

IMPACTS OF THE CORPORATE INCOME TAX CHANGE
ON ASSET PRICES IN TURKEY

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SAMET KÜTÜK

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Prof. Dr. Meliha Altunışık
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

Prof. Dr. Nadir Öcal
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

Assist. Prof. Dr. Pınar Derin-Güre
Supervisor

Examining Committee Members

Assoc. Prof. Dr. Elif Akbostancı Özkazanç (METU, ECON)

Assist. Prof. Dr. Pınar Derin-Güre (METU, ECON)

Assist. Prof. Dr. Ayşegül Eruygur (Çankaya Üni., ECON)

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name : SAMET KÜTÜK

Signature :

ABSTRACT

IMPACTS OF THE CORPORATE INCOME TAX CHANGE ON ASSET PRICES IN TURKEY

KÜTÜK, Samet

M.Sc., Department of Economics

Supervisor: Assist. Prof. Dr. Pınar Derin-Güre

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The aim of this paper is to analyze impacts of the announcement of the corporate income tax change on asset prices in Turkey in 2005. Prime Minister of Turkey in his speech in his political party group meeting in Turkish Grand National Assembly announced the decline in corporate income tax rate on November 29, 2005. He indicated that the corporate tax rate would be decreased from 30% to 20% starting from the next year. In line with the market efficiency hypothesis, we use event study methodology to measure the effects of this announcement on asset prices. To the best of our knowledge, we are the first to analyze impacts of the announcement of the corporate income tax change in Turkey in 2005 on asset prices using substantially large data sets. Kandır and Yakar (2012) investigates the same announcement with quite small sample set which contains only five companies among highest corporate income tax payers in Istanbul Stock Exchange Market and they conclude that reaction of stock returns are significant. We obtain that there is no significant change in asset prices in

the event period using two different large sample sets and three different methodologies. This result is parallel to the fact that asset prices in semi-efficient stock markets reflect publicly available information.

Keywords: Corporate Income Tax, Asset Prices in Turkey, Event Study, Efficient Market Hypothesis

ÖZ

TÜRKİYE’DE KURUMLAR VERGİSİ DEĞİŞİKLİĞİNİN VARLIK FİYATLARI ÜZERİNE ETKİSİ

KÜTÜK, Samet

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Bu çalışmanın amacı 2005 yılında yapılan kurumlar vergisi değişikliği açıklamasının varlık fiyatları üzerine etkisini incelemektir. Türkiye Cumhuriyeti Başbakanı, 29 Kasım 2005 tarihinde Türkiye Büyük Millet Meclisinde gerçekleşen siyasi parti grup toplantısında yaptığı konuşmada kurumlar vergisi oranında indirimle gidileceğini açıklamış, kurumlar vergisi oranının gelecek yılın başından itibaren yüzde 30’dan yüzde 20’ye düşürüleceğini belirtmiştir. Etkin piyasa hipotezi doğrultusunda, açıklamanın varlık fiyatları üzerindeki etkisini ölçmek için olay çalışması yöntemi kullanılmıştır. Bildiğimiz kadarıyla, bu çalışma 2005 yılında Türkiye’deki kurumlar vergisi değişikliği açıklamasının varlık fiyatları üzerine etkisini bu büyüklükte bir veri seti kullanarak yapan ilk çalışmadır. Kandır ve Yakar (2012) yılında aynı açıklamayı İstanbul Menkul Kıymetler Borsasında yer alan en çok vergi ödeyen 5 şirket ile incelemiş ve hisse senedi getirilerinin istatistiksel olarak anlamlı düzeyde tepki verdiği sonucuna ulaşmıştır. Bu çalışmada iki büyük örneklem ve üç farklı yöntem kullanılarak oluşturulan olay döneminde varlık fiyatlarında istatistiksel

olarak anlamlı deęiřmelerin olmadıęı sonucuna ulařılmıřtır. Elde edilen bu sonu yarı etkin piyasalarda varlık fiyatlarının kamuya mal olmuř bilgileri fiyatlandırıđı savını desteklemektedir.

Anahtar Kelimeler: Kurumlar Vergisi Deęiřiklięi, Trkiye’de Varlık Fiyatları, Olay alıřması, Etkin Piyasa Hipotezi

To Merve

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CHAPTER 1

INTRODUCTION

The aim of this study is to analyze impacts of the announcement of the corporate income tax change on asset prices in Turkey in 2005. Corporate income tax rate decreased in 2006 but the official announcement was on November 29, 2005. Prime Minister of Turkey in his speech in his political party group meeting in Turkish Grand National Assembly announced the decline in corporate income tax rate. He indicated that the corporate tax rate is decreased from 30% to 20% and lower tax rates would be applied starting from 2006.

In this study, event study analysis is used and it is analyzed whether this announcement caused significant change in values of firms. Asset prices in Istanbul Stock Exchange¹ are used as a sufficient statistics of firm values. According to the Efficient Market Hypothesis², no significant change in asset prices in the event period is expected since there were certain information and expectation that the corporate income tax rate would fall in the short run before the announcement.

¹ After December 30, 2012, Istanbul Stock Exchange Market is transformed to Borsa Istanbul. Since Borsa Istanbul does not exist in the analysis and research period of this study, the name of “Istanbul Stock Exchange Market” is used in this study.

² The Efficient Market Hypothesis is explained in section 3.

Kandır and Yakar (2012) investigates the same announcement with quite small sample set which contains only five companies among highest corporate income tax payers in Istanbul Stock Exchange Market. Prices and dividend payments are used in return calculation of these five stocks. In calculation of abnormal return, only the market model is used. As a result of empirical results, the authors conclude that reaction of stock returns are significant and suggest to consider Istanbul Stock Exchange Market as semi-strong efficient market according to the Efficient Market Hypothesis.

In contrast to the Kandır and Yakar (2012), two large sample sets are used in this paper. In the first sample set, almost all firms are included in the sample. All companies among highest corporate income tax payers, which exist in Istanbul Stock Exchange Market, are included in the second sample. Therefore, this study provides two large sample sets in the analysis. In contrast to the study of Kandır and Yakar (2012), not only market model but also two alternative methods and econometrical approaches are utilized in the calculation of abnormal return. To the best of our knowledge, this is the first research to analyze impacts of the announcement of the corporate income tax change in Turkey in 2005 on asset prices using really large data sets utilizing different calculation approaches.

In the second chapter, brief review of tax system including corporate income tax in Turkey is introduced. In addition to information about the tax system, certain information and expectations about the decline in the corporate income tax rate before the official announcement in 2005 are discussed. A literature review about the Efficient Market Hypothesis and event study analysis is provided in the next chapter. Chapter 4 presents the methodological framework utilized in this study while Chapter 5 examines the empirical results of the study. Then, Chapter 6 undertakes robustness checks of the empirical results. Finally, the conclusions are presented in Chapter 7.

CHAPTER 2

TAX SYSTEM AND CORPORATE INCOME TAX CHANGES IN TURKEY³

Public Revenue is the sum of money received by the government within the constitutional limits from various sources in the country. Governments earn revenues from taxes levied on goods, services, individuals' and corporations' income, publicly owned companies income, capital receipts of the existing government bonds, privatization of public assets and etc.

Governments use public revenues in order to fulfill the administrative functions of states and provide public services like education, health, social security, and defense. Although governments have lots of sources of income, nearly in all of the countries, tax revenues are the most significant part of the public revenues. As it is shown in the Figure 1, tax revenue collected by the central government comprises nearly 80 percent of the public revenue in each year starting from the foundation of the Turkish Republic. In the recent years, this ratio gets larger, and in 2011 tax revenue to public revenue ratio is realized as 89 percent, which is the largest value of the Turkish Republic history. Therefore, it could be easy to make an inference that tax revenues is the most important part of the government revenues and any change in tax system can create quite important and

³ In various parts of this chapter, there are elements from Official Web Site of Revenue Administration (Revenue Administration, 2007). In order to avoid repetition, the reference is given once at the beginning of the chapter.

significant results both for the government and the economic agents subject to the tax.

Table 1: The Composition of the Public Revenue in Turkey

	Public Revenue (TL)	Tax Revenue (TL)	Share (%)
1923	111	95	85,7
1928	220	180	81,8
1933	202	156	77,6
1938	323	203	62,9
1943	1.031	758	73,5
1948	1.468	1.084	73,9
1953	2.272	1.708	75,2
1958	4.822	3.564	73,9
1963	11.731	8.424	71,8
1968	20.130	16.239	80,7
1973	58.548	51.958	88,7
1978	304.699	246.420	80,9
1983	2.313.957	1.934.492	83,6
1988	16.813.270	14.231.761	84,6
1993	350.845.430	264.272.936	75,3
1998	11.635.610.868	9.228.596.187	79,3
2003	98.558.732.547	84.316.168.756	85,5
2004	120.089.244.000	101.038.904.000	84,1
2005	148.237.974.000	119.250.807.000	80,4
2006	182.577.918.000	151.271.701.000	82,9
2007	203.349.268.000	171.098.466.000	84,1
2008	225.496.339.000	189.980.827.000	84,3
2009	232.930.317.000	196.313.308.000	84,3
2010	271.957.407.000	235.714.637.000	86,7
2011	319.512.928.000	284.490.017.000	89,0
2012	362.654.794.000	317.218.619.000	87,5
2013	420.194.883.507	367.473.551.231	87,5

Source: Turkish Revenue Administration

In general there are various classifications of taxes. For instance, there can be classification of taxes according to their subjects like income, wealth, and expenditure. However, the generally accepted one is the classification of direct and indirect taxes. In direct taxes, legal taxpayer and actual taxpayer is same, in other words governments collects taxes directly from the person or the company on whom the tax is imposed. On the other hand, in indirect taxes, the legal taxpayer could easily reflect the tax burden to different economic agents according to demand and supply elasticity of the parties. In

direct taxes, since government directly collects taxes from the individuals and corporations, the taxpayers are certain.

Similarly in Turkish tax regime, there are both indirect and direct taxes. According to the composition of tax revenues, the share of direct taxes is around 35.7% in average trough 1999 and 2013 (Figure 1).

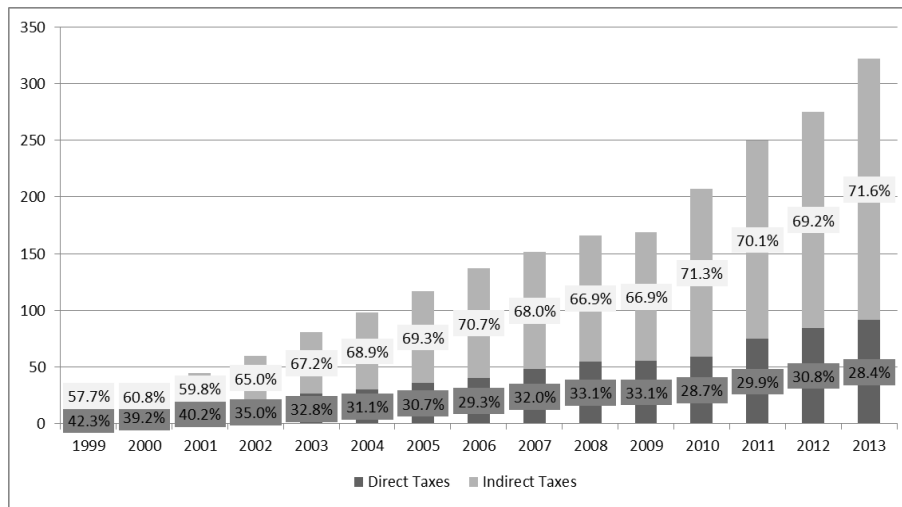


Figure 1: Composition of Tax Revenue in Turkey, Millions of TL, 1999-2013 Source: the Ministry of Development of the Republic of Turkey

The data retrieved from the Ministry of Development shows that government collected 17,1 billion TL taxes in 1999, the percentage share of revenue realized from direct taxes to the total tax revenue was 42.3, whereas the share of indirect taxes was 57.7 percentage in that year. However during the last decade, the revenue generated from indirect taxes increased faster than the revenue generated from direct taxes. Revenue collection from direct taxes increased by 12 times to 91.3 billion TL, while revenue collection from indirect taxes increased by 23 times to 230.3 billion TL between 1999 and 2013. As a result, the share of direct taxes to the total tax revenue decreased back to 28.4 percent whereas the share of indirect taxes rise to 71.6 percent in 2013 as shown in Figure 1.

2.1 Major Indirect Taxes in Turkish Tax System



Figure 2: Major Indirect Tax Types in Turkish Tax System Source: Turkish Revenue Administration

In Turkey there are various indirect tax types. Major ones are listed in Figure 2. One of the most frequently collected indirect tax item is value added tax, which is the tax collected from goods and services produced within Turkey. Another item is stamp duties which are collected as a percentage of value stated in the documents like contracts, agreements, financial statements, payrolls.

There is indirect taxation also in the financial sector which is banking insurance transaction taxes which are applied to transactions and services of banking and financial sectors. It is important to note that banks and insurance companies are exempt from value added taxes; instead, they are subject to banking and financial insurance tax for their services.

Special consumption taxes are another type of indirect taxes applied in Turkey. Special consumption taxes are different from value added taxes and they are applied to the some specific goods for the sake of social welfare such as reducing consumption of the harmful products to health and environment. Opposite to the value added taxes, special consumption taxes are only paid in the first purchases of the goods; in other words, they are not paid in each transaction later than the first one.

Custom duties, which are applied, to the goods imported from abroad. Communication tax, which is imposed, on all types of installation and telecommunication services provided by the mobile phone companies are two other examples of indirect taxes applied in Turkey.

Another tax type is gambling taxes. These taxes are applied in gambling activities such as lotteries and betting. Moreover, there are various types of fees in Turkish indirect tax system such as fees paid in notaries, fees paid in order to obtain passport, judgment fees.

2.2 Direct Taxes and Corporate Income Taxation in Turkey

Although there are various indirect taxes, there are two main elements of direct tax system in Turkey. Government collects direct taxes from wealth and assets of the citizens and income of individuals and corporations.

The direct taxes collected from wealth and assets by the Turkish government are motor vehicle tax, property tax, inheritance and gift tax. In general, motor vehicle tax is collected for the registration of motor vehicles in traffic and municipality areas. Property tax is collected each year from the land and building owners. Inheritance and gift tax are imposed on the items obtained as a gift or through inheritance. The direct tax collected from individuals' wealth and assets composes the small part of the revenue generated from the direct taxes.

Government collects direct taxes mainly from the individuals and corporations earnings and income. The rules of taxation concerning individuals' and corporations' earnings are stated in the Income Tax Law (1960) and Corporate Tax Law (1949) respectively (Revenue Administration, 2007).

If earnings and income belongs to individuals, then they pay income tax out of their earnings; whereas, if earnings and income belongs to companies, then they pay corporate tax out of their income and earnings.

The residents in Turkey are regarded as full tax liable and they are obliged to pay taxes from their worldwide income, whereas nonresidents in Turkey are regarded as limited tax liable and they are obliged to pay taxes only from their income earned in Turkey.

The second main direct tax is the corporate income tax. Corporate income tax is collected from corporations as percentage of their income and earnings. According to Corporation Tax Law, capital companies, cooperatives, joint ventures, public enterprises and corporations, and economic enterprises owned by the associations or foundations are obliged to pay the corporate income tax.

These corporations and corporate bodies have to pay corporate income taxes out of their net taxable income. The Corporation Tax Law of 1949 defines the net corporate income as the change in the net assets value of corporations at the beginning of the fiscal year and the net assets value at the end of the fiscal year as it is shown in Equation 1.

$$\begin{aligned}
 \text{Net corporate income} = & \\
 & \text{Net assets value}_{\text{the beginning of the fiscal year}} - \\
 & \text{Net assets value}_{\text{the end of fiscal year}}
 \end{aligned} \tag{1}$$

Table 2: Corporate Income Tax Rates in Turkey (%)

Years	Tax Rate (%)	Years	Tax Rate (%)
1990	46	2002	30
1991	46	2003	30
1992	46	2004	33
1993	46	2005	30
1994	25	2006	20
1995	25	2007	20
1996	25	2008	20
1997	25	2009	20
1998	25	2010	20
1999	30	2011	20
2000	30	2012	20
2001	30	2013	20

Source: Armağan, 2007 and Revenue Administration, 2014.

Corporate income tax rates in Turkey between 1990 and 2013 are shown in Table 2. According to the current tax system, corporate income tax rate is 20% and it is the same since the change in 2006. Before the last change in 2006 -official announcement was on November 29, 2005 and lower taxes were applied starting from 2006-, the corporate income tax rate was 30%.

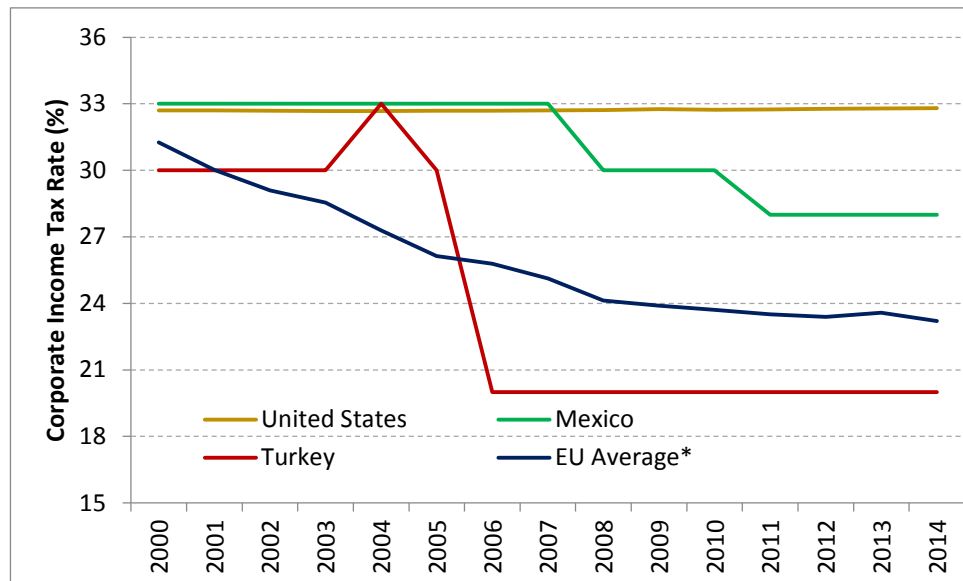


Figure 3: Corporate Income Tax Rate in Selected Countries Source: OECD Data Source * EU Average is the average of corporate income tax rates in 22 EU member states which are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

Figure 3 shows corporate income tax rates in the US, EU, Mexico and Turkey. It is clear that the tax rate in Turkey was quite above the EU average until the fall in 2006. However, the rates in Turkey are lower than one in the US and Mexico. Similar to Turkey, there is also downward trend in the EU.

It is certain that the corporate income tax rate has a significant role in overall economic activity due to the fact that tax rates is significant factor for the business profits after tax. Corporate income tax rate determines how much economic resources are shifted from productive sectors to governments. Therefore, higher corporate income tax rate causes higher production costs for the firms in the country. Regarding overall spillover effects of production costs, this would bring changes not only in investment behaviors of firms due to lower profit margins but also in prices, labor

earnings, and etc. There is no doubt that there is a close relation between private investment and corporate income tax rate. Moreover, the corporate income tax rate determines the competitiveness to attract foreign direct investment in a country. Therefore, the applied corporate income tax rate in Turkey has important implications as a developing country. As it is seen in Figure 3, Turkey had been applying quite higher tax rates until the last decline and there was an expectation of private sector about the decline in the corporate income tax rate in 2005.

The need for decline in the corporate tax rate was explained by the International Monetary Fund (IMF) before the announcement of an actual change in the IMF Staff Country Report 2005. It is stated that there is an agreed desire of further deduction in corporate income tax rates, broadening the tax base, and promoting compliance in the following three years after 2005. Report suggests that Turkey should make a stepwise reduction in corporate tax rates to the levels of new member states of EU.

In the same month the IMF Staff Country Report was published, on November 29, 2005, the Prime Minister of Turkey in his speech in his political party group meeting in Turkish Grand National Assembly announced the decline in corporate income tax rate. He indicated that the corporate tax rate was decreased from 30 percent to 20 percent and lower tax rates would be applied starting with 2006. It was aimed to have the advantage in global competition by promoting domestic and foreign investment in Turkey declining in the corporate income tax rate.

The Prime Minister explained the main reasons behind the corporate income tax rate reduction in the announcement in details. Firstly, the government aimed to increase both domestic and foreign investments in Turkey by the corporate income tax rate reduction. As a result of the reduction in the tax rates to the levels of Turkey's neighboring countries, it was expected that there would be a huge increase in the competitive power of Turkey

compared to the new EU Member States and EU candidate states. The government anticipated that both domestic and foreign investors would find the investment in Turkey more profitable owing to the improvements in investment climate in Turkey. Due to lower tax rates, the domestic investors who have a desire to make investment in the neighboring countries of Turkey were considered to have a chance to make investments in their own country with more competitive rates. As a result, the lower tax rates were thought as a way to attract more foreign direct investment to Turkey.

Secondly, the government targeted to broaden the tax base and increase the taxable income by the corporate income tax rate reduction. It was stated that corporations were complaining about high tax rates because high tax rates are seen as a significant obstacles to make profit. In addition to this, it was argued that high corporate income tax rates caused an increase in the tendency of tax evasion. In other words, the government pointed out that high corporate income tax rates are one of the major reason of informal economic activities of corporations. In this context, it was expected that there would be increase in the declared profits of the firms and taxable income and decrease in informal economic activities. The government also argued that government revenues would increase through compensation of the negative impact of the decline in the corporate income tax rate on government tax revenues owing to broader tax base and higher taxable income.

As it is clear in official government statements, main purposes of the decline in the corporate income tax rate can be classified in three targets. First one is to achieve increase in domestic investment; second one is to attract more foreign direct investment to Turkey; and the last one is to broaden tax base and increase tax revenue. Figure 4 shows the gross fixed capital formation in Turkey at 1998 constant prices. Although there are so many other factors affecting investment level and the global crisis of 2007-2008, real investment level is higher in the period after 2005 compared to the period

prior to 2005. The average real investment level at 1998 constant prices in 1998-2005 is 15.491 million TL; whereas, the average in 2006-2013 is much higher by 25.982 million TL.

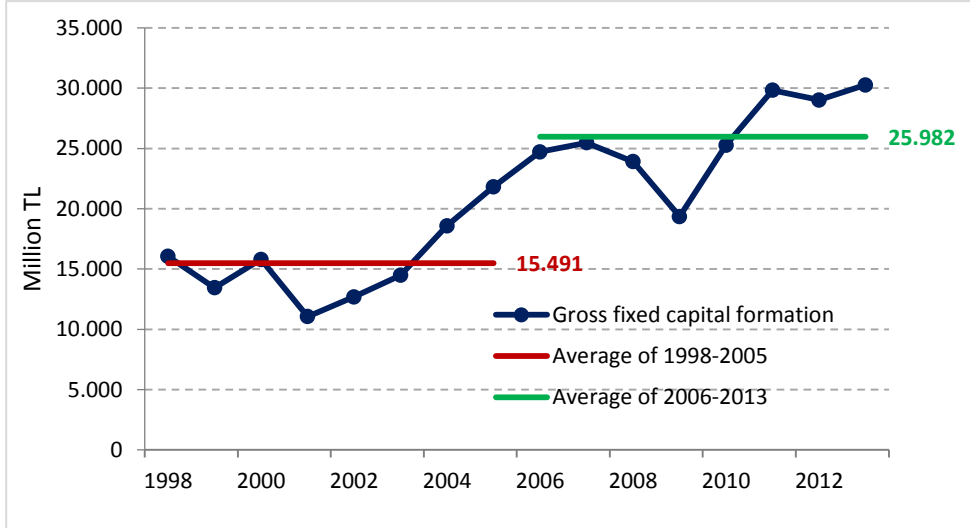


Figure 4: Gross Fixed Capital Formation in Turkey, at 1998 prices Source: Turkish Statistical Institute

The second target of the decline in the corporate income tax deduction is to achieve increase in foreign direct investment. In line with this purpose, there is a significant hike in 2006 and foreign direct investment doubled in 2006 (Figure 5). There is no doubt about the existence of other factors -like increasing privatization efforts of the government- affecting foreign direct investment, however, it can be argued that the decline in the tax rate can be one of the most important factors. The average of the foreign direct investment in the period of 1995-2005 (2.188 million US Dollar) is almost seven times lower than the average in the period of 2006-2013 (15.249 million US Dollar).

In a broader perspective, the government reaches its aims in terms of investment level and foreign direct investment. However, the situation is not so easy to interpret in tax base and taxable income. The Corporate income

tax collected increase through 1988 to 2013. However, its share in total tax collection does not change so much in the same period. The average share is 9.31 percent in 1988-2005 period and the average is 9.55 in the later years.

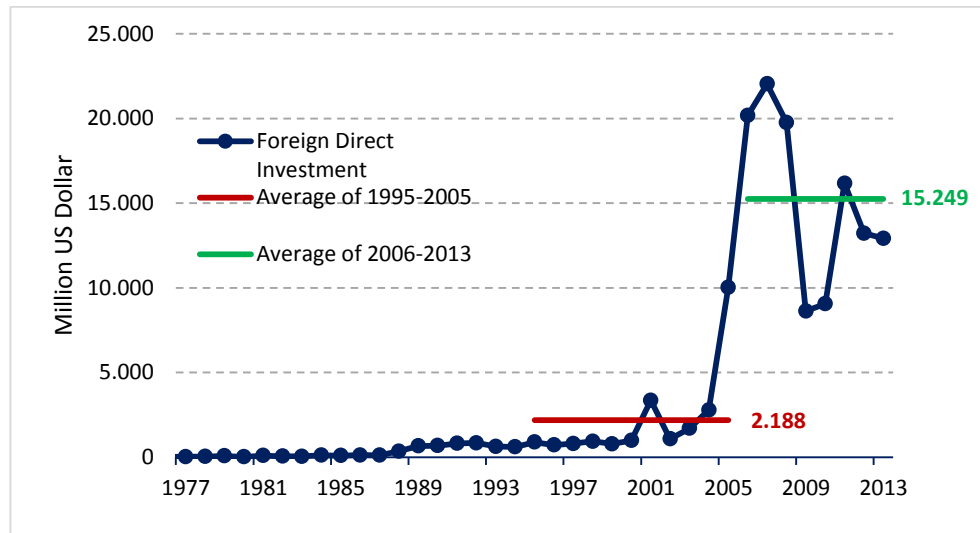


Figure 5: Foreign Direct Investment in Turkey Source: The Central Bank of the Republic of Turkey

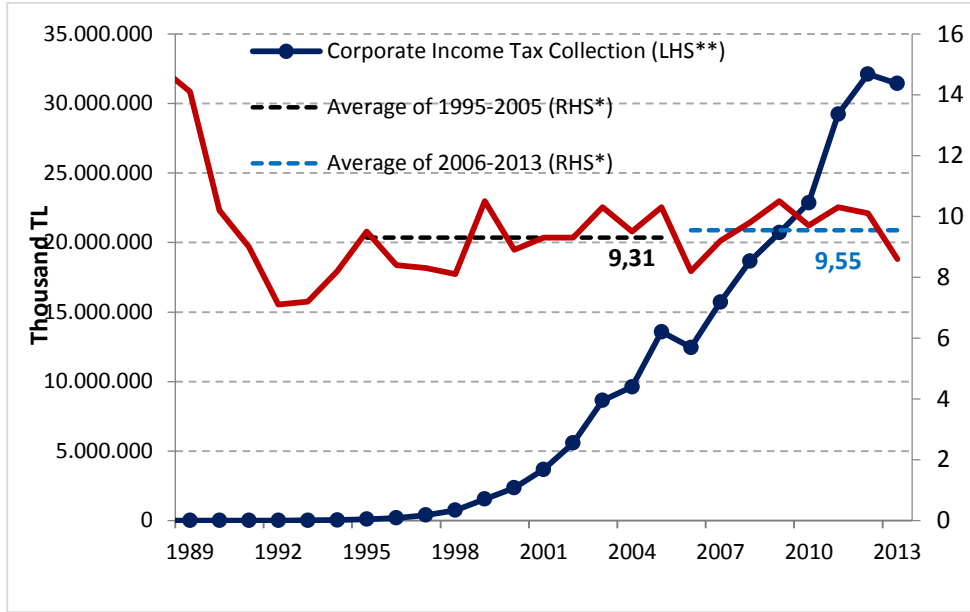


Figure 6: Corporate Income Tax Collection in Turkey Source: Turkish Revenue Administration *RHS: Right Hand Side, **LHS: Left Hand Side

In fact, the announcement of the decline in the corporate income tax rate by the Prime Minister of Turkey was not a surprise for Turkey. Besides recommendations from the IMF mentioned above; the Finance Minister Kemal Unakıtan had indicated that decline in corporate income tax rate would be realized and the Prime Minister would state it publicly in short term before the official announcement in several times.

One of speech of the Finance Minister of Turkey was in a panel on May 27, 2005 about underground economy in Ankara. He announced that they (the government members) would continue tax reductions, especially reduction in corporate income tax in order to compete with countries in the region. He added that the studies they had done about laws on corporate tax and income tax would be completed in a short time.

In addition to the speech on May, there is another speech on November 14, 2005 in the Tax Reward Ceremony of Uşak Chamber of Commerce and Trade. The Minister said that members of the government would make a generous decline in income tax rates and corporate tax rates in the following

days. It is indicated that everybody would be surprised after the announcement, and details about the tax rate decline would be provided by the Prime Minister (Yeni Asır Newspaper, 2005).

Other statement of the Finance Minister was just two days before the official announcement. The interview is published in the Hürriyet Newspaper on November 27, 2005. He said that 10 point reduction in corporate income tax rate would be realized and the Prime Minister of Turkey would make it public in 10 days (Hürriyet Newspaper, 2005).

In the light of this speeches and statement of the Finance Minister, it is certain that there are clear and significant declaration about the decline in the corporate income tax change beyond the expectations and signals. Therefore, economic agents are aware of the high probability about the tax rate decline in the near future.

CHAPTER 3

LITERATURE REVIEW

As it is indicated in previous section, the aim of this paper is to analyze impacts of the corporate income tax change on asset prices in Turkey; particularly this paper focuses on the change in 2005. In line with this purpose, Efficient Market Hypothesis becomes important and critical in this study. The equilibrium price in stock markets represents the consensus of all investors in the market and conclusion of all actions such as purchases and sales. According to the Efficient Market Hypothesis, the equilibrium point can change when new information come up in the market through the channel that the competitive investors in the market evaluate this new information and reflect this in the prices. Moreover, the Efficient Market Hypothesis provides that new equilibrium after the new information is set quickly without any delay since financial markets are enough efficient in reflecting all information. In other words, it implies that asset prices are always equal to present value of all future cash flows.

Actually the efficient market hypothesis mostly evolved from the idea of random walk theory. Although the term “random walk” was firstly used by an English mathematician and biometrician Karl Pearson in 1905, the concept of *efficient market* was originally seen in the PhD thesis of the French mathematician Louis Bachelier (Mussavian, 2000). In his work, Bachelier emphasizes that “past, present and even discounted future events

are reflected in market price, but often show no apparent relation to price changes”. However until 1950s, Bachelier’s work on market efficiency was disregarded.

Kendall was the first one who used random walk term in finance in 1953 (Kendall & Hill, 1953). Kendall examined 22 UK stock indexes and commodity prices in his work, and he concluded that in series of prices, which are observed at fairly close intervals the random changes from one term to the next are so large as to swamp any systematic effect which may be present. The data behave almost like wandering series. Therefore, the prices were behaving randomly regardless of what occurred in the past days, so the near zero correlation among price series has been called as random walk model.

After these contributions in this research subject, the core idea of the Efficient Market Hypothesis, which is prices in markets are reflections of whole publicly available information, is developed by Eugene F. Fama and Paul A. Samuelson in the same decade in 1960s but their studies are independent from each other. These two important and famous economists are studied the same topic with different approaches (Lo, 2007).

Samuelson (1965) argues that in a market with efficient information, movements in the prices must not be estimated if prices reflect all information and expectations of economic agents in the market. He proved his argument by developing a general stochastic model of price with no uncertainty. Using a different methodology, Fama also worked about the same topic but his approach is quite different than Samuelson since he focuses on statistical approaches in asset markets. In 1960s, he wrote substantially important papers about asset markets, stock prices, information efficiency and the relations of stock prices and random walk theory (Mandelbrot and the stable Paretian hypothesis, 1963), (The behavior of stock market prices, 1965a), (Random walks in stock market prices, 1965b).

He started to use market efficiency and explicitly indicated that whenever new information arises, the value of this information are reflected in the stock prices by transactions of competitive investors *instantaneously* (1965b).

Fama's (1970) paper on the efficient market presents a comprehensive review of the theory and beyond the theory to empirical work. He defines market efficiency very clearly: A market is said to be efficient if security prices fully reflect all the available information in the market. One can make an inference that nobody can generate excess returns using available present and historical information according to the efficient market hypothesis framework. Not surprisingly, there are certain assumptions in this hypothesis to observe such results: there is a large number of economic agents in the competitive market, each of them are profit-maximizers, they analyze the firms and determine the value of securities independently from each other. When a new information arise in the market, owing to instant actions of profit maximizer investors and independent economic agents in the market, new information is reflected in the security values without any delay.

According to classification introduced in the study of Fama (1970), market can have three forms regarding efficiency. In the weak form efficient markets, asset prices reflect the information set of historical prices and so there is possibility of excess return. In the semi-strong form efficient markets, asset prices reflect publicly available information such as announcement of earning, stock splits, etc. in addition to the information set of historical prices. Finally, in the strong form efficient markets, asset prices reflect any public and private information, in other words, there is information efficiency. Also, it is argued that investors cannot earn more than each other (Finnerty, 1976).

After these classifications of Fama, Grossman and Stiglitz (1980) argued that the existence of a market in which information efficiency is observed is impossible as it can be understood easily from the name of their article: “On the impossibility of informationally efficient markets”. In other words, Grossman and Stiglitz (1980) claimed that strong form of market efficiency is hard to occur. They indicated that if there is information efficiency in a market, then there would be no reason to trade in this market due to lack of profit opportunities to gather information.

In the later work of Fama (1991), it is clearly declared that stock prices, which reflect all available information, is too strong to be true. In other words, observing strong form of efficiency in financial market is not so easy and common. In this context, he argues that information and transaction costs weaken strong form of efficiency in stock markets. It is stated that it is possible to obtain excess return using public announcement such as economy, industry and partnership in semi-strong form of efficiency due to the fact that it is assumed that all types of publicly available information are reflected in the prices in the stock market.

In semi-strong form of efficiency, Fama (1991) suggests that event study analysis can be used to test whether a market is semi-strong or not; due to the fact that asset prices should react to the publicly available information quickly. Hence, in this analysis event study methodology is used to in line with the suggestion of Fama (1991) in order to test whether the announcement of decline in corporate income tax rate is reflected in asset prices or not. Since there are publicly available certain signals and speeches before the official announcement, we expect that asset prices react to this information before the day of official announcement -November 29, 2005-. Hence it is expected to have insignificant change in asset prices in just before and after the official announcement of decline in corporate income tax.

For the first time, event study analysis is introduced by Fama, Fisher, Jensen and Roll (1969). Their paper is considered as an important step in finance, economics and accounting due to the fact that after their introduction of the methodology, event study analysis has been used as a standard methodology to understand reactions of asset prices when a new announcement or event arises. Event study analysis provides a measurement method to test market efficiency with respect to information in empirical studies and to investigate the impacts of information or an event on value of firms (Binder, 1998).

In the paper in which event study methodology is introduced (Fama, Fisher, Jensen, & Roll, 1969), impacts of stock splits announcements on prices of stocks in New York Stock Exchange Market are analyzed. Since this is an important paper in terms of analysis steps rather than their empirical findings, general explanation of their methodological framework is a necessity. In order to extract pure effect on stock prices, the following regression is constructed:

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_{it} \quad (2)$$

where R_{it} shows the return of security i at month t and R_{mt} shows market return at month t . For the market return at month t , the New York Stock Exchange Market Portfolio Return in the Centre for Research in Security Prices is used. The month in which there exist stock split announcements as called month 0 as an event time. Then the 29 months before the event month and 30 months later than this is designed as event period. Therefore, an event period with the length of 60 months is used to observe the effects. For each individual security, estimated residuals in (2) $\hat{u}_{it}$ are obtained and interpreted as abnormal return for each security i at month t . By taking average of abnormal returns for each security, average abnormal return for the market is obtained in the event time. Moreover, by adding average abnormal returns in the event time, cumulative average abnormal return is calculated.

As a result of this methodological framework, Fama, Fisher, Jensen, and Roll (1969) observe that investors in the stock market reevaluate the value of stocks i.e. expected income after the announcement of stock splits, as empirical results suggests. Furthermore, they indicate that the information of the announcement of a stock split is reflected in the stock prices until the end of event month in which the announcement of stock splits are observed but mostly the reactions are observed instantaneously after the announcement day. In the light of such empirical observations, they conclude that the New York Stock Exchange Market is efficient due to immediate reactions in the stock prices after the announcement.

After the introduction of event study methodology by Fama, Fisher, Jensen and Roll (1969), this method has become so popular in the area of corporate finance. Although there are so many studies which use event study analysis in many different field of research areas, event study analysis is considered one of the most common methods in corporate events to analyze responses of markets and stock prices when new information is publicly available.

Event study analysis is also used in researches in the public finance area such as measuring impacts of tax reforms or a tax rate change on stock values. It is expected to observe that tax changes directly affect profitability of firms and so they have certain impacts on value of firms, i.e. asset prices. Therefore, tax reforms and tax rate changes related to firms are considered as corporate events and so the methodology of event study is used in many studies on this topic.

One of the important examples of application of event study analysis in the case of tax reform is the study of Cutler (1988). The author examines how the Tax Reform Act in 1986 in the US affected the asset prices in security market using event study analysis. The tax changes in 1986 in the US have three dimensions. First of all, it would lead a change in overall corporate tax burden. Secondly, it would cause a decrease in corporate tax rates, and

finally it would bring relative treatment of old and new capital. Cutler (1988) utilizes event study analysis and market model represented in equation (2) in the paper of Fama, Fisher, Jensen and Roll (1969) and he utilizes different event windows such as one-day, 10-day and one-month event windows. The empirical results show that there are not significant reactions in the stock market and no significant responses in asset prices to the news about changes in the tax system. In addition to the market model, the author examines the estimated abnormal returns using industry and firm-specific characteristics. In industry-based tests, firstly, the industries and firms for which the tax reforms are considered as beneficial, detrimental and indeterminate are determined. Then, their estimated abnormal returns over different event windows are calculated. Although, the signs of abnormal returns are consistent with the industry characteristics, in other words, industries for which the tax reforms are beneficial generates positive abnormal returns and the negatively affected ones generates negative abnormal returns, industry-specific abnormal returns are insignificant. Secondly, the author conducts firm-specific tests controlling capital shares, investment rate, capital stock, firm specific average tax rate and cash flow. Empirical results suggest that there is little support for the positive responses of abnormal returns to the cash flow changes; however, the other firm specific characteristics are seen empirically unimportant.

In another study about tax reform, Lang and Shackelford (2000) analyze the stock price reactions to the tax rate change in May 1997 through the budget act in the US. It was expected that tax reform would bring a reduction in the effective tax rate change from 28% to 20%. The analysis covers 2000 biggest US corporations for 129 weeks. Empirical results suggest that there is an inverse relation between stock prices and dividend payments during the rate change. A higher increase in stock prices is observed for the firms, which do not pay dividends during the tax rate change. In contrast, increase in the stock prices of the firms, which pay dividends declines in parallel

with the amount paid. Unlike Cutler (1998), the study of Lang and Shackelford (2000) finds that change in the capital gain taxes causes significant reactions in asset prices in the event period. It is argued that this study presents an evidence of market efficiency.

The study of Amoako-Adu, Rashid and Stebbins (1992) shows the differential impacts of the introduction of capital gains tax exemption in 1985 and the reduction in the limit of tax exemption in 1987 in Canada on asset prices. They find that there is no reaction in stock prices to the first tax change in 1985 due to fact that market anticipates this change whereas they find significant reaction in asset prices to the change in 1987 in the event period. They conclude that unanticipated tax changes cause reaction in asset prices in Canada. Another research about Canadian taxation change is McKenzie and Thompson (1995). They study the increment in the tax rate of dividends in 1986. They make a distinction between firms which have high and low dividends in order to capture different effects of the tax rate change on different groups. According to the empirical results of event study analysis, authors observe that abnormal returns and dividends are negatively correlated; therefore, they support the view that asset prices are affected by the tax rate changes.

Auerbach and Hassett (2005) examine the effects of Jobs and Growth Tax Relief Act of 2003 in the US. They indicate that the Act brings so many provisions but most importantly it brings decline in the tax rate of dividends. Therefore, they analyzed the effects of reduction in the tax rate of dividends on value of firms. They find that there is significant evidence that the tax rate change had significant impacts on stock markets. They concluded that the returns of firms, which have more dividend yields, become higher due to the tax rate cut. They also analyzed the firms, which have no dividend payments. The empirical results obtained by Auerbach and Hassett (2005) demonstrates that firms which have no dividend payments obtained higher

excess returns compared to the rest of the firms due to decline in the dividend tax rate.

Kandır and Yakar (2012) utilize the event study analysis to measure the effects of the official announcement of the corporate income tax rate reduction in 2005 on the stock returns in Turkey. They investigate the same announcement with this study, but using quite small sample set which contains only five companies among highest corporate income tax payers in the Istanbul Stock Exchange Market. Moreover, although both of the studies reach the same conclusions that the Istanbul Stock Exchange Market is semi-strong form efficient market, the analysis results are opposite to each other. Kandır and Yakar (2012) state that there is no evidence regarding the announcement of corporate income tax rate reduction before the event day. Furthermore, they found that stock returns of five companies significantly react to the official announcement in the event day. Since they found no evidence in advance about the announcement, they evaluate the information as entirely a new for the market; therefore, they support their findings with the efficient market hypothesis. However in this study, it is found some evidences regarding the tax rate cut before the official announcement which are the IMF staff country report and speeches of Finance Minister of Turkey. Moreover, according to event study analysis, stocks used in two different samples do not react to the announcement in the event day. Therefore, it is concluded that since the announcement is substantially publicly available in advance and market do not react to this publicly available information, the Istanbul Stock Exchange Market is considered as semi-strong form efficient market.

Tax reform applications of event study analysis are not the only research area utilizing this methodology. The event study analysis is used in different application areas such as merger and acquisitions, stock splits, announcement of dividend payments, any regulation announcement regarding firms.

One of the most cited paper in the area is written by Andrade, Mitchell and Stafford (2001)⁴. Authors analyzed the impacts of merger announcements on asset values by establishing different event windows with different time intervals. The announcement of merger decisions is taken as event day and they use two different event windows: first event window is one day before and after the event day with the length of 3 days whereas the second one starts from 20 days before the event day and last until the end of merger closing date. In addition to two different event window setting, the analysis is conducted in different time intervals: from 1973 to 1979, from 1980 to 1989, 1990 to 1998 and the whole period from 1973 to 1998. They find out both significant and insignificant abnormal returns in the event window in different years determined according to the announcement of merger decisions. In addition to the differentiations in event windows and analysis periods, the position of the firms also differs. They make a distinction between firms, which are the target, and acquirer in the merger decisions. After these differentiations, they find that abnormal returns for the target firms are significant for all different event windows in all different time intervals from 1973 to 1998. However, the abnormal returns for the acquirer firms are insignificant in all time intervals and different event window settings. Furthermore, the authors also report the results for both groups of the firms without any discrimination of target and acquirer. The results suggest that abnormal returns are insignificant when the analysis is conducted without discrimination among firms. As a result, the paper of Andrade, Mitchell and Stafford (2001) support the claim that target companies own most of the gains in the announcements of merger decisions.

Another important article utilizing event study is written by Beaver (1968) about impacts of earning announcements in the stock market. In this paper,

⁴ The paper of Gregor Andrade, Mark Mitchell and Erik Stafford published in 2001 - *New Evidence and Perspectives on Mergers* – has been cited 2180 time as the date of June 29, 2014.

the analysis is conducted in terms of price and volume movements. Instead of daily data, weekly data is used and the week in which earning announcement is released are taken as event week. In line with this design, weeks surrounding the earning announcement (8 weeks before and after the event week) are constructed as event window. The study covers 143 firms, which has annual earnings announcements during the period of 1961-1965 in New York Stock Exchange Market. Empirical results show that there is remarkable rise in the volume of stocks traded in the event week. Empirical results show that the volume prior to the event week is abnormally low and actually below normal. This result is interpreted as investors in financial markets delay their purchase and sale transaction until the release of earnings announcements. The results suggest that volume of shares traded reach and pass the normal level in four weeks after the event week due to realization of postponed purchase and sales decisions. In the second part of the analysis, Beaver (1968) reports the results about price movements. It is indicated that empirical evidences show that there is abnormal increase in the prices of stocks in the announcement week and this abnormal rise is interpreted as an expected reaction due to the fact that annual earnings announcements are considered to have information value. More interesting results, rather than the abnormal rise in the event week, are the evidence that the prices of stocks have started to rise in the week before the announcement week. This observation is interpreted as information leakage in the stock markets. As a result, the author concludes that earning announcement has a significant effect in stock market both in terms of prices and volumes, and earning announcement has an information value.

Also, the event study methodology is one of the common methods in analysis of stock splits. As mentioned above, the first study introducing event study analysis is also the analysis of announcements of stock splits (Fama, Fisher, Jensen, & Roll, 1969). One of the most popular studies about stock splits is the study of Wulff (2002), which investigates the

impacts of stock splits in the German stock market. The data set used in the paper covers 78 stock splits starting from 1966 to 1993. Similar to the other event study applications, the announcement of stock splits is taken as event day and 10 day before and after the announcement is designed as event window. Empirical results show that although market reaction in the event day is insignificant, abnormal return in the next day after the announcement is significant in the period of 1994-1996. Author conducts an event study analysis also for the execution of stock splits. In this case, the execution day is taken as event date and event window is set accordingly. In this setting, empirical evidence suggests that the days before the event date including the event date becomes significant but in later days there is no significant abnormal returns.

Recently, event study methodology is also started to be used in monetary macroeconomics. For instance, Thornton (2014) analyzes effects of large scale asset purchases -quantitative easing- announcements of the Federal Reserve -the Central Bank of the United States- on long term yield using event study methodology. The author aims to extract announcement effect of quantitative easing on long term yields. Returns of 10-year Treasury bill, corporate bonds with high ratings as a long-term yield have been used. According to obtained results, it is concluded that the announcements of quantitative easing do not cause a statistically significant decrease in the long-term yields. In other words, it is observed that the announcement effects of the quantitative easing programs are not effective to reach a fall in the long-term interest rates.

It is certainly true that event study analysis is quite applicable to see effects of tax rate change on asset prices; however, there are different methodologies to use in this concept such as difference-in-difference statistical method. However, it is not possible to apply this method in this study due to the fact that standard difference-in-difference analysis requires a control group, which is not affected by the event. Since the announcement

of the decline in corporate income tax rate affects all firms and there isn't a security of a firm traded in Istanbul Stock Exchange, which is not subject to corporate income tax, this technique is not applicable. In the next section of the study, the methodology applied in the study is explained.

CHAPTER 4

METHODOLOGY

In the light of information introduced in the previous section, event study analysis is used in line with the suggestion of Fama (1991) in order to test whether the announcement of decline in corporate income tax rate is reflected in asset prices or not. In this section, the methodology used in this study is summarized. Mainly, the methodological framework of MacKinlay (1997) and Brown and Warner (1985) is used.

General steps followed in this study like many different event study analysis applications are outlined in Figure 7.

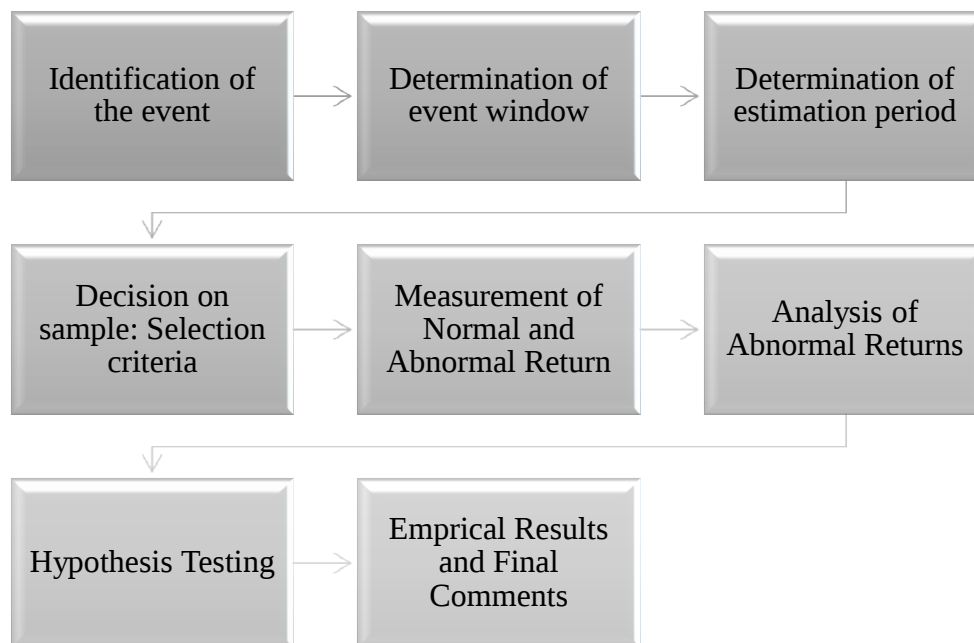


Figure 7: Steps in the Event Study Analysis

4.1 Identification of the event

The first step in this method is identification of the event. Events chosen in studies utilizing event study analysis are so various and they have different characteristics. Therefore, it is certain that there is no significant restriction in the choice of events in the event study analysis. The only point analysts should take care of the fact that the event has to have an impact on value of firms; in other words, it should be a corporate event and actors in the market should be able to understand and react it.

Announcements of regulation changes by government related to corporations, declaration of bankruptcy of a firm, acquisition and merger decisions, earnings announcements and announcements of stock splits are among examples of events in the related literature.

In general, event subjects to an event study analysis may be classified into two groups. In the first one, a common type of an event with similar

characteristics occurs on different days, such as the announcement of mergers and acquisitions decisions of different firms. However, in the second one, a certain type of an event such as a new regulation announcement by government representatives, which has an effect on the whole industry, or a subset of firms takes place on a specific day. In other words, in the first type of events, different event dates are taken and normalized to one point in the time line as the event day; whereas in the second one, the calendar day of the event are common and same for all corporations affected by the event and there is no need for normalization.

4.2 Determination of Event Window

After the identification of the event, the second step in the analysis is the determination of event window⁵. An event window is a time period prior to and after the event day. Since this period includes the event day and the days surrounding it, it represents the effects of the event on stock market before and after the event.

Figure 8 shows important time points and intervals for the methodology of the event study analysis. Firstly, the event day such as the announcement date of merger decisions is donated as t^* . Then the time interval from time t_3 to t_4 including boundaries shows event window: $[t_3, t_4]$. There are so many studies with different length of event window (T^{event}). Therefore, there is no certain rule or a consensus for the length of event window. However, Brown and Warner (1985) observe that using long event window cause a decline in the statistical power of test statistics. In order to avoid ending up with wrong conclusion due to lower statistical power, it is appropriate to choose shorter event window. In this context, event window should be long enough to capture impacts of the events, whereas it should be short enough to avoid confounding impacts (McWilliams & Siegel, 1997).

⁵ The terms of “Event Window” and “Event Period” have the same meaning and they are both used in the related literature. In this study, “Event Window” and “Event Period” is used interchangeably.

There are different studies with different event window lengths. For instance, Brown and Warner (1985) uses event window as 5 days before and after the event day with the length of 11 days. However, Auerbach and Hassett (2005) uses short event window with the length of 5 days. There are also studies with higher event windows such as the study of Beaver (1968) in which the event window is constructed as 8 week before and after the event window. These examples of event study analysis have symmetric event window i.e. the length before and after the event day or week is the same. However, event windows do not have to be symmetric around the event day. At that point, the study of Andrade, Mitchell and Stafford (2001) provides asymmetric event window, which is constructed as 20 days before the event window and until the end of event days.

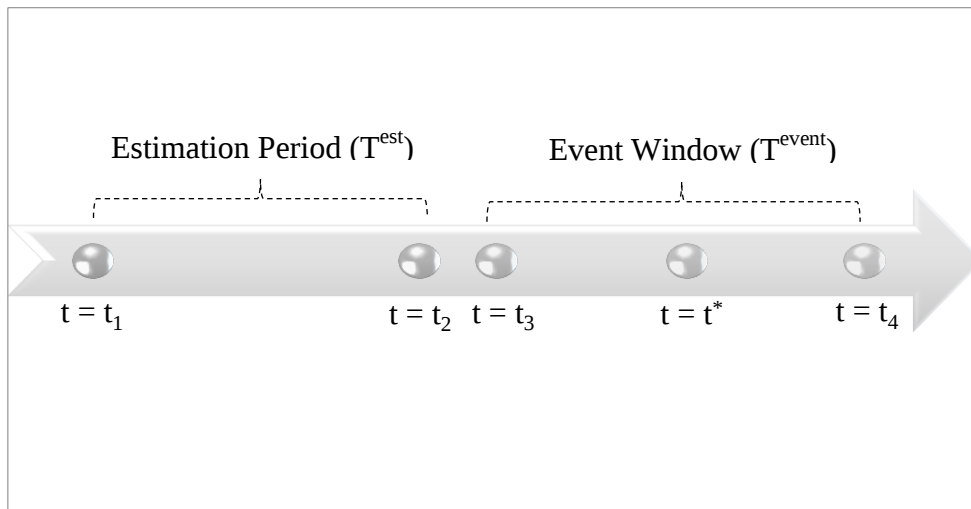


Figure 8: Timeline in Event Study Analysis

4.3 Determination of Estimation Period

Estimation period is a time interval that represents the characteristics of normal times of stocks. After the event window, the next step is to

determine the characteristics of estimation period. There are different ways to determine estimation period. For instance, estimation period can be established before the event window, during the event window, after the event window and around the event window. However, in most of the cases, it is appropriate to choose estimation period before the event window (Henderson, 1990). Therefore, one can assume that estimation period is time interval from t_1 to t_2 including boundaries in Figure 8. The event window follows the estimation period and there is no missing time interval between these periods; in other words, $t_3 = t_2 + 1$. Compared to the event window, the length of estimation period (T^{est}) is chosen as a long time interval to capture the whole characteristics without any bias of the security. Moreover, in some studies it is possible to determine the post event window period that starts at time t_4+1 and finish say at time t_5 .

It is important to note that it would be healthier to have no intersection of estimation period and event window. This property is consciously set since parameters used in measurement of normal return are estimated in estimation period and these parameters should not be affected by the event to represent just normal (pre-event) times. If the parameters for the normal return are calculated in a time interval including event window, this would lead to have a return measure not only representing “normal” times but also “abnormal” times. Hence, non-empty intersection of these two time intervals is against the spirit of event study analysis methodology because it is assumed that impact of the event on returns is reflected by abnormal returns and not reflected by normal returns.

4.4 Decision on sample: Selection criteria

The next step in the analysis is the decision on sample, namely definition of the selection criteria for the firms to be included in the sample set. The firms, which should be included in the sample and so, the analysis is determined in this step.

In fact, the selection criteria are directly related to the nature of the event. For instance, if the event has an effect on only just one industry in the market, assume that it is construction, and then the firms in the construction sector should be included in the study. As another example, if the event is merger announcement, then the analysis consists of the firms that have an announcement of a merger decision in their history. Moreover, researchers may prefer to have a subset of firms as a sample, which is able to represent whole firms affected by the event due to several reasons such as data restrictions and limitations, ease of calculations, etc. In this case, a subset of firms, which has a power to represent the whole firms, can be used instead of inclusion of all firms affected by the event.

4.5 Measurement of Normal and Abnormal Return⁶

The next step is measurement of abnormal return. The abnormal return is defined as the difference of actual and normal return of a security in event period.

$$A_{i,t} = R_{i,t} - NR_{i,t} \quad (3)$$

Abnormal return of firm i at time t denoted by $A_{i,t}$ is formalized in equation (3) where $R_{i,t}$ is actual return and $NR_{i,t}$ is normal return of security i at time t . There are different approaches and methods to model $NR_{i,t}$ and so to measure abnormal return. In this study, major approaches preferred in applications are provided.

4.5.1 Mean Adjusted Model

The first way to measure abnormal return is mean adjusted model. In this method, it is assumed that the return of securities does not change as time passes. In other words, it is assumed that a security generates the same

⁶ In this study, the approaches of Brown and Warner (1985) and MacKinlay (1997) are combined and reported.

return with the average in the estimation period. Hence, abnormal return is calculated using following two equations (4) and (5):

$$A_{i,t} = R_{i,t} - \bar{R}_i \quad (4)$$

$$\bar{R}_i = \frac{1}{T_{est}} \sum_{t=t_1}^{t_2} R_{i,t} \quad (5)$$

where $A_{i,t}$ shows abnormal return of security i at day t , $R_{i,t}$ is actual return of security i at day t and $\bar{R}_i$ is denoted for the simple average of security i 's daily return in the estimation period. It is important to note that only the data from estimation period (pre-event period) are used in calculation of simple average of security returns. Therefore, observations from t_1 to t_2 are taken in calculation of simple average return in equation (5). The reason behind this limitation is to cover only normal times and use statistics obtained in period of normal times.

Calculated abnormal returns for each security in this method provide the excess return of securities compared to its past experience using simple average mean of returns. One can argue that calculation of abnormal return using this method is too simple and easy. However, the results obtained in this method are parallel to the ones in other methods (Brown & Warner, 1985). The underlying reason of this observation is the fact that other complicated models could not provide lower variance of abnormal returns. Hence, using this simple model does not create misleading results in general (MacKinlay, 1997). On the other hand, Dyckman, Philbrick and Stephan (1984) argue that this method does not produce good results compared to the OLS market model, which is introduced in the section of 4.5.3. +-

4.5.2 Market Adjusted Returns

The second method – Market Adjusted Returns – is similar to the first one; however, abnormal returns are calculated by using market returns instead of simple average of securities' daily return. In this method, it is assumed that

a security generates the same return as the market return in the event window. Hence, the difference between a security's return and market return is corresponding to the abnormal return. Market adjusted abnormal return of security i at day t is calculated according to (6):

$$A_{i,t} = R_{i,t} - R_{m,t} \quad (6)$$

where $A_{i,t}$ shows abnormal return of security i at day t , $R_{i,t}$ is actual return of security i at day t and $R_{m,t}$ shows market return for day t . In the literature of event study applications, stock market indexes are preferred for market return $R_{m,t}$ such as Standard & Poor's 500 Index, CRSP⁷ equal and value weighted index returns. In this method, abnormal return of securities $A_{i,t}$ shows the excess return of securities compared to the market return.

4.5.3 Ordinary Least Square (OLS) Market Model

Third method to measure abnormal return is OLS Market Model. In order to obtain abnormal return, following regression is constructed:

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_{it} \text{ for } t = t_1, t_1+1, \dots, t_2 \quad (7)$$

where $R_{i,t}$ is actual return of security i at day t , $R_{m,t}$ shows market return for day t , u_{it} is excess return for security i at time t , $E(u_{it}) = 0$ and $Var(u_{it}) = \sigma_{ui}^2$.

After estimation, excess returns of securities are obtained as in equation (8):

$$A_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} \quad (8)$$

where $A_{i,t}$ shows abnormal return of security i at day t , and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated coefficients by using OLS regression in equation (7) in the estimation period (from t_1 through t_2).

⁷ Center for Research in Security Prices

Abnormal returns obtained in OLS market method provide a better measurement since the variance of abnormal return decreases by elimination of the return parallel to variation in the market. (MacKinlay, 1997). Hence, the models with strong linear relationship between actual return of securities and market return, that is to say higher R-square values, presents lower variance of the abnormal return. Thus, power of the model in testing significance of abnormal return increases.

After studying OLS Market Model, it is possible to say that Market Adjusted Model is a reduced form of OLS Market Model under the hypothesis that constant term (α_i) is equal to zero and slope term (β_i) is equal to one in equation (7).

4.6 Analysis of Abnormal Returns and Hypothesis Testing

In the previous step, individual abnormal returns of securities are obtained. In this step, aggregation of abnormal return that represents the excess return in the sample set is needed. Therefore, average abnormal return is calculated as follows:

$$\bar{A}_t = \frac{1}{N} \sum_{i=1}^N A_{i,t} \quad (9)$$

where $\bar{A}_t$ is average abnormal return for the sample set at time t , $A_{i,t}$ shows abnormal return of security i at day t and N is the number of securities in the sample set.

In addition to the average abnormal return, cumulative abnormal return calculation shows total amount of excess return obtained by securities on average during the event window. The formulation of cumulative abnormal return is in equation (10):

$$CAR_{t'} = \sum_{t=1}^{t'} \bar{A}_t \quad (10)$$

where $CAR_{t'}$ shows cumulative abnormal return at time t' for the sample set.

After average and cumulative abnormal returns obtained, the next step is hypothesis testing. The null hypothesis that the excess return in the event period is zero is tested. In order to test this null hypothesis, the test statistics (t^*) is calculated as follows:

$$t^* = \frac{\bar{A}_t}{\hat{S}(\bar{A}_t)} \quad (11)$$

where $\hat{S}(\bar{A}_t) = \sqrt{\frac{(\sum_{t=t_1}^{t_2} (\bar{A}_t - \bar{\bar{A}}_t)^2)}{T^{est}-1}}$ is the standard deviation of $\bar{A}_t$ in the estimation period and $\bar{\bar{A}}_t = \frac{1}{T^{est}} \sum_{t=t_1}^{t_2} \bar{A}_t$ is the mean of $\bar{A}_t$.

At the end of aggregation of abnormal return and calculation of test statistics, the final step is to report empirical results and final comments. Significant abnormal returns in the event window are evaluated as market reactions to the event. On the other hand, insignificant abnormal returns are considered, as the market reaction to the event is empirically ignorable.

In the next section of this thesis, empirical results, which are obtained the methods in this section, are provided.

CHAPTER 5

EMPIRICAL RESULTS

In the light of methodological framework explained in the previous section, empirical results are obtained and reported in this section.

5.1 Identification of the Event

As the name of the study suggests, the event is the announcement of corporate income tax rate change in Turkey in 2005. Since the corporate income tax rate directly affects profits of firms and so value of corporations, it is certainly a corporate event that is appropriate for the event study analysis methodology.

Since the official announcement is occurred on November 29, 2005 and the calendar day of the announcement is same for all corporations, there is only one common event day for all firms. Hence, official announcement date of the decline in the corporate income tax rate – November 29, 2005 – is taken as event date. The date of entry into force is not taken as the event date consciously because according to Efficient Market Hypothesis, market reacts to new information immediately. Therefore, rational investors have already reflected this information to the prices when the official announcement has made.

5.2 Determination of the Event Window

The next step is the determination of the event window. The event day is denoted as *Day 0* ($t=0$) and 5 days before and after the event day is taken as event window of the analysis (Figure 9). Hence, the last 11 days of the analysis period (-5 through +5) is designated the event window as suggested in the study of Brown and Warner (1985) using daily return data.

5.3 Determination of the Estimation Period

The estimation period is the time interval before the event window. Similar to the study of Brown and Warner (1985), estimation period is the first 239 day before the event window from the *Day -244 to -6* (Figure 9). The intersection of event window and estimation period is empty and estimation period covers a relatively long period just before the event window. As a result of estimation period and event window, the analysis period starts from *the Day -244* and continues until the end of *the Day +5* so the length of analysis period is 250 days.

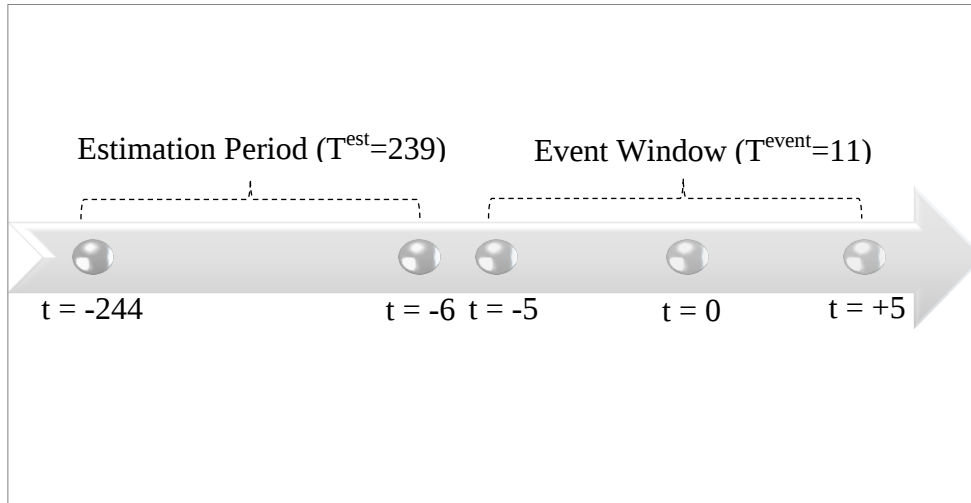


Figure 9: Timeline Used in the Study

5.4 Decision on sample: Selection criteria

In this step, the firms, which should be added in the sample, is decided. In this study, all firms in the stock exchange market are directly affected by the event since all firms in the Istanbul Stock Exchange Market pays corporate income tax. Therefore, all firms existing in 2005 are potential subjects of this study without any industrial and structural discrimination.

In order to investigate impacts of the corporate income tax change on asset prices, two samples are set. In the first one, almost all firms which were traded in the Istanbul Stock Exchange during the analysis period – 256 securities out of 275 – are taken to the sample. The results of analysis of the first sample set show the overall impact of the announcement of corporate income tax rate deduction in all securities.

On the other hand, the second sample covers only the securities of the firms, which are among top 100 corporate income tax payers in 2005⁸ and at the same time which are traded in the Istanbul Stock Exchange Market. Since, only 31 firms out of 100 had securities in the stock market, the second sample set contains 31 securities. In this context, the results obtained in the second sample shows impacts of the corporate income tax deduction on top corporate income tax payer firms in the Istanbul Stock Exchange Market.

Moreover, for a security to be included in one of the two samples, it must have at most consecutively 2 missing daily return data. The securities which have equal to or more than consecutively 3 missing daily return data⁹ are excluded from the samples in order to avoid getting unintended results.

⁸ Each year, Turkish Revenue Administration publishes list of top 100 corporate income tax payers and the amount of the tax they paid. However, the name of some firms which do not allow Turkish Revenue Administration to announce information about them are excluded from the list.

⁹ In the first sample set, there are 19 securities, which have equal to or more than consecutively 3 missing daily return data. Therefore, 256 securities out of 275 are included in the first sample set. In second sample set, no data is excluded due to lack of missing Daily return data so 31 securities out of 31 are included in the second sample.

5.5 Measurement of Normal and Abnormal Return

Before normal and abnormal return calculations, return calculations of securities are needed. The returns of the securities are calculated using total return index adjusted according to net dividend payments of the securities in the Bloomberg. The daily returns are calculated as follows:

$$R_{i,t} = \ln(TOTR_{i,t}) - \ln(TOTR_{i,t-1}) \quad (12)$$

where $R_{i,t}$ is daily return for security i at day t , and $TOTR_{i,t}$ is total return index in Bloomberg for security i at day t .

After calculation of daily return of securities as described in equation (12), abnormal returns of securities are measured and analyzed using three different ways introduced in previous section.

5.5.1 Mean Adjusted Model

First of all, mean adjusted model is applied to measure abnormal return in event window. Main equations of the model turn to the followings in our case:

$$A_{i,t} = R_{i,t} - \bar{R}_i \quad (13)$$

$$\bar{R}_i = \frac{1}{239} \sum_{t=-244}^{-6} R_{i,t} \quad (14)$$

where $A_{i,t}$ shows abnormal return of security i at day t , $R_{i,t}$ is actual return of security i at day t and $\bar{R}_i$ is denoted for the simple average of security i 's daily return in the estimation period. Therefore, abnormal return of a security is calculated as the difference between return of a securities and its past average in the estimation period from *Day -244* to *-6*.

After calculation of abnormal return for each security, average abnormal return for the samples are calculated as described in (9). In other words, the abnormal returns of 256 securities in the first sample and 31 securities in the

second sample is the aggregated. Then, cumulative abnormal returns (CAR) and t-statistics are calculated as shown in (10) and (11) in the previous section.

Table 3 shows average abnormal returns and t-statistics of securities in the event period for first sample which contains all securities in the market. Since t-statistics of the abnormal returns is low, average abnormal returns are not statistically different than zero. Hence, the results in this model do not provide any evidence that there is abnormal return in the event window for the first sample.

Table 3: Mean Adjusted Abnormal Returns and T-statistics in the Event Window: All Securities

Days	Average Abnormal Returns	T-statistic
-5	-0,008	-0,567
-4	0,014	1,032
-3	0,002	0,140
-2	0,006	0,477
-1	0,008	0,557
0	0,012	0,916
+1	0,007	0,493
+2	0,009	0,645
+3	0,003	0,220
+4	0,013	0,933
+5	0,001	0,046

Source: Bloomberg and Authors' Calculations

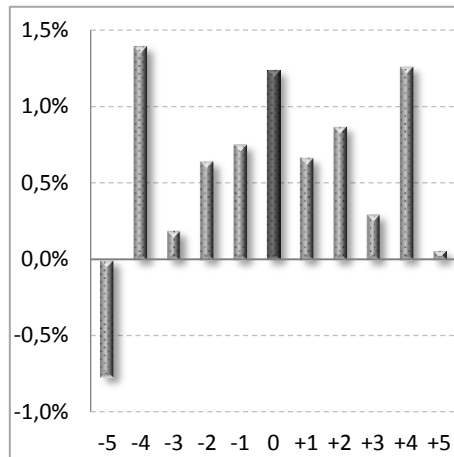
Figure 10 provides detailed information related to the results obtained in this method for the first sample. Panel A shows that although abnormal returns in the event window is insignificant, there are higher abnormal returns in the event day, 4 days before the event and 4 days after the event.

Abnormal return index shown in Panel B is calculated using average abnormal return rates in percentage terms. It shows the return level at *Day t*

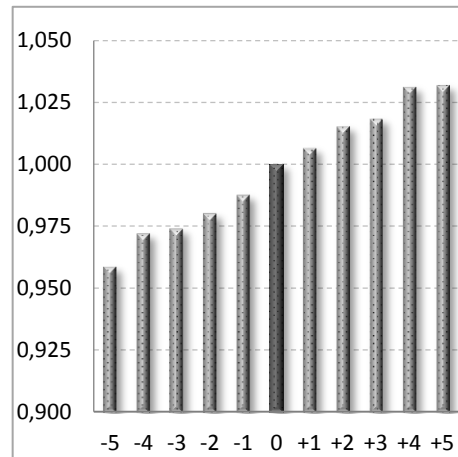
compares to *Day 0* since the index is obtained by equalizing the value of abnormal return in the event day to 1. Abnormal return index shows that there is lower return level at the beginning of the event window and higher at the end. However the increase through this 11-day period is not dramatic.

Similar to the excess return index, the other way to see returns through the period is cumulative abnormal return in the Panel C of the Figure 10. As it is clearly seen in the Panel C, there is positive CAR throughout the event window. Another indicator related to CAR is also shown in the Panel D which is the share of securities with positive and negative CAR at the end of event window. Although there is positive CAR throughout the event period, 21 percent of the securities end up with negative CAR. Therefore, the results displayed in Figure 10 suggest that there is no significant excess return behavior in the event window at the aggregated level.

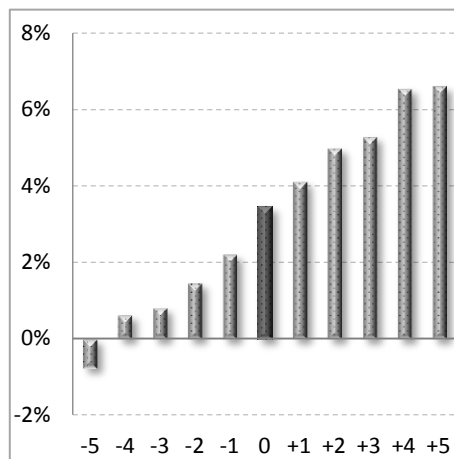
Panel A: Abnormal Returns



Panel B: Abnormal Returns Index



Panel C: Cumulative Abnormal Returns



Panel D: CAR at the end of Event Window

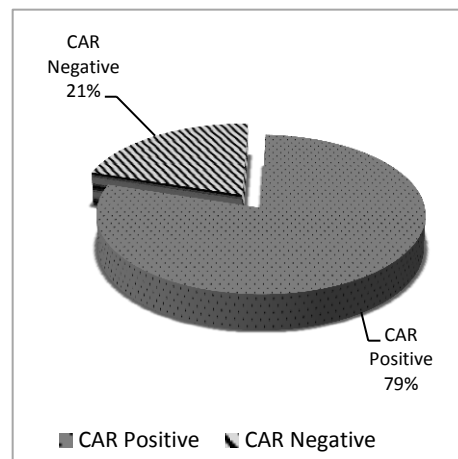


Figure 10: Empirical Results in Mean Adjusted Model: All Securities
Source: Bloomberg and Authors' Calculations

Figure 11 provides further information at the security level. It is clearly seen that the number of securities with significant and positive abnormal returns increases one day before the event window, namely at *Day -1*. However, there is only 28 securities with significant at 10 percent and positive abnormal return at *Day -1* out of 256 securities. Moreover, in the event day, the number of securities with positive abnormal return increases; in contrast,

the number of securities with positive and significant abnormal returns declines.

As a result, mean adjusted model does not suggest that securities react to the announcement of corporate income tax rate change significantly in the first sample containing all securities traded in Istanbul Stock Exchange.

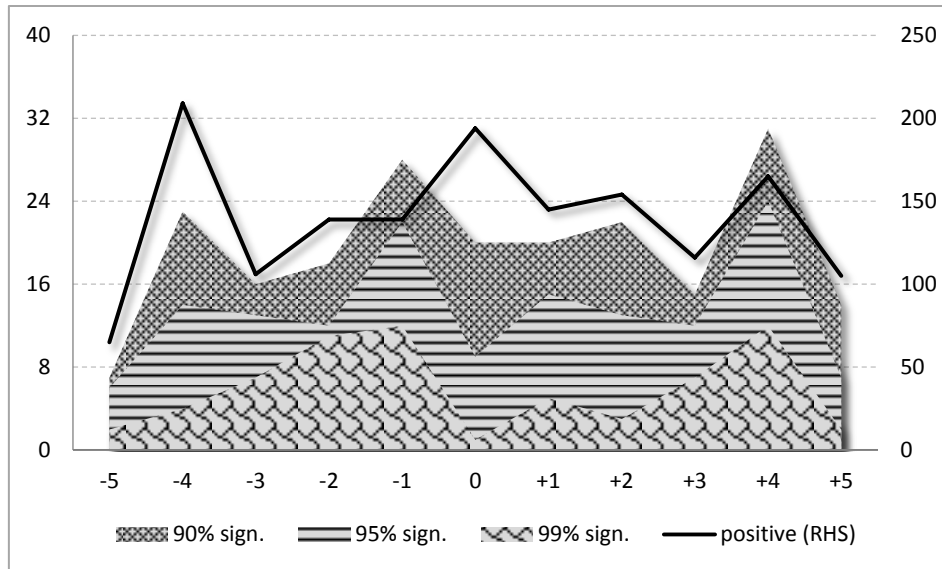


Figure 11: Mean Adjusted Abnormal Return in the Event Window: All Securities Source: Bloomberg and Authors' Calculations

Table 4: Mean Adjusted Abnormal Returns and T-statistics in the Event Period: Top Corporate Income Tax Payers

Days	Average Abnormal Returns	T-statistic
-5	-0,005	-0,355
-4	0,023	1,511
-3	0,006	0,382
-2	0,004	0,243
-1	-0,001	-0,038
0	0,016	1,028
+1	0,012	0,792
+2	0,018	1,196
+3	0,001	0,066
+4	0,003	0,231
+5	0,004	0,276

Source: Bloomberg and Authors' Calculations

The same analysis is repeated also for the second samples, which are top corporate income tax payers. Results show that empirical findings in mean adjusted model in the second sample do not change compared to the first sample case. Similar to the sample of all securities, there is no significant abnormal return in the event window even among top corporate income tax payers (Table 4).

Moreover, there are higher abnormal returns in the event day in both samples but statistically average abnormal returns are not different than zero (Figure 12 Panel A). In addition, higher abnormal return index range (0.954–1.039 rather than 0,959-1,032) and cumulative abnormal return (%8,1 rather than %6,6) has been observed compared to the case in sample of all securities (Figure 10 and Figure 12 Panel B and Panel C). This shows that there are different characteristics in each sample but these characteristics are not strong enough to have a significant abnormal return in the event window. Moreover, higher shares of securities with positive cumulative abnormal return at the end of event window with 84% rather

than 79% are observed (Figure 12 Panel D). Parallel to these results, there is no jump in the number of securities, which have positive and significant abnormal returns during the event window (Figure 13).

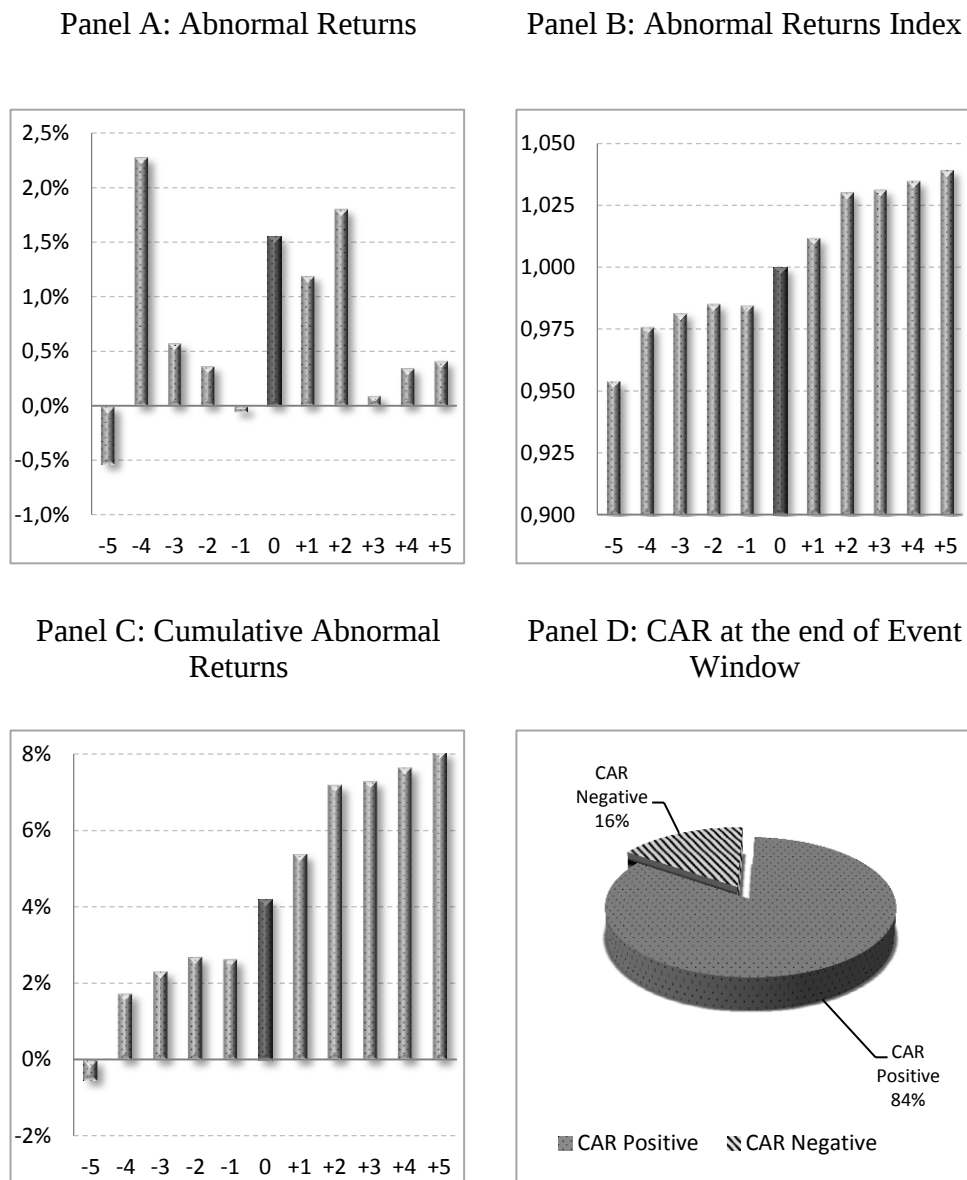


Figure 12: Empirical Results in Mean Adjusted Model: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

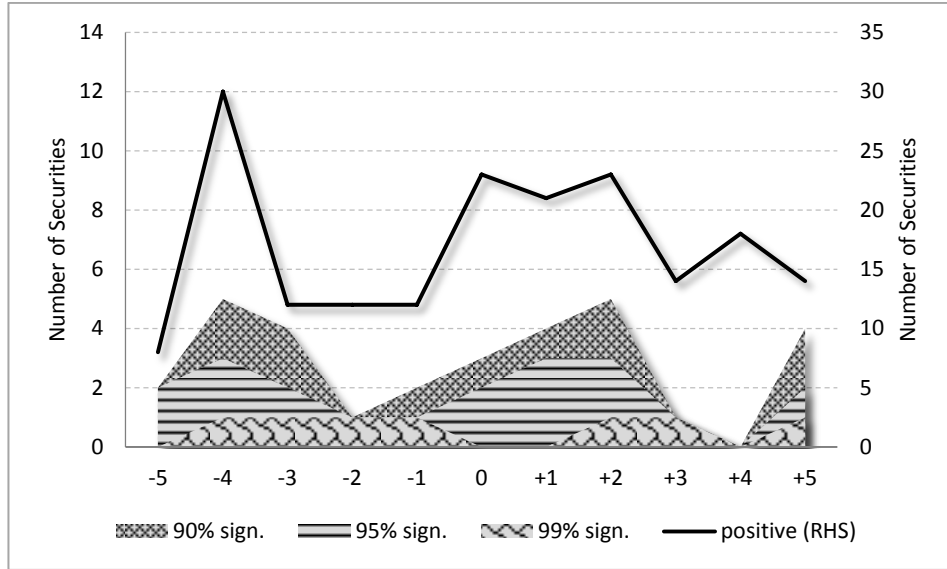


Figure 13: Mean Adjusted Abnormal Return: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

To sum up, empirical results in mean adjusted model suggest that securities in the Istanbul Stock Exchange Market do not generate excess return due to the announcement of the decline in the corporate income tax rate change. In other words, values of the firms do not change significantly. Moreover, this result does not differ in the analysis of firms which are top corporate income tax payers.

5.5.2 Market Adjusted Returns

The same analysis with two different sample sets is repeated using the method of market-adjusted returns. In this method, abnormal returns are equal to the difference between return of security and the market return. In this study, Istanbul Stock Exchange 100 Index is used for the market return calculation. After calculation of abnormal return for each security by taking this difference, average abnormal returns and CAR is calculated.

Table 5: Market Adjusted Abnormal Returns and T-statistics in the Event Period: All Securities

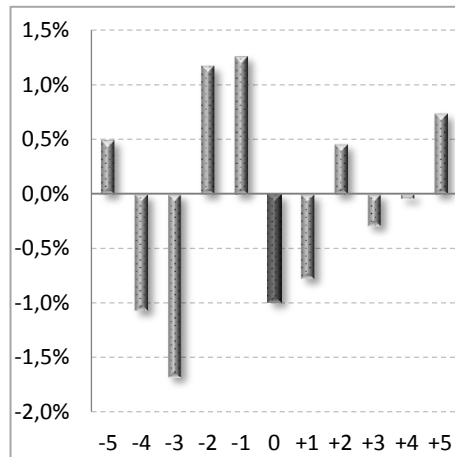
Days	Average Abnormal Returns	T-statistic
-5	0,005	0,519
-4	-0,011	-1,112
-3	-0,017	-1,750
-2	0,012	1,233
-1	0,013	1,321
0	-0,010	-1,033
+1	-0,008	-0,808
+2	0,005	0,480
+3	-0,003	-0,304
+4	0,000	-0,042
+5	0,007	0,773

Source: Bloomberg and Authors' Calculations

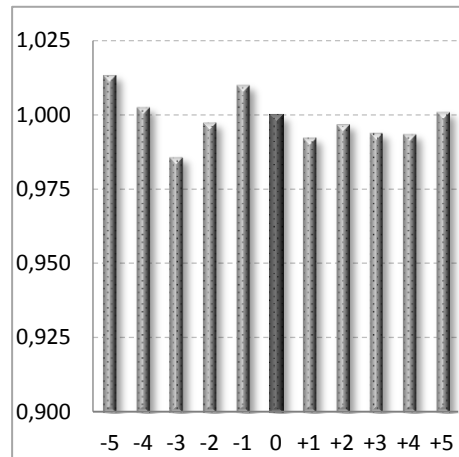
Average abnormal returns for the sample of all securities are displayed in Table 5. The only significant abnormal return is on *Day -3*; however, there is – 1.7 percent abnormal return. Since there is only one and negative significant abnormal return in the event window, the results seem to suggests that there is no significant market reactions in the first sample.

Figure 14 provides further information about the results. The sign of the daily average abnormal return varies throughout the event window and so there is no clear upward trend in the abnormal return index (Panel A and B). Since the abnormal returns show the overall performance of firms compared to the market return, negative abnormal return is an indication of underperformance of the sample containing all securities compared to the market return. Parallel to the negative abnormal returns, CAR is also negative. Securities end up 0.7 percent cumulative loss at the end of event window (Panel C). Moreover, shares of securities with positive CAR at the end of event window fall to 38 percent (Panel D).

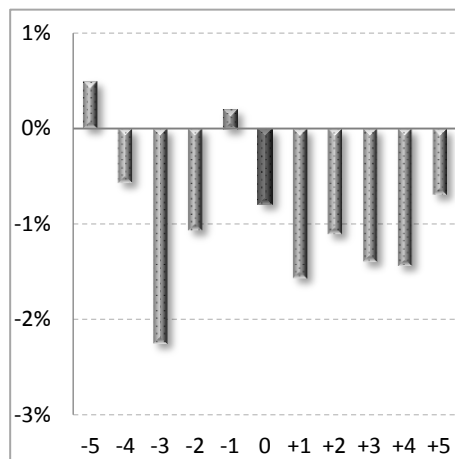
Panel A: Abnormal Returns



Panel B: Abnormal Returns Index



Panel C: Cumulative Abnormal Returns



Panel D: CAR at the end of Event Window

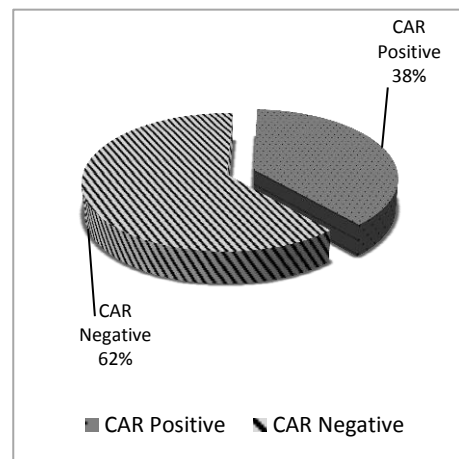


Figure 14: Empirical Results in Market Adjusted Model: All Securities

Source: Bloomberg and Authors' Calculations

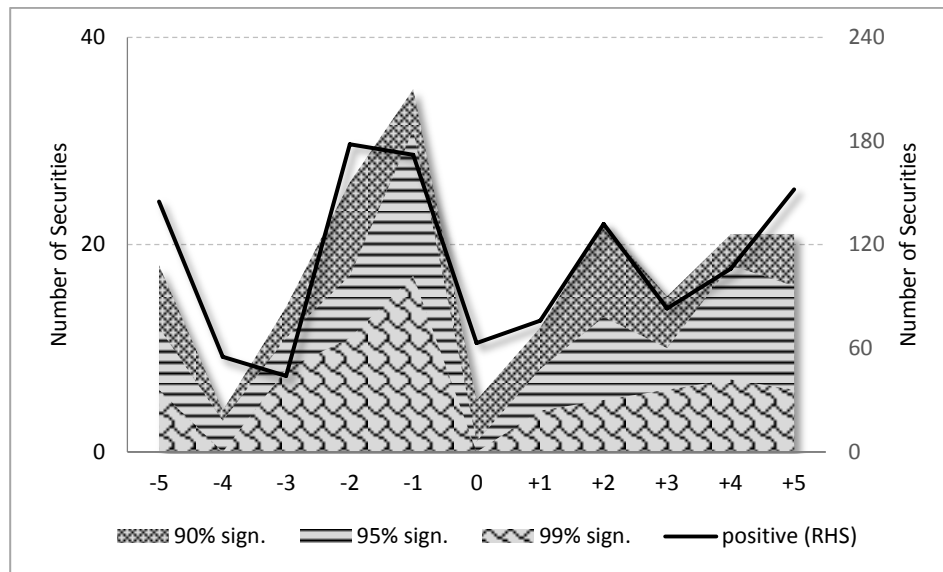


Figure 15: Market Adjusted Abnormal Return: All Securities Source: Bloomberg and Authors' Calculations

Figure 15 provides number of securities that have significant and positive abnormal returns. The number of securities with significant abnormal returns is quite low and also it decreases to quite low numbers on the event day. As a result, the empirical findings in the method of market-adjusted return suggest that there is no significant market reaction to the official announcement and so the firms do not generate excess returns in the event window. Beyond positive excess returns, there is negative but mostly insignificant abnormal returns which are the indication of excess losses around the event day in the first sample case.

Table 4 provides calculated average abnormal returns for the sample of top corporate income tax payers. Similar to the results of the first sample, average abnormal returns take negative values but they are statistically not different than zero.

Table 6: Market Adjusted Abnormal Returns and T-statistics in the Event Period: Top Corporate Income Tax Payers

Days	Average Abnormal Returns	T-statistic
-5	-0,014	-0,946
-4	0,014	0,921
-3	-0,003	-0,208
-2	-0,005	-0,347
-1	-0,009	-0,629
0	0,007	0,438
+1	0,003	0,201
+2	0,009	0,605
+3	-0,008	-0,525
+4	-0,005	-0,359
+5	-0,005	-0,315

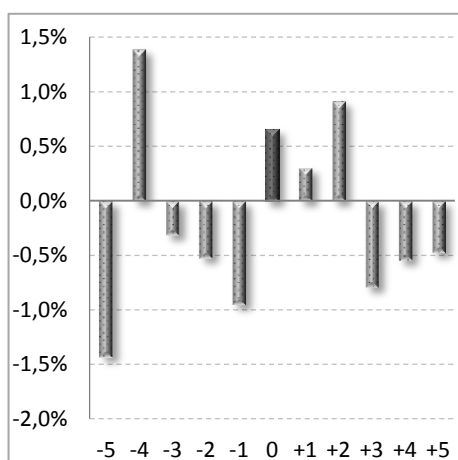
Source: Bloomberg and Authors' Calculations

Figure 16 provides further information about the findings in second sample. Abnormal return index is almost stable around 1 which indicated no change in return level compared to the *Day 0* (Panel B). Moreover, Panel C shows that securities of top corporate income tax payers generates negative excess returns compared to the market return due to negative CAR throughout the event window. Similar to the first sample, the number of securities with negative CAR at the end of event window is still high (Panel D).

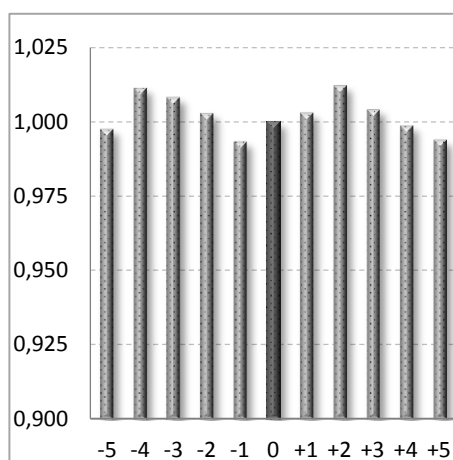
Figure 17 shows that number of securities, which is positive and significant at 10 percent level during the event window, does not exceed 3 securities out of 31.

To sum up, empirical findings in the market-adjusted model suggest that there is no significant excess return of securities around the official announcement. This result is not only true for the all securities in the market but also it is valid for the securities of top corporate income tax payers. In other words, return performances of these two sample sets are not affected differently by the announcement of corporate income tax rate change.

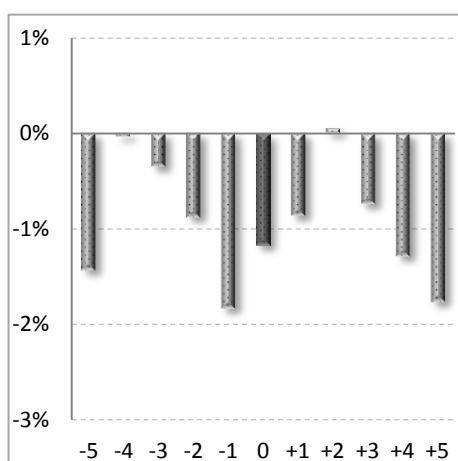
Panel A: Abnormal Returns



Panel B: Abnormal Returns Index



Panel C: Cumulative Abnormal Returns



Panel D: CAR at the end of Event Window

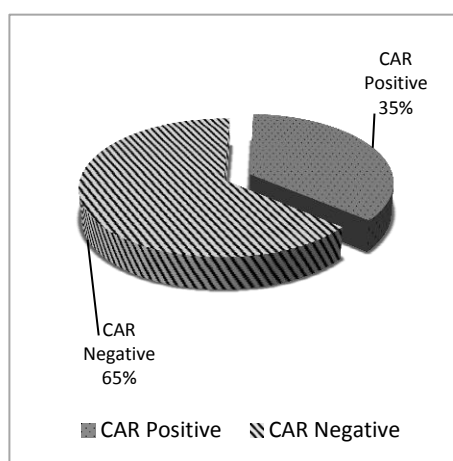


Figure 16: Empirical Results in Market Adjusted Model: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

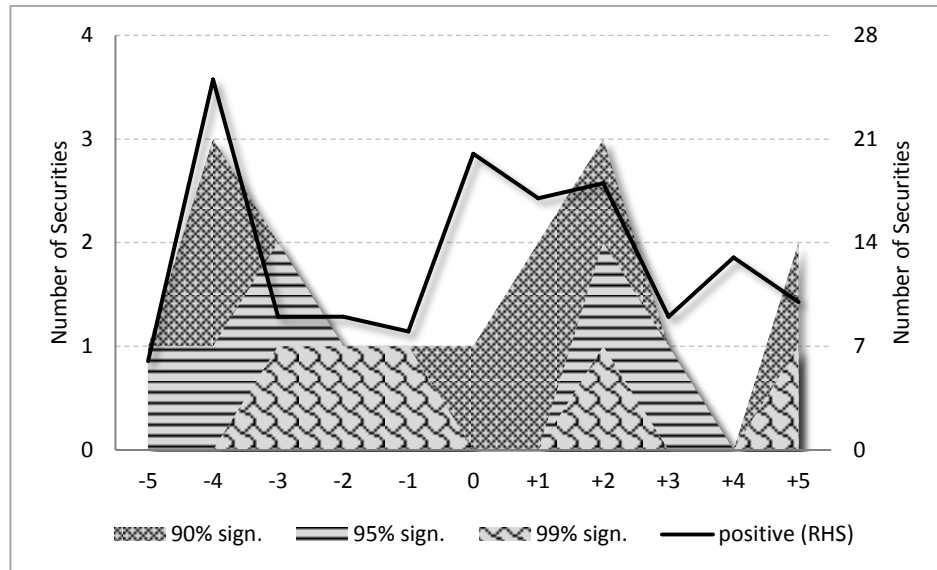


Figure 17: Market Adjusted Abnormal Return: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

5.5.3 OLS Market Model

The last method for calculation of abnormal returns is the OLS Market Model. In order to calculate average abnormal returns of securities, firstly 256 independent OLS regressions are done, and then using estimated coefficients, abnormal returns of each security are calculated and then they are aggregated.

Table 7 shows average abnormal returns during the event window for the sample of all securities. As other methods suggests, the average abnormal returns are insignificant during the event window. Although they are not statistically different than zero, both negative and positive abnormal returns are observed. Moreover, there is negative abnormal return on the event day.

Further information is provided in Figure 18. Securities generates lower than 1 percent loss at the end of event window (Panel C) and only 59 of securities end up with positive CAR at the end of event window. In line with these results, Figure 19 suggests that although there is jump in the number of securities which has positive and significant abnormal returns one and

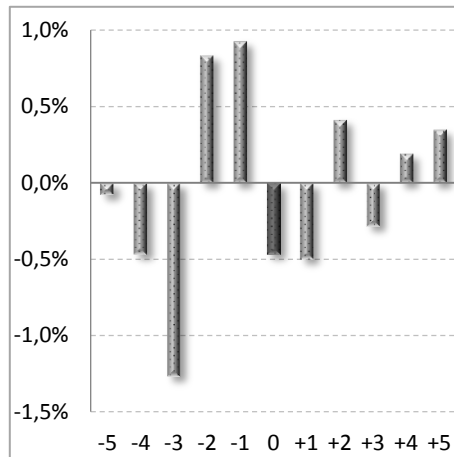
two days before the event day, the number of securities still too low to dominate the entire sample set to obtain significant excess returns.

Table 7: OLS Market Model Abnormal Returns and T-statistics in the Event Period: All Securities

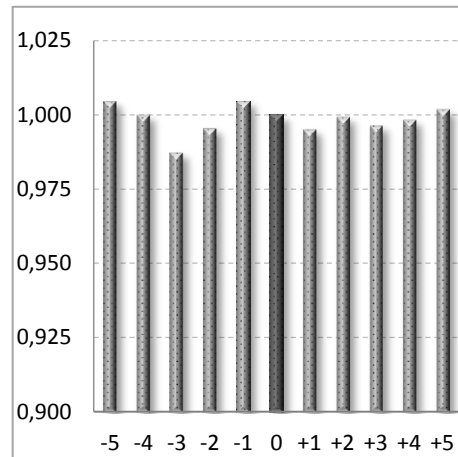
Days	Average Abnormal Returns	T-statistic
-5	-0,001	-0,094
-4	-0,005	-0,571
-3	-0,013	-1,547
-2	0,008	1,022
-1	0,009	1,134
0	-0,005	-0,568
+1	-0,005	-0,607
+2	0,004	0,506
+3	-0,003	-0,345
+4	0,002	0,236
+5	0,004	0,429

Source: Bloomberg and Authors' Calculations

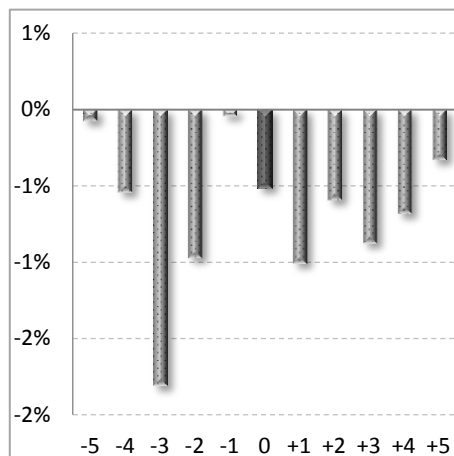
Panel A: Abnormal Returns



Panel B: Abnormal Returns Index



Panel C: Cumulative Abnormal Returns



Panel D: CAR at the end of Event Window

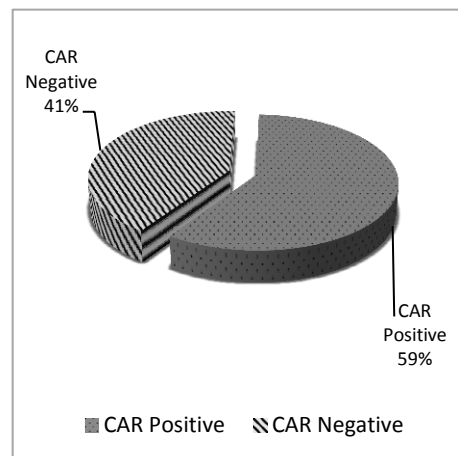


Figure 18: Empirical Results in OLS Market Model: All Securities Source: Bloomberg and Authors' Calculations

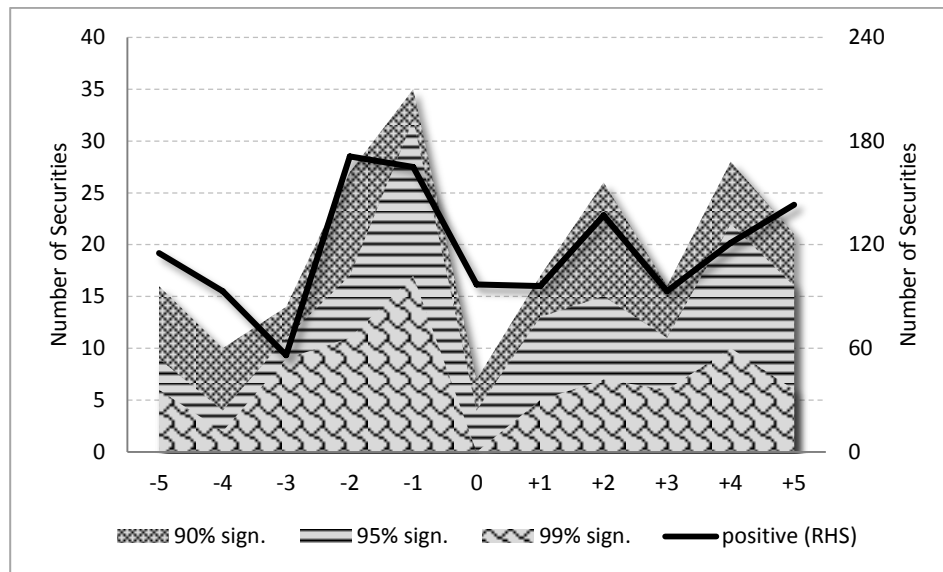


Figure 19: OLS Market Model Abnormal Return: All Securities Source: Bloomberg and Authors' Calculations

The same procedure of the analysis is also conducted for the second sample of top corporate income tax payers. Table 8 displays the results for the average abnormal returns. The second sample set has three significant abnormal returns during the event window. One is two days before the event day, one is two days later and the last one is the last day of the event window. All these three points are significant at 5 percent level.

Abnormal return index in Panel B of Figure 20 shows the hike in the return level especially two days after the event date, in other words the hikes comes later than the announcement. In this case, the securities of the top corporate income tax payers generated positive CAR during the event window and most significant hike realizes two days after the event day (Panel C). Similar to the CAR, the number of securities that has positive and significant abnormal returns rises in the following two days after the event date.

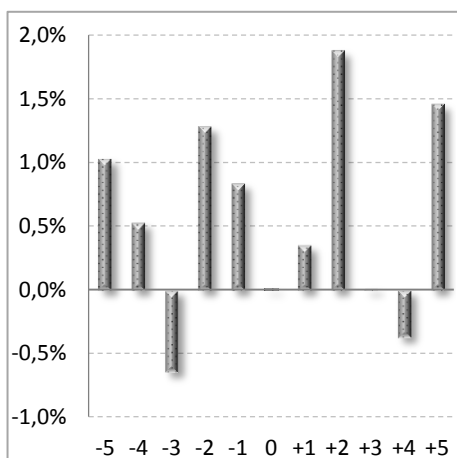
Table 8: OLS Market Model Abnormal Returns and T-statistics in the Event Period: Top Corporate Income Tax Payers

Days	Average Abnormal Returns	T-statistic
-5	0,010	1,853
-4	0,005	0,953
-3	-0,006	-1,153
-2	0,013	2,308
-1	0,008	1,505
0	0,000	0,016
+1	0,004	0,635
+2	0,019	3,375
+3	0,000	0,029
+4	-0,004	-0,666
+5	0,015	2,627

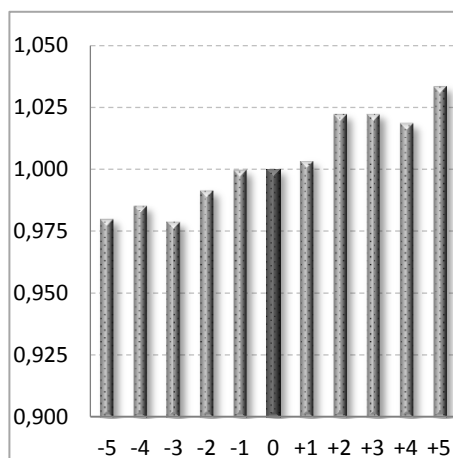
Source: Bloomberg and Authors' Calculations

The empirical findings in the OLS Market Model do not provide significant abnormal returns for the first sample. Although three significant abnormal returns are calculated for the second sample, significant excess returns realizes after and before the event day. Even, there is no significant reaction among top corporate income tax payers one day before and after the event day. Therefore, significant abnormal returns do not seem to be a sign of a reaction caused by the announcement.

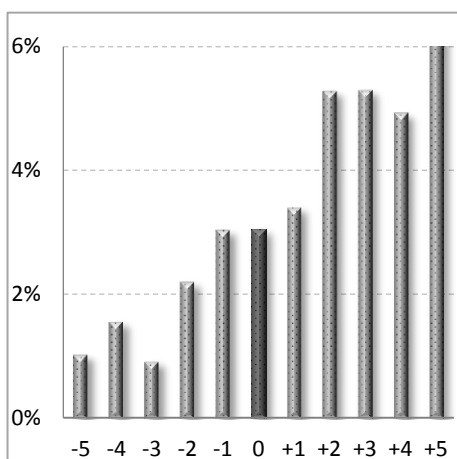
Panel A: Abnormal Returns



Panel B: Abnormal Returns Index



Panel C: Cumulative Abnormal Returns



Panel D: CAR at the end of Event Window

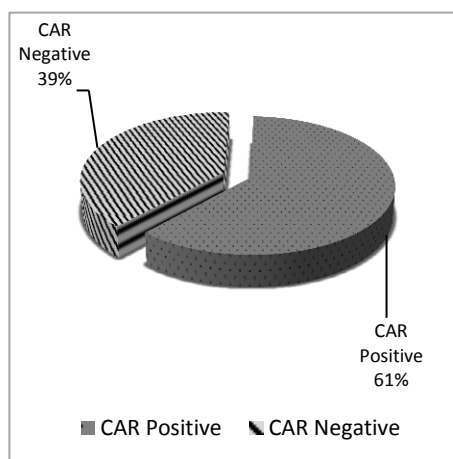


Figure 20: Empirical Results in OLS Market Model: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

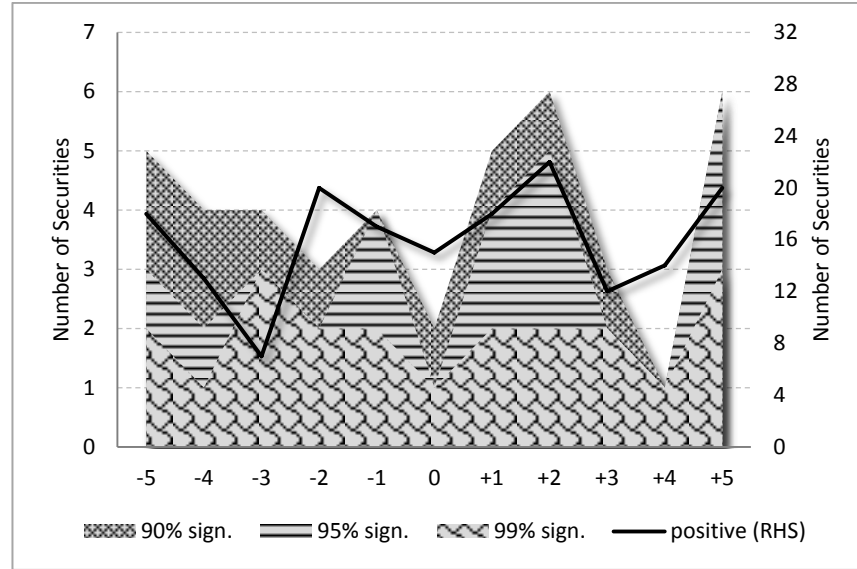


Figure 21: OLS Market Model Abnormal Return: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

In conclusion, abnormal returns of securities are calculated using three different methodologies for the two different sample sets. The results implied by different methodologies does not change since the results in all methods indicated insignificant reaction in the stock market to the official announcement of the corporate income tax rate deduction. The empirical findings are parallel to our expectations since it is certain that signals of corporate income tax rate cut was so clear before the official announcements beyond the expectations. Therefore, it is considered that competitive investors reflected the information of the tax rate cut well before the official announcement in the prices. Since an expected public announcement does not create significant abnormal returns in the market, the empirical evidences support the claim that the Istanbul Stock Exchange Market is semi-strong efficient market.

CHAPTER 6

ROBUSTNESS OF THE RESULTS IN THE EVENT STUDY ANALYSIS

In the previous section, existence of abnormal returns around the announcement day in two different sample set is investigated. In this section, other econometric approaches and one more event study analysis are used for robustness of the results in the event study analysis.

In the study of Izan (1978), an econometric way is introduced to detect effects of a regulatory announcement. Therefore, the approach of Izan (1978) is applicable to see whether there is an abnormal return in the event window or not. According to this study, the following regression is constructed:

$$PR_t = \alpha + \beta R_{mt} + \sum_{i=1}^I \gamma_i D_{it} + u_t \quad (15)$$

where PR_t is the equally weighted return of the portfolio at time t , R_{mt} is the market return at time t , I denotes the number announcement, D_{it} is the dummy variable for announcement periods i and u_t is the residual at time t . Therefore, significance of γ_i shows abnormal return in the event period around the announcement date.

Simple average of the returns of securities introduced in the previous section are used for the variable of portfolio return PR and ISE 100 Index is used

for the market return R_m . In this study, there is only one announcement and so the unique dummy variable D_t is as follows:

$$D_t = \begin{cases} 1 & \text{for } t = -5, -4, \dots, +4, +5 \\ 0 & \text{for } t = -239, -238, \dots, -7, -6 \end{cases}$$

Table 9: Portfolio Return in the Analysis Period: All Securities

	Coefficients		t-value
constant	0,000 (0,001)		-0,07
R_{mt}	0,675*** (0,042)		16,13
D_t	0,002 (0,002)		1,03
Observation	250	R-squared	0,6322
Degrees of Freedom	247	Adjusted R-squared	0,6292

* significant at 10%, ** significant at 5%, ***significant at 1%
The numbers in parenthesis shows robust standard errors.

Source: Authors' calculations.

The result of the regression for the first sample is displayed in Table 9. Using standard t-test, the coefficient of dummy variable D_t is insignificant. Hence, similar to the results of event study analysis, this regression suggests that there is no abnormal return during the event window in the first sample set, which contains all securities.

Table 10: Portfolio Return in the Analysis Period: Top Corporate Income Tax Payers

	Coefficients		t-value
Constant	0,001** (0,000)		2.31
R_{mt}	0,881*** (0,025)		34.81
D_t	0,002 (0,002)		0.90
Observation	250	R-squared	0,8561
Degrees of Freedom	247	Adjusted R-squared	0,8549

* significant at 10%, ** significant at 5%, ***significant at 1%

The numbers in parenthesis shows robust standard errors.

Source: Authors' calculations.

The same regression represented in equation (15) is also applied for the securities of the firms, which are top corporate income tax payers. The results of the regression are represented in Table 10. Similar to the previous results, the dummy variable for the event window is insignificant; therefore, estimated regression support the argument that there is abnormal return for top corporate income tax payers around the announcement of corporate income tax change.

In addition to this times series regression, the following regression is specified:

$$CAR_{it} = \alpha + \beta DM_{it} + u_{it} \quad (16)$$

where CAR_{it} denotes cumulative abnormal return of security i at time t and DM_{it} is dummy variable for the securities of top corporate income tax payers as follows:

$$DM_{i,t} = \begin{cases} 1 & \text{if security } i \text{ belongs to the firm which is one of} \\ & \text{the top corporate income tax payers, } \forall t \\ 0 & \text{otherwise} \end{cases}$$

Table 11: OLS Market Model Cumulative Abnormal Return in the Event Window: All Securities

	Coefficients	z-value
Constant	-0,009 (0,016)	-0,57
$DM_{i,t}$	0,017 (0,019)	0,89
Observation	2816	R-squared
		0,0005

* significant at 10%, ** significant at 5%, ***significant at 1%
The numbers in parenthesis shows robust standard errors.

Source: Authors' calculations.

In the regression in equation (16), the constant term shows the effects of the announcement of capital income tax deduction on average returns and $DM_{i,t}$ controls firm specific characteristics which are to be one of the top capital income tax payers. Estimated results using GLS regression suggests that there is insignificant decrease in asset returns on average over 11-day window around the announcement. Also, since the coefficient of the dummy variable is insignificant, results support that there is significant change in asset returns on average in the event window for the top corporate income tax payers (Table 11).

As a result, simple OLS and GLS regression is also consistent with the results obtained by the event study analysis.

In addition to these robustness checks, one more event study analysis is used. Although it is known that event study analysis is appropriate for the unexpected event, the analysis is applied to the date of entry into force of

the corporate income tax rate deduction – January 1, 2006 - to show that there is no postponed market reaction to the announcement. Other characteristics of the event study rather than the event data is the same as explained in the section 4 and applied in section 5. Since January 1, 2006 is public holiday, the date of January 2, 2006 is taken as event date in the analysis. Moreover, abnormal returns are calculated in the OLS Market Model since it is most preferred method.

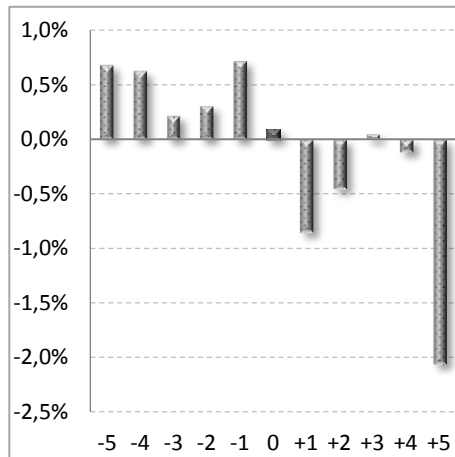
Table 12 presents the results for the first sample set. There only significant average abnormal return on the last day of the event window and it is negative. It is clear this negative abnormal return after 5 days later is not related to the entry into force of the new corporate income tax rate. As a result, insignificant abnormal returns in the event period provide that there is no market reaction to the entry into force in the sample set of all securities in the stock market. Instead of positive market reactions to the entry into force, there are negative abnormal returns in the second half of the event period and CAR through the end of the period (Figure 22).

Table 12: OLS Market Model Abnormal Returns and T-statistics in the New Event Period: All Securities

Days	Average Abnormal Returns	T-statistic
-5	0,007	1,133
-4	0,006	1,038
-3	0,002	0,360
-2	0,003	0,508
-1	0,007	1,190
0	0,001	0,161
+1	-0,009	-1,412
+2	-0,005	-0,754
+3	0,001	0,085
+4	-0,001	-0,196
+5	-0,021	-3,408

Source: Bloomberg and Authors' Calculations

Panel A: Abnormal Returns



Panel B: Cumulative Abnormal Returns

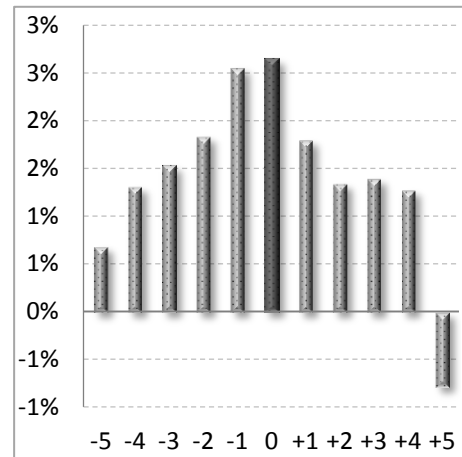


Figure 22: Empirical Results in OLS Market Model: All Securities Source: Bloomberg and Authors' Calculations

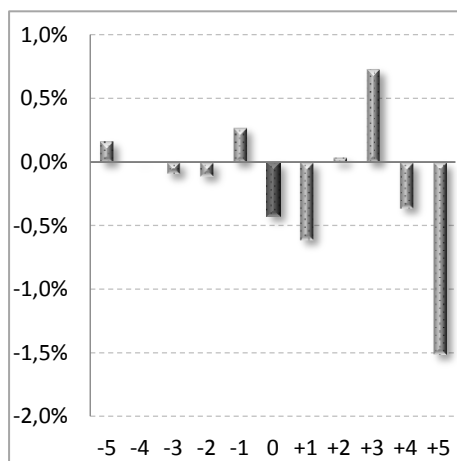
The same analysis is repeated for the sample of top corporate income tax payers for the robustness checks. Similar to the first sample, the only significant abnormal return occurs in the last day and it negative. In other days during the event period, statistically, abnormal returns are not different than zero and there is downward trend in the CAR instead of upward movements (Figure 23).

Table 13: OLS Market Model Abnormal Returns and T-statistics in the Event Period: Top Corporate Income Tax Payers

Days	Average Abnormal Returns	T-statistic
-5	0,002	0,34
-4	0,000	0,00
-3	-0,001	-0,19
-2	-0,001	-0,23
-1	0,003	0,56
0	-0,004	-0,87
+1	-0,006	-1,26
+2	0,000	0,07
+3	0,007	1,52
+4	-0,004	-0,75
+5	-0,015	-3,12

Source: Bloomberg and Authors' Calculations

Panel A: Abnormal Returns



Panel B: Cumulative Abnormal Returns

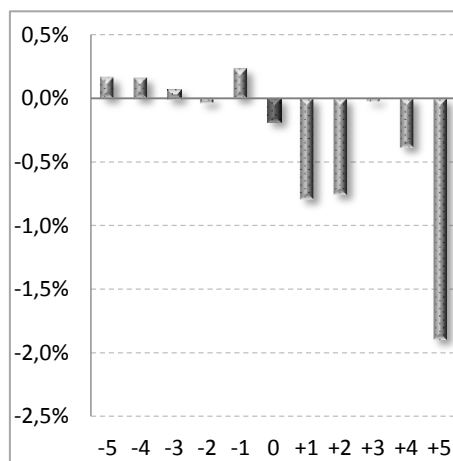


Figure 23: Empirical Results in OLS Market Model: Top Corporate Income Tax Payers Source: Bloomberg and Authors' Calculations

As a result of second event study analysis, there is no postponed market reaction regarding the corporate income tax rate change in both sample sets. Hence, in light of empirical results and all robustness checks, market reaction the official announcement of decline in the corporate income tax rate change is not significant as it is expected.

CHAPTER 7

CONCLUSION

The decline in corporate income tax rate from 30% to 20% is officially announced on November 29, 2005 and the date of entry into force as determined as January 1, 2006. In this context, this paper analyzes the impacts of the announcement of the corporate income tax rate reduction on asset prices in Turkey in 2005.

Event study analysis is used to measure the impacts on asset prices. It is analyzed whether the official announcement caused a significant change in asset prices in the Istanbul Stock Exchange Market. In the event study application, the official announcement date is taken as the event date in order to observe immediate reactions of the investors¹⁰. Two different sample set which are all securities and securities of top corporate income tax payers are used. In addition, three measurement methods suggested in the event study analysis are utilized to measure the impacts. It is obtained no significant change in asset prices for both whole market and securities of top corporate income tax payers in the event period. The reason behind this is that there is certain information and expectation that the corporate income tax rate would fall in the short run before the announcement. This result is parallel to the fact that asset prices in semi-efficient stock markets reflect

¹⁰ The conclusion of insignificant reaction to the decline in the corporate income tax rate does not change in the analysis in which the date of entry into force of the corporate income tax rate change is taken as the event date.

publicly available information. In other words, the Istanbul Stock Exchange Market can be considered as semi-efficient stock market according to the market efficiency hypothesis.

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APPENDIX A

TURKISH SUMMARY

Bu çalışmanın amacı 2005 yılında gerçekleşen kurumlar vergisi indirimi açıklamasının varlık fiyatları üzerine etkisinin incelenmesidir. 29 Kasım 2005 tarihinde Türkiye Büyük Millet Meclisi'nde gerçekleşen siyasi parti grup toplantısında Türkiye Cumhuriyeti Başbakanı tarafından yapılan açıklamada kurumlar vergisi oranında indirimle gidileceği belirtilmiştir. Yapılan açıklamada yüzde 30 olan kurumlar vergisi oranının 2006 yılının başından itibaren yüzde 20'ye indirileceği ifade edilmiştir.

Bu çalışmada, yapılan açıklamanın varlık fiyatları üzerine kısa vadeli etkisi olay çalışması yöntemi ile incelenmektedir. Firma değerlerini ölçme amacıyla İstanbul Menkul Kıymetler Borsası'nda açıklama tarihinde işlem gören hisse senedi fiyatları yeterli istatistik olarak ele alınmaktadır.

Kamu geliri, hükümetin anayasal limitler dahilinde ekonominin çeşitli kaynaklarından topladığı gelirleri ifade etmektedir. Hükümet, piyasaya sürdüğü tahviller, kamu iktisadi teşekküllerinin elde ettiği gelirler, kamu varlıklarının özelleştirilmesi gibi çeşitli kaynaklardan kamu geliri elde edebilmektedir. Ancak kamu gelirleri içerisinde en önemli pay vergi gelirleridir. Ülkemizde merkezi yönetimin elde ettiği kamu gelirlerinin yaklaşık yüzde 80'i vergi gelirlerinden oluşmaktadır.

Vergi gelirlerinin hükümet bütçesinde sahip olduğu bu yüksek pay nedeniyle vergi uygulamalarının, ekonomiye etkileri dikkatli bir şekilde incelenmeli ve yürürlüğe konulmalıdır.

Ülkemizde vergiler doğrudan ve dolaylı olmak üzere iki genel başlık altında sınıflandırılmaktadır. Doğrudan vergiler, en genel tanımıyla, fiili ve yasal mükellefinin değişmediği; hükümetin vergi gelirini doğrudan fiili olarak ödemekle yükümlü kişilerden elde ettiği vergilerdir. Diğer yandan, dolaylı vergilerde yasal mükellef vergiyi arz ve talep dengesine göre kolaylıkla farklı ekonomik birimlere yansıtabilmekte ve verginin fiili ve yasal mükellefi birbirinden farklılık göstermektedir.

T.C. Kalkınma Bakanlığı verilerine göre 1999 yılında Türkiye 17,1 milyar TL'lik vergi geliri elde etmiş; elde ettiği vergi gelirinin yaklaşık yüzde 42,3'ünü ise doğrudan vergiler oluşturmuştur. 2013 yıl sonu itibarıyla hükümetin elde ettiği vergi geliri 321,3 milyar TL'ye ulaşmış, ancak dolaylı vergilerde yaşanan hızlı artış sonucu doğrudan vergilerin vergi gelirleri içerisinde payı yüzde 28,4'e kadar gerilemiştir.

Hükümetin doğrudan elde ettiği vergi gelirlerini varlık üzerinden toplanan; Motorlu Taşıtlar Vergisi, Emlak Vergisi, Veraset ve İntikal Vergisi ve kişi ve kurumların yıllık kazançları üzerinden alınan; sırasıyla Gelir ve Kurumlar Vergisi oluşturmaktadır. Hükümetin kişilerin varlıkları üzerinden topladığı vergi gelirlerinin doğrudan vergi gelirleri içindeki payı sınırlıdır. Doğrudan vergiler temel anlamda kişi ve kurum kazançları üzerinden elde edilmektedir. Kişi ve kurumların kazançları üzerinden toplanacak vergiye ilişkin hükümler sırasıyla 1960 tarihli Gelir Vergisi Kanunu'nda ve 1949 tarihli Kurumlar Vergisi Kanunu'nda belirlenmiştir. Kanunda sınırları belirlenen kişi ve kurumlar her yıl elde ettikleri kazançlar üzerinden devlete vergi ödemektedirler.

1990'lı yılların başında Türkiye'de resmi olarak yürürlükte olan kurumlar vergisi oranı yüzde 46 seviyesinde idi, ancak belirtilen dönemde yürürlükte olan çeşitli muafiyet ve teşvikler nedeniyle etkin oranının bu oranın altında olduğu bilinmektedir. Nitekim 1994 yılında resmi kurumlar vergisi oranında 21 puanlık indirimle gidilmiş ve 1994 yılından itibaren kurumlar vergisi

oranı yüzde 25 olarak uygulanmaya başlanmıştır. 1999 yılına kadar yürürlükte kalan bu oran, Hükümetin 2000’li yılların başında kamu bütçe dengesini vergi artışlarıyla, toplanan vergi miktarını da vergi oranı artışlarıyla yükseltebileceği görüşüne paralel şekilde 1999-2004 yılları arasında iki defa yükseltilmiştir. 2004 yılında kurumlar vergisi oranı yüzde 33 olarak uygulanmış, sonrasında 2005 yılında öncelikle yüzde 30’a, 29 Kasım 2005 tarihinde yapılan resmi açıklama ile 1 Ocak 2006 tarihinden itibaren geçerli olmak üzere yüzde 30’dan yüzde 20’ye düşürülmüştür. Kurumlar vergisi oranı Hükümetler için sadece bir vergi geliri değildir. Kurumlar vergisi hükümleri, ülkenin üretken kesimi olan şirketlerin net karları üzerinde doğrudan etkiye sahiptir, dolayısıyla genel ekonomik faaliyetler üzerine etki etmektedir. Yüksek kurumlar vergisi oranı, ülkenin üretimde kullanılabilecek kaynaklarının kamu gelirleri yönüne transferine yol açmakta ve şirketler için ek maliyet unsuru oluşturmaktadır. Ortaya çıkan bu ek maliyet nedeniyle şirketler yatırım kararlarını değiştirebilmekte, örneğin karlı gördüğü bir sektörde yapacakları yatırımdan yüksek vergi oranları nedeniyle vazgeçebilmektedirler. Diğer yandan kurumlar vergisi sadece yerli yatırımcının yatırım kararları üzerinde değil yabancı yatırımcının ülkede yapacağı yatırımlar üzerinde de etkili bir unsurdur. Küresel anlamda yüksek kurumlar vergisi uygulamaları ülkeye gelebilecek doğrudan yabancı yatırımlar üzerinde de olumsuz etkilere neden olmaktadır. Nitekim belirli bir bölgede yatırım yapmayı planlayan küresel bir yatırımcının yatırım kararlarını alırken dikkat edeceği unsurların başında vergi oranları gelmektedir. Vergi değişikliğinin ikincil etkileri ele alındığında, kurumlar vergisi oranında meydana gelecek bir artışın neden olacağı yatırım azalması öncelikle üretimin azalmasına, daha sınırlı üretim koşulları altında talebin sabit kaldığını varsayarsak genel fiyat seviyesinde ve çalışanların kazançlarında olumsuz etkilere neden olacaktır. Bu anlamda bütün vergi politikaları gibi kurumlar vergisi uygulamalarının da iyi bir şekilde analiz edilip hayata geçirilmesi gerekmektedir.

Ekonomik Kalkınma ve İşbirliği Örgütü verilerine göre 2005 yılında gerçekleşeceği açıklanan indirim öncesinde Türkiye’de kurumlar vergisi 22 AB üyesi ortalamasının yaklaşık 4 yüzde puan üzerinde bulunurken, yapılan değişiklik sonucu 6 yüzde puan altına gerilemiştir. İlerleyen dönemde AB ülkelerinde kurumlar vergisi indirimlerine devam edilmesi sonucunda 2013 yılsonu itibarıyla 22 AB üyesi ortalaması yüzde 24’ün altına gerilemiş ve aradaki fark azalmıştır. Özetle, değişiklik öncesinde Türkiye’de kurumlar vergisi oranının komşu AB ülkelerinin ciddi oranda üzerinde olduğu görülmektedir.

Esasen, Türkiye’de kurumlar vergisi oranının yüksek olduğu yönünde açıklamalar resmi indirimden önce kişi ve kurumlar tarafından dile getirilmiştir. Vergi oranı indirimi gerekliliğine, Uluslararası Para Fonunun Türkiye’ye ilişkin 2005 ülke raporunda da yer verilmiş ve Türkiye’nin AB’ye yeni üye olan ülkeler seviyesine inene kadar kademeli bir kurumlar vergisi indirimine gitmesi gerektiği belirtilmiştir. Diğer yandan, Türkiye Cumhuriyeti Maliye Bakanı tarafından kurumlar vergisi oranında indirimle gidileceği yönünde açıklamalar yapılmıştır. Maliye Bakanı 27 Mayıs 2005 tarihinde katıldığı kayıt dışı ekonomi konulu panelde vergi indirimlerine devam edeceklerini, özellikle Türkiye’ye komşu olan ülkelerle daha iyi rekabet edebilmek adına kurumlar vergisi indiriminin ilerleyen dönemde gerçekleştirileceğini belirtmiştir. Mayıs ayında yapılan açıklamaya paralel şekilde Maliye Bakanı, 14 Kasım 2005 tarihinde Uşak Ticaret ve Sanayi Odası’nın düzenlediği vergi ödül töreninde gelir vergisi ve kurumlar vergisi ile ilgili çalışmalarının sürdüğünü ve cömert bir indirimin önümüzdeki günlerde yapılacağını açıklamıştır. Benzer şekilde, resmi açıklamadan iki gün önce 27 Kasım 2005 tarihinde Hürriyet Gazetesine röportaj veren Maliye Bakanı kurumlar vergisi oranında yüzde 10’luk bir indirimle gidileceğini açıklamış ve bunun Başbakan tarafından takip eden 10 gün içinde ilan edileceğini açıklamıştır.

Maliye Bakanı'nın basına verdiği demeç ve gerçekleştirdiği konuşmalardan, bunun yanında Uluslararası Para Fonu tarafından da belirtildiği gibi kurumlar vergisi oranında bir indirim ihtiyacının olduğundan dolayı aslında gerçekleşen resmi açıklamanın sürpriz olmadığı anlaşılmaktadır.

Bu çalışmanın temel amacı, kurumlar vergisi indiriminin varlık fiyatları üzerinde kısa vadeli etkisinin incelenmesidir. Bu anlamda Etkin Piyasalar Hipotezi hakkında genel bir tartışmanın yapılmasında yarar görülmektedir. Etkin Piyasalar Hipotezine göre, finansal piyasalar çok sayıda alıcı ve satıcının kar etme güdüsüyle hareket etmesinden dolayı bilgi açısından etkin piyasalar olarak kabul edilmektedir. Buna göre, piyasaya yeni bir bilgi geldiğinde bu bilgi çok sayıda rekabetçi yatırımcı tarafından hızlı bir şekilde değerlendirilmekte ve elde edilen bilgi sürekli olarak piyasalar tarafından fiyatlandırılmaktadır.

Etkin piyasa hipotezi, ilk olarak Fransız matematikçi Louis Bachelier'in (Mussavıan, 2000) doktora tezinde yer almıştır. Bachelier çalışmasında piyasa fiyatlarının, satıcı ve alıcıların geçmiş, bugünkü ve gelecekteki beklentilerini yansıttığını ve fiyat değişimleri arasında belirli bir ilişkinin bulunmadığını belirtmiştir.

Eugene F. Fama ve Paul A. Samuelson 1960'lı yıllarda birbirlerinden bağımsız olarak etkin piyasa hipotezi üzerine çalışmış, ancak Fama 1970 tarihinde yayımladığı makalesinde etkin piyasalar hipotezi hakkında teorisinin genel bir değerlendirmesini ve ana hatlarını oluşturmuştur. Fama'ya göre etkin bir piyasa, varlık fiyatlarının elde edilen bilgileri tamamı ile yansıttığı piyasalardır. Buna göre yatırımcıların etkin piyasalarda geçmiş fiyat hareketlerini ve elde ettiği bilgileri kullanarak normalin üzerinde bir kazanç elde etmesi mümkün değildir. Etkin piyasalar hipotezi, birçok varsayıma dayanmaktadır. Fama (1970) çalışmasında, etkin piyasaları 3 farklı grup altında sınıflandırmaktadır. Zayıf formda etkin piyasalarda, varlık fiyatları sadece geçmiş fiyat bilgilerini yansıtmakta ve yatırımcılar

sadece geçmiş fiyatları takip ederek anormal getiri elde edememektedirler. Yarı-etkin formda piyasalarda, varlık fiyatları geçmiş fiyat bilgilerinin yanında kamuya verilmiş bütün bilgileri yansıtmakta ve yatırımcılar bu bilgileri kullanarak anormal bir getiri elde edememektedirler. Diğer yandan, güçlü formda etkin piyasalarda, varlık fiyatları geçmiş fiyat bilgilerini, kamuya açık bilgileri bunun yanında firmalarla ilgili özel tüm bilgileri yansıtmaktadır. Güçlü formda etkin piyasalarda, yatırımcıların anormal getiri elde etme ihtimali yoktur. Güçlü formda etkin bir piyasada ticaret yapmak anlamlı değildir, bu nedenle finansal piyasaların gerek işlem maliyetleri, gerekse bilgiye ulaşma maliyetleri nedeniyle güçlü formda etkin bir piyasa olmadığı, genel olarak yarı-etkin forma sahip olduğu kabul edilmektedir (Fama, Grossman and Stiglitz, 1980)

Fama (1991) olay çalışması analiz yönteminin yarı-formda etkin piyasaları test etme amacıyla kullanılabileceğini belirtmektedir. Bu çalışmada, Fama'nın önerisi doğrultusunda kurumlar vergisi açıklamasının varlık fiyatları üzerinde etkisinin bulunup bulunmadığı ve İstanbul Menkul Kıymetler Borsasının yarı-formda etkin bir piyasa olup olmadığı olay çalışması analiz yöntemi ile test edilmektedir. Yapılan resmi açıklama öncesi kamuya mal olmuş bazı kesin bilgiler bulunduğu ve bu doğrultuda genel bir indirim beklentisi olduğundan dolayı, resmi açıklamanın etkin piyasalar hipotezine göre varlık fiyatları üzerinde kısa vadeli etkisinin bulunması beklenmemektedir.

Olay analizi yöntemi ilk olarak, Fama, Fisher, Jensen ve Roll (1969) tarafından kullanılmıştır. Yapılan ilk olay analizi çalışmasında, hisse senedi bölünmesi açıklamasının varlık fiyatları üzerine etkisi incelenmektedir. Yapılan bu çalışma sonrası olay analizi yönteminden başta hisse senedi bölünme, birleşme ve satın alma açıklaması gibi finans alanı konularında yararlanılmakla beraber mali iktisat alanında da birçok uygulamada yararlanılmıştır. Cutler (1988), 1986 yılında ABD'de yapılan vergi reformu açıklamasının varlık fiyatları üzerine etkisini olay analizi yöntemi ile

incelemektedir. Cutler’ın çalışmasında, 10 günlük ve 1 aylık iki farklı olay penceresi oluşturulmuş, ancak açıklamanın varlık fiyatları üzerinde etkisinin bulunmadığı görülmüştür. Ayrıca, sektörel ve firma bazlı yapılan değerlendirmelerde de farklı bir sonuca ulaşamamıştır. Mali iktisat alanında olay analizi yöntemini kullanan bir diğer çalışma Land ve Shackelford (2000) tarafından gerçekleştirilmiştir. Bu çalışmada, 1997 yılında ABD bütçesi içinde görüşülen sermaye kazancı vergi değişikliğinin hisse senedi fiyatları üzerine etkisi incelenmektedir. Yapılan görüşmeler sonucunda etkin vergi oranının yüzde 28’den yüzde 20’ye gerileyeceği beklenmektedir. En büyük 2000 Amerikan şirketinin 129 haftalık verileri ile gerçekleştirilen analiz sonucunda, vergi indirimin açıklamasının yıl içinde en fazla temettü ödeyen şirket değerlerinde az miktarda, buna karşılık temettü ödemeyen şirketlerde daha fazla etkiye neden olduğu belirtilmektedir. Bu gözlemin arkasında yatan nedenin ise fazla temettü ödemesi yapan şirketlerin, hali hazırda temettü ödemesi yapmaları nedeniyle gerçekleşecek vergi indiriminden ödemeyenler kadar yararlanamayacağı ifade edilmektedir.

Kandır ve Yakar (2012) 2005 yılında Türkiye’de gerçekleşen kurumlar vergisi açıklamasının İMKB’de işlem gören 5 şirketin hisse senedi fiyatları üzerine etkisini olay çalışması yöntemiyle incelemiştir. Elde edilen bulgulara göre, kurumlar vergisi indirimi açıklamasının olay gününde hisse senedi getirilerinde anormal bir tepkiye neden olduğu sonucuna ulaşmışlardır. İndirim öncesinde konuyla ilgili herhangi bir ön ibarenin ya da beklentinin olmaması nedeniyle de piyasa tepkisinin olay gününde anormal getiri vermesini Etkin Piyasalar Hipotezi ile ilişkilendirmişler ve İMKB’nin yarı güçlü formda etkin bir piyasa olduğu sonucuna ulaşmışlardır. Aynı olay gününü konu alan bu çalışmada farklı örneklem grupları kullanılmış ve Kandır ve Yakar’ın çalışmasına paralel şekilde İMKB’nin yarı güçlü formda etkin bir piyasa olduğu sonucuna ulaşılmıştır. Ancak, bu çalışmada kullanılan iki farklı örneklem olay gününde anormal

bir getiri elde etmemiştir. Dahası piyasa da kurumlar vergisi indiriminin gerçekleşeceği yönünde bulgulara rastlanmış ve varlık fiyatlarının bu bilgiyi önceden fiyatlandığı sonucuna ulaşılmıştır. Özetle, aynı olay gününü konu alan bu iki çalışmanın ulaştığı sonuç aynı olsa da, sonuca ulaşmada gittiği yol birbiriyle tamamen ayrı ve çelişmektedir.

Mali iktisat alanı dışında olay analizi yöntemi, Andrade, Mitchell and Stafford (2001) tarafından şirket birleşme açıklamaları; Beaver (1968) tarafından gelir açıklamaları; Wulff (2002) tarafından Alman hisse senedi piyasasında hisse senedi bölünmesi açıklamalarının etkisini ölçmek amacıyla kullanılmıştır. Son dönemde olay çalışması yöntemi Amerikan Merkez Bankası tarafından yapılan miktarsal genişleme duyurularının uzun vadeli faiz oranlarına etkisinin analizinde Thornton (2014) tarafından kullanılmıştır. Çalışmanın sonuçlarına göre miktarsal genişleme duyurularının uzun vadeli faizler üzerinde etkisi bulunmamıştır.

Bu çalışmada, olay analizi yöntemi MacKinlay (1997) ve Brown ve Warner'ın (1985) ayrı ayrı ortaya koyduğu yöntem derlenerek 8 basamak altında toplanmaktadır.

İlk aşama olayın belirlenmesidir. Olayın belirlenmesi aşamasında kesin bir kural olmayıp, seçilen olayın varlık fiyatlarını etkileyebilecek bir etkiye sahip olması gerekmektedir. Seçilen olay hisse senedi bölünmesi, birleşme ve satın alma, temettü dağıtım açıklaması gibi şirketleri farklı günlerde etkileyen bir olayın olay gününe göre normalleştirilmesi olabileceği gibi; vergi yönetmeliğinde gerçekleşen bir değişikliğin ilgili gündeki etkisinin doğrudan ilgili takvim gününde incelenmesi de olabilir. Bu çalışmada olay resmi kurumlar vergisi indirim açıklaması olarak belirlenmiştir.

İkinci aşama, olay penceresinin belirlenmesidir. Olay penceresi, olayın etkisinin olay öncesinde ve sonrasında incelendiği dönemi ifade etmektedir. Olay penceresi seçilirken dikkat edilmesi gereken kural şu şekildedir. Finansal piyasalar her türlü bilgiye duyarlı bilgiler olduğundan

oluşturulacak olay penceresinin farklı etkileri içermeyecek kadar kısa, incelenen bilginin piyasada oluşacak etkisini içerecek kadar uzun olmalıdır. Bu çalışmada olay penceresi Brown ve Warner'ın (1985) makalesinde önerdiği şekliyle olay gününden 5 gün önce ve sonra olarak belirlenmiştir.

Üçüncü aşama tahmin döneminin belirlenmesidir. Tahmin dönemi varlık fiyatlarının şokun etkisinde olmadığı normal zamanlarda izlediği seyrin belirlenmesi aşamasıdır. Bu aşamada oluşturulan modellerde şokun etkisinde olmadığı varsayılan parametreler elde edilir. Bu çalışmada tahmin dönemi Brown ve Warner'ın (1985) önerisi doğrultusunda olay penceresinden önceki 239 gün seçilmiştir.

Dördüncü aşama örneklem grubunun seçilmesidir. Örneklem grubu oluşturulurken ele alınan şokun etki etmesi beklenen gruba etkisi göz önünde bulundurulmalıdır. Oluşturulacak örneklem grubunun bu gruba temsil eder nitelikte olması önemlidir. Bu çalışmada, kurumlar vergisi indirim açıklamasının borsada işlem gören tüm şirketler üzerinde etkili olacağı göz önünde bulundurularak, ilk örneklem açıklamanın gerçekleştiği tarihte işlem gören tüm şirketler dahil edilerek oluşturulmuştur. Diğer yandan, daha fazla vergi ödeyen şirketler üzerinde farklı bir etkinin oluşup oluşmadığını incelemek amacıyla belirtilen dönemde en çok vergi tahakkuk eden ve borsada işlem gören şirketler oluşturulmuştur. Buna göre tahmin dönemi ve olay penceresi boyunca üst üste 3 ve daha fazla verisi eksik olan şirketler örneklem dışında tutulmuş ve birinci örneklem 256 hisse senedi, ikinci örneklem ise 31 hisse senedi kullanılarak oluşturulmuştur.

Beşinci ve altıncı aşama normal ve anormal getirilerin hangi yöntemle hesaplanacağını belirlediği ve hesaplandığı aşamalardır. Bu aşamada, 3 farklı yöntem bulunmaktadır. Birinci yöntem Ortalamaya Uyarlanmış Yöntemdir. Bu yönteme göre anormal getiriler varlık getirilerinin tahmin döneminde elde ettiği ortalama gelirlerden olay penceresi boyunca elde ettikleri getirilerin farkı bulunarak hesaplanır. İkinci yöntem Piyasaya

Uyarlanmış Yöntemdir. Bu y nteme g re anormal getiriler analiz d nemi boyunca varlık getirilerinin piyasa getirilerinden farkı alınarak hesaplanır.     nc  ve literat rde en  ok kullanılan y ntem ise En K   k Kareler Piyasa Modelidir.

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_{it} \text{ for } t = t_1, t_1+1, \dots, t_2 \quad (7)$$

7 numaralı denklemde R_{it} i varlığının t g n nde ger ek getirisini; R_{mt} piyasanın t g n nde ger ek getirisini ve u_{it} i varlığının t g n nde elde ettiĐi anormal getiriyi g stermektedir. Bu  alıřmada piyasa getirisi IMKB100 endeksinin g nl k getirisi olarak belirlenmiřtir.

$$A_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} \quad (8)$$

EKK y ntemi ile anormal getiriler 8 numaralı eřitlikten tahmin edilmektedir. 8 numaralı eřitlikte $A_{i,t}$ i varlığının t g n ndeki anormal getirisini g stermektedir. Bu  alıřmada, anormal getiriler 3 farklı y ntemle de hesaplanmıřtır.

Analizin yedinci ařamasında anormal getirilerin istatistiksel olarak anlamlılık d zeyi kontrol edilmektedir. Bu ařamada her bir varlık fiyatı i in hesaplanan anormal getirilerin t m  rneklemini yansıtacak řekilde toplulařtırılması gerekmektedir. Bu ama la,  rneklemden yer alan t m varlık fiyatlarının g nl k aritmetik ortalaması saptanır ve bu ortalama  rneklemin o g nk  anormal getirisini oluřturmaktadır. Daha sonra, tahmin d nemi verileri kullanılarak anormal getirilerin standart sapmaları hesaplanır ve elde edilen standart sapma deĐerleri ile olay penceresindeki getirilerin istatistiksel olarak anlamlılık d zeyi kontrol edilir. Ayrıca etkinin olay g n  dıřında ger ekleřmesi ihtimaline karřılık olay penceresi boyunca ortalama anormal getirilerin toplamı alınarak k m latif anormal getiriler elde edilir.

Olay  alıřması y nteminin son ařaması ampirik bulguların paylařılması ve sonu ların tartıřılmasıdır.

Bu alıřmada, oluřturulan iki farklı rneklem ve  farklı anormal getiri hesaplama yntemi kullanarak anormal getiriler hesaplanmıř ve anlamlılık dzeyleri test edilmiřtir. alıřmada kullanılan  farklı anormal getiri hesaplama yntemi de birbirine paralel sonu vermiřtir. Literatrde de en sık kullanılan EKK yntemi ile anormal getiri sonularına gre; iki farklı rneklem grubunda yer alan hisse senetlerinin her biri iin yapılan regresyon analizi sonucunda elde edilen anormal getiriler kullanarak her gn iin ortalama anormal getiri oranı hesaplanmıřtır. Tahmin dneminde kullanılan 239 gnlk ortalama anormal getiriler zerinden hesaplanan standart sapma deėerleri ile olay penceresi getirilerinin istatistiksel olarak anlamlılık dzeyi test edilmiřtir. EKK yntemi ile hesaplanan ortalama anormal getiri deėerleri ve t-istatistiėi Tablo.1’de paylařılmıřtır.

Tablo 1: EKK Yöntemi ile Hesaplanan Anormal Getiri Değerleri ve t-istatistikleri

Günler	Bütün Firmalar		En Çok Vergi Verenler	
	Ortalama Anormal Getiriler	t-istatistiği	Ortalama Anormal Getiriler	t-istatistiği
-5	-0,001	-0,094	0,010*	1,853
-4	-0,005	-0,571	0,005	0,953
-3	-0,013*	-1,547	-0,006	-1,153
-2	0,008	1,022	0,013*	2,308
-1	0,009	1,134	0,008	1,505
0	-0,005	-0,568	0,000	0,016
1	-0,005	-0,607	0,004	0,635
2	0,004	0,506	0,019*	3,375
3	-0,003	-0,345	0,000	0,029
4	0,002	0,236	-0,004	-0,666
5	0,004	0,429	0,015	2,627

Kaynak: Yazarın Hesaplamaları ve Bloomberg

Elde edilen bulgulara göre; olay gününde bütün firmaların dahil edildiği ilk örnekleme ve en çok vergi veren firmaların dahil edildiği ikinci örnekleme de istatistiksel olarak anlamlı bir düzeyde anormal getiri elde edilmemiştir. Bunun yanında, bütün firmaların kullanıldığı ilk örnekleme kurumlar vergisi oranında ki indirimin olumlu yansıyacağı beklentisine karşılık ampirik bulgular bunun tersine işaret etmektedir. Nitekim olay gününde ilk örneklemin ortalama anormal getirileri yüzde 0,5 oranında değer kaybetmiştir. Diğer yandan olay penceresi boyunca ilk örnekleme istatistiksel olarak anlamlı bir getiri saptanmazken, en çok kurumlar vergisi ödeyen şirketlerin oluşturduğu örnekleme ise olay penceresi döneminde istatistiksel olarak anlamlı değerlere ulaşmakla birlikte bu değerlerin olay günü etrafından tutarlı bir şekilde olmadığı görülmektedir. Bu nedenle, olay penceresinde görülen istatistiksel olarak anlamlı getirilerin dağılık seyri kurumlar vergisi indirimi ile ilişkilendirilememektedir.

Elde edilen ampirik bulgular, Etkin Piyasalar Hipotezini de desteklemektedir. Nitekim açıklama öncesi kurumlar vergisi indirimine ihtiyaç duyulduğu yönünde açıklamalar, Maliye Bakanı'nın çeşitli demeçleri bu indirimin resmi açıklamaya yakın bir tarihte gerçekleşeceğini ortaya koymaktadır. Bu konuda kamuya mal olmuş bu ölçüde bir bilgi birikiminin oluşu piyasaların bu bilgiyi resmi açıklama öncesinde halihazırda fiyatlandığı görüşünü desteklemektedir. Bu açıdan bakıldığında, piyasaların kamuya mal olmuş bilgileri fiyatlaması sonucu piyasaların olay gününde tepki vermemesi beklenmekte ve İMKB'nin yarı-güçlü etkin bir piyasa olduğu sonucuna ulaşılmasını sağlamaktadır.

Çalışmanın sonunda yer verilen dayanıklılık testleri de bu sonuçları desteklemektedir. Dayanıklılık testlerinde ilk olarak piyasa getirisi ile açıklanamayan getirilerin olay penceresinde farklılaşıp farklılaşmadığının test edilmesi yer almaktadır. İki örneklem grubu için de yapılan testler, getirilerin olay penceresinde farklılaşmadığını desteklemektedir. Ayrıca, kümülatif anormal getirilerin, en çok vergi ödeyen şirketler için farklılaşıp farklılaşmadığı kukla değişken kullanılarak incelenmiştir. Bu çerçevede, en çok kurumlar vergisi ödeyen şirketlerin elde ettiği kümülatif getirilerde bir farklılaşma olmadığı desteklenmektedir.

Son olarak, olay çalışması analizi kurumlar vergisi indiriminin yürürlük tarihi için bir kez daha uygulanmıştır. 1 Ocak 2006 yürürlük tarihinin iş günü olmaması nedeniyle 2 Ocak 2006 tarihinin olay günü olarak kabul edildiği analizin amacı ise resmi duyuru esnasında ortaya çıkmayan ancak yürürlük tarihinde ortaya çıkabilecek tepkileri saptamaktır. Çalışmada kullanılan farklı yöntemden biri olan ve literatürde de olay analizi çalışmalarında en sık kullanılan EKK yöntemi oluşturulan iki örneklem içinde uygulanmıştır. Etkin piyasalar hipotezine göre piyasalar elde edilen yeni bir bilgiyi gecikmeksizin fiyatlandırmaktadırlar. Nitekim, kurumlar vergisi indiriminin gerçekleşeceğine dair Maliye Bakanı'nın açıklamaları, bu indirime ihtiyaç duyulduğu yönündeki raporlar ve son olarak 29 Kasım

2005 tarihinde yapılan resmi açıklama piyasa tarafından fiyatlandırılmıştır. Nitekim iki örneklem için de EKK yöntemi kullanılarak yapılan analiz sonuçları da etkin piyasalar hipotezine paralel şekilde ertelenmiş bir tepkinin yürürlük tarihinde ortaya çıkmadığını göstermektedir.

Sonuç olarak, bu çalışmada 29 Kasım 2005 tarihinde resmi açıklaması yapılan ve 2006 yılında yürürlüğe giren kurumlar vergisi oranının yüzde 30'dan yüzde 20 seviyesine indirilmesi ele alınmıştır. Temel olarak, bu değişikliğin varlık fiyatları üzerinde kısa vadeli etkisi analiz edilmiştir. Analiz yöntemi olarak olay çalışması yöntemi kullanılmış olup iki farklı örneklem ve üç farklı hesaplama yöntemi kullanılarak analiz yapılmıştır. Her iki örneklem grubu için üç farklı hesaplama yöntemi sonuçları kurumlar vergisi indiriminin resmi açıklamasının varlık fiyatları üzerinde anlamlı bir etki meydana getirmediğine işaret etmektedir. Resmi açıklama öncesinde kurumlar vergisi indirimin yakın bir zamanda gerçekleşeceği yönündeki açıklamalar, piyasaların kurumlar vergisi indirimi bilgisine olay günü öncesinde tepki verdiği görüşünü desteklemektedir. Bu kapsamda da piyasaların her yeni bilgiyi çok kısa sürede fiyatlaması beklenmekte ve İMKB'nin yarı-güçlü etkin bir piyasa olduğu düşünülmektedir.

APPENDIX B

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü	☐
Sosyal Bilimler Enstitüsü	☒
Uygulamalı Matematik Enstitüsü	☐
Enformatik Enstitüsü	☐
Deniz Bilimleri Enstitüsü	☐

YAZARIN

Soyadı : KÜTÜK
Adı : Samet
Bölümü : İktisat

TEZİN ADI: IMPACTS OF THE CORPORATE INCOME TAX CHANGE ON ASSET PRICES IN TURKEY

TEZİN TÜRÜ: Yüksek Lisans ☒ Doktora ☐

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
3. Tezimden bir (1) yıl süreyle fotokopi alınamaz. ☒

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: