as SME owners and managers in Turkey who look for a more

effective value management for their companies. First of our variables is the degree of internationalization, which shows the international activity of the company, it generally is represented by foreign sales to total sales ratio. Our other variables are leverage (measured by debt to asset ratio), book value, dividends, earnings (measured by earnings and earnings before interest and taxes) and cash flow from operations. This study firstly aims to identify whether investors in Turkey recognize internationalization of the company as a hidden asset, secondly it aims to examine the effects of leverage, book value, dividends, earnings and cash flows on the value of small and medium sized manufacturing companies in Turkey.

This study contributes the international trade literature by first realizing a broad analysis of the effects of certain variables on the market value of the Turkish small and medium sized manufacturing companies, which may be useful for the foreign investors, foreign companies that seek acquisitions or merging as well as SME owners and managers in Turkey who look for a more effective value management for their companies. Secondly it seeks the effect of internationalization, which shows the international activity of the company, on the value of the small and medium manufacturing companies in Turkey.

In the following chapters the dissertation will continue by defining SME so that the reader may understand according to which criteria we choose the subject companies. Then it will continue by defining the value concept. Once the different perspectives of this concept are clear we examine various methods of firm valuation as well as their inputs, assumptions, advantages and disadvantages. After this theoretical survey, the dissertation will proceed by a detailed literature survey. Once the reader is acknowledged about the early empirical studies, we will define our data selection criteria, methodology and develop our Ohlson variant linear models in

order to examine the value relevance of internationalization, earnings, leverage, book value, dividends and cash flow from operations. Then the results of our regression analysis will be shown and discussed.

CHAPTER 2

DEFINITION OF SME AND VALUE

This study aims to identify the effects of internationalization, book value, leverage, dividends, earnings and cash flows on the market value of small and medium sized manufacturing companies in Turkish market. Thus, this work will help to understand according to which criteria foreign and domestic investors value the small and medium manufacturing companies in ISE. Before getting into the valuation theory and the survey of previous empirical studies, it is crucial to give the reader the definition of small and medium sized entreprises according to which we form our data sample and the various definitions of value in order to give the reader an understanding of different perspectives of value concept.

Small and Medium Entreprises

SME concept generally expresses a relative size. According to Budak (1991) the concept changes according to industrialization level, market size, sector and technology. Therefore it is difficult to find a generally accepted SME definition. Countries and institutions use the number of employees, sales volume, capital size (Tutar & Kucuk, 2003), annual balance sheet values, number of machinery and machinery park value and operation capacity to define the concept (Muftuoglu, 1998). Kocak (1996) stated that the

number of employees is the most commonly used measurement, but recently sales volume and asset value measurement are started to be used.

In other words, international and national institutions use different definitions for small and sized enterprises. According to the World Bank, firms that have up to 50 employees are counted as small, from 51 to 200 are considered as medium sized enterprises. (OECD Observer, 2000). The SME definition made by European Union (EU) classifies the enterprises as micro (1-9 employees), small (10-50 employees) and medium sized (51-249 employees). The EU definition also considers the annual sales sizes and asset values. The detailed mentioned classification is shown in the following table (Ercan, 2005).

Table 1: SME Definitions of Different Institutions in Turkey

Institutions	Scale	Number of Employees	Sales	Asset
Development Union of Small and Medium Sized Companies	Small Industry Medium Industry	1-50 51-150	- -	- -
Undersecretariat of Treasury	Micro Scale Small Scale Medium Scale	1-9 10-49 50-250	- - -	<600.000 YTL <600.000 YTL <600.000 YTL
Undersecretariat of the prime ministry for foreign trade		1-200	-	<2 Million USD
Halk Bank		1-250	-	<600.000 YTL
Exibank		1-200	-	-
Turkish Statistical Institute & State Planning Organization	Micro Scale Small Scale Medium Scale	1-9 10-49 50-99	- - -	- - -
The Union of Chambers and Commodity Exchanges of Turkey	Micro Scale Small Scale Medium Scale	<10 <50 <250	- - -	<1.000.000 YTL <5.000.000 YTL <25.000.000 YTL

The asset values mentioned in the table are the balance sheet numbers excluding the land and building. Another definition of SME made by Bank for International Settlements,

formed by central banks of different nations, define the SMEs as the firms whose annual total sales numbers don't exceed 20 million Euros. (Korkmaz Gokbulut, 2005)

Several different SME definitions are available in Turkey by KOSGEB, Undersecretariat of Treasury and Foreign Trade, Halk Bank, Eximbank, Turkish Statistical Institute, State Planning Organization and Union of Chamber and Commodity Exchanges (Iseri and Aslan 2005). The measures that are used by these institutions are summarized in table 1. In October 2005 the regulation on the definition, characteristic and classification of SMEs is entered into force. The target of the regulation is to have a single SME definition convenient with the EU.

SMEs play an important role for both national and global economices due to their creation of employment and added value. In the world, 95% of the firms hold SME characteristic and 66% of the employment and 55% of the production is carried by the SMEs. (Business Europe, 2000)

Value

Before getting into the theoretical approaches of business valuation, it would be beneficial to clarify different definitions of value so that the reader has the necessary insight of what value of a business is. This chapter will start with the definition of fair market value and proceed by defining investment value, intrinsic value, going concern value and liquidation value.

Fair Market Value

To facilitate the understanding of the definition of fair market value the reader should assume a free market where sellers and buyers have unlimited access to necessary information. Fair market value represents cash or cash equivalent price at which an asset would change hands between a willing seller and buyer. In this definition the terms seller and buyer do not refer to a specific buyer and seller, instead they refer hypothetical sellers and buyers that constitutes a large enough market (Cornell, 1993).

Fair market value is therefore determined by the market. In this definition the market is so large that it is assumed to be free of speculation or personal interests of buyers and sellers. In the valuation process the aim is to determine or estimate the fair market value of a company. However the task is not easy and rarely the statistical, mathematical, and economic formulas are enough to determine with certainty the value of a business. Following reasons may explain why valuation of a going on business can be compared to forecast the weather (Tuller, 1994):

1- First reason is the fact that the concept contains relativity, because the monetary value of anything is the amount of cash one party is willing to pay another party for it.
2- Moreover in order to determine the monetary value of a business one must consider not only measurable assets but also intangible assets and liabilities.

3- External factors have important effect on the value of a business and since these factors are constantly changing, any calculated value is valid for only one period of time.

Fair market value is only one way to calculate the value of a business, there are other value definitions according to purpose of the valuation and the party doing it.

Investment Value

Investors make investment decisions based on their expectations, such as; dividend flows, growth, interest payments, capital gains from appreciated assets, etc… The price of an investment for a particular investor is called investment value. (Osman and Yakup, 2004) Therefore this is a subjective value.

Investment value is generally predicted on the future return to an investor (dividends, cash flows, profit sharing, etc…). Expectations of these returns may vary with each investor according to following criteria (Tuller, 1994):

1- Business's future earning power
2- Investor tax status
3- Risk of the investment or returns
4- Potential interaction with other business owners or businesses controlled by the investor

5- Government regulations in the future which affect the preservation of earning power
6- Marketability of the investment.

In case where a buyer and seller determine the worth of a business by investment value, it is more likely that, since they have different expectations, their price for the worth of the business will be different. In such cases the final price is determined through negotiations.

Intrinsic Value

Intrinsic value, also called fundamental value focuses on the worth based value of a business. Therefore it does not include subjective expectations of a particular investor. Intrinsic value considers not only tangible assets but also intangible assets by using fundamental analysis methods. In fundamental analysis the securities analyst considers financial statements of the company, on going business activities, market conditions (growth opportunities, competition, etc…) and other macroeconomic factors. Most frequently used method of calculating the intrinsic value is to forecast the future cash flows generated by the company and to discount them with a discount rate which is a function of risk factor (Copeland et al., 2000).

Intrinsic value is an objective expression of firm value. Theoretically any number of analysts could calculate similar intrinsic values for a particular firm (Tuller, 1994). Moreover intrinsic value may differ from the market value of a company due to the fact

that it is calculated via fundamental analysis. Securities analysts use this, in order to observe whether a firm's stocks are under or overvaluated by the market.

Going Concern Value

Going concern value or operating value is the value of a business' tangible and intangible assets minus its debt. It differs from the liquidation value with the fact that it considers the intangible assets (also intangible assets that has no liquidation value such as; goodwill, skilled personal, management practices, etc…) of the company and assumes that the business will operate forever (Gürbüz and Ergincan, 2004)

Liquidation Value

Liquidation value is not the value of a business as a whole; instead it is the total value of individual business assets. In this approach the business is not viewed as an income generator, but only a group of assets; therefore the intangible assets that has no liquidation value have no importance. When estimating the liquidation value, one should consider the costs associated to the liquidation of assets, such as; auctioneer's fees, taxes, cost of moving equipment, expenses preparing assets to sale, etc… (Tuller, 1994).

Liquidation value usually succeeds the end of business activity and in most of the cases there is a time limit to liquidate the assets. This fact often causes the undervaluation of business assets compared to their fair market value (Damadoran, 1996).

In conclusion value concept may differ according to parties and valuation purposes. While for a particular company the stock market assesses a market price, an investor appraises the value of the company according to his expectations. On the other hand, an analyst although does not include his expectations, includes personal judgment when calculating the intrinsic value. In addition while going concern value assumes the continuity of business, liquidation value is used in case the business would cease the operation.

CHAPTER 3

LITERATURE SURVEY

In the previous chapter we explored different definitions and perspectives of firm value. The aim of this chapter is to give the reader a clear insight of valuation theory, the main drivers of value, how and according to which theoretical basis the previous models are developed, as well as how the variables in this study's area of interest are examined in the previous studies and their effects; so as to construct a robust basis to develop our model, realize analysis and interpret the results. With the aim of doing this, the literature survey will start with exploring the valuation models and proceed with the previous studies that examined the effects of internationalization, book value, dividends, leverage, earnings and cash flow from operations on the firm value and stock returns.

Valuation Models

This section aims to introduce different valuation models and the main variables which serve as main drivers of firm value. We will start with dividend based models. In this section we will investigate Dividend Discount Model (DDM) and Dividend Growth Model (DGM). Afterwards we will continue with Residual Income (RI) and

Ohlson's Model. These models consider earnings and book value as main drivers of the company's price. Thereafter the chapter will go on with Discounted Cash Flow Model (DCF) which takes cash flows as main value relevant information. Lastly we will finish with relative valuation.

Dividend Based Models

We start our exploration of the security valuation models by dividend discount and dividend growth models which take dividend as main value creating variable.

Dividend Discount Model (DDM)

People make investments because they want to enjoy the benefits of wealth in the future rather than at the present. Therefore theoretically, the value of an asset can be determined by discounting the expected benefits to the investor over the holding period at the cost of capital. The investor's benefit from a share is the dividend paid during the holding period plus the value of the share at the end of this period. When discounting these cash streams to the present we have:

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} + \frac{P_n}{(1+r)^n} \quad (1)$$

Where,

P is the price of the stock,

t is the period,

D is the dividend paid (D_t is the dividend paid at the period t),

n is the ending period,

r is the required rate of return.

On the other hand the price of the share at the ending period can also be expressed as the future dividend streams after that period. It brings us to the fundamental equity valuation model generally credited to Williams (1938).

$$R_0 = \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} \quad (2)$$

This is the most generally accepted statement about how much a share is theoretically worth. Although the model is sound in the theory, it is not so efficient in practice, mostly due to the fact that it requires an infinite number of dividend forecasts. Moreover DDM assumes a constant rate of return over time.

Dividend Growth Model

Though DDM perfectly explains what value is for the investor and shows the analyst how to calculate the value of a business, the fact that the model requires an infinite number of dividends as input makes it very difficult to use in practice. On the other hand Gordon (1962) assumed a uniform growth for the dividends:

$$D_{n+1} = D_n + (1+g) \quad (3)$$

Where, g is the uniform growth rate for the dividends. Since t is growing infinitely, when we put this in DDM we have:

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t} \Leftrightarrow P_0 = \frac{D_0 * (1+g)}{(r-g)} \quad (4)$$

This equation is clearly easier to calculate, however it assumes a constant growth of dividends for infinite period of time. Moreover the growth rate must be smaller than the required rate of return.

Before leaving the dividend based valuation, it is important to discuss its problems. In order to forecast the future dividends the analyst should use current dividends, therefore the model implicitly assumes that there is a relationship between current and future dividends (Barker, 2001). However theoretically there need not be such a relationship. Dividends reflect decisions of the management on the distribution of wealth, rather than operating decisions which directly affect the business performance (Pirie and Smith, 2006). In fact, in their study Miller and Modigliani (1961) have shown that the value of the firm is theoretically independent of how the company chooses to distribute dividends. This fact gives rise to "dividend conundrum"; share prices depend on future dividend stream, however current dividends do not give useful information to forecast future dividends (Penman, 1992). Yet this theoretical fact is less problematic in practice because the level of current dividend is often consciously decided by management according to the performance of the company as well as sustainability or growth perspectives (Barker, 2001).

All in all, dividend based models are theoretically fundamental models which explain exactly what value is for the investor; however there is a discussion in the literature about whether current dividends are relevant to the business value or not.

Models Based on Earnings and Book Value

Residual Income Model (RI)

This model, also known as abnormal earnings model, takes earnings and book value as main value creating variables. Several authors such as Edwards and Bell (1961), Peasnell (1982) and Stark (1997), have shown that it is possible to transform the DDM so that the value of the equity can be expressed as a function of book value and residual income.

Accounting book value in period t is equal to book value in previous period plus earnings minus dividend distributed to equity financers:

$$B_t = B_{t-1} + E_t - D_t \qquad (5)$$

Where

B_t is book value

E_t is earnings

D_t is dividend paid.

A necessary condition for this is the clean surplus relation which requires that the accounting earnings include all changes in equity book value (Barker, 2001)

Assuming the condition holds, dividend distributed in year *t* can be expressed as earnings of year *t* minus increase in book value:

$$D_t = E_t - (B_t - B_{t-1}) \quad (6)$$

Define residual income as earnings minus holding cost of book value (book value multiplied by cost of capital):

$$A_t = E_t - k * B_{t-1} \quad (7)$$

Where A_t is abnormal earnings.

Then, we replace the earnings by abnormal earnings plus cost of book value and we rewrite the expression of dividends as follows:

$$D_{t+1} = A_{t+1} + k * B_t - (B_{t+1} \quad B_t) \quad (8)$$

We replace the dividends in the DDM according to (8)

$$P_t = \frac{A_{t+1} + (1+k) * B_t - B_{t+1}}{(1+k)} + \frac{A_{t+2} + (1+k) * B_{t+1} - B_{t+2}}{(1+k)^2} + \frac{A_{t+3} + (1+k) * B_{t+2} - B_{t+3}}{(1+k)^3} + \cdots$$

(9)

When we simplify the expression by cancelling the terms on the right we have:

$$P_t = B_t + \sum_{t=1}^{\infty} \frac{A_t}{(1+k)^t} \quad (10)$$

Thus since RI model is equivalent to DDM, it is a theoretically valid model for equity valuation. Moreover one important advantage of RI is the fact that regardless of the accounting policies used to measure earnings and value of company assets, it gives same equity value (Pirie and Smith, 2006).

When it comes to the critics of RI, since it is totally equivalent to DDM, in order to calculate book values the analyst should estimate future dividends therefore he is subject to same problems when he is using DDM. Moreover Bierman (1996) stated that "the equity value is not a function of book value".

Ohlson's Model

This model is a variant of RI but it has a particular importance for the academicians. Ohlson (1995) started his reasoning by the fact that abnormal returns attracts competition, therefore they tend to decrease over time. With this, he proposed that abnormal earnings have an auto-regressive process and they can be expressed as follows:

$$A_{t+1} = w * A_t + V_t + e_{1,t+1} \quad (11)$$

$$V_{t+1} = \mu * V_t + e_{2,t+1} \quad (12)$$

Where *V* is the accounting information that can be useful in predicting future abnormal earnings and other than current abnormal earnings; e_1 and e_2 are random disturbance terms with constant variance and zero mean; w and are the persistence

parameters between one and zero which ensures the fact that abnormal returns will decrease over time.

From that point Ohlson goes on and demonstrates (we will not repeat his demonstration here, see Ohlson (1995)) the value of the company can be expressed as follows:

$$P_t = B_t + \alpha_1 A_t + \alpha_2 V_t \qquad (13)$$

Where α_1 is the coefficient on abnormal earnings and it is a function of risk free rate of return and w. α_2 is the coefficient on other information and it is a function of risk free rate of return, w and . Moreover Ohlson continues by replacing A_t by using (7), then by replacing B_{t-1} via (6), he obtains:

$$P_t = (1 - k) * B_t + k * (\varphi * E_t - D_t) + \alpha_2 V_t \qquad (14)$$

In this case the coefficient k and φ are functions of risk free rate of return (see Ohlson 1995 for details).

This expression makes the value of a company a linear function of book value, abnormal returns and other relevant accounting information. Thus it forms a theoretically valid basis to test the value relevance of accounting information.

Cash Flow Based Models

Discounted Cash Flow Model (DCF)

The dividend based models concentrate on the cash flow of equity financers, on the other hand DCF model focus on the free cash flow as main value creating variable. According to DCF model, the value of a company is a function of discounted future free cash flows of the company using the appropriate cost of capital. The calculation of the firm value according to DCF valuation is as follows (Copeland et al., 1990):

$$FCF_0 = \sum_{t=1}^{n} \frac{FCF_t}{(1+k)^t} + \frac{TV}{(1+k)^n} \quad (15)$$

Where

FCF_t is the free cash flow in period t,

TV is the terminal value of the firm at the end of period n.

Thus in order to find the value of a firm the analyst should forecast the future cash flows to equity, estimate an appropriate cost of capital to discount these cash flows and determine a terminal value of the firm at the end of the forecast period of free cash flows. In the following section we will discuss about how to calculate free cash flows, cost of capital and terminal value.

Calculating FCF

Free cash flow is the cash flow that can be distributed to equity financers as well as to debtors of the company. In order to determine the future cash flows the analyst needs to create future financial statements. This task requires a deep analysis and understanding of company's operations, as well as costs and capital structure. By taking into consideration of following key ratios and their evaluation in time, the analyst can project current financial statements to future (Tevfik, 2005):

- Revenue growth rate: It represents the growth rate of company's sales.

- EBITDA/Sales: It represents earnings margin before interests, taxes, depreciation and amortization.

- Tax rate: It represents tax rate applied by the government.

- Rate of investment on fixed assets: This ratio represents company's investment rate to fixed assets and can be calculated by dividing a year's investment by sales.

- Depreciation and amortization rate: This ratio can be calculated by dividing depreciation and amortization by sales.

- Rate of investment on working capital: It can be calculated by dividing change in working capital by change in sales.

The analyst uses available historical data to project these ratios according to which he creates future financial statements. Once this task is done, he calculates free cash flows as follows:

Table 2: Calculation of FCF

+	Earnings before interest and taxes (EBIT)
-	Cash taxes on EBIT
-	Investments
+	Depreciation
+/-	Change in working capital
=	Free cash flow

(Frykman and Tolleryd, 2003)

Estimating the Cost of Capital

One of the most critical challenges the analyst should face is to estimate a fair cost of capital to discount the free cash flows. The cost of capital, also called discount rate, should reflect the risk of forecasted free cash flows. Among the various methods of calculating the cost of capital, weighted average cost of capital (WACC) is the most used today (Frykman and Tolleryd, 2003).

$$WACC = \frac{E}{De + E} * C_E + \frac{De}{De + E} * C_D * (1 - T) \quad (16)$$

Where

E is equity,

C_E is the cost of equity,

De is debt,

C_D is the cost of debt

T is the tax rate.

The cost of debt is the cost of capital raised from the debtors. When calculating $C_{D,}$ required interest rate is usually a good indicator; however analyst should carefully examine the debt structure of the company because debt from different lenders can have different interest rates.

The cost of equity is the cost of capital raised from the equity financers therefore its calculation is similar to the calculation of the required rate of return used in DDM model. Sharpe (1964) suggested a Nobel Prize winning solution to this problem; capital asset pricing model (CAPM).

$$E(R_i) = R_f + B_i * (E(R_m) - R_f) \quad (17)$$

$$Bi = \frac{Cov(R_i, R_m)}{Var(R_m)} \quad (18)$$

Where

E(Ri) stands for expected required rate of return for stock *i*,

Rf is the risk free rate of return,

Bi (beta) is the systematic risk of the stock i,

E(Rm) is the expected return of the market,

Cov stands for covariance and

Var stands for variance.

Determining Terminal Value

Another crucial part in the DCF valuation is determining a terminal value for the company. In DCF valuation the terminal value is very critical due to the fact that it takes biggest share of the company's value (according to DCF) (Frykman and Tolleryd, 2003). Therefore care is needed for accurate valuation. Here we present a calculation method for *TV* suggested by Koller et al. (2005).

$$TV_t = \frac{NOPLAT_{t+1} * \left(1 - \frac{g}{RONIC}\right)}{WACC - g} \quad (19)$$

Where

NOPLAT is the net operating cash flows less adjusted taxes,

g is the expected future growth rate of *NOPLAT*,

RONIC is the expected return on invested new capital.

When calculating the necessary variables for determination of TV, the analyst should consider competition factor, especially when estimating *RONIC*, due to the fact that competition is likely to eliminate the abnormal returns in time unless the company has sustainable competitive advantages. Moreover when estimating growth, the analyst should take into account the growth rate of industry and country's economy.

Calculating Firm Value and Equity Value

Once the FCF_0 is calculated we can find the firm value by adding the value of nonoperating assets to FCF_0:

$$FV = \mathbf{FCF_0} + nonoperating\ assets \quad (20)$$

Firm value is the value of the entire company which consists the market value of its debt and equity in the same time. From this point, in order to calculate the equity value all the analyst should do is to subtract the value of debt from FV:

$$MV = FV - De \quad (21)$$

Where

MV is the market value of the company and De is the debt.

When we look at the DCF valuation process, we can see that it uses a wide variety of information from company and industry. On the other hand it requires the analyst make various estimations and forecasts, thus it is open to mistakes from the side of analyst.

Valuation Based on Multiples

Until now we concentrated on the fundamental valuation methods which concentrate mostly the company's financial statements in order to determine the value of the

firm. This section is consecrated to relative valuation models which takes the industry multiples as main source of information.

In the multiple based valuation the analyst chooses a multiple and forms a group of companies which possess similar characteristics with the valued company (same industry, similar capital structure, profit margin …etc). He finds the multiple of each company in the group and calculates their mean. Then he compares this mean with the subject company and determines a relative value. Another utilization of the multiple valuation is to estimate a benchmark multiple for a company and compare it with its current multiple. We will discuss more broadly how this comparison works and how does the analyst determine the value of the company.

Among the various multiples used in relative valuation we will concentrate on the two mostly used; price/earnings and price to book ratio.

Price/Earnings Ratio

Price earnings ratio can be calculated via dividing the value of a share by earnings per share or by dividing the market value of the company by the total earnings. The analyst can use P/E ratio by using fundamentals or comparables (Damodaran, 1994).

Using Fundamentals

This approach has the idea of relating fundamentals to multiples. The analyst estimates the multiple by using growth rate, payout ratios and risk which makes this

kind of analysis analogue to cash flow valuation. The following formulas show a way to estimate P/E ratio:

For stable growth firms:

$$\frac{P_0}{E_0} = \frac{Payout\ ratio * (1 + g_n)}{r - g_n} \qquad (22)$$

Where g_n is the growth rate of dividends (forever) and payout ratio is the percentage of earnings paid to shareholders in dividends.

For high growth firms we assume two different periods during which the company experiences different rates of growth:

$$\frac{P_0}{E_0} = \frac{Payout\ ratio_1 * (1 + g_h) * \left(1 - \frac{(1 + g_h)^n}{(1 + r)^n}\right)}{r - g_h} + \frac{Payout\ ratio_2 * (1 + g_h)^n * (1 + g_n)}{(r - g_n) * (1 + r)^n}$$

(23)

Where g_h represents the high growth rate in the first n years, $Payout\ ratio_1$ is the payout ratio during the first n years while $Payout\ ratio_2$ represents the payout ratio after n years.

Once the analyst realized the estimation of P/E ratio he can compare it with the current P/E ratio of the company. If current P/E is lower the shares are undervalued, if higher they are overvalued.

Using Comparables

In this approach the analyst identifies a group of companies that can be comparable to the company being valued (same industry, similar capital structure, profit margin …etc). Then he calculates the mean value of their multiples (P/E in this case). Once the mean is determined he compares it with the current P/E ratio. If the current P/E ratio is lower than the mean the shares of the company are undervalued, if higher they are overvalued.

Moreover by simply multiplying the industry mean of the multiple by earnings the analyst may determine a price (market value) to the company. The application of this method can be observed in some initial public offerings (Izahname-a, 2006; Izahname-b, 2008).

Behind these kinds of comparison and valuation, there is the hidden assumption that the market prices, on the average, of the comparable firms are correct. Yet this assumption can be dangerous and misleading in situations where the market undervalues (or overvalues) the entire industry (Damodaran, 1994). Such a situation causes undervaluation (or overvaluation) of the company.

Price/Book Value ratio

Price to book value (P/B, also known as market to book value) ratio can be calculated via dividing the market value of the company by the difference between its assets and debts. While its usage is similar to the usage of P/E ratio it can also be used in valuing companies with negative earnings (unlike P/E ratio) (Damodaran,

1994). Similar to P/E ratio, price to book value can be used by using fundamentals and comparables.

Using Fundamentals

In this approach the analyst estimates a P/B ratio by using fundamentals such as earnings, risk and growth. The following formulas show a way to estimate P/B ratio for stable and high growth firms.

For stable firms:

$$\frac{P_0}{B_0} = \frac{ROE - g_n}{r - g_n} \quad (24)$$

Where ROE refers to return on equity and can be calculated dividing earnings by book value.

For high growth firms:

$$\frac{P_0}{B_0} = ROE * \left[\frac{Payout\ ratio_1 * (1 + g_h) * \left(1 - \frac{(1+g_h)^n}{(1+r)^n}\right)}{r - g} + \frac{Payout\ ratio_2 * (1+g_h)^n * (1+g_n)}{(r - g_n) * (1+r)^n} \right]$$

(25)

Once the estimated P/B is calculated the rest of the analysis is similar to P/E ratio. Therefore if current P/B is lower than estimated P/B, the shares are undervalued, otherwise they are overvalued.

Using Comparables

Similar to P/E ratio this kind of analysis requires the analyst to determine the mean P/B of comparable companies. Once the mean is determined he compares it to the current P/B ratio of the company being valued. If the current value is lower, the company's shares are undervalued, otherwise they are overvalued. Moreover the analyst can simply asses a value to the company by multiplying the mean P/B by book value of the company.

Multiple based valuation is an easy to realize and fast way to have an idea about the value of a company. Gathering the necessary data is not complicated and the calculation method is not sophisticated, as a consequence it is not very sensible to the mistakes of the analyst. Although this is a too simplistic method to determine the value of the company, it can be used as a complementary to DCF or other stand alone valuation methods (Frykman and Tolleryd, 2003). For instance, in the public offering process of Selçuk Ecza Deposu Tic. ve San. Anonim Şti. multiple based valuation is used as a complementary to DCF (Izahname-a, 2006), on the other hand in the public offering of Türk Telekomünikasyon Anonim Şti. multiple based valuation is used as a stand alone valuation method to determine initial value interval of the shares (Izahname-b, 2008).

Previous Empirical Studies

In the previous section we have seen different approaches to determine the market value of the company. Each approach takes different variables as a determinant of the value. For instance in the residual income model market value can be calculated as a function of book value and earnings, whereas according to dividend discount model the value is a function of dividends. On the other hand there are considerable number of variables that affect cash flows, dividends and earnings. On that point reader shouldn't forget that when one is talking about the market value of the firm, this value is determined by market itself, therefore there may be a large number of variables that suppose to affect the market value of the company, but the important point is lying beneath the question; "Which of these numerous variables are considered by the market?". In the literature, there is no shortage of research and analysis which explore different drivers of value. In this work, we will mainly concentrate on the effects of the degree of internationalization, earnings based variables, dividends, cash flow, book value and leverage on the market value of small and medium sized manufacturing firms in Turkey.

Before getting into the survey of previous empirical studies, it is necessary to remind the reader that stock return of a company is the sum of holding gain and dividends paid by the firm (In some studies it is not expressed not as the sum but a function of holding gain and dividend). Holding gain is the change in share price of the company. Due to this strong relation between stock prices and stock returns, we include studies that have stock returns as dependent variable in our literature survey. This section starts with the prior research on the characteristics of ISE (Istanbul

Stock Exchange); it proceeds respectively with the studies of internationalization, book value and leverage. Lastly it explores researches of dividends, earnings and cash flows.

Analyzing the Turkish market gives the researcher the opportunity of obtaining insights into firm valuation in an emerging market. Beim and Calomiris (2001) characterized the emerging markets by low per capita income, chronic inflation, thin and immature capital markets and they classified Turkey as an emerging market. According to Binbaşıoğlu et al. (1995) potential volatility and inefficiency characterize the Turkish market. Moreover the buying and selling activity of a few large investors can influence stock prices. In their study Binbaşıolu et al. (1995) identified that Turkish stock market conforms to the weak form of market efficiency and investors cannot earn excess returns based on historical information. They observed that daily, weekly and monthly returns were inconsistent with the random walk hypothesis, which implies market inefficiency in pricing stocks.

Whether the investors recognize internationalization as a positive value driver or not is an open research question (Yang et al. 1985). First of all in their study on US- international firms, Agmon and Lessard (1977) found that international firms show lower systematic and unsystematic risk compared to securities of purely domestic firms. Moreover they identified a positive relationship between internationalization and stock returns which means that US investors recognize the international composition of the activities of US based firms. The fact that international firms show lower systematic and unsystematic risk is also proven by Errunza and Senbet (1981). Moreover the result of Lane's (1985) study supports the

fact that US stock market recognizes the multinationality of a firm and its international activities. In addition AlNajjar and Riahi-Belkaoui (1999) examined the effect of the degree of internationalization (which they measured by foreign revenues/total revenues ratio) on profitability and the market value of the firm. They found out that multinationality (degree of internationalization) has a positive and significant effect on the market value of the firm, therefore the degree of internationalization can be taken as an unbooked, hidden asset. Another article of Riahi-Belkaoui (1999) examined the effect of internationalization on market value of Forbes "Most International" 100 manufacturing and service firms by taking foreign revenues to total revenues and foreign assets to total assets ratios as indicators of internationalization. He started from the Ohlson Model and used internationalization indicators as other relevant information. As a result of pooled regression, the model explained 64% of the dependent variable's variance. In the annual regressions, the model's explanatory power varied between 62% and 82%. Moreover the positive relation between internationalization and the market value of firm is confirmed by the results.

Book value is another variable that we include in our study. Reader may remember that book value of the firm is a primary driver of market value according to residual income model. Moreover in the relative valuation, book value of equity can be used in the form of price to book value ratio in order to determine the market value of the company. In 1991 Chan et al. analyzed (in the Japanese market) the relation between stock returns and earnings, cash flows, size of the company and B/MV ratio. As a result they found out that B/MV ratio and cash flows have a significant positive effect on stock returns. Fama and French (1992) studied effects

of various independent variables on the stock returns as a result of which they identified that book to market value ratio has a strong explanatory power on stock return variations. Ramakrishnan and Thomas (1992) guided a research to determine the effects of past information about book value, market value and earnings on share prices. Starting from DDM they explained the value of shares as a function of discounted future earnings streams, than they developed three different models; first based on book value, second on market value and the third on earnings. The findings indicated that there is a superiority of the book value model relative to the other two models when explaining the earnings series. As discussed among the fundamental valuation models, Ohlson (1995) started his reasoning by the fact that abnormal returns attracts competition, therefore they tend to decrease over time, thus he expressed abnormal returns as a autoregressive function, then developed his model which shows that there is a linear relationship between the market value, current earnings, book value of the company, dividends and other relevant information. Barber and Lyon (1997) examined the effect of book value and company size on the stock returns. They also included financial firms in their research. Their findings indicated that book to market ratio has a significant effect on stock returns. Pinfold et al. (2001) realized a research in the New Zealand stock exchange and found that the portfolio of higher book to market ratio firms bring higher returns. Anandarajan et al. (2006) examined the value relevance of earnings and inflation adjusted book values in Turkish stock market. They used market data of non-financial firms from ISE between years 1992 and 2001. The number of companies they included in their study differs from 98 in 1993 to 352 in 1998. They developed five different models; an earnings based linear model, an inflation adjusted book value based linear model, an

Ohlson variant model which expresses the value of a firm as a linear function of earnings and inflation adjusted book value and two other linear models in order to test whether the success of the companies affect the independent variables significance. As a result they identified that earnings model explained 40% of the variation and earnings had a significant effect on value, however this effect tended to decrease over time. When it comes to inflation adjusted book value, the second model showed that inflation adjusted book value positively affected the stock prices. The model explained 60% of the variation. They explained the fact that book value is more important to investors of ISE with the difficulty of projecting the future earnings in an unstable financial environment and since the firm failures are common in such an environment investors pay less attention to future earnings that may never realized. Moreover their Ohlson variant model explained 63% of the dependent variable's variation. Canbaş et al. (2007), in their empirical study for Turkish firms, observed the effect of market value, book to market ratio, leverage and earnings price ratio on stock returns. They formed five portfolios for each variable and examined the differences between each portfolio's return. Results indicated a portfolio of small firms has higher return than a portfolio of large firms. Moreover higher book to market ratio firms brings higher returns.

There is considerable number of studies that examined the relation between financial structure of the company and stock prices/returns. For instance Miller and Modigliani (1966) realized a research on a basis of electric utility firms and found that debt policies of the firms does not affect the value of their shares. Bhandari (1988) investigated the effect of leverage on stock returns. The results indicate that there is a significant relation between leverage and stock returns. Further, Fama and

French (1992) defined two different variables with the aim of testing the relation between leverage and stock returns. First of these variables is total assets to equity ratio and the second is total assets to market value ratio. In conclusion they found that while the second variable has a positive relation with stock returns, the first one has a negative relation. In their study where Drees and Eckwert (2000) investigated the relationship between leverage and share prices volatility, they found that equity shares become riskier as debt-to-equity ratio increases, on the other hand this fact does not necessarily make share prices more volatile. They explained that if the investors' preferences exhibit risk complementarily, a firm can reduce the volatility of its share prices by issuing more corporate debt. Moreover Lam (2002) in his research covering Hong Kong stock exchange tested the effect of various variables, including leverage, on stock returns. As a result he found that there is a significant relation between leverage and stock returns.

Last independent variables in this study's area of interest are dividends, earnings and cash flows. The reader may remember from our valuation model survey that each of these variables is a main value driver of a valuation model. It has been already mentioned that DDM is the fundamental valuation model, therefore future dividends should have strong relation with market value. On the other hand the information at the hands of analyst is current dividends and, as discussed earlier, the "dividend conundrum" (Miller and Modigliani, 1961) states that current dividends do not give useful information about future dividends. Yet according to Barker (2001) dividend policies are consciously shaped in line with the financial performance of the company. Therefore, although the condition that current dividends give useful information about future dividends does not necessarily hold, such a condition is

likely to exist. Let us extend the discussion of value relevance on the issue of the value relevance of earnings versus cash flows. According to Tuller (1994) earnings is not a good indicator of market value, because generally accepted accounting principles give company managers a wide range of choices for recording transactions (same principle applies for Turkey). For instance managers free to choose LIFO (last in first out) or FIFO (first in first out) as a method of recording the inventory. The choice of the method can significantly affect earnings. Furthermore research and development expenses of the company can be written of or capitalized (the choice of which affect earnings). However cash flows are not influenced by accounting policies, thus they form a more solid base for valuation. Conversely, Liu (2007) states that, in theory, earnings outperform revenues as value relevant information, because earnings incorporate relevant expenses. Further, earnings outperform cash flows because earnings ignore current-period cash flows that are not value relevant and they incorporate value-relevant cash flows that occur in other periods. Among the numerous empirical researches about the value relevance of dividends, earnings and cash flows; the research of Miller and Modigliani (1966) on electric utility firms asserts that the dividend policy of the firm does not affect the value of its shares. Ten years after Bar-Yosef and Kolodny (1976) examined the relation between Capital Asset Pricing Model and the dividend relevance. Their findings support the fact that investors prefer dividends to capital gains. In addition, in his research, Bernard (1995) compared the value relevance of book value and expected earnings with expected dividends. He found that the variation in share prices across companies is better explained by book value and earnings. Further, Biddle et al. (1997) tested the relationship between share prices and earnings, EVA, abnormal earnings and cash

flow from operations. The findings showed that the changes in share prices and absolute levels of share prices are better explained by earnings than by other variables. Moreover when the measures are used in combination with one other, then they had a better explanatory power of share prices. Rees (1997) developed an Ohlson variant model with the aim of testing the impact of debt, investment expenditure and dividends on the market value of industrial and commercial firms in United Kingdom. The findings indicated that the main value drivers of the Ohlson model (earnings and book value) were highly significant in pooled and annual regressions. His study also showed that earnings distributed as dividends have a larger impact on value than earnings retained within the firm. While his model explained 60% of the variation, it also showed that the capital expenditure was positively related to market value, on the other hand he couldn't find consistent evidence on the value relevance of debt. In 2000 Andreau guided a research for Japanese capital market. As a result they found out that earnings have a stronger statistical association with security returns given cash flows. Moreover the importance of cash flows increase when the earnings are transitionary. Moreover, Liu et al. (2002) realized a study with the aim of identifying and comparing the value relevance of historical cash flow measures; EBITDA (earnings before interest, taxes, depreciation and amortization), CFO; accrual based measures; sales, earnings, book value; forvard looking measures; EPS forecast, longterm EPS growth, longterm price earnings growth; EBITDA/ enterprise value, sales/enterprise value. As a result they identified that EPS forecasts explain best the stock prices, historical earnings come next, cash flow and book value measures tied for third and sales perform worst. Furthermore, in his study Şamiloğlu (2004) investigated the relation of EVA

(economic value added), earnings and residual income based variables and stock returns on manufacturing firms from ISE. He found that EVA based variables explain 7.9% of stock returns while earnings based variables explain 6.8% and residual income based variables explain 7.8%. In addition when EVA based variables are combined with earnings based variables they explain 12.6% of stock returns; when combined with RI based variables they explain 27.2% of stock return variance. In 2007 Chen and Zhang developed a model based on real options model in order to identify the relation between earnings yield, capital investment, changes in profitability, and changes in growth opportunities, discount rate and stock returns. They started by explaining the value of the company as a function of future cash flows, then by taking in to account of the fact that equity value is a function of scale and profitability they explained stock returns as a linear function of earnings yield, change in profitability, change in equity capital, change in growth opportunities and change in the discount rate. Their findings indicate that earnings yield, capital investment, changes in profitability and changes in growth opportunities have positive effects on stock returns while changes in the discount rate has a negative effect. In another study Liu (2007) tested the value relevance performance of earnings forecasts, dividend forecast and cash flow forecast multiples. They used multiple based valuation to predict the market value of the companies and they found that earnings forecasts are more performed than dividends forecasts and cash flow forecasts in determination of market value.

CHAPTER 4

MODEL DEVELOPMENT AND METHODOLOGY

The aim of this study is to examine the effect of earnings based variables, cash flows, dividends, book values, debt to asset ratio (leverage) and internationalization on the market value of small and medium sized manufacturing firms from the Istanbul Stock Exchange (ISE). We will start by defining our variables, data sources, how and according to which criteria the data is collected. The chapter will proceed by the explanation of the methods to overcome certain difficulties such as inflation, announcement effect and volatility. Then it will continue by justifying the use of Ohlson Model and end with the deduction of three linear models which will test the value relevance of earnings based variables, cash flows, dividends, book values, debt to asset ratio and internationalization.

Variables

Dividends, earnings and cash flows; each of these variables is a main value driver of a valuation model. A wide empirical research is available for each of these independent variables. Miller and Modigliani (1961 and 1966) state that current

dividends do not give useful information about future dividends, therefore the value of the company. Bar-Yosef and Kolodny (1976) identified that investors prefer dividends to capital gains. Bernard (1995) found the variation in share prices across companies is better explained by book value and earnings rather than dividends. Biddle et al. (1997) showed that share prices are better explained by earnings rather than EVA, abnormal earnings and cash flow from operations. According to Andreau (2000) earnings have a stronger statistical association with security returns given cash flows. According to Tuller (1994) earnings is not a good indicator of market value, because generally accepted accounting principles give company managers a wide range of choices for recording transactions. Conversely Liu et al. (2007) state that, in theory, earnings outperform revenues as value relevant information. Şamiloğlu (2004) identified that EVA based variables has a better explanatory power than earnings based variables. Liu (2007) found that earnings forecasts are more performed than dividends forecasts and cash flow forecasts in determination of market value. In this study we will use net earnings (E) and earnings before interest and taxes (EBIT) to determine the effects earnings, cash flow from operations as a proxy of cash flows (CFO) and dividend paid to found out the effects of dividends (D).

Leverage is another independent variable which is in this study's area of interest. There is considerable number of studies that examined the relation between financial structure of the company and stock prices/returns. While Miller and Modigliani (1966) found out that there is no relation between a company's debt polices and the value of its shares, Bhandari (1988) identified a strong relationship between leverage and stock returns. Moreover Fama and French (1992) tested two different variables with the aim of investigating the value relevance of leverage, as a

result they found that one of the variables has a positive but the other has a negative effect. Lam (2002) also identified a strong relation between stock prices and leverage. In our study we will use debt to asset (De/A) ratio in order to determine the value relevance of leverage.

Book value (B) is another variable that we include in our study. It is an important value driver in RI and Ohlson models. The studies such as Chan et al. (1991), Fama and French (1992), Ramakrishnan and Thomas (1992), Barber and Lyon (1997), Pinfold et al. (2001), Canbaş et al. (2007) proved the value relevance of book value.

Whether the investors recognize internationalization as a positive value driver or not is an open research question (Yang et al. 1985). We use foreign sales to total sales ratio (FSTS) so as to reveal the effect of internationalization on the market value of small manufacturing companies. Lane (1985) showed that US market recognizes international activities of a firm as a hidden asset. Moreover in his studies AlNajjar and Riahi-Belkaoui (1999) and Riahi-Belkaoui (1999) identified a positive relation between internationalization and value nevertheless, we need to remind the reader that the data source of these studies are large scale multinational companies, on the other hand our study focuses on small manufacturing companies for which international activities are mostly limited by export.

Data

With the aim of analyzing the value relevance of internationalization earnings, cash flows, book value, dividends and leverage on the market value of the Turkish manufacturing SMEs, data from ISE is used. In order to identify the SMEs in ISE one needs a rigorous definition of SME. Although at first glance it seems easy, the fact that there is no global definition of what an SME is hinders the task. The difficulty of defining the concept of SME globally is coming from the fact that SME concept expresses a relative size (Budak, 1991). There are definitions based on sales, number of workers, capital size (Tutar and Küçük, 2003), number of machines, capacity and balance sheet values (Müftüoğlu, 1998). The European Union identifies the SMEs according to sales, assets and number of workers (Ercan, 2005). In this study, we choose manufacturing SMEs from ISE according to SME definition done by EU. As a result, 36 manufacturing SMEs from ISE are identified. For these 36 companies yearly balance sheets from 1997 to 2007 are gathered from the ISE web page. Among the companies, we look for the availability of data and existence of an export activity due to the fact that one of our aims is to identify the value relevance of internationalization and export to total sales ratio is our proxy for internationalization. As a result, 6 companies were eliminated. In his Study Riahi-Belkaoui (1999) used an Ohlson variant model in order to determine the value relevance of internationalization and his data set includes 100 most international American manufacturing and service firms according to Forbes. Thus the data set has contained only the firms that have international operations. Moreover in their study Daniels and Bracker (1989), investigated the relation between profit performance and international operations, they excluded the firms whose foreign operations were too

insignificant. The independent variables are calculated based on these 30 companies' balance sheets. On that point since for some company/years the balance sheet or market data is unavailable, the number of companies tested is different for each year. With the aim of not reducing the already limited data we tried to include as much company as possible for each year, on the other hand in order to sustain consistency of data we used same companies across years. For instance the 23 companies used for year 1997 are used all across the other years. Moreover although earnings variables are largely available, cash flow variables are available only after 2005. Therefore the number of data used to test earnings and cash flow models are different. On that point the companies observed are chosen consistently; the 27 companies used in cash flow model are also used in EBIT and earnings model. In their study Anandarajan et al. (2006) observed the value relevance of earnings and book value in ISE with different models. The number of companies included in the study varies across years. Moreover in their empirical study for Turkish firms Canbaş et al. (2007) used different number of companies across years while testing the effect of market value, book to market ratio, leverage and earnings price ratio on stock returns. The following table indicates the number of observations tested for each year and model.

Table 3: Number of Companies Included in the Study per Year and per Model

	1997	1998	1999	2000	2001	2002
Earnings Model	23	27	29	30	30	30
EBIT Model	23	27	29	30	30	30
Cash Flow Model						
	2003	2004	2005	2006	2007	
Earnings Model	30	30	30	28	27	
EBIT Model	30	30	30	28	27	
Cash Flow Model			27	27	27	

When it comes to the calculation of the dependent variable, market value, we examined the approach used by Fama and French (1992), Lam (2002) and Canbaş et

al. (2007). In their works, they interpolate the companies' year *t* balance sheet data with the market values in June of the year *t+1*. The reason of such an interpolation is the fact that though a balance sheet is prepared for year end (assume balance sheet for 31.12.2006) it is not publicly announced at year end but during the following months. The market has access to the accounting data only when it is published, thus it reacts according to this data only after the publication. Therefore since the subject companies publishes the balance sheets until June they interpolate the accounting data with the market value in the following June. For instance the data gathered from 31.12.2006 balance sheet is interpolated with the market value of the company at June 2007. On the other hand in our case we observed that some of the companies publish their accounting information months before June. In such cases the announcement effect of the information might disappear until June. Thus, with the aim of catching the announcement effect of accounting information, we used a slightly different approach. First, we identified for each company/year, when the accounting data is published. Therefore instead of interpolating each company's accounting information automatically with the share prices in June, we identified exact time of announcement and we interpolated the accounting information with the share price of the announcement month. To calculate the share price of the announcement month we collected (from www.analiz.com) 20 work days share price data after the publication date. Afterwards harmonic mean of these 20 work days share price data is calculated. The use of harmonic mean mitigates the effect of too low or high prices on the mean, therefore reduces the effect of volatility. A similar approach is used by Liu et al. (2007) in order to reduce the high or low values while calculating the industry multiples. Once the mean is calculated we calculated the

market value of the company by multiplying the harmonic mean by the number of shares. Finally we interpolate this market price with the accounting data.

Lastly in order to mitigate the effect of inflation on our data, Turkish Lira (TL) and New Turkish Lira (TRY) values are converted in to US dollars. Şamiloğlu (2004) used a similar approach; with the aim of reducing the effect of inflation he converted TL values in to US$. The exchange rate is determined according to each company's announcement date of accounting information. For instance if the accounting data of a firm is published in March, we calculated the mean of March rates and used this in order to convert TL/TRY values in to US$.

Model

With the intention of testing the value relevance of our independent variables we develop three linear models that express the market value of the company as a linear function of earnings (or cash flows), dividends, book values, leverage and the degree of internationalization of the company. With the aim of doing so, we will start by Ohlson Model. As discussed in earlier chapters Ohlson Model is a variant of residual income model. According to Lundholm (1995) Ohlson (1995) and Feltham and Ohlson (1995) works are landmark works in financial accounting. This is mostly due to the fact that this model proposes a linear function of share prices which makes it very interesting for empirical studies. For instance Riahi-Belkaoui (1999) used Ohlson model to test the relation between multinationality and stock prices. Huang and Wang (2008) tested the relationship between intellectual capital and the market value with an extension of Ohlson Model. Liu and Liu (2007) in their study where

they compared the value relevance of accounting information among different Chinese stock market segments used a modified Ohlson model.

As discussed earlier, Ohlson suggests the following linear equation as a function of market value:

$$P_t = (1-k) * B_t + k * (\varphi * E_t - D_t) + \alpha_2 V_t \quad (26)$$

$$\leftrightarrow$$

$$P_t = (1-k) * E_t + k\varphi * E_t - k * D_t + \alpha_2 V_t \quad (27)$$

In this equation the market value is a linear function of book value, earnings, dividends and other relevant information. In order to test the value relevance of the degree of internationalization and the leverage, we replace the other information parameter in the model by FSTS and DeA. To operationalize this equation in the empirical testing we estimate the following cross-sectional regressions for each year:

$$MV_{it} = a_{0t} + a_{1t}B_{it} + a_{2t}E_{it} + a_{3t}D_{it} + a_{4t}FSTS_{it} + a_{5t}DeA_{it} + e_{it} \quad (28)$$

Where;

MV_{it} is the market value of the company i at date t,

e_{it} is the error term and

a_{jt} (j=1,2,3,4,5) is the regression coefficient vector.

While (28) is consisting our base model for empirical testing, with the aim of testing two different earnings variables (E and EBIT) we will use two different models. In addition due to the obvious correlation between CFO and earnings a regression model which contains CFO and earnings in the same time will not be sound. Therefore a third model for cash flows is estimated.

Earnings models:

$$Model1 \quad MV_{it} = a_{0t} + a_{1t}B_{it} + a_{2t}E_{it} + a_{3t}D_{it} + a_{4t}FSTS_{it} + a_{5t}DeA_{it} + e_{it} \quad (29)$$

$$Model2 \quad MV_{it} = b_{0t} + b_{1t}B_{it} + b_{2t}Ebit_{it} + b_{3t}D_{it} + b_{4t}FSTS_{it} + b_{5t}DeA_{it} + e_{it} \quad (30)$$

Cash flow model:

$$Model3 \quad MV_{it} = c_{0t} + c_{1t}B_{it} + c_{2t}CFO_{it} + c_{3t}D_{it} + c_{4t}FSTS_{it} + c_{5t}DeA_{it} + e_{it} \quad (31)$$

According to the model performances we can compare the relative performance of the value relevance of earnings and cash flows. Further we can identify the relation between the value of small and medium sized manufacturing firms (in Turkey and publicly traded) and their book value, leverage, degree of internationalization and dividends. Moreover the fact that there are two different earnings models help us to determine which of the two earnings variables (E and EBIT) more value relevant is.

CHAPTER 5

ANALYSIS

This chapter is dedicated to the analysis of the outputs of regression analysis. It will start with the analysis of cash flow model and proceed with the analysis of EBIT and earnings model. At the end of the chapter the results will be summarized.

Analysis of Cash Flow Model

The reader may remember that in the previous chapters three linear models have been deducted from Ohlson's Model. One of these three models explains the market price of the company by a linear combination of cash flow from operations (CFO), dividends (D), book value (B), financial leverage characterized by debt to asset ratio (De/A) and the degree of internationalization of the company proxied by foreign sales to total sales ratio (FSTS). Following formula indicates the linear relation between the independent variables and dependant variable:

$$MV_{it} = c_{0c} + c_{1c}B_{it} + c_{2c}CFO_{it} + c_{3c}D_{it} + c_{4c}FSTS_{it} + c_{5c}DeA_{it} + e_{it}$$

The panel data for the cash flow model contains data of thirty Turkish small and medium-sized manufacturing companies for a time period of 2005-2007. The choice

of time span is determined by the availability of the companies' cash flow from operations data. The data set includes 27 companies and 84 observations.

The following table indicates descriptive statistics for dependent and independent variables.

Table 4: Descriptive Statistics for Cash Flow Model

	Mean	Std. Deviation	N
MV (USD)	45,651,885	59,611.651	84
CFO (USD)	5,149,699	24,416.610	84
D (USD)	1,182,192	3,429.005	84
B (USD)	23,894,808	36,802.279	84
DeA %	51	4.1	84
FSTS %	19	2.3	84

According to this data, between 2005-2007 Turkish small and medium manufacturing companies' (which's stocks are traded in ISE and data is available for subject years) market price has a mean of 45,651,884 USD. While the companies' cash flow from operations average is 5,149,698 USD the mean for dividends is 1,182,192 USD. The average book value for subject years and companies is 23,894,807 USD. Moreover between years 2005-2007 subject companies have financed 51% of their assets with debt (in the average) and exports consists 19% of their total sales (in the average). On the other hand; the reader may notice the significant magnitude of standard deviations. The reason of this is the fact that the companies in the panel data varies by size and sector.

The following table shows the correlations between variables.

Table 5: Cash Flow Model, Correlation among Variables

		MV	CFO	D	B	DeA	FSTS
Pearson Correlation	MV	1.000	0.579	0.667	0.691	-0.178	0.071
	CFO	0.579	1.000	0.881	0.816	-0.011	0.14
	D	0.667	0.881	1.000	0.9	-0.123	0.122
	B	0.691	0.816	0.9	1.000	-0.339	0.057
	DeA	-0.178	-0.011	-0.123	-0.339	1.000	0.178
	FSTS	0.071	0.14	0.122	0.057	0.178	1.000
Sig. (1-tailed)	MV	.	0	0	0	0.052	0.26
	CFO	0	.	0	0	0.462	0.102
	D	0	0	.	0	0.133	0.135
	B	0	0	0	.	0.001	0.302
	DeA	0.052	0.462	0.133	0.001	.	0.053
	FSTS	0.260	0.102	0.135	0.302	0.053	.

In order to see whether if there is a significant positive autocorrelation between residuals, a Durbin-Watson test is realized. The following table indicates adjusted R square, F and Durbin-Watson statistics.

Table 6: Cash Flow Model, Adjusted R square, F and Durbin Watson Statistics

Adjusted R Square	F Change	df1	df2	Sig. F Change	Durbin-Watson
0.458	15.050	5	78	0.000	1.050

At 95% significance level for degrees of freedom 5 and 78 Durbin-Watson critical values are 1.51 (lower) and 1.77 (upper). In the mean time our d value is 1.050. Since d value is lower than lower end of critical value interval, we can conclude that there is evidence that there is a significant positive autocorrelation between residuals. Autocorrelation is a problem in regression analysis since its existence violates the ordinary least squares assumption that the error terms are uncorrelated (Priestley, 1982). In order to overcome the effects of autocorrelation ARIMA Models, autoregressive or moving average methods can be used. Our study showed that, in case an Ohlson variant linear model is used in order to investigate the value

relevance of cash flows, dividends, book value, internationalization and leverage, an autocorrelation problem is showed up. The mentioned models and methods would be helpful to the future researchers that want to contribute the valuation efforts of SMEs. When it comes to the explanatory power of cash flow model, the adjusted R square is 0.458.

The following table indicates ANNOVA test results:

Table 7: Cash Flow Model, ANNOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	144,825,723,733,959	5	28,965,144,746,791,840	15.050	0.000
Residual	150,118,840,105,504	78	1,924,600,514,173,132		
Total	294,944,563,839,463	83			

The estimation of variables' coefficients and their significances are given in the table below:

Table 8: Cash Flow Model, Estimated Coefficients and Their Significances

	Standardized Coefficients	T	Sig.
(Constant)		1.327	0.188
CFO	-0.109	-0.604	0.547
D	0.279	1.191	0.237
B	0.541	2.383	**0.020**
DeA	0.035	0.346	0.730
FSTS	0.015	0.185	0.854

On that point we want to remind the reader that among our independent variables debt to asset ratio and foreign sales to total sales ratio are rational values unlike other variables, therefore their absolute values are very low comparing to other variables. As a result of this unstandardized values of their coefficients strongly differ from the unstandardized values of other independent variables' coefficients. In order to make the comparison between variables easier, we are directly giving standardized coefficients.

According to the data above the only significant variable is book value of the equity (at 95% level of significance). Its coefficient is positive which is in line with the existing valuation literature. In their studies Chan et al. (1991), Fama and French (1992), Ramakrishnan and Thomas (1992), Barber and Lyon (1997), Pinfold et al. (2001), Canbaş et al. (2007) proved the value relevance of book value.

In conclusion although the cash flow model seemed to explain 45.8% of the dependent variable's variance, according to Durbin Watson test there is evidence of positive autocorrelation between residuals. Therefore, a rigorous researcher should avoid making deterministic conclusions according to this model's data.

Analysis of EBIT Model

The reader may remember that one of the research questions of the study was whether earnings before interests and taxes carry significant information about the value of a small or medium manufacturing company in Turkey which means whether EBIT is recognized as value relevant information. With the aim of analyzing this, a variant of Ohlson Model was developed, where market value of a company is a linear function of; earnings before interests and taxes, dividends, book value, leverage and export to total sales ratio:

$$MV_{it} = b_{0t} + b_{1t}B_{it} + b_{2t}Ebit_{it} + b_{3t}D_{it} + b_{4t}FSTS_{it} + b_{5t}DebA_{it} + e_{it}$$

The panel data for the EBIT model contains data of thirty Turkish small and medium manufacturing companies for a time period of 1997-2007. The data set includes 314 observations.

The following table indicates descriptive statistics for dependent and independent variables.

Table 9: Descriptive Statistics for EBIT Model

	Mean	Std. Deviation	N
MV (USD)	19,312,490	40,809.252	314
EBIT (USD)	2,832,821	6,387.439	314
D (USD)	723,085	2,324.235	314
B (USD)	13,883,354	26,059.188	314
DeA %	54	4.4	314
FSTS %	22	2.6	314

According to this data, between 1997-2007 Turkish small and medium sized manufacturing companies' (which's stocks are traded in ISE and data is available for subject years) market price has a mean of 19,312,490 USD. While the companies' EBIT average is 2,832,821 USD the mean for dividends is 723,085 USD. The average book value for subject years and companies is 13,883,354 USD. Moreover between years 2005-2007 subject companies have financed 54% of their assets with debt (in the average) and exports consists 22% of their total sales (in the average). On the other hand; the reader may notice the significant magnitude of standard deviations. The reason of this is the fact that the companies in the panel data varies by size and sector.

The following table shows the correlations between variables.

Table 10: EBIT Model, Correlation among Variables

		MV	EBIT	D	B	DeA	FSTS
Pearson Correlation	MV	1.000	0.454	0.648	0.696	-0.143	-0.014
	EBIT	0.454	1.000	0.791	0.657	0.118	0.078
	D	0.648	0.791	1.000	0.812	-0.126	0.040
	B	0.696	0.657	0.812	1.000	-0.354	-0.027
	DeA	-0.143	0.118	-0.126	-0.354	1.000	0.152
	FSTS	-0.014	0.078	0.040	-0.027	0.152	1.000
Sig. (1-tailed)	MV	.	0	0	0	0.006	0.402
	EBIT	0	.	0	0	0.018	0.084
	D	0	0	.	0	0.013	0.240
	B	0	0	0	.	0	0.316
	DeA	0.006	0.018	0.013	0	.	0.004
	FSTS	0.402	0.084	0.240	0.316	0.004	.

In order to see whether if there is a significant positive autocorrelation between residuals, a Durbin-Watson test is realized. The following table indicates adjusted R square, F and Durbin-Watson statistics.

Table 11: EBIT Model, Adjusted R square, F and Durbin Watson Statistics

Adjusted R Square	F Change	df1	df2	Sig. F Change	Durbin-Watson
0.526	66.790	5	308	.000	0.577

At 95% significance level for degrees of freedom 5 and 308 Durbin-Watson critical values are 1.787 (lower) and 1.839 (upper). In the mean time our d value is 0.577. d value is significantly lower then lower bound of Durbin-Watson critical value interval. Therefore there is evidence of the presence of positive autocorrelation between residuals. Thus the ordinary least squares assumption which claims that error terms are not correlated is violated. In order to overcome the effects of autocorrelation ARIMA Models, autoregressive or moving average methods can be used. Our study showed that, in case an Ohlson variant linear model is used in order to investigate the value relevance of EBIT, dividends, book value, internationalization and leverage, an autocorrelation problem is showed up. The

mentioned models and methods would be helpful to the future researchers that want to contribute the valuation efforts of SMEs. When it comes to the explanatory power of cash flow model, the adjusted R square is 0.526.

The following table indicates ANOVA test results:

Table 12: EBIT Model, ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	278,054,568,731,644	5	55,610,913,746,328,904	70.424	0.000
Residual	243,214,095,864,669	308	789,656,155,404,772		
Total	521,268,664,596,314	313			

The estimation of variables' coefficients and their significances are given in the table below:

Table 13: EBIT Model, Estimated Coefficients and Their Significances

	Standardized Coefficients	T	Sig.
(Constant)		-0.493	0.622
EBIT	-0.272	-3.883	**0.000**
D	0.376	4.581	**0.000**
B	0.626	8.223	**0.000**
DeA	0.161	3.330	**0.001**
FSTS	-0.015	-0.387	0.699

As a result of regression analysis of EBIT model following independent variables prove significant; EBIT, dividends, book value and debt to asset ratio. While dividends, book value and debt to asset ratio have positive coefficients, EBIT has a negative coefficient. On that point we want remind the reader that, we found clear evidence of positive autocorrelation between residuals, therefore the reliability of the results is questionable.

Analysis of Earnings Model

The previous sections of this chapter have been consecrated to the analysis of the results of cash flow and earnings before interest and taxes model data. Both of the

models' results lack of the reliability because of the fact that we found evidence of positive autocorrelation between residuals.

In its initial form Ohlson Model expresses market value of a company as a linear function of earnings (not EBIT, nor CFO), dividends, book value and other relevant information. As reader can remember we replaced the term relevant information by leverage and internationalization. Therefore our earnings model is the direct variant of the Ohlson Model. Following equations shows our earnings model which explains the market value as a linear function of earnings, dividends, book value, leverage and internationalization:

$$MV_{it} = a_{0t} + a_{1t}B_{it} + a_{2t}E_{it} + a_{3t}D_{it} + a_{4t}FSTS_{it} + a_{5t}DeA_{it} + e_{it}$$

The panel data for the earnings model contains data of thirty Turkish small and medium manufacturing companies for the time period of 1997-2007. The data set includes 314 observations.

The following table indicates descriptive statistics for dependant and independent variables.

Table 14: Descriptive Statistics for Earnings Model

	Mean	Std. Deviation	N
MV (USD)	19,312,490	40,809.252	314
E (USD)	600,332	5,137.769	314
D (USD)	723,085	2,324.235	314
B (USD)	13,883,354	26,059.188	314
DeA %	54	4.4	314
FSTS %	22	2.6	314

According to this data, between 1997-2007 Turkish small and medium manufacturing companies' (which's stocks are traded in ISE and data is available for

subject years) market price has a mean of 19,312,490 USD. While the companies' earnings average is 600,332 USD the mean for dividends is 723,085 USD. The average book value for subject years and companies is 13,883,354 USD. Moreover between years 2005-2007 subject companies have financed 54% of their assets with debt (in the average) and exports consists 22% of their total sales (in the average). On the other hand; the reader may notice the significant magnitude of standard deviations. The reason of this is the fact that the companies in the panel data varies by size and sector.

The following table shows the correlations between variables.

Table 15: Earnings Model, Correlation among Variables

		MV	E	D	B	DeA	FSTS
Pearson Correlation	MV	1.000	0.465	0.648	0.696	-0.143	-0.014
	E	0.465	1.000	0.727	0.725	-0.312	0.078
	D	0.648	0.727	1.000	0.812	-0.127	0.040
	B	0.696	0.725	0.812	1.000	-0.354	-0.027
	DeA	-0.143	-0.312	-0.127	-0.354	1.000	0.152
	FSTS	-0.014	0.066	0.040	-0.027	0.151	1.000
Sig. (1-tailed)	MV	.	0.000	0.000	0.000	0.006	0.402
	E	0.000	.	0.000	0.000	0.000	0.084
	D	0.000	0.000	.	0.000	0.012	0.240
	B	0.000	0.000	0.000	.	0.000	0.316
	DeA	0.006	0.000	0.012	0.000	.	0.004
	FSTS	0.402	0.121	0.241	0.317	0.004	.

When the table is analyzed, an important correlation among earnings, dividends, book value and market value can be seen. This multicollinearity consists one of the limitations of this study. However, multicollinearity does not reduce the explanatory power or reliability of the model. Moreover, when we look with the valuation perspective, it is not surprising that, for instance, earnings and dividends are highly related. Generally it is earnings which is distributed as dividends or retained as capital.

In order to see whether if there is a significant positive autocorrelation between residuals, a Durbin-Watson test is realized. The following table indicates adjusted R square, F and Durbin-Watson statistics.

Table 16: Earnings Model, Adjusted R square, F and Durbin Watson Statistics

Adjusted R Square	F Change	df1	df2	Sig. F Change	Durbin-Watson
0.512	70.424	5	308	0.000	1.999

As a result for degrees of freedom 5 and 308, at 0.05 significance level, we obtain d value of 1.999, on the other hand for the subject degrees of freedom and significance level the critical values are 1.718 and 1.82. Since our d value exceeds 1.82 we can conclude that there is evidence that there is no positive autocorrelation between residuals. When it comes to the explanatory power of cash flow model, the adjusted R square is 0.512. Therefore the model explains 51.2% of the dependent variable's variance. Rees (1997) used Ohlson Model with the aim of identifying the value relevance of dividends, debt and investment. His data included 30 companies listed in Tunisian Stock Exchange. The models explanatory power was 60%. King and Langli (1998) examined relationships between share prices and earnings and book value using Ohlson Model with data from Germany, Norway and United Kingdom. The model's explanatory power was 70% in the United Kingdom, 60% in Norway and 40% in Germany. In his study Riahi-Belkaoui (1999) used a similar Ohlson variant model in order to examine the effect of internationalization on market value of Forbes "Most International" 100 manufacturing and service firms, his model explained 64% of the variance. Moreover Anandarajan et al. (2006) tried to identify the effects of earnings and book value on the market value of the service and manufacturing companies in ISE, in the pooled regressions their Ohlson variant model explained 63% of the dependent variable's variation. The explanatory power of the Ohlson Model may vary across countries, data sets, it may vary according to

the variables selected in place of other relevant information. However as a result with our Ohlson variant model which explains value of a company as a linear function of earnings, book value, dividends, leverage and the degree of internationalization we explained 51.2% of the variance of small and medium manufacturing companies' (in ISE) firm value.

The following table indicates ANOVA test results:

Table 17: Earnings Model, ANOVA Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	278,054,568,731,644,544	5	55,610,913,746,328,904	70.424	0.000
Residual	243,214,095,864,669,760	308	789,656,155,404,772		
Total	521,268,664,596,314,300	313			

The estimation of variables' coefficients and their significances are given in the table below:

Table 18: Earnings Model, Estimated Coefficients and Their Significances

	Standardized Coefficients	t	Sig.
(Constant)		0.221	0.825
E	-0.157	-2.490	**0.013**
D	0.282	3.674	**0.000**
B	0.601	7.793	**0.000**
DeA	0.058	1.261	0.208
FSTS	-0.007	-0.182	0.856

When we look at the significance of the variables, earnings, dividends and book value has significant effect on the independent variable, on the other hand leverage and foreign sales to total sales ratio has no significant effects.

The results of regression analysis via earnings model reveals that earnings, dividends and book value has significant effect on the independent variable, on the other hand leverage and foreign sales to total sales ratio has no significant effects. Among the significant variables earnings has a negative coefficient while dividends and book value have positive coefficients. The fact that dividends and book value has positive and significant relation with market value is consistent with the existing

valuation literature. In 1991 Chan et al. analyzed (in the Japanese market) the relation between stock returns and earnings, cash flows, size of the company and B/MV ratio. As a result they found out that B/MV ratio has a significant positive effect on stock returns. Fama and French (1992) identified that book to market ratio has a strong explanatory power on stock return variations. In addition, Anandarajan et al. (2006) identified that book value has a significant and positive effect on firm value. When it comes to the dividends, Barker (2001) stated that dividends give useful information about firm value. Rees (1997) showed that dividends have a significant impact on firm value.

The result of our analysis identified that leverage is not a significant variable for the investors who invest in small and medium manufacturing firms in ISE. In 1966 Miller and Modigliani realized a research on a basis of electric utility firms and found that debt policies of the firms does not affect the value of their shares In his study Rees (1997) identified that debt policy had no value relevant information for firms in Tunisian Stock Exchange. In addition, we identified that the degree of internationalization has no significant effect on the value of the small and medium manufacturing companies in ISE. Therefore we can say that investors in ISE don't recognize the internationalization as a hidden asset. On the other hand, Lane's (1985) study supports the fact that US stock market recognizes the multinationality of a firm and its international activities. Moreover, the studies of AlNajjar and Riahi-Belkaoui (1999) and Riahi-Belkaoui (1999) found empirical evidence about value relevance of internationalization. The reason of this contradiction may be the fact that existing empirical research on value relevance of internationalization was realized by using the data of big scale multinational corporations (for instance Riahi-Belkaoui (1999) realized his research with the data of most international hundred US firms); on the

other hand, in our case, internationalization of a Turkish SME is mostly limited by exports.

Our study showed that earnings had a negative and significant effect on (though the magnitude of the coefficient is low and it is not as significant as book value or dividends) market value which contradicts the results of the existing literature. Bernard (1995), Biddle et al. (1997), Rees (1997), Şamiloğlu (2004), Anandarajan et al. (2006) showed the positive relation between earnings and firm value. On the other hand Tuller (1994) stated that earnings is not a good indicator of market value, because generally accepted accounting principles give company managers a wide range of choices for recording transactions (same principle applies for Turkey). For example managers free to choose LIFO (last in first out) or FIFO (first in first out) as a method of recording the inventory. Besides research and development expenses of the company can be written off or capitalized. These choices can significantly affect earnings. Moreover, in their study of Turkish market, Anandarajan et al. (2006) stated that although earnings had a positive and significant effect on firm value the effect was declining over time. They identified that book value of the equity has a stronger association with equity value than earnings and explained this with the fact that in the inflationary and risky environment of Turkey investors seemed to give less importance to earnings. Likely, Burgstahler and Dichev (1997) noted that in a turbulent environment where firm failures are common, it appears that investors pay less attention to future earnings that may not be realized. Moreover, although Şamiloğlu (2004) and Anandarajan (2006) et al. realized their studies in Turkish market without considering the size of the companies, our study focuses only on small and medium manufacturing companies in Turkey and due to their size SMEs are strongly affected by crises which cause a significant fluctuation

of the firms' earnings. On that point such a volatile data may not be value relevant for investors.

On that point in order to better understand and observe the reason of the fact that earnings has negative coefficient (though it is not as significant as book value or dividends) we expand our research by first realizing a cross sectional analysis of existing data via earnings model, so that we can track the coefficient and significance of the independent variables (especially earnings) and the performance of our model across years. Secondly with the aim of observing the model performance and significances and coefficients of variables across sectors, we introduce sector in our analysis as a dummy variable.

Cross Sectional Analysis

This section is consecrated to the cross sectional analysis of panel data. Reader may remember that as a result of regression analysis we found that our earnings based model, which expresses the market value of the company as a linear function of earnings, dividends, book value, leverage and internationalization, explained 51.2% of dependent variable's variance. Among the independent variables, earnings, dividends and book value had significant effects. We also identified that while dividends and book value have positive coefficients, earnings has a negative coefficient. In this section with the aim of tracking the effect of different variables (especially earnings) on the market value of the small and medium manufacturing firms in Turkey across years, we realized a cross sectional analysis. The following table indicates F values, Durbin-Watson values, degree of freedoms, Durbin-Watson

critical values, adjusted R square values, number of observations as well as independent variables' coefficients and significances, across years.

Table 19: Results of Cross Sectional Data for Years 1997-2000

	1997		1998		1999		2000	
F	16.4		3.042		7.098		4.713	
df	5-17		5-21		5-23		5-24	
dl-du	0.778-1.90		0.927-1.811		0.986-1.785		1.013-1.775	
D-W	1.886		1.885		1.871		1.748	
Adj. R square	0.093		0.282		0.521		0.39	
N	23		27		29		30	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
E	-0.147	0.654	-0.093	0.677	-0.577	0.052	0.314	0.127
D	0.464	0.154	0.51	0.073	1.079	**0.001**	0.105	0.589
B	0.23	0.349	0.169	0.534	0.124	0.583	0.549	**0.026**
DeA	-0.127	0.588	-0.19	0.439	-0.072	0.738	0.255	0.26
FSTS	-0.104	0.64	-0.071	0.709	0.116	0.494	-0.107	0.508

Table 20: Results of Cross Sectional Data for Years 2001-2004

	2001		2002		2003		2004	
F	5.647		16.616		4.828		4.234	
df	5-24		5-24		5-24		5-24	
dl-du	1.013-1.775		1.013- 1.775		1.013- 1.775		1.013-1.775	
D-W	2.156		2.195		1.915		1.856	
Adj. R square	0.445		0.729		0.398		0.487	
N	30		30		30		30	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
E	-0.103	0.802	0.123	0.479	0.232	0.414	-0.259	0.356
D	0.651	**0.006**	0.828	**0**	0.286	0.201	0.975	**0.014**
B	0.029	0.957	-0.071	0.797	0.246	0.51	-0.005	0.988
DeA	-0.202	0.43	-0.014	0.952	-0.117	0.549	-0.028	0.859
FSTS	0.193	0.198	0.031	0.757	0.061	0.685	-0.041	0.761

Table 21: Results of Cross Sectional Data for Years 2004-2007

	2005		2006		2007	
F	4.254		5.212		9.141	
df	5-24		5-22		5-21	
dl-du	1.013-1.775		1.013- 1.775		0.927-1.811	
D-W	1.942		2.059		2.156	
Adj. R square	0.359		0.438		0.61	
N	30		28		27	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
E	0.101	0.703	-0.484	0.167	-0.386	0.465
D	0.379	0.398	0.929	0.125	0.774	0.088
B	0.235	0.611	0.135	0.782	0.452	0.347
DeA	-0.014	0.942	-0.229	0.326	0.069	0.709
FSTS	-0.041	0.796	0.081	0.601	0.009	0.941

First of all we tested the reliability of data with a Durbin-Watson autocorrelation test. For year 1997 data, Durbin-Watson value is between critical values, thus there is no evidence of positive autocorrelation. For year 1998 data, the Durbin-Watson value is higher than the upper bond of critical value interval; therefore we can conclude that there is evidence that there is no positive autocorrelation between residuals. Same conclusion can be drawn for year 1999 data. For 2000 data there is no evidence of positive autocorrelation due to the fact that Durbin-Watson value is between critical values. For years 2001, 2002, 2003, 2004, 2005, 2006, 2007 data since Durbin-Watson values are higher than the upper bond of critical value interval there is evidence that there is no positive autocorrelation between residuals.

When it comes to the explanatory power of the model across years; in 1997 our model explains only 0.9% of the variance, in 1998 it explains 28.2% of the dependant variable's variance. For 1999 the explanatory power rises to 52.1%, for 2000 it is 39%, for 2001 44.5%, for 2002 72.9%, for 2003 39.8%, for 2004 48.7%, for 2005 35.9%, for 2006 43.8% and for 2007 61%. In their study Anandarajan et al. (2006) examined the value relevance of earnings and inflation adjusted book values in Turkish stock market. They used market data of non-financial firms form ISE between years 1992 and 2001. They used an Ohlson variant model which expresses the value of a firm as a linear function of earnings and inflation adjusted book value. The results of cross sectional analysis showed that the model has a strong explanatory power, the adjusted R square varied between 92% and 45%. In addition Riahi-Belkaoui (1999) examined the effect of internationalization on market value of Forbes "Most International" 100 manufacturing and service firms by taking foreign revenues to total revenues and foreign assets to total assets ratios as indicators of internationalization. He started from the Ohlson Model and used internationalization

indicators as other relevant information. In the annual regressions, the model's explanatory power varied between 62% and 82%. The difference between models' explanatory power can be explained by the difference of data sets, markets and the variables used as other value relevant information in Ohlson Model. On the other when we look at the previous studies we saw that Ohlson Model has a strong explanatory power in annual regressions. Therefore our findings are in line with the existing literature. To sum the performance of our model in pooled regression is supported by the fact that it has strong explanatory power across years except 1997.

When we analyze the effect of earnings, we observe that earnings are not statistically significant across years with the exception of 1999 where it is nearly significant at 95% confidence interval. Although for 1999 its coefficient is negative, lecturer may observe that this negativity is not consistent across years. For 1997, 1998, 1999, 2004, 2006, 2007 the direction of the effect is negative, for the rest of the years it is positive. The inconsistence in the sign of the coefficient and its statistical insignificance across years strengthens our hypothesis that earnings, being a volatile data for the Turkish small and medium manufacturing companies, may not be a value relevant data for the investors (when they invest in small and medium manufacturing companies in ISE). Moreover the results for debt to asset ratio and foreign sales to total sales ratio are consistent with the results of our test for panel data; both of the variables are consistently insignificant across years. When it comes to the dividends it is statistically significant for 1999, 2001, 2002, 2004 at 0.05 significance level and its significance is very close to the bond for years 1998 (0.073) and 2007 (0.088). Besides the sign of the coefficient is positive and it is consistent across years which strengthens our test results with the panel data. Therefore dividend seems value relevant for the investors when they include small and medium

manufacturing companies in their portfolios. In addition book value proves significant for years 2000 and 2003 (significance is 0.051, very close to 0.05). When we examine the direction of its effects, the coefficient is consistently positive across years with the exception of 2002 (-0.071), but for this year the coefficient is highly insignificant. Thus cross sectional effect of book value is consistent with our test results with panel data.

The cross sectional analysis adds important and complementary findings to our panel data analysis. Firstly the explanatory power of the model is high (with the exception of 1997) across years. Secondly the analysis shows insignificance of earnings across years, besides the sign of the coefficient is changing across years which points out the fact that investors may not primarily consider earnings when they include small and medium manufacturing companies' stocks in their portfolios. Lastly the results for dividend, book value, leverage and internationalization are supporting our previous findings.

Sector Analysis

Different industries have different dynamics, therefore have different ways of using assets to create added value and earn benefits. As a result it would be logic that the value relevance of different variables differs across sectors. In this section with the aim of investigating the performance of our earnings model and value relevance of our independent variables across industries, we regrouped the data in to subgroups, so that each subgroup contains data from one specific sector. The panel data that we used contained data of thirty small and medium sized manufacturing companies. When they were regrouped, we obtained eight subgroups; however five of the

companies can not be included any of the subgroups due to the fact that each belongs to different industries. Following tables indicate descriptive statistics for packaging, dye and chemical, food and beverage, stationery, automotive, textile raw material, textile confection and construction industries:

Table 22: Sector Analysis, Descriptive Statistics 1

	Packaging		Dye & Chemical		Food & Beverage	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
MV (USD)	13,193,164	16,968.722	32,418,027	45,501.703	12,110,002	13,614.776
E (USD)	-1,287,981	6,691.337	249,549	8,497.059	349,904	1,705.371
D (USD)	111,253	614.670	2,668,656	3,485.526	213,584	823.699
B (USD)	11,790,542	16,092.940	18,245,618	51,644.843	13,236,653	9,728.083
DeA %	67	5.3	119	11.1	41	2.2
FSTS %	21	2.9	18	1	13	2.2

Small and medium manufacturing firms in packaging industry have an average (between 1997-2007) market value of 13,193,164 USD, earnings of -128,798 USD , they have distributed 111,253 USD dividends and their average book value is 11,790,542 USD. They have financed (in the average) 67% of their assets with debt and (in the average) 20% of their sales have consisted of exports. For the small and medium manufacturing companies in dye and chemical industries the average market value between 1997 and 2007 is 32,418,027 USD. The earnings have an average of 249549.422, they have distributed 2,668,656 dividends and their book value is 51,644,843 USD. Their book value is 18,245,618. They have financed all their assets and some of their debts with debt (since the debt to asset ratio exceeds one). Their exports have consisted 17% of their total sales. The companies from food and beverage industry have an average market value of 12,110,002 USD, earnings of 349,904 USD. In the average 213,584 USD dividends have been distributed. In the

average their book value is 13,236,653 USD. They have financed 41% of their assets with debt and 12% of their sales have been exports.

Table 23: Sector Analysis, Descriptive Statistics 2

	Stationery		Automotive		Textile Raw Material	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
MV (USD)	5,641,416	9,910.391	48,315,298	77,627.998	7,505,235	7,469.169
E (USD)	1,820,390	1,876,072	1,643,654	2,459.154	-444,199	1,585.143
D (USD)	665,220	961.785	563,778	965.713	67,637	260.721
B (USD)	9,233,041	8,771.832	14,763,570	8,815.316	6,057,543	4,053.430
DeA %	37	1.2	42	1.3	53	2
FSTS %	5	0.5	39	2.3	38	1.9

Average market value and earnings (between years 1997-2007) for small and medium manufacturing companies from stationery industry have been 5,641,416 USD, 1,820,390 USD. They have distributed 665,220 USD dividends. Their average book value is 9,233,041 USD. They have an average debt to asset and export to sales ratio of 37 % and 5% consecutively. When it comes to the companies from automotive industry in the average they have a market value and earnings of 483,152,298 USD and 1,643,654 USD. They have distributed 563,778 USD dividends. Their average book value is 14,763,570 USD. Their average debt to asset and export to total sales ratio have been consecutively 42% and 39%. For the small and medium companies that produces textile raw material the average market value and earnings have been 7,505,235 USD and -444,199 USD. They have distributed 67,637 USD of dividends. Their book value is 6,057,543 USD. In the average they have financed 53% of their assets with debt and exports have consisted 38% of their total sales.

Table 24: Sector Analysis, Descriptive Statistics 3

	Textile Confection		Construction	
	Mean	Std. Deviation	Mean	Std. Deviation
MV (USD)	5,749,241	6,691.748	32,512,446	68,451.731
E (USD)	-492,843	1,712.193	3,828,126	8,868.010
D (USD)	27,329	89.793	1,992,863	5,002.427
B (USD)	6,807,998	4,414.574	30,011,192	52,538.470
DeA %	56	1.5	53	1.3
FSTS %	38	4.2	18	1.3

When it comes to the small and medium manufacturing companies from textile confection industry, their average market value and earnings have been 5,749,241 USD and -492,843 USD. In the average 27,329 USD dividends have been distributed. Their average book value is 6,807,998 USD. In the average they have financed 56% of their assets with their debt and exports have consisted 38% of their total sales. Lastly the companies from construction industry have an average market value and earnings of 32,512,446 USD and 3,828,126 USD. They have distributed 1,992,863 USD of dividends. Their average book value is 30,011,192 USD. They have financed (in the average) 53% of their assets with debt and exports have consisted 18% of their total sales.

In the following table with the aim of examining the reliability of results and explanatory power of model across industries, Durbin-Watson values, Durbin-Watson critical values, F values and adjusted are square values and number of observations for each subsample are indicated.

Table 25: Adjusted R Square and DW Values by Sector

Industry	D-W	dl-du	F	Adj. R square	N
Packaging	1.365	1.22-1.725	3.16	0.213	41
Dye & Chemical	3.884	0.63-2.00	30.12	0.885	19
Food & Beverage	1.069	1.34-1.72	44.79	0.811	52
Stationery	3.149	0.68-1.97	3.33	0.368	22
Automotive	1.164	0.734-1.93	5.06	0.492	21
Textile Raw material	1.817	0.685-1.977	4.28	0.45	21
Textile Confection	1.052	1.03-1.76	1.09	0.015	33
Construction	2.258	1.26-1.72	197.03	0.958	44

Durbin-Watson value for food and beverage industry is lower than the lower bond of Durbin-Watson critical value interval; therefore there is evidence that there is positive autocorrelation between residuals. Durbin-Watson values for packaging, automotive, textile raw material, textile confection industries are between the lower and upper bonds of Durbin-Watson critical value interval which indicates there is no proof of positive autocorrelation. Durbin-Watson values for dye and chemical, stationery and construction industries are bigger than upper bond of Durbin-Watson critical value interval; thus there is evidence that there is no positive autocorrelation between residuals. The explanatory power of the model changes across industries. It explains only 1.5% of the dependant variable's variation for the small and medium manufacturing companies from textile confection industry.

For the packaging industry the explanatory power is 21.3%, for dye and chemical 88.5%, for stationery 36.8%, for automotive 49.2%, for textile raw material 45%, for construction 95.8%. As seen by the results the model has a significant explanatory power across industries especially for chemical and construction industries.

Following table indicates standardized coefficients of variables across industries as well as their significances.

Table 26: Estimated Coefficients and Their Significances, by Sector

	E		D		B		DeA		FSTS	
Industry	Coeff.	Sig.	Coeff.	Sig.	Coeff	Sig.	Coeff.	Sig.	Coeff.	Sig.
Packaging	-0.386	0.033	0.067	0.638	0.714	0	0.124	0.426	0.025	0.859
Dye & Chemical	0.075	0.587	0.497	0.066	0.697	0.016	0.275	0.11	-0.231	0.04
Food & Beverage	0.054	0.521	0.226	0.016	0.767	0	0.033	0.678	-0.017	0.793
Stationery	-0.092	0.924	-0.098	0.873	0.917	0.083	-0.009	0.97	-0.224	0.391
Automotive	-0.543	0.027	0.178	0.433	0.32	0.062	0.362	0.045	-0.295	0.089
Textile Raw material	-0.019	0.93	-0.121	0.529	0.924	0.004	0.17	0.529	0.25	0.254
Textile Confection	0.084	0.759	0.159	0.569	0.55	0.21	0.546	0.212	0.108	0.677
Construction	-0.622	0	0.422	0	0.202	0	0.031	0.479	-0.08	0.1

Among the tested independent variables the degree of internationalization (FSTS) is mostly insignificant except for dye and chemical industry. When it comes to the leverage, industry based results are supporting the results of panel data; debt to asset ratio is mostly insignificant with the exception of automotive industry. Moreover book value is significant and has positive coefficients for most of the industries (with the exception of textile confection, book value seems insignificant for stationery and automotive industries, however the significances are very close to 0.05), which is consistent with our previous findings with the pooled and annual regressions. Furthermore dividends are significant for food and beverage and construction industries (in addition the significance for dye and chemical industry is very close to 0.05) and the coefficients are positive. When it comes to the earnings it is significant for construction, packaging and automotive industries and the coefficients are negative. Nevertheless when we look at the coefficients of earnings for different industries, their signs are not consistent.

The results of sector analysis bring complementary information to our previous findings. First, although the adjusted R square differs among industries it seems that the model has a strong explanatory power with the exception of textile and confection industry. In addition, book value is significant and has a positive relation with firm value for almost all industry groups. The only industry where book value is far from 0.05 significance level is textile confection. Dividends which proved significant as result of our pooled regression seem significant for three industry groups and the relation is positive. When it comes to the leverage and internationalization they are insignificant across industries with the exception of dye and chemical and automotive industries. Most importantly this analysis shows that

earnings are not value relevant for most of the industries except construction and automotive. Another important contribution of using sector as a dummy variable is the fact that this investigation may give birth to future studies in the field of valuating small and medium businesses in Turkey, because this analysis shows that explanatory power or the Ohlson Model and the significances and the effects of some variables differs from industry to industry. The reason of these differences may be the differences of industry mechanics or the different investment perspectives of investors towards different industries. Although explaining these reasons is not in this study's area of interest, it contributes to the Turkish SME valuation literature by shedding light to the existence of these differences.

Results

This section is consecrated to the summary of all previous regression results. It contains the analysis panel data by using cash flow model, EBIT model and earnings model as well as the cross sectional and industrial analysis realized by using earnings model.

In this dissertation with the aim of contributing the valuation efforts of small and medium manufacturing companies in Turkey we tested the value relevance of earnings, cash flows, earnings before interest and taxes, book value, dividends, leverage and the degree of internationalization. In order to realize this we derived three different linear models from Ohlon's model. The original version of the model explains market value of the company as a linear function of earnings, book value, dividends and other relevant information. First we replaced other relevant information by leverage and internationalization and then with the aim of testing the

value relevance of EBIT and cash flow we developed two other models where earnings was replaced by EBIT in one and by cash flow in the other. The results indicated that the outcomes of cash flow and EBIT based models were not reliable due to the evidence of strong positive autocorrelation between residuals. In order to overcome the effects of autocorrelation ARIMA Models, autoregressive or moving average methods can be used. Our study showed that, in case an Ohlson variant linear model is used in order to investigate the value relevance of EBIT or cash flows, dividends, book value, internationalization and leverage, an autocorrelation problem is showed up. The mentioned models and methods would be helpful to the future researchers that want to contribute the valuation efforts of SMEs On the other hand earnings based model brought up reliable and significant results. First of all the model explained 51.2% of the dependent variable's variance. Moreover it showed that leverage had no significant effect on the market value of the small and medium manufacturing companies in ISE. In 1966 Miller and Modigliani found similar results. Rees (1997) also identified that debt policy had no value relevant information for firms in Tunisian Stock Exchange. In addition the results of the analysis indicated that degree of internationalization (proxied by export to total sales ratio) is not significantly value relevant for small and medium manufacturing companies. This contradiction to the existing empirical studies can be explained by the difference of firm characteristics in the samples. While the samples of early studies are consisting of large multinational companies we investigated small and medium companies. For instance Riahi-Belkaoui (1999) realized his research with the data of most international hundred US firms; on the other hand, in our case, internationalization of a Turkish SME is mostly limited by exports. Furthermore the results indicated that dividends and book value had significant and positive effects on the market value of

the small and medium manufacturing companies in ISE which is in line with the existing empirical studies. Lastly our results showed that earnings had a significant but negative effect on the market value of the company. The magnitude of the coefficient was low and the significance was not as high as the significance of book value or dividends. Following causes may explain the reason of this contradiction; Turkey is a developing country, thus its economy is relatively vulnerable to global and domestic crises, moreover due to their size SMEs are strongly affected by these crises which cause a significant fluctuation of the firms' earnings. On that point such a volatile data may not be value relevant for investors. Burgstahler and Dichev (1997) noted that in a turbulent environment where firm failures are common, it appears that investors pay less attention to future earnings that may not be realized. In addition, Tuller (1994) stated that earnings is not a good indicator of market value, because generally accepted accounting principles give company managers a wide range of choices for recording transactions.

On that point we expanded our research first, in order to investigate the effects of earnings across years and industries and explain more rigorously this contradiction; second to analyze model's performance across years and industries.

The results of cross sectional analysis indicated that the data is reliable across years and the model has a strong explanatory power except for 1997. We also identified that earnings had no significant effect on value across years except for 1999, besides though the sign of the coefficient was negative for 1999 this sign was not consistent across years. These facts supports the idea that earnings is not a good indicator of value neither a good value relevant information for investors who include small and medium manufacturing companies in their portfolios. Moreover

the results for dividends, book value, leverage and internationalization were supporting the results gathered from the analysis of panel data.

Our tests across eight industries indicated similar results. The explanatory power of the model has changed across industries but with the exception of textile confection industry, it is high. For the packaging industry the explanatory power is 21.3%, for dye and chemical 88.5%, for stationery 36.8%, for automotive 49.2%, for textile raw material 45%, for construction 95.8%. When it comes to the effect of earnings, it is significant for construction, packaging and automotive industries and the coefficients are negative. Nevertheless when we look at the coefficients of earnings for different industries, their signs are not consistent. This inconsistency supports the fact that earnings is not a good indicator of value and neither a good value relevant information for small and medium manufacturing companies in ISE. However the fact that it has significant and negative effect for companies in construction, packaging and automotive industries may constitute starting points for future studies. Furthermore the degree of internationalization (FSTS) is mostly insignificant except for dye and chemical industry and the leverage is mostly insignificant with the exception of automotive industry which supports our previous findings. The results for dividends and book value are also supporting the results of the analysis with panel data; book value is significant and has positive coefficients for most of the industries (with the exception of textile confection, it is very close to the significance level for stationery and automotive industries), in addition dividends is significant for food and beverage and construction industries (nearly significant for dye and chemical industry). Moreover sector analysis shows that explanatory power or the Ohlson Model and the significances and the effects of some variables differ from industry to industry. Although explaining the reasons of these differences is not

in this study's area of interest, it contributes to the Turkish SME valuation literature by shedding light to the existence of these differences and may give birth to the future studies.

CHAPTER 6

CONCLUSION

SMEs have a crucial importance for national and global economies due to their flexibility, ability of adaptation to changes and ability to take fast decisions. In the world, 95% of the firms hold SME characteristic; they carry 66% of the employment and 55% of the production. In the European Union, SMEs comprise approximately 99% of all firms and employ between them about 65 million people. In Turkey, SMEs constitute 76.7% of country's employment, 26.5% of investment and 38% of added value. They form 95% of the manufacturing sector, 61.1% of the employment and 27.3% of the added value in this sector.

The numbers above show that the importance of SMEs in Turkey is eminent. This study aimed to contribute the existing international trade litterature in Turkey by concentrating on a very specific area; valuation of small and medium sized manufacturing companies, because it has been observed that Turkish valuation literature lacks to narrow its focus solely on SMEs. Thus, with the aim of contributing the valuation efforts of small businesses in Turkey, we tested the effects of a number of independent variables, including internationalization on market value of small and medium manufacturing firms in Turkey. Understanding the valuation and the effect of different variables on the value of SMEs is not only important for the local investors but also for the foreign investors, foreign companies that seek

merging or acquisitions, as well as SME owners and managers in Turkey who look for more effective value management for their companies.

To establish a valid model which links the set of independent variables and firm value, we started from Ohlson Model which is widely used in the existing valuation literature. Than three different linear models were derivated from Ohlson Model. The earnings model expresses the market value of the company as a linear combination of earnings, dividends, book value, leverage and internationalization. In the second model earnings is replaced by earnings before interest and taxes. Lastly, the third model contains cash flows instead of earnings. Therefore we established three different linear models with the aim of testing the effects of earnings, earnings before interest and taxes, cash flows, dividends, book value, leverage and internationalization on the market value of small and medium sized manufacturing companies.

With the aim of analyzing the value relevance of internationalization, earnings, cash flows, book value, dividends and leverage, secondary data gathered from ISE was used. Once the definition of an SME was made according the criteria used by EU, we identified the companies which constitute the data pool. Necessary data to calculate the independent variables was gathered from the balance sheets of the companies. When it comes to the calculation of dependant variable, market values of the companies' stocks were considered. On that point, before application of the model, one should consider the effects of inflation, because of the existence of high inflation in Turkey. It is obvious that since the inflation raises the prices continuously, it raises the value of dependant and independent variables (except for ratios) simultaneously. Thus the existence of high inflation creates a false link between independent and dependant variables. In order mitigate the effect of

inflation, Turkish Lira and New Turkish Lira values are converted in to US dollars. Once the data set was ready, we tested the three models with pooled data. For the earnings and EBIT model the data set included 314 observations, as for the cash flow model the number of observations was 84 due to the unavailability of data. Than we deepened our research, by realizing a cross sectional and sector analysis using earnings model. The results of our study are mostly consistent with the literature; however some shortcomings existed despite the validity of the methodology and model.

- The effect of cash flow on small and medium sized manufacturing companies' market value is inconclusive.

Despite the strong explanatory power of the cash flow model (45.8%), the analysis showed that there is evidence that there is a significant positive autocorrelation between residuals. Autocorrelation is a problem in regression analysis since its existence violates the ordinary least squares assumption that the error terms are uncorrelated. Therefore, it is evident that the results of this regression analysis are not healthy. In conclusion the effect of cash flow on small and medium sized manufacturing companies' market value is inconclusive.

- The effect of EBIT on market value of the small and medium sized manufacturing companies' is inconclusive.

Our second model expresses the market value of the small and medium sized manufacturing companies as a linear function of earnings before interest and taxes,

dividends, book value, leverage and internationalization. Once more a significant positive autocorrelation between residuals was detected. Thus, despite the obvious fact that the EBIT model has a strong explanatory power (52.6%), the results of this analysis are not healthy due to the violation of the ordinary least squares assumption.

- The linear model which expresses the market value of the small and medium sized manufacturing companies as a linear function of earnings, dividends, book value, leverage and internationalization has a strong explanatory power.

The results of the analysis of earnings model have shown that the earnings model explained 51.2% of the dependant variable's variance. Therefore one important contribution of this study is our Ohlson variant model is not only valid but also an effective tool in explaining the variance of small and medium manufacturing companies' market value. A direct implication of this conclusion is the fact that this model may consists a solid basis for the future SME and value studies; this model may be used to reveal the value relevance of different independent variables. The strength of the model's explanatory power was also confirmed by cross sectional analysis. In sector analysis, although the adjusted R square differs among industries it seems that the model has a strong explanatory power with the exception of textile and confection industry

- Leverage has no significant effect on the market value of small and medium sized manufacturing companies.

One of the dependant variables that this study concentrated on was leverage (debt to asset ratio) which summarizes the debt policies of the companies. The results indicated that leverage does not posses information about the market value of the small and medium sized companies in ISE. Therefore investors when adding small and medium manufacturing companies in their portfolios should consider that stock market in Turkey does not recognize leverage as a value relevant information for SMEs.

- Internationalization has no significant effect on the market value of small and medium sized manufacturing companies.

In our study, we identified that the degree of internationalization has no significant effect on the value of the small and medium manufacturing companies in ISE. In other words the investors in ISE don't recognize the internationalization as a hidden asset. This results has confirmed by the cross sectional analysis, in addition internationalization was insignificant across industries except for the dye and chemical industry.

- Earnings is neither a good indicator of value nor brings value relevant information for investors who include small and medium manufacturing companies in their portfolios.

The results of the panel data analysis indicated that earnings had a significant but negative effect on the market value of the company. However, the significance and the magnitude of the coefficient were low. On the other hand previous studies in

the valuation literature had shown the positive value relevance of earnings. Following causes may explain the reason of this contradiction; Turkey is a developing country, thus its economy is relatively vulnerable to global and domestic crises, moreover due to their size, SMEs are strongly affected by these crises which cause a significant fluctuation of the firms' earnings. On that point such a volatile data may not be value relevant for investors. Moreover, in a turbulent environment where firm failures are common, it appears that investors pay less attention to future earnings that may not be realized. Lastly, since generally accepted accounting principles give company managers a wide range of choices for recording transactions, earnings is a variable that can be manipulated by management decisions, therefore is not a fair indicator of market value. Furthermore, it is also possible that the investor does recognize not announced but expected earnings as value relevant information. Whether the expected earnings affect the market value of small and medium sized manufacturing companies in Turkey is an open research question. In addition, the results of cross sectional analysis had shown that earnings had no significant effect on value across years except for 1999, besides, though the sign of the coefficient was negative for 1999 this sign was not consistent across years. These facts supports the idea that earnings is neither a good indicator of value nor brings value relevant information for investors who include small and medium manufacturing companies in their portfolios. The sector analysis revealed that earnings is significant for construction, packaging and automotive industries and the coefficients are negative. Nevertheless when we look at the coefficients of earnings for different industries, their signs are not consistent. This inconsistency supports the fact that earnings is neither a good indicator of value and nor a good value relevant information for small and medium manufacturing companies in ISE. However the

fact that it has significant and negative effect for companies in construction, packaging and automotive industries may constitute starting points for future studies.

- Dividends and book value has a significant and positive effect on market value of the small and medium sized manufacturing companies in ISE.

The results of our analysis revealed that dividends and book value had a significant and positive effect on market value of small and medium sized manufacturing companies in ISE. The results were also confirmed by cross sectional and sector analysis. Thus, we identified that investors in ISE (when investing in SMEs) found book value and dividends more value relevant than earnings which can be manipulated by management decisions or which may never realized because of the turbulent environment of Turkish market. This finding may shed light to the investors who are willing to add SMEs in their portfolios. Besides managers and owners of the Turkish SMEs may manage more effectively their companies' value if they take into account of this findings.

Although this study has realized important contribution to the existing literature, it has some limitations. Firstly this study couldn't effectively determine the effect of cash flow or EBIT on the market value of the small and medium sized manufacturing companies due to the autocorrelation problem. Therefore although the models' explanatory power were high, we can not say which of the cash flow streams (earnings, cash flows or EBIT) are more value relevant. Moreover we observed an important correlation among earnings, dividends, book value and market value. It consists one of the limitations of this study. However, multicollinearity does not reduce the explanatory power or reliability of the model. Moreover, the relation

between the independent variables may give birth to future studies. In the future researches, the dividends conundrum can be questioned by investigating the effect of announced earnings or expected earnings on dividends. Another shortcoming of this study is the relatively limited number of companies included in the study. However we couldn't find any solution to this problem since the number of small and medium sized manufacturing companies in ISE is limited.

In addition to the contributions of this study to the Turkish SME and valuation literature, it also may constitute starting point for the future studies. In this dissertation we defined a valid model and methodology which links the market value of a small and medium sized manufacturing company to the earnings, dividends, book value and other relevant information which we replaced by leverage and internationalization. For the future studies, other independent variables may be considered as other relevant information and can be tested via using this model and methodology. Furthermore this study found out that announced earnings is neither a good indicator of value, nor brings value relevant information for investors who include small and medium manufacturing companies in their portfolios. Nevertheless, whether the expected earnings affect the market value of small and medium sized manufacturing companies in Turkey is an open research question. The future researcher may use future earnings as a proxy for expected earnings and thus investigate the value relevance of expected earnings.

Moreover our sector analysis revealed that the value relevance of different independent variables varies across sectors. The possible reasons of this fact may be starting points for future studies.

APPENDIX

APPENDIX A
LIST OF COMPANIES INCLUDED IN THE ANALYSIS OF EARNINGS AND EBIT MODEL

Adel Kalemcilik
Alkim Kimya
Borusan
Bosch Fren Sistemleri
Ceylan Giyim
ÇBS Boya
Çimbeton
Derimod
Ege Endüstri
Emek Elektrik
Eminiş Ambalaj
Ersu Gıda
F-M İzmit Biston
Haznedat Refraktör
Işıklar Ambalaj
Kaplamin
Kav Orman Sanayi
Konfurt
Kristal Kola
Lüks Kadife
Marmaris Altınyunus
Mazhar Zorlu
Metemtem Tekstil
Okan Tekstil
Pasta Villa
Pınar Su
Servet Kırtasiye
Uşak Seramik
Ünal Tarım
Vanet

APPENDIX B
LIST OF COMPANIES INCLUDED IN THE ANALYSIS OF CASH FLOW MODEL

Adel Kalemcilik
Alkim Kimya
Borusan
Bosch Fren Sistemleri
Ceylan Giyim
ÇBS Boya
Çimbeton
Derimod
Ege Endüstri

Eminiş Ambalaj
Ersu Gıda
Haznedat Refraktör
Işıklar Ambalaj
Kaplamin
Kav Orman Sanayi
Konfurt
Kristal Kola
Lüks Kadife
Mazhar Zorlu
Metemtem Tekstil
Okan Tekstil
Pasta Villa
Pınar Su
Servet Kırtasiye
Uşak Seramik
Ünal Tarım
Vanet

APPENDIX C
LIST OF COMPANIES BY SECTOR

Packaging

Eminiş Ambalaj
Işıklar Ambalaj
Kaplamin
Ünal Tarım

Dye & Chemical

Alkim Kimya
ÇBS Boya

Food & Beverage

Vanet
Pınar Su
Kristal Kola
Konfurt
Ersu Gıda

Construction

Borusan
Çimbeton
Haznedar Refraktör
Uşak Seramik

Stationery

Adel Kalemcilik
Servet Kırtasiye

Automotive

Bosch Fren
Ege Endüstri

Textile Raw Material

Metemtem Textil
Lüks Kadife

Textile Confection

Ceylan Giyim
Derimod
Okan Tekstil

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