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TEZ DANIŞMANI: PROF. DR. JALE ORAN

İSTANBUL, 2014

MARMARA ÜNİVERSİTESİ

SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜ

TEZ ONAY BELGESİ

İŞLETME (İNGİLİZCE) Anabilim Dalı MUHASEBE FİNANSMAN (İNGİLİZCE) Bilim Dalı DOKTORA öğrencisi AHMET ÖZCAN'nın FAMILY CONTROLLED AND NON-FAMILY CONTROLLED FIRMS IN BIST 100 AND THEIR FINANCING DECISIONS FOR THE PERIOD 2005-2012 adlı tez çalışması, Enstitümüz Yönetim Kurulunun 05.07.2013 tarih ve 2013-25/15 sayılı kararıyla oluşturulan jüri tarafından oy birliği / ~~oy çokluğu~~ ile Doktora Tezi olarak kabul edilmiştir.

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Keywords : Aile Şirketleri, Borsa İstanbul, BIST, Finansal Kriz, Finansal Kararlar, Hisse Senedi İhracı, Borçlanma

Bu çalışma Borsa Istanbul şirketlerinin aile şirketi olma veya olmama durumlarının finansal kararlarına; hisse senedi ihracı ve borçlanma davranışları çerçevesinde etkisini araştırmaktadır. Çalışmaya konu firmalar 2005-2012 yılları arasında BIST-100 endeksi ile BIST-50 ve BIST-30 alt endekslere kote firmalardır. Dönem aralığı aynı zamanda Amerika Birleşik Devletleri'nde ortaya çıkıp tüm dünyaya yayılan ve Türkiye'yi de etkileyen global finansal krizi de kapsamaktadır. Bu sebeple krizin BIST üzerindeki etkisi de çalışmaya konu olmuştur.

Aile şirketi; çoğunluk hisseye sahip ana hissedar yönetimi olarak tanımlanmaktadır. Aile kontrollü şirketler ise azınlık hissesine sahip olmasına rağmen kontrolü elinde bulunduranlardır. Firmaların yaş, büyüklük, teminat, nakit, borç oranı, pazar/defter değeri oranı, aktif karlılığı ve satış artışı değişkenleri bağımsız değişken alınarak incelenmiştir. Analizlerde hisse senedi ihracı ve borçlanma davranışlarına göreceli büyüklüklerin etkisini de ölçebilmek için BIST-100, BIST-50 ve BIST-30 endeksleri ayrı ayrı ele alınmıştır. Son olarak da yakın geçmiş ekonomik krizin finansal kararlara etkisi analiz edilmiştir.

Yöntem olarak firmaların en az bir halka açılma dönemleri veya borçlarının kuruluş dönemine olan oranının %10'dan fazla olduğu dönemler için bir ikili değişken oluşturulmuştur. Bu değişken daha sonra logit analizi ile yaş, ln(büyüklük), teminat, nakit, borç oranı, pazar/defter değeri oranı,aktif karlılığı ve satış artışı değişkenleri bağımsız değişken alınarak incelenmiştir. Ayrıca yapılan logit analizi bir yılda en az bir çeyrek dönemde BIST-30, BIST-50 veya BIST-100 endekslerinin içerisinde bulunan firmalar için de gerçekleştirilmiştir.

Sonuçlar göstermektedir ki; BIST-100 endeksine kote aile firmaları hisse senedi ihracı konusunda aile yönetiminde olmayan şirketlere göre 2005-2012 yılları arası dönemde daha isteksiz oldukları görülmüştür, ancak bu sonuç BIST-50 ve BIST-30 için kısmen geçerlidir. Büyüklük değişkeni ise BIST-100, BIST-50 ve BIST-30 endekslerine kote firmaların hisse senedi ihracını artırmaktadır. Başka bir önemli sonuç da, teminatın güçlü aktif yapısını işaret etmesinden dolayı hisse senedi ihracını BIST-100 ile alt endeksler BIST-50 ve BIST-30'a kote firmalarda düşürücü bir etkiye sahip olmasıdır. Ek olarak, kriz döneminde (2008-2009) kriz öncesi ve sonrası döneme göre daha çok hisse senedi ihraçları görülmüştür. Bunlar şirketlerin finansal kararlarında iyi yönetildiğine işaret olarak görülebilir.

BIST-100, BIST-50 ve BIST-30 endekslerine kote firmalarda hisse senedi ihracı ve borçlanma konusunda çok açık davranışsal farklılıklar görülmektedir ve sonuçlar çok nettir. Diğer tarafta, aile firmalarının aile yönetiminde olmayan şirketlerle karşılaştırıldığında borçlanma konusunda hisse senedi ihracına göre daha da isteksiz oldukları söylenebilir. Bu sonuç araştırmada incelenen tüm endeksler için geçerlidir. Yine firma büyüklükleri borçlanmayı pozitif artırmaktadır. Hisse senedi ihracından farklı olarak, beklendiği üzere borç rasyosu borçlanmayı artırmaktadır. Satış artışı sadece BIST-50 ve BIST-30 endekslerine kote firmalarda borçlanmaya pozitif etki ederken, BIST-100 endeksinde etkisi görülmemiştir. Teminat ise tüm firmalar için negatif bir faktor olmuştur. Bunlara ek olarak toplam aktifle

ölçülen aktif karlılığı, BIST-30 firmalarında borçlanmayı artırmaktadır. Genç firmaların eski firmalara nispetle borçlanma konusunda daha istekli oldukları söylenebilir, diğer bir söylemle yaş borçlanma konusunda negatif etkiye sahiptir.

ABSTRACT

GENERAL KNOWLEDGE

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Keywords : Family Controlled Firms, Borsa İstanbul, BIST, Financial Crisis, Financial Decisions, Equity Issuance, Debt Issuance

This study investigates whether family controlled and non-family controlled firms differentiate with respect to their financing decisions, that is, equity and debt issuance made by these firms in BIST. Firms that are quoted in BIST-100 and sub-indices of BIST-50 and BIST-30 are investigated for the period 2005-2012. The time interval also covers the global financial crisis that emerged in the USA and spread to many countries and also effected Turkish economy. The influence of the crisis on BIST is also examined in this study.

Family company is described as the major shareholder management with majority shares. Family controlled companies are the ones that have control of family with minority shares. The effects of variables as firms' age, size, collateral, cash, leverage, mb, roa and growth on financing decisions are investigated. The analyses were conducted for BIST-100, BIST-50 and BIST-30 firms in order to see the effect of being relatively big, have any influence on debt or equity capital raising. Finally, the analyses were conducted to see the effect of recent economic crisis on the financing decisions.

Methodologically, two types of binary dependent variables are generated and coded as one if the sample firm makes at least one issue of equity or excess more than 10% debt ratio compared to foundation year (2004). These dependent variables are analyzed with logit regressions with age, ln (size), collateral, cash holding, leverage, market to book value, ROA, and sales growth as independent variables. Logit regresssions were also conducted for firms, which were in either in BIST-30, BIST-50 or BIST-100 for at least one quarter of a year.

Results indicate that family firms quoted in BIST-100 are more reluctant to issue equity rather than non-family firms for the period 2005-2012, but it is partially true for BIST-50 and BIST-30. Size for all firms quoted in BIST-100, BIST-50 and BIST-30 increases equity issuances. Another important outcome from analyses is that collateral is a factor reducing equity issuance for firms in BIST-100 including sub-indices such as BIST-50 and BIST-30 since collateral indicates a firm's strong asset structure. Additionally, it can be asserted that there are more equity issuances in the crisis period (2008 to 2009) rather than post-crisis and pre-crisis periods. These are signs of good steering of companies with respect to financing decisions.

The results are significant and show that there are significant behavioral differences between equity issuance and debt issuance for the firms quoted in BIST-100, BIST-50 and BIST-30. In addition, it can be clearly asserted that family firms are reluctant more than non-family firms for issuing debt rather than issuing equity. This result is valid for all BIST indices examined in this research. Again, firm size positively affects debt issuance. Apart from equity issuance, leverage increases debt issuance for all indices as expected. Sales growth only positively affects firms listed in BIST-50 and BIST-30 but not BIST-100. Collateral is also a negative factor for all firms. In addition to all of these, ROA, scaled by total assets, can increase debt issuance for BIST-30 firms. It can also be claimed that younger

firms are more willing to issue debt rather than older firms, namely age negatively affects debt issuance.

FOREWORD

I would like to express my deep appreciation and thanks to my advisor Prof. Dr. Jale ORAN.

Great honor to work with you, thanks for your guide and positive encouragement in all issues, Mr. Fikret Tayfun DEMİRÖREN.

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ABBREVIATIONS

AIC : Akaike Information Criteria

BIST : Borsa Istanbul

CHI2 : Chi-Square Value

FCNE : Family Centered Non-Economic

FF : Family Firm

ID : Issuing Debt

IE : Issuing Equity

MLE : Maximum Likelihood Estimator

LL : Log Likelihood

P : P-value

R2 : R-square

RBV : Resource Based View

SIC : Schwarz-Bayesian Information Criteria

INTRODUCTION

Firms can be classified in the terms of their management structure. One such way is management by family members or by professionals. According to research, family firms constitute approximately 50 % of US and European firms (La Porta et al. 1999; Faccio & Lang, 2002). Developing countries have even higher percentages of family managed businesses. (Sabancı-Özer 2012, Wong 1985)

While there are several studies about the family firms in literature, a great majority of them concentrate on firms in the US, EU and the Far East. These studies mostly examine the differences between family and non-family firms in terms of their market values, sales, asset acquisitions etc. However, in studies regarding the differences between family and non-family controlled firms, those that focus on financial decisions are limited. There is no study concerning the differences between family and non-family firms for Turkey. This study, therefore, focus on investigating the differences between family and non-family controlled firms in terms of their financial decisions, and will provide a starting point for further research on the subject in Turkey.

In general, family firms are managed by family members since they are the major shareholders. Inevitably, this structure makes those firm's management strategies more dependent on family relations. For this reason, behavior of family controlled firms is mostly shaped by decisions of family members who are in and out of management. The study, by taking into consideration this distinction, aims to reveal that financial decision-making processes may differ from family firms to from non-family firms.

The study, specifically, examines financial decisions of firms quoted in BIST (Borsa Istanbul) for the period from 2005 to 2012. The study narrows down the sample with BIST-100 firms, because BIST-100 includes the firms with highest market capitalization and transaction volume, thus used as major index for BIST. Due to the fact the firms are listed and delisted regarding the selection criteria, there may be more than 100 different firms in BIST-100 index within a year. Logistic regression analysis was conducted and extended for other indices that are BIST-50 (top 50 firms in BIST-100) and BIST-30 (top 30 firms in BIST-100). In addition to this, pooled logit analysis and yearly analysis are presented in order to elaborate if there is change in financial decisions for firms due to the recent 2008 global crisis that originated from the US.

The study consists of four sections. The following section includes a detailed literature review. Data description and methodology including the logit analysis procedure are detailed in the second section. The third section is the main part of the study and presents comprehensive results of the analyses. Lastly, the study is finalized with a conclusion section.

1. LITERATURE REVIEW

In order to cover the previous research findings, review starts with the research on family firms in terms of firm performance, ownership structure, earnings etc. and are summarized and examined. Research covering similar topics is also reviewed for non-family firms. In the third sub-section, studies focused on financial decisions of firms are elaborated in accordance with main research question. The last part integrates the first and second part with third part, that is, it investigates the literature in terms of differentiation of financial decisions of firms, which are managed by family or non-family executives.

1.1. Family Firms

Importance of family companies has become a heavily debated issue throughout the years. There have been many attempts to examine the advantages and disadvantages of running family businesses, Habbershon and Williams et. al. (2003) compared family business with non-family businesses. In terms of competitive advantage, the Resource Based View (RBV) is a theoretical framework for evaluating the competitive advantages of family companies. This relates rather to the field of strategic management. From the point of view of competitive advantage, benefits arising from family-managed models may overcome many of the problems related with the disadvantages of family companies in comparison to the non-family companies. Hence, the exclusive properties of the family companies may have a potential for a competitive edge. RBV gives a new theoretical aspect for family companies and also offers a theoretical foundation on how to assess the behavioral social phenomena within family firms and demonstrates how these phenomena could be transformed into competitive advantage.

Moreover, Christman et. al. (2012) also studied some advantages of family businesses. Their study considers the fundamental aspect of family members participating in

the company decision-making process, which may lead to success by using interactions to create additional resources and capabilities. With these resources and capabilities, concept of synergy was also studied. It should also be considered that the study might have been restricted to the creation of wealth. The study considers the theory in the creation of wealth by family companies as a way of trans-generational methods. This may be applied to all family companies. Moreover, the combination of vision and behavior as well as being a family creates an opportunity for forming a family company theory.

In the nutshell, they have summarized their study in four key items: (1) Maintaining a theoretical description and collecting empirical evidence on how the essence of family influences and partially mediates the relationship between family engagement and family centred non-economic goals. Thus improving their understanding about the sources of heterogeneity among family firms. (2) Identifying implications for the future application of behavioral and stakeholder theories in organizational studies. (3) Further developing a theoretical, as opposed to operational, basis for defining family businesses. (4) Illustrating how the hierarchical relationship between family involvement and family essence variables can provide insights that might otherwise be missed Christman et. al. (2012).

Kellermanns et al. (2008) emphasize the relationship between entrepreneurial behavior and growth of the company from the perspective of family businesses. The entrepreneurial actions may be affected by many factors, which can be significantly important to the company profitability and growth. The study conducted an empirical test on family companies based on the hypothesis of age of CEO asserted by Zahra (2005). In general, it was determined that CEOs of family companies have entrepreneurial behavior, which is significantly related to employment growth (our variable of performance). Because of the fact that the assets of the family may be prone to risk, the CEO of the family company may keep the tendency towards the entrepreneurial behavior as she/he ages which may mean that her/his

gains provided to future generations may motivate in this regard. In conclusion, in the study of entrepreneurial behavior of family firms, it's found that managers like CEOs may maintain additional intuition in order to be aware of the meaning of why certain family firms can grow while other ones stagnate. Kellermans et. al. (2008) show that tenure and generation in the organization structure play an important role for a firm's entrepreneurial approach to and growth of employment structure, thus, CEO can shape this behavior and employment growth in family firms in view of generation and tenure.

Chua et. al. (1999) focused mainly on development of the family company theory. Also directions that need to be taken for future research were discussed. Thus, based on these directions as well as developments, recommendations were made relating to the suitable strategy for management of family companies. Today, there are no dominant theories in relation to family companies. What needs to be discussed is if the theories relating to family companies are solid enough so that behaviors can be defined as well as the performance of the family companies. Thus, they can see progress of family companies as a dominant paradigm, which may be applied to various facets in family firms, which are sourced from adaptation as well as integration of main company theories. Chua's (1999) exact definition is here:

"*The family business is a business managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled by members of the same family, or a small number of families, in a manner that is potentially sustainable across generations of the family or families*".

Sirmon and Hitt's (2003) study which has a brief review of RBV discusses a company which also encompasses the pertinent as well as special aspects of family resources. Also analyzed are the resources, which affect the model of the management process in family companies aiming at wealth and success. In the competitive environment of the modern age, it is clear that family companies should have an entrepreneurial mindset, which allows them to

grow with possible new business opportunities. In order to maintain the competitive advantage, resource management is of significant importance. The main predictor for a business' performance is the company's resources and the most significant resource is the human resource. Family companies are obliged to obtain and assess their resources effectively so, as to become successful and efficient. In a competitive environment, family companies benefit from special niches and they have idiosyncratic advantages as well as disadvantages in the course of becoming more competitive. Management of the resources of the company was studied and the result showed that efficient management of the company resources can bring more value to the business.

A supportive study has been done by Lee (2006). His study analyzes the stability of family companies and their competitiveness in comparison to the companies owned by regular shareholders. Also he investigated the influence of family control (or ownership) over the stability of the company. The correlation between the company ownership and performance was also studied. Family companies are the most common types of businesses around the globe and most companies have this nature at the initial stages of incorporation. The trust and high commitment aspects of family companies are their common properties. This may lead to higher efficiency and greater profitability. Yet, potential of disagreement among the family members may adversely affect the performance of the company. Therefore, a significant problem is the merit of influence of the family on the performance of the company.

Chrisman et al. (2012) emphasize on the fact that family essence may partly mediate relation between the involvement of the family and the goals of small companies. They focused on the adoption of the family-centered non-economic (FCNE) due to a variety of reasons. The performance of a company should better be measured based on the goals of the company. The goals, which were set by the family owned companies also need to be studied

as much as the study on performance. Also the studies on performance of family companies were measured mostly in terms of economic aspects. The essence of the variables mediates a relation between the factor variables and family commitment as well as non-economic aims, which also suggest an intergenerational control aspect. Further study should be made on definition and measurements relating to family companies. Yet more experiments are required towards this end, which should fit into the theoretical aspect of the field. There are too many behavioral-outcomes as well as resource factors to be compared such as human resources, and survivability capital. Both the involvement of family as well as essence should be considered which might lead us to greater comprehension of this issue. Their results showed that family involvement is related with family essence. In addition to these findings, Carney (2005) proved that family involvement concentrates a firm on FCNE goals in the short run so that other factors that are possible obstacles can be reduced. More importantly, the study provides evidence that family influence is potentially a very important reason for that heterogeneity.

On the other hand, McConaughy et al. (2001) conclude that although it is assumed that family owned companies have differences compared to professionally managed companies, there is very little empirical research made to this end. Yet those few studies showed that there are significant differences. It is proposed that family run companies may have better efficiency in comparison to the professionally operated companies. Eventually, based on the factors, the founding family controlling companies mostly have higher value; they are even more efficiently operated and they have better fiscal standing. Also as the study sets forth, more analysis was required. The family control aspect of the company (instead of management ownership) is the key, which these differences are based upon. Secondly, the differences in the management between founders and their descendants need to be more fully explored. Family control is not necessarily the same as founder control.

Another important study, which is closely related with main research question of our study is Anderson et al. (2003a), comparing agency theory and family control in terms of debt. Anderson analyzes the ownership of the family company has relation to debt financing in terms of cost. The board, being independent is related to smaller cost in debt financing. Additional tests and analysis showed that contrary to above finding, when a family member serves as a company CEO, the debt financing (cost) is greater if CEO is from the outside. Nevertheless, the results showed that continued family ownership in companies, which are publicly traded lead to diminished costs of debt. Using data of firms from the Lehman Brothers Bond Database and the S&P 500, their study documents that founding family ownership is very common with families present in about 30% of firms and holding 18% of the spectacular equity. This is just because these shareholders generally have undiversified portfolios, they are interested in the reputation of firm or family and often desire to pass the firm onto their descendants. The study shows that agency cost may increase because of a unique class of shareholders whose shares are significantly different from other shareholders. Results also present that founding family ownership can decrease the responsibility of debt financing.

So, as a result, there is solid evidence that the structure of equity ownership affects the conflict of interest between the holders of shares and bonds. This analysis also showed that bondholders see family ownership as the structure of organization, which protects their interests even better. Thereby, the cost of debt financing is reduced. The CEOs that are the founder's descendants are more prone to increasing the debt costs.

Anderson and Reeb (2003b) also emphasize the asymmetric information problem in family businesses. It is seen that founding families mostly do not deal with the opportunistic business activities, which exploit the minority shareholders. Although the influence is prevalent and significant in the founding family owned industrial companies in United States,

the results showed that in big American companies, the minority shareholders have more benefits from the founding families. In the study, it was emphasized that the impact that the shareholders have on the diversification is contrary to popular belief. Also the analysis showed that losses of the shareholder values should be significant in order for the undiversified investors from being dissuaded. The study also emphasizes that conflicts of agency among the shareholders (reduction of risk) does not seem to have a very obvious explanation. Also, as it is stated that family ownership may lead to very significant conflicts of agency in East Asian companies, it is thereby seen that family companies in United States use less leverage to minimize the company risk. The findings showed that in properly operating finance markets, family ownerships tend to diminish the conflicts in terms of moral hazards. They used ordinary least squares (OLS) with leverage as continuous variable and logit regression analysis with the binary variable (leveraged firms = 1). They use the same independent variables as to capture family ownership. Their results proved that family ownership, in presence or absence of a family CEO, might not be significantly relevant with debt usage. The coefficients of Founding Family, CEO (Founder, Hired, Descendant) and Family control are not statistically different from zero. Generally speaking, debt-financing behaviour in family firms is the same as non-family firms.

James (1999) found out that the specialization of ownership and functions of decision-making may cause significant agency costs. The properties of family companies may give to the decision makers the incentives to invest based on the market rules and limits the agency costs, which may occur as the control and the ownership are separated. Loyalty as well as stability is the factors, which are expected to be as effective in terms of expanding the managers' horizons and also for managers of the family company in making efficient investments. This is reflected by the analysis, which demonstrates that privately held family companies provide greater return on investments in comparison to the non-family businesses. There is sufficient evidence from companies having public stock offerings, which are family

operated that outperform the professionally governed firms. The findings in this regard also showed that more emphasis should be put on family companies as effective and viable members of the economic organization.

Wong (1985) studied family businesses by using Chinese firms. His study places emphasis on the family ownership aspect (in addition to nepotism and paternalism) of the Chinese companies, which are privately owned and either in commercial or industrial businesses. The four stages of development of companies are identified and emphasized as segmented, disintegrative, centralized and emergent. Familism actually is the essence of the Chinese economic organization. The durability of a Chinese family company is a relative matter; it is more transitory in comparison to its Japanese equivalent. The relationships among the Chinese relatives are fragile and the most brittle family bonds may be among the first cousins. In China, the individual profit is seen to be legitimate and even in this case; the validity of this statement may be dependent on familism. In reality and business life, the family companies may hardly be dissociated from the environment outside. Many external factors are bound to exist which would change the above listed cycles.

Church (1993) emphasizes the historic experience of family (namely family capitalism) and the managerial business and enterprise in the United States, Britain and Japan at the end of nineteenth and at the start of twentieth century. The behavior often considered as peculiar to family companies, especially in relation to control, governance and ownership as well as policy and motivation aims, performance, succession and adaptability are considered. Family firms were an important institutional weakness especially within the economy of England before and during the first part of 20th. century. Yet, it cannot be generally accepted that family companies had more dysfunctional elements in comparison to managerial businesses. Also international comparisons state that even more attention should be given to

cultural differences. They produce significant performance and behavior in a contrasting way with no regard for the significant characteristics of the corporate structures.

An accounting analysis has been done by Sabancı-Ozer (2012). The study analyzes the role of family control relating to the financial performance of the family company. The study used the financial data of the family companies registered to the chamber of commerce in Gebze district. 51 companies registered to the Gebze Chamber of Commerce were contacted for the interview via telephone. 35 companies declined the request for an interview since they did not want to share key financial information because of corporate confidentiality policies. Sixteen CEOs of 16 participated companies were interviewed. The financial performance of the family company was measured by using Return on Assets (ROA), Total Debt to Total Assets (TD/TA) and Return on Sales (ROS). A family member CEO is more successful in terms of the TD/TA compared to ROA, in most of the companies. The model considered in this paper may be further expanded by the addition of other important financial ratios, which can be used for making further analysis. The suggestions, which are made in the study encompass the increased sample size and sampling from all over the nation. The Mann-Whitney test was conducted to measure the CEO's effectiveness with respect to being family member or not. The results reveal that there are differences between a CEO who is a family member and a CEO who is not a family member in terms of ROA and TD/TA.

Bertrand and Schoar (2006) considered that the family concept in their study. Due to the comprehension of the connection between the family and the firm, this should develop with microeconomic studies, which analyze structure of the family. This showed the strategic choices of the family company as well as its performance taking into consideration factors such as gender, ages and size. Other factors with significant importance are the interaction among the family, their values and considering the country in question and its government. Family values may be exogenous, and more complicated dynamics between the values of the

family and the formal institutions may occur. For instance, the shocks in the corporate market control can render it more costly to benefit such family focused preferences. The cultural view of family companies imply that such companies can be reluctant to make the changes, which are required by the market even if this may be an obligation.

Anderson et al. (2012) examined that how and to what extend entrepreneurial people capitalized on the resources embedded in a family. They used twelve extended interviews, which were conducted with telephone calls for a detailed elaboration of the dynamics of family firms. The ties within the family provide some significant resources, which have affective and professional aspects. The ties with beneficial dimensions extend the family company without incurring the risks of external linkages. The study also showed that the within the interstices among the conventional entrepreneurship interests and the family company, a missing middle is available that merits the analysis. Thus, the family members who are outside the family company provide some very significant resources to the entrepreneurs. The expansion of the Bull's Eye model covers all relationships of family enterprises. They may be from the most intense to the loosest and provided with some initial validation. Also the interactions of the family enterprises using the network approach and their nature was studied. Yet, this requires further studies. The study also emphasized the importance of considering family issues even more seriously.

Cebrera-Suarez et al. (2001) use the resources and opinions of the company to identify the possibility of special family business properties, especially the retained knowledge that may become a competitive advantage. The strategic importance of the transfer of knowledge in family companies may help the discussion of the issue of succession. The training of the successor should also be important and all of these are important to the process to develop and protect knowledge. Empirical test of relationships established among factors and variables, which they submit are required. Also the effect of other significant variables set

forth relating to the process of succession should be considered. Those encompass the family relations include commitment to the company, cohesion, adaptability and the relations among the family members. The strategic management scope and the framework should be suitable in relation to the analysis of the issue of succession as a major factor in the strategic planning of the family companies.

Chrisman, Chua and Sharma (1999) encompassed a review on the significant trends relating to the approach of strategic management in family companies. The family companies dominate the economic landscape in many countries, so the importance of family businesses has begun to be recognized. Although this field of study obtained some momentum during recent years, it still needs much work to be done. The objective is the study of the strategic management approach related to family companies, namely the improvement of the family companies' strategic management theory. Thus, the growing importance in the family business aspect of the economy was considered. It is possible that they will be witnessing the early phases in improvement of the strategic management theory in relation to family companies. Also the involvement of family affecting the performance was studied with the empirical evidence. It was concluded that the evidence collected was persuasive in this regard. Also how the theory of agency and RBV were implemented relating to the improvement of the theory of strategic management in relation to family companies were analyzed. The study shows a valuable advice for family firms like:

"*Family firms should focus on what they have traditionally done well; diversify in specialized areas using their knowledge of how to perform in specific markets with specific clients and by offering them specific products and services. Particularly, the family owned companies should take advantage of their potential to transfer that knowledge between generations at managerial and operational levels. This tacit knowledge embedded in the founder is a strategic asset that a family firm can develop and transfer more effectively than a*

non-family one. The reason being that in the case of a family business, there is a special relationship between successor and predecessor that goes beyond work and includes personal and family values."

The objective of Colot and Bauweraerts (2012) was to determine the financial behavior of family companies in comparison with non-family companies. The analysis showed the divergence between the non-family and the family companies. Whereas family companies set a target debt ratio, they also seek financing by issuing shares. Whereas the non-family companies do not follow the theories, namely pecking order and static tradeoff theory considered in the study. The study also emphasizes the effects of the theory of the Static Trade Off in family companies' financial behavior. This contributes to recent perspectives of research. The approach may limit the effects of a financial and economic crisis by using the effect of family properties on the financial structure of the company.

The aim of Culasso (2012) is to analyze the impacts of the composition of the board by comparing Italian family and non-family companies in terms of business performance. This research was conducted on a group of listed Italian companies (family and non-family) and the data is obtained from AIDA database and Borsa Italiana website. The criteria of evaluation are if the family is controlling a certain percentage of shares and that at least one family member having a role of management and participates in the board. Thus, it can be stated that a company having a board with the board including a family member may be defined as a family company. The study shows that involvement of the family has positive effect on the performance of the company. Culasso also showed the disadvantages of family businesses.

Ibrahim, Soufani and Lam (2001) investigate the reluctance of the founder of a company showed in terms of transferring and assigning the management to his/her child. The methodology used covers case histories and a research on public documents. The research

also emphasizes the disagreements among the members of the family. Therefore, the research enlightened the matter of assignment of businesses in terms of succession.

Habbershon, Williams and Macmillan's (2003) research showed that the performance based results obtained from family companies are influenced by the interactions within the family and unique conditions created by it. Thus, the relations between resources as well as capabilities of the company were analyzed as to observe the influence of the family on business. In this regard, the performance model of the unified systems has no preliminary judgement in relation to the degree or the nature of the j factor effect. The model may be applied to all company types. So, the j factor may be identified as the predecessors' capabilities as well as the resources. The performance model of the unified system for corporate families refers to some critical problems in terms of examining the influence of the family on creating the assets for business.

Dreux IV (1990) studied the financial practitioner aspect of the family businesses and assessed the financial interests of the family companies and the problems they may encounter to intergenerational succession. As a result, the family companies will encounter the issue of transfer of ownership of the business to third parties, which are not family. Many companies will also be obliged to make decisions in these regards and due to the exogenous factors; they will be obliged to re-consider their shareholder targets and shareholders' aims because of such challenges. An important factor for the success of the family company relies on obtaining professional support properly. He concluded that in the 1990s, numerous family firms could face a real question of transferring ownership to non-family agents. He concluded that this may be better, but it will be inevitably a fashion in the near future. As we can see, his prediction became a reality for most of the firms.

Naldi et al. (2007) emphasized that the subject of taking risks as a significant aspect of orientation in entrepreneurship dimension. In addition, the influence on family companies

was studied. They used the data of Swedish companies, which are relatively small and medium sized. Then they separated these firms family and non-family firms in accordance with their ownership structure. The full sample consisted of approximately 2455 Swedish firms whose data was collected from the Bureau of Census of Sweden. They also extended this database with telephone calls and mailings to the CEOs of the small and medium sized firms, which were also identified as family or non-family businesses. They advised that taking risks is a different aspect of entrepreneurial channeling in family companies. It also is related to the proactiveness as well as innovation in this regard. It may be concluded that the family companies take risks in the course of entrepreneurship activities; such risks are less significant in comparison to non-family companies. In family companies, the risk taking has a negative correlation with performance. Thus taking risks is a distinct aspect in entrepreneurship orientation, which has positive relation with innovation as well as pro-activeness.

Lee (2006) postulated that the potential of disagreements among the family members might adversely affect the performance of the company. Therefore, a significant empirical problem is the merit of influence of the family on performance of the company.

Randoy and Goel (2003) showed that the agency theory prescription in relation to the monitoring is more relevant in founderless companies, yet more redundant in founding family-run firms in Norway. They used data from randomly selected 72 firms from 1996 to 1998. They are publicly traded firms (headquarters located only in Norway) quoted in the Oslo Stock Exchange. They used cross sectional-time series analysis. The empirical tests have shown that founding family chairmanship or CEO moderate a relation between the ownership structure and the company performance. That has major implications regarding the founding family companies, which are seeking to finance the entrepreneurial opportunities. Firms that are under founder management and those that are not, face different agency contexts in terms

of financing entrepreneurial opportunities. According to the results, founder led firms have low agency costs, use board and insiders to reach to critical resources without incurring any agency cost.

1.2. Agency Theory & Non-Family Firms

Studies regarding family businesses, their characteristics and performance have been reviewed so far. In this section, agency theory and its implications for non-family businesses will be covered and a comparison of the agency theory and non-family businesses, family businesses and non-family businesses will be made.

An asymmetric information problem has been examined over the last three decades as it is seen as a very crucial subject for the efficiency of the companies. Agency theory deals with the principal-agent issues. Principals could be the shareholders of the firms whereas agents can be defined as the executives who are hired by the principals. This problem may occur due to the incomplete information among two parties, thus, inefficiencies arise.

Jensen and Smith (2000) concentrated on conflict resolution among partners and managers regarding the interests of the parties. They analyzed the properties of the residual claims, management separation and risk bearing.

Fama and Jensen (1983a) examined the cost of controlling mechanism by means of enforcing constraints on residual claims, so that it is limited to one or more decision-making agencies. The study also showed how the agency theory might be used for analyzing the contractual provisions in relation to conflicts of interest among claimholders and the stockholders. The agency theory provided the most useful tool for detailed analysis of determinants of complicated contractual arrangement (namely the modern corporation). The major purpose of the study is to examine the applications of the theory in relation to the conflicts of interests among main partners, managers as well as the creditors. The analysis made on such conflicts and resolution of the conflicts increases their comprehension of the many contractual practices, which were previously viewed with suspicion.

Crutchley and Hansen (1989) emphasizes on leverage and dividend policies of the companies. According to them agency theory can assert numerous ways to decrease equity agency costs. They suggest that leverage and dividend policy strongly depends on the decisions of agency in accordance with CEO theory. In addition to this, they also find that large stakeholders who hold well-diversified portfolios care first about the firm's risk.

Agency theory offers several ways in order to reduce equity agency cost. Jensen and Meckling (1976) suggest that one way in which equity agency costs may be reduced is for managers to increase their common stock ownership in the firm, better aligning their interests with stockholders' interests. Yet, since the managers' role in stock ownership is the focus of the agency theory by Jensen and Meckling (1976), the paper also studies the common stock ownership actions of the directors. The results of the study indicate that the directors benefit from the cost trade-offs of the policies which reduce agency costs. The findings of the study are consistent with the idea that ownership, dividends as well as the leverage have been chosen by the company directors in tandem. In addition, the company directors determine their stock ownership and corporate debt levels as well as dividends. These findings support the previous studies' results. Also, it was identified that the stock ownership of the management is inversely related with the common stock diversification. The results support the Jensen and Meckling's model's central equilibrium condition.

Moreover, Eisenhardt (1989) assesses whether businesses use salary compensation or performance-based compensation. He used a more conceptual approach than many prior studies, highlighting agency and institutional variables that are new to the empirical literature on compensation, and data that moves beyond the compensation of senior executives in major corporations. The study's contribution to organizational theory is its juxtaposition of variables from two very different perspectives, each of which has received considerable attention in its base discipline (economics and sociology), but little empirical study. The significant

predictors in relation to the compensation policy can be listed as span of control and uncertainty; the type of the merchandise; the age of the business and programmability of a job. The results state both perspectives are necessary for a proper description of the compensational policies. In all business and organization literature, compensation being tied to the performance is a widespread assumption. Although not all factors, which may explain the compensation choices, were examined in the study, it made some contributions. Yet, the agency results set forth that the companies prefer payments on the basis of the activities and behavior. Both the variables in terms of agency and institutional variables should also be present as important parts of the future research on compensation. The study suggests that the very little number of companies use the performance/contingent payment. In terms of determining the compensational policies, the industry traditions and the recognition relating to the founding conditions have an important role.

The purpose of the study is clearing some of the confusion revolving around the agency theory and also leading the business researchers use the agency theory within the study of the problems between the principals and agents. The study did not consider all the factors that might explain compensation choice, but it did make several contributions. The implication is that a theoretical view of compensation across many settings is possible. The contribution of agency theory to this research is a more balanced view of performance contingent pay. As noted, much of the compensation literature proceeds from an advocacy of performance-contingent pay. However, the agency results suggest that firms prefer pay based on behavior and use pay based on outcomes only when behavior is difficult to measure. Observation suggests a shift from the frequent research question of why so few firms use performance-contingent pay to the question of when such pay is appropriate.

Morck and Yeung (2003) showed that the business structures lead to their own set of the agency problems. There is a concern in the widely held companies that the professional

directors can act for the controlling family yet not for the shareholders in general. The agency problems include using pyramidal groups in order to separate the ownership from control. Since the reinforcement of controlling families as well as the transactions of the non-arm's length principle among related companies may adversely affect individual investors. Currently, they are not sure that the agency issues are more serious adverse influences to general prosperity in comparison to the ones afflicting the companies widely held. In order to show how agency issues may be socially detrimental, the investments in innovation are considered and the current theory finds it responsible for a significant part of the economic growth. Today, it is not clearly known which group of agency problems can be worse and more studies are needed in this regard. The family company structures, which are widely seen in many countries, may lead to the agency issues at least as major as the ones known as to afflict the companies, which are widely held.

Additionally, Xu and Mengistae (2004) studied the extent to where the agency theory explains the CEO compensations in the Chinese businesses owned by the state during the 1980s. Authors also investigated the relationship between executives' productivity and CEO sensitivity affecting firm performance. 400 State Owned - Enterprise (SOE) data collected from a survey conducted by Chinese Academy of Social Sciences, which cover ten year observations. Researchers imply that CEO's performance sensitivity reduces the variance of performance. The support to the agency theory is CEO payment sensitivity diminishing in proportion to the performance variance. Furthermore, the CEO's payments performance sensitivity changes with the marginal return to the executive actions. The elasticity of the payments in comparison to the sales are smaller than the conventional Western companies yet the figures may be comparable with the estimates in the regulated industries of the USA. Incentives relating to the Chinese SOEs seemed stronger compared to many countries. The pay/performance sensitivity in Chinese SOEs was comparable to some of the regulated sectors of the USA. Controlling for CEO fixed effects and firm fixed effects, they find strong

evidence in favor of an insurance versus incentives trade-off in pay schemes: the CEOs compensation is less sensitive to enterprise profitability the more uncertain is the latter's magnitude. This is very much in line with the relevant literature on conventional firms in the West, and if anything, their estimates suggest a stronger role for risk considerations in pay determination in Chinese SOEs than that implied in this literature.

Dennis et al. (1997) investigated the agency costs and its empirical implication regarding the relation between the ownership structure and the corporate diversification. The findings have supported the original idea that the ownership structure affects the strategies of corporate diversification. It is expected that the study on the corporate diversification is going to continue in financial literature as well as the strategic management literature. In agency theory, it is stated that the strategies of the diversification represent the corporate decisions where there are fundamental conflicts of the interests among the managers and the shareholders. Therefore, the ownership structure on equities may be linked with the diversification. Such perspectives may arise from the fundamentally different perspectives yet they are testable.

Shapiro (2005) started with economics paradigm in the agency theory, which has an extensive shadow over the social sciences. He suggested how the sociology might have a better use of the agency theory and contribute to the agency theory. Also social fabrics which include the agency relations that are prevalent and that examine the aspects of social control which delivers agency such as the institutions, the roles, the social organization forms and social control strategies are mentioned. Although the agency theory does not occupy any niches in the sociology, the agency relations are present. They may be under other names such as the bureaucracy, the organizations, the professions or the roles etc. Regarding the agency theory in the other fields, the sociologists were rather sensitive in order to not lose any sight of interaction among the agent selection and the specification of preferences as well as

designing the incentives. Also sociology offers even more, in studying the social environment in which the agency is prominent.

In many analyses on the principal-agent issue, it should be assumed that the principal selects an incentive scheme in order to maximize the expected utility, which may be subject to agent's utility present at the stationary point. Grossman and Hart (1986) concluded that if agent's choices regarding the lotteries are independent of any action, than they showed the optimum way for implementing the action by agent which may be found by solving the convex programming problem. This is used for characterizing optimal incentives scheme and also analyzing the seriousness of the incentive problem. The purpose of the study was developing the method to analyze the principal/agent problem when the agent's attitude towards the income risk is independent of the action. The method used includes breaking up principal's problem to computing costs and the benefits, which the principal accrues when agent takes a specific action. This method has been used for establishing the results regarding structure of optimal incentive scheme. It was shown that it never is optimal for an incentive schemes in a way that principal's and the agent's payoffs are negatively related. Yet this relationship may be optimal over some of this range.

In order to examine how and when the company officers conceal the negative organizational outcomes from the shareholders, a content analysis is made using over one thousand company presidents' letters in the annual reports. The results showed that the outside directors and big institutional investors as well as the accountants, to some extent limit the concealment. Yet the smaller institutional investors and the outside directors that are the shareholders prompt it. The insufficient disclosure subject is also related with the subsequent selling of stocks by the senior officers as well as the outside directors. The result may support that the concealing made by the officers and intentional tolerance is shown by outside managers. From the viewpoint of the practitioner, the research on the communication

strategies of the officers with the shareholders may help the individuals and the companies that invest in corporations. The study is also helpful for investment managers. It is also beneficial for individuals as well as the institutions such as the boards of directors and the accountants who are assigned to provide integrity within the organization as well as regulating the communications from the officers to the shareholders (Abrahamson and Park, 1994).

Deephouse and Jaskiewciz (2013) studied the socio-emotional wealth and the social identity to develop the theory in terms of the reputation differences between the family and the non-family companies. They suggest that the family members are more strongly identified with their family company than the non-family members. The study is conducted in eight countries with different cultures and managerial systems, the findings support their hypothesis.

According to the results, improved identification motivates the members of the family for a good reputation, which causes them to feel good which lead them to contribute to the socio-motional wealth. It is also seen that when the name of the family is a part of the company name, the company reputation is greater since the members of the family are motivated towards their company having a better reputation. The members of the family may also need the organizational power in order to seek for a positive reputation. So, they suggest in their theory that family ownership level and the presence of the family board should be related to better reputations.

Zahra et al. (2004) found that organizational structure is an important strategic resource, which the family companies may benefit in order to obtain competitive advantage. They established several hypotheses to test them and collected data through mailings from 536 manufacturing firms. Based on the RBV of the company, since entrepreneurship is important for value creation, the study analyzes relation between four aspects of the

organizational culture and entrepreneurship in family companies vs. the non-family businesses. These cultural aspects are: i) Individual vs. group orientation, ii) Internal vs. external orientation, iii) Centralization vs. decentralization, and iv) Short term vs. long-term orientation.

Compared to non-family firms, family controlled firms there is significant relationship between the external orientation and the entrepreneurship. Also there is stronger association between decentralization, short termism in financial controls and long term orientation in terms of strategic controls with entrepreneurship for family firms rather than non-family firms. As a result, it can be said that the influence of culture on entrepreneurship greater in family firms than non-family firms. The entrepreneurship is the important way for the family businesses creating values. Since the family companies are generally characterized with the emphasize about the social control and the centrality of the founder and the organizational cultures can even have a bigger strategic importance in comparison to the non-family companies.

Holmstrom and Milgrom (1994), conducted a theoretical work, with the idea that the problem of providing incentives to agents and employees is far more complicated than is represented in standard economic treatment of principal-agent issue. The compensation systems served the dual function of the allocated risks and the reward process of the productive works. As the agent is reluctant to risks, the tension between the two functions arises and in order to provide agent with the effective incentives of work mostly obliges her/him to bear the risk unwanted. Current formal models have conducted analyzes on the tension, yet they only could produce limited results. They conclude that incentive problems must be analyzed in totality; one cannot make correct inferences about proper incentives for an activity by studying the attributes of that activity alone.

Haubrich's (1994) study calculates the numerical solutions relating to principal/agent issue and it compares the results with the stylized facts in the CEO compensation. Quantitative predictions are obtained from parameterizing the models by Grossman and Hart (1983) and Holmstrom and Milgrom (1994). Although correct incentives of the CEO may improve the performance of the company, provision of such incentives should not be expensive. The gap between the theory and the reality especially looms significantly in the questions of the compensations of the executives. By the use of the reasonable assumptions, the principal-agent theory may yield quantitative solutions. The results show that low levels of performance pay are not inconsistent with risk aversion, CEO effort, and other parameters. They conclude that low profit shares can occur with low risk aversion, and even low profit shares provide incentives and substantially increase the value of the firm.

Li (1994) studied relationship between the ownership structure and composition of board of the directors of 390 large manufacturing companies in Japan, the USA and Western Europe. Research is focused on the ownership concentration, the bank control and the state ownership and how they affect the percentage of directors, which are the outsiders on company boards. Also the background of the corporate management as well as practices of control in different countries is examined. The results showed that, in line with the agency theory predictions, the ownership structure has important effects on the composition of the board. It can be concluded that as international competition in market intensifies, willingness to board diversification consisting multinational members is increased. Therefore, international competition can shape board structure to strengthen the power of competing.

Waterman and Meier (1998) offer a principal-agent model, which were basis for the extensive studies regarding the bureaucracy to the elected officials. The model has two assumptions encompassing the conflict of aims among principals and the agents and the fact that the agents have more information compared to the principals, which leads to an

asymmetry between them. The principal-agent models were derived from the disparate disciplines including economics, finance and law etc. Based on the model in the study, they suggest that principal-agent model should be expanded. The model asserts the assumption that principal-agent model cannot be a general explanation for the myriad relationships between the principals and the agents in the world of bureaucracy. They have also offered an alternative to the traditional principal-agent model. By arguing that information and goal conflict are not constants, but rather continuous variables in a bureaucratic model, authors believe they have laid the basic groundwork for the development of a more generalizable theory of bureaucratic politics. At the same time, the complexity and the dynamics can be clustered into a modest number of logically related cases to facilitate research.

Sappington (1991) identifies some major problems, which were examined in the literature relating to the incentives. The study starts with the frictions within the core of the incentive issues. The principal's optimum response against these frictions is studied. Designs of the individual contracts and tournaments as well as tournaments were analyzed. The task, which the principal has relating to election of the best agent, is considered. The study focuses on the simple agency relationships, which proceed separate from the other agency relationships. The insight on the incentives also derived in the growing literature was given. The concept, bounded rationality and also incomplete contracting were considered. In many of the analyzes conducted, principal and the agent were omniscient and it was in an important sense. Various factors in this regard were often seen as able for communicating the assessment of environment cost less. The simple principal-agent models alone may not provide the complete understanding in operation and the structure of the complex organizations. Yet, the models seem to be helpful in terms of identifying the possible sources of friction in various companies and searching for ways to diminish the friction.

Hill & Jones (1992) argue as the agency theory and the stakeholder theory as starting points, and proposed a study to explain the following: i) The certain angles of the strategic behavior of a company, ii) the stakeholder contract structure (in management), iii) the form received by corporate structures which enforce and monitor the contracts between the managers and the other stakeholder and evolutionary process shaping management/ stakeholder contracts and corporate structures which control these contracts. The study asserts that by joining together the notions of efficiency and the power under same framework, this significantly increases paradigm's predictive power in comparison to earlier company theories. The paradigm focuses on causes of the conflict between the managers and the stakeholders after the occurrence of the conditions of disequilibrium. The stakeholder/agency theory also emphasized the theory of adjustment mechanisms, which re-adjust the management and stakeholders' interests after the disruption phase.

According to Donaldson and Davis (1991), agency theory asserts that the shareholder interests require the protection by the separation of the incumbency in the roles of the board of the directors and the CEO. The stewardship theory asserts that the interests of the shareholders can be maximized by the shared incumbency of the roles. The results of the empirical test yet fail to support the agency theory and some support relating to the stewardship theory was provided. The agency theory has influenced the strategic management and the business policy. That is to say that the directors may not act in the way to maximize returns to the shareholders until the appropriate governing structures were applied in the company in order to protect the shareholders' interests. The board has a significant function at this point and this especially relates to the chairperson and CEO affairs. The shareholders' interests can only be safeguarded where the board chairmanship is not by CEO or in the case where CEO has the same interests, as the CEO by suitable planned compensation plan of incentives. The study analyzes the way to contrast the opinions relating to the CEO's governance and incentive as well as subject empirical tests. Thus, two contrast approaches to

structure of corporate boards were given as the agency theory and the stewardship theory. The first one emphasizes the control of the managerial opportunism by having a board chairmanship which is independent from CEO and using the incentives to bind the CEO's interests with shareholders' interests. The stewardship theory stresses the beneficial consequences on the shareholder returns, which unify the command by having CEO roles and the chairmanship position held by same person.

1.3. Financing Decisions

Two basic groups of decisions in finance are investment and financing decisions. In some respects financing decisions are easier to make, and also easier to reverse. However, the insufficiency of financial markets in developing countries may prevent the reversal of financing decisions due to lack of several funding schemes.

Financing decisions shape capital structure, which is crucial for the risk and return and even for the survival of the company. There have been many attempts to examine the decisions for capital structure of companies as choice of the capital structure is vital and choosing the optimal capital structure will help to maximize the firm value.

The financial decisions include various objectives such as the adequate amount of funds in order to run a firm, finance the projects, and working capital, which is vital for the maximum of working efficiency.

The origin of these financing decisions generally contains a mixed combination of equity and debt financing. In a firm theory, a financed project may result in obligation, liability and excess use of sources. Projects or investments, which are risky, are financed with more equity due to cash flow commitments although the equity cost is generally higher than the debt cost. Then, financing equity can emerge an increased hurdle rate that may lead to offset abatement in the cash flow risk.

Taggart's (1989) study presents an integrated model in financial patterns. This model emphasizes the current optimal capital structure, yet it places the theory in the context of overall and ongoing financial decisions. The estimates figures model gives specific allowance to the balance sheet restrictions as well as interdependent properties of financial decisions. A major conclusion is that stirring actions in long-term debt and equity are the most important factors to determine a corporate’s security issues. Permanent increases in capital in each

quarter within the scope that companies may retain their earnings and if any shortfall occurs, it can be made up by a bonds and stocks issued. The authors say that "businesses also watch their debt capacity, but, and if bond issues may lead to excessive debt levels, stock issues can be stimulated as a countermeasure; since the speeds of adjustment to the permanent capital targets are shown to be relatively slow, liquid assets and short-term debt play an important role in absorbing short-run fluctuations in the external financial deficit".

Moreover, Cotei and Farhat (2001) used the two-variable Probit-Tobit model to find the optimal debt-equity structure. The objective of the researchers is using the two-stage Probit-Tobit model in order to study the factors, which affect the choices between the internal and the external funding as well as between the debt and the equity and size of the issues. The results they have shown that the Probit equation is comparatively more efficient when compared with the two independent Probit equations. The factors, which affect choice of the financial form, are subject to inspection and issue size endorsed predictions of the trade-off theory. In terms of information, asymmetricity affects the choice among the debt and the equity yet no evidence was found that it might influence size of the issue. The two-staged Bivariate Probit-Tobit model was again used in order to examine the financial decisions of the companies. In the model, the authors have asserted that the directors made the three sequential decisions of finance, which were not independent from each other. Market to book ratio makes positive effect on the probability of use of external funding as well as equity issue size. Yet, this affects the issuing debt probability as well as the debt issue size adversely. The result is consistent with a notion where the companies with higher growing options possess a lower probability to issue debt. In a nutshell, they reach a refined conclusion that Trade-off factors (profitability, non-debt tax shield, financial distress, projected deviation from target leverage) have a significant impact on the debt-equity choice as well as on the size of issue. Profitable firms are more likely to issue debt rather than equity. Given the choice of the financial form, profitability encourages firms to issue more debt and less equity. The net loss carry forward

increases the likelihood of issuing equity and decreases the likelihood of issuing debt, but has no effect on the size of the financial form.

Morris (1976) investigated the factors that affect average maturity of the corporate debt. Hypothesis is tested by the use of the cross sectional sample in big industrial companies. The study covers 159 companies, which were in the list of 1971 Fortune 500 biggest industrial companies. The linear regression model was developed with company's average debt maturity as independent variable company's assets maturity, leverage, growth, income and growth variability were the independent variables. The results showed that asset maturity, leverage and size were positively correlated and growth and income variability were negatively correlated with debt maturity.

Although the theoretical developments continued during the past many years, the understanding they have in terms of the relationship between the theories and the practical company financial decisions remain incomplete (Tsuji, 2011). Thus, Tsuji (2011) designed a survey to for better understanding of capital structure, especially pecking order theory of the corporate financing. The study analyzed the data of various countries including the USA. For investigating international evidence of capital structure issues, especially focusing on pecking order theory in corporate finance. Empirical and the survey evidence are mostly contradictionary. Theories of the capital structure are conditional and one theory alone is not always complete; each works better in some conditions than in others. Further progress may be needed for deeper understanding of these issues.

Stearns and Mizruchi (1988) studied the scope of presence of the representatives of the financial institutions on company boards of the directors, which have affected the loan obtaining decisions. It was identified that types of financial corporation's represented on companies' boards were related with the amounts and types of the financing, which the companies obtained. It was demonstrated that the composition of a board affects the outcome

as research and development expenditures and CEO compensation. There is negative relationship between an investment banker as board member and short-term borrowing. Also the financial sector representatives on the board is negatively correlated with debt ratio. That is, these representatives provide a kind of safeguard against heavy borrowing and resultant bankruptcy.

Beattie et al. (2006) conducted a survey regarding the corporate financial decision-making among listed firms in Britain. There is an important finding that the companies are heterogeneous in terms of capital structure policies. Half of companies attempt to maintain a target debt ratio, consistent with trade-off theory, but 60% follow a hierarchy consistent with pecking order theory. The important factors determining debt ratio are interest tax shield, financial distress, agency costs and information asymmetry. Finally, institutional differences have significant impact on financial decisions. Attention should be given to seeking a better understanding of the diversity and complexity of firms' capital structure decisions rather than simply describing the associations between capital structure outcomes and firm-specific characteristics for the average firm. In view of the finding that managers do not believe, the market to be efficient, future research might also usefully to consider alternative decision models, which are less founded on rational economics.

Hsiao and Li (2011) examined relationships between financial decisions of the Taiwanese companies and their level of under-/over-investment. Findings demonstrate that both equity and debt issuers over-invest, and this is largely dependent upon valuable investment opportunities a two empirical test types were conducted viable to them. Also under-investment was due to non-valuable investment opportunities.

1.4. Financing Decisions in Family & Non-Family Firms

The last part of this literature review consists of the financial decisions for the family and non-family businesses. There is not much research on financial decisions for the family and non-family businesses, so this field requires more attention.

Family businesses are generally controlled by the largest shareholders with moderately high percentage of shares in the organizations, which they organize and lead. In addition to this, their financial decisions are more likely to be affected by the largest shareholder's incentives than financial decisions of outside shareholders.

Croci et al (2011) conducted a study on a comprehensive data of continental European firms to investigate external financing behavior of these firms during 1998-2008 periods. Analysis shows that family firms issue less equity and more debt compared to non-family firms. The reasons behind debt issuance may be control considerations and desire not to dilute shares. In addition, maturities of debt instruments vary for these two groups. Family firms tend to borrow on long term, demonstrating a non-risk-seeking behavior. The results show that they spend less for Research and Development (R&D), and invest less in high-risk investments compared to non-family firms. The evidence suggests that there is agency conflict between family shareholders and public shareholders of family companies. While the prevalent view in the entrenched management literature has been that entrenched managers tend to issue less debt, family firms, generally viewed as corporate organizations run largely by entrenched managers provide an ideal source from which to draw inferences about the relation between financial decisions and managerial entrenchment.

Moreover, Anderson et al. (2003) found out that family ownership decreases the cost of debt financing, because of smaller amount of agency conflicts between debt holders and

equity holders. They suggest that bondholders can be see family ownership for their interests as a safety device-protecting tool.

Masulis et al. (2011) studied the motivations towards the family controlled business groups. The dataset consisted of 28.635 companies in 45 countries. They give new evidence that is in line with the argument, certain group structures may emerge not only so as to sustain control yet also in order to diminish financing constraints within the country and firm levels. At company level, the intensity of investment is larger for companies held in pyramidal structures than horizontal structures, which reflected financial advantages of the former whereas at country level, family groups, which were structured as family groups, were more widespread in the markets having limited capital as available. Yet the group company performance decreases as dual class shares as well as cross shareholding are used as control mechanisms.

Andres' (2008) study provides empirical findings as to how unique incentives of the founding families influence the investment decisions. Despite theoretical considerations, results showed that the family companies are not more vulnerable to the external financial constraints. As they compare with the companies of the similar size and the dividend payout rate, family companies' investment outlays can consistently be less sensitive against the internal cash flow. The family companies are even more responsive to the investment opportunities and they tend to invest the required cash flow. Findings suggested that the founding family ownership can be associated with smaller agency costs and this may help the information asymmetries be diminished with outside finance suppliers. Study examines family companies' investment behavior when compared with non-family companies and the ownership. Yet it extends the pattern to the outside ownership. The blockholders except the founding families may have limited influences on the investment behavior.

Griching et al. (2011) examined the family commitment and how it moderated financial knowledge with positive experience with the debt suppliers and the economic aim orientation influencing the attitudes of the owner manager attitudes to the financing of debt in family companies. A sample group of 280 German family companies was used and significant relationships were found between the financial knowledge and the positive experience of the debt providers and the owner manager attitudes to debt. It was found that the family commitment moderated the relationships in such a way that the high family commitment caused impacts of prior experience with the debt providers although effects of the goal orientation is diminished and reversed. In general, the contributions that were made to the research were on the financial decision taking, structure of capital and the social capital within the family companies. Conclusively, based on the family company owner managers' financial attitudes, the study may give additional insights to the understanding of why some companies use a distinct financial policy and others do not. The design of the research may also explain how family affects the decision taking processes within the family company. Especially the results of family commitment interaction affect showed that the family company owner managers reflect the values, norms and the opinions, which other members of the family have under the attitude formation process.

Karakaya and Karamustafa (2007) explained the factors' effects on the debts structures of the small and medium sized businesses within Samsun. The research was comprised of interviewing the companies' managers or owners. They analyzed the effects of number of employees, ages of companies, their legal structures, market diversification, capacity usage rates, level of satisfaction with banks, ownership trends on debt structure of companies. The study used the stepwise regression method. Results of the stepwise regression analysis showed that the variables in this regard statistically have a significant effect on structure of Debts/Total assets and variables including ages of companies, legal structures and

their capacity use rates statistically have no significant relations with structure of the Debts/Total Assets.

Al-Fayoumi and Abuzayed (2009) examined the impact of the ownership structure on corporations financial decisions based on the agency theory perspective. Analysis is conducted on the firms quoted in Jordanese stock exchange from 2001 to 2005. The study examines the static and dynamic effects made by managerial insiders and the large shareholders' ownership structure. This study also presents evidence that debt ratio has negative relationship with the managerial ownership, although not significant, loosely related with blockholders' ownership. Institutional ownership additionally examined in this study and it is not related with debt ratio. The research has also elaborated the relationship between capital structure and ownership structure for Jordan firms. They conducted a panel data analysis in order to reveal the factors of the ownership structure including the individual block holders, the managerial insiders and the institutions. It is found that managerial insiders are negatively related with capital structure, this is just because managers aiming to reduce the performance pressures connected with the high debt capital employed lower debt.

Moradi et al. (2012) investigated the factors of management mechanism and financial behavior affecting businesses' performance. To test their hypotheses, data for randomly selected 84 firms listed within Tehran Stock Exchange between 2007-2011 is used. Tobin's Q, which is an indicator of firm performance as a proxy, and Return on Investment (ROI) were used. Their examination just consists of univariate regressions, mean comparison test (t-tests or ANOVA), pairwise correlation tests. They found out that corporate governance, capital structure and financial decision have significant implication of firm performance. Conflict of interest arising between CEOs and owners of the firm can trigger the evolution of the companies that is mainly considered by different parties as the creditors, the owners and even the managers.

In Bajaj et al. (1998) study, a signaling model has been developed to show the adverse selection and the moral hazard interactions in order to determine the company's ownership structure and the financial as well as the investment decisions endogenously. The analysis focused on the relationships between the insider ownership, the performance measures such as Tobin's Q ratio and the elements of the financial structure (such as debt-equity ratio). So, the study has proposed a model which showed how the adverse selection and the moral hazards interact and in turn determine company's ownership structure, the financial and the investment decisions. This research contributed to relevant literature by extending the signaling model, embedding adverse selection and the moral hazards models under a unified framework and give a reference point for empirical results based on the stand alone signaling as well as the agency considerations and also a basis for discrimination against these models.

2. DATA & METHODOLOGY

The data and analysis methods will be explained in this section. There are theoretical explanations of the methods are also presented in order to provide the researchers firsthand information.

2.1. Data

This study is covering the period between 2005-2012, and Borsa Istanbul (BIST) data is used for the analysis. The study is conducted on BIST-100, BIST-50 and BIST-30 indices, in order to investigate whether there are differences between findings regarding relatively bigger firms (blue chips – less volatile ones) and others in the indices. Firms in these indices are reevaluated each quarter, some are excluded and some other are included regarding the criteria set by BIST: The sample is constructed from the firms, which are in the relevant index at least one quarter for a year.

Throughout eight years (2005 - 2012), BIST-100, BIST-50 and BIST-30 indices covered respectively 112, 57 and 37 firms in 2005; 113, 57 and 37 firms in 2006; 108, 57 and 37 firms in 2007, 113, 56 and 37 firms in 2008, 112, 56 and 36 firms in 2009, 111, 57 and 37 firms in 2010, 112, 56 and 36 firms in 2011 and 107, 56 and 35 firms in 2012. Due to this, the number of total possible observations are 888 for BIST-100, 460 for BIST-50 and 279 for BIST-30. However, companies, which didn't provide any information about equity issuance or debt issuance, have been excluded from our sample. So, total number of observations issuing equity is 532 and issuing debt is 506. But these firms have some missing data in terms of independent variables. As a result, the final number of firms consisting all dependent and independent variables are presented below:

For BIST-100 : 422 firms Issuing Equity (IE) and 407 firms Issuing Debt (ID)

For BIST-50 : 229 firms (IE) and 227 firms (ID)

For BIST-30 : 155 (IE) and 157 firms (ID)

The dataset is collected from Thomson One Banker, DataStream and Orbis data sources. Ticker symbols are different or missing in different databases;

Datastream uses a three-digit ticker for firms, Thomson One Banker uses five-digit codes and Orbis does not provide any ticker symbol for firms. To deal with match and merge for several datasets collected from sources, additional formulations should be used. A small number of ticker symbols of firms were manually changed for matching.

The classification of firms family and non-family firms is quite complicated, because founding member or major family member may be involved at board level but not have a real controlling stake in the sharepool, or family may have control just by having minority shares. Therefore, specific criteria presented below are decided upon by literature review (Croci et al 2011, Andres 2011, Masulis 2011) to be used to determine genuine family control:

1. If the largest shareholder is a family member then, the firm is family controlled.

2. If total shares of family members are higher than other shareholders who are non-family members or firms (subsidiaries), the firm is family controlled.

3. If the main firm is a subsidiary of another firm, which is controlled by family members, then, the firm is family controlled.

Since family firms have a broader meaning in accordance with the literature, two variables regarding the type of company are defined:

FAMILY; if the family shares are higher than 50.1% and FAMILYBR, if the controlling shares of the family are less than 50.1% and the biggest shareholder is the family member.

2.2. Methodology

In this section, the main techniques used in the study will be explained in detail. In the following section (2.3), these techniques will be applied with the use of econometric models constructed according to the main research questions.

2.2.1. Logit

The Logistic Model was first suggested by Berkson (1944) for biological analysis. Cox (1970) revised this model and made some applications. Briefly, improvements were made by the Andersson (1979). There have been some further attempts to check whether the model is compatible with the data. Among them, Aranda-Ordaz (1981) made the most improvements. Pregibon (1981) examined the influential, the peripheral observations, and some measures in a two group logistic model. Also, Lesaffre and Albert (1989) examined the influential and the peripheral observations with measures i multiple grouped logistic models and provides a wide range of logistic regression models, improvement of estimation of the errors and re-examination of logistic regression models. Cornfield (1962), used a discriminated function in estimation of the coefficient of logistic regression. Lee (1984), emphasizes the importance of the linear logistic models in order to analyze easy convertible cross-over. Bonney (1987) worked on the application of logistic regressions and tried to improve it. Robert et al. (1987) gave importance to chi-square, probability measure G^2, pseudo probabilities, compatibilities and hypothesis testing.

2.2.1.1. Logistic models

In logistic regression models, the dependent variable is binary variable and takes the value of either 1 or 0 (Gujarati, 1999). The situation, which represents the case investigated (risk, gender, type of company etc.), takes value of 1 and the other alternative takes value of 0. In regression problems, the key value hinges on the independent variable, which helps to find the average value of the dependent variable. This value is called the conditional value and represented by $E\ Y/x$ Y shows the dependent variable whereas X shows the independent variable. In the regression model analysis, conditional average is assumed to be a linear equation x variable;

$$E\ Y/x\ = \beta_0 + \beta_1 x$$

(1)

This equation, shows the range of $+\infty, -\infty$ and represents that x can take the value between this range. In the analysis of logistic regressions, conditional average should either be equal to higher than 0 or smaller than 1 or equal to 1.

$$0 \leq E\ Y/x\ \leq 1$$

(2)

In logistic regression analysis, $E\ Y/x\ = \beta_0 + \beta_1$x as the left hand side of the equation takes the value between 0 and 1 as explained by Gujarati (1999), this equation cannot always be satisfied. In order to overcome this obstacle, we need to define this probability value between $-\infty, \infty$.

If the result has multiple options then it includes many different distribution functions, which could be logit and probit transformations. There are some reasons to choose logistic distributions such as there are no restrictions choosing estimation coefficient and biologically it is easier to interpret.

In order to make it easier in the representation, when we use the logistic distribution, if x is known, to show the conditional average, we can use $\pi\ x\ = E(Y/x)$. The specific form of logistic regression model is shown as follows:

$$\pi\ x\ = \frac{e^{\beta_0+\beta_1 x}}{1 + e^{\beta_0+\beta_1 x}}$$

(3)

The central point of our analysis is the logit transformation of the $\pi(x)$ and defined as follows:

$$g\ x\ = \frac{\pi(x)}{1 - \pi(x)}$$

(4)

The importance of this transformation is g(x) contains the all the features of linear regression. Logit g(x) is linear in terms of their parameters and varies according to the values that x can take between -∞, ∞.

2.2.1.2. Construction of a Logit Model

In logistic regression model, a maximum likelihood estimator is used for the estimation of the coefficients. Under the assumption of there are n independent variables like (x_i ,y_i), we need to estimate the β_0 and β_1 in order to estimate the result variable. If Y is defined as 0 or 1, π(x) gives the 1 when x is given into π(x)=P(Y=1/x). [1- π(x)] shows that any given x will make the Y=0, 1- π(x)=P(Y=0/X). (x_i ,y_i) couple, when $y_i = 1$ the contribution of it, will be $\pi(x_i)$ and 1-p(x_i) for the y=0 (Hosmer Jr et al., 2013). A suitable way of showing the contribution of the variables is as follows:

$$\varphi\ x_i\ = \pi(x_i)^{\ y_i}[1 - \ \pi\ x_i\ ]^{1-y_i}$$

(5)

As we assume that observations are independent, the probability function can be obtained by the multiplication of equation (5).

$$I(\beta) = \prod_{i=1}^{n} \varphi\ x_i$$

(6)

As it easier to deal with equation (6) by using log function, the log function is defined as:

$$L(\beta) = \ln[l(\beta)] \sum_{i=1}^{n} \{y_i \ln [\pi(x)] + (1 - y_i) \ln [1 - \pi(x)]\}$$

(7)

To find the β that maximizes L(β), we differentiate it with respect to β_0 and β_1 and equate them to zero. Then the results will be:

$$\sum_{i=1}^{n} \{y_i - \pi(x_i)\} = 0$$

(8)

and

$$\sum_{i=1}^{n} x_i\{y_i - \pi(x_i)\} = 0$$

(9)

These equations are called probability equations. In linear regressions, these probability equations can be solved easily. However, in logistic regressions these equations are nonlinear equations according to β_0 and β_1. In order to solve these non linear equations, iteration methods are needed (Hosmer Jr. et al., 2013). β is obtained by the equations (8) and (9) and called maximum likelihood estimator of them.

The result of equation (8) we will get:

$$\sum_{i=1}^{n} y_i = \sum_{i=1}^{n} \pi(x_i)$$

(10)

Sum of the observed values of y is equal to sum of the estimated values.

2.2.1.3. Importance of Variables

It is very important to put the meaningful variables in regression or we will have wrong or less accurate estimates. Similarly, it is important to put the crucial variables to logistic regressions as well, these need to be checked to ensure if the variables have importance for the model or not.

After the estimation of the variables, the estimated model is tested to examine the significant variables. These tests give a result about the variables whether variables are statistically significant or not. The methodology for these tests varies for different types of models.

In logistic regressions, the test for the significance of variables can be done by comparing the models with and without variables. The comparison of observed and the estimated values of variables can be done by the log-probability functions. This equation is used to compare them:

$$\mathrm{D} = -2\ln\left[\frac{probability\ of\ current\ model}{probability\ of\ satisfied\ model}\right]$$

(11)

This test is called probability ratio. Using equation (11) we can get

$$D = -2 \sum_{i=1}^{n} [y_i \ln(\frac{\pi_i}{y_i}) + (1 - y_i)\ln(\frac{1 - \pi_i}{1 - y_i})]$$

(12)

D statistics are called deviance and are important for compatibility. To decide the significance of the independent variable, we compare the D statistics of the models, which include the independent variable and the one that is not included.

Change in D statistics due to including the independent variable is as follows:

$$G = D(model\ that\ has\ no\ variables) - D(model\ that\ has\ variables)$$

this statistics has the same role with the nominator in the F-test for the linear regressions.

$$G = -2ln[\frac{probability\ of\ \ model\ that\ has\ no\ variables}{probability\ of\ \ model\ that\ has\ variables}]$$

(13)

In special cases like having one independent variable, value of the maximum likelihood estimate of the β_0 is $\ln(n_1/n_0)$ where

$$n_1 = \quad y_i$$

and

$$n_0 = \quad 1 - y_i$$

Estimated value is constant (n_1/n). The G statistics is as follows:

$$G = -2ln[\frac{(\frac{n_1}{n})^{n1}(\frac{n_0}{n})^{n0}}{\prod_{i=1}^{n}(\pi_i{}^{y_i}1-\pi_i{}^{1-y_i})}$$

(14)

or

$$G = 2\{\sum_{i=1}^{n}(y_i\ln(\pi_i) + (1-y_i)ln(1-\pi_i)) - [\, n_1ln(n_1) + n_0ln(n_0) + n\, ln(n)\,]$$

(16)

The reliability of this model is tested by the chi-square of these 2 different models. In this way, we can decide which variables should be taken into the model. Under the null of β_1=0, G statistics has chi-square distribution. After estimation of the model, the importance of the estimations will be examined.

2.2.1.4. Multiple Logistic Regression

If the logistic regression model has more than one independent variable then it is called multiple logistic regression model. This multiple logistic regression has no differences than the other multiple regressions in terms of structure but has different interpretation. Interpretation depends on the kind of the independent variable. Temporary independent

variables in the multiple regression models can be categorized nominally and ordered ordinal. Modelling power of logistic regressions depend on variability of the model. Some variables could have different measures. Our focus in multiple logistic regressions will be estimation and significance of the variables. In order to put the estimated and nominal measured independent variables into regressions some designing models will be used.

Let x' =(x_1, x_2,....., x_p) shows the vectors and assume that there are p independent variables. Logit of the multiple logistic regressions model is as follows (Menard, 2002):

$$g(x) = \beta_0 + \beta_1 x_1 + \ldots\ldots + \beta_p x_p$$

(17)

In this case;

$$\pi\ x\ = \frac{e^{g(x)}}{1 + e^{g(x)}}$$

(18)

If some independent variables are measured nominally then it will be implausible to put them as range variables into equation because the estimates of these variables have no numerical values. In these situations, we need to use dummy variables.

In general, if we use the nominal value of variable, which has k category, then we need to use k-1 degrees of freedom. k-1 degrees of freedom is shown by D_{ju} and its coefficients are shown by β_{ju}. As a result, logit for the jth variable for the number of p variable model is:

$$g(x) = \beta_0 + \beta_1 x_1 + \ldots\ldots + \sum_{u=1}^{k} \beta_{ju} D_{ju} + \beta_p x_p$$

(19)

Assume that there are n numbers of independent variables (x_i ,y_i). We need to obtain the β' =(β_1, β_2,....., β_p) as same as simple regressions. We will use the same method, which is maximum likelihood estimator. We can get the p+1 probability equation by differentiating it with respect to p+1 coefficient.

$$\sum_{i=1}^{n} [y_i - \pi(x_i)]$$

(20)

and

$$\sum_{i=1}^{n} x_{ij}[y_i - \pi(x_i)] = 0 \text{ ; j} = 1,2, \ldots, \text{p}$$

(21)

Assume that β shows the result of this equation. We can use β and x_i to get the π(x) for the multiple logistic regression model. Maximum likelihood theory emphasizes the log-probability function and will give the matrices value of the variables (Menard, 2002). These derivatives are shown as follows:

$$\frac{\partial^2 L(\beta)}{\partial \beta_j^2} = -\sum_{i=1}^{n} x_{ij}^2 \pi_i (1 - \pi_i) = 0$$

(22)

$$\frac{\partial^2 L(\beta)}{\partial \beta_j \ \beta_u} = -\sum_{i=1}^{n} x_{ij} x_u \ \pi_i(1 - \pi_i) = 0$$

$$\mathrm{u} = \mathrm{j} = 0,1,2, \ldots, \mathrm{p}$$

(23)

[(p+1)*(p+1)] is called as information matrices which captures the negative values of terms given above. Variances and the covariances of estimated values can be obtained by this matrices $\beta = I^{-1}(\beta)$. It is impossible to write all matrices except in some special cases. We can show the jth diagonal element of by $\sigma^2 = (\beta_j)$ which is also the variance of the variable. With the non-diagonal variables, we can get the covariances between two variables. We will show the terms in matrices as $\sigma^2 = (\beta_j)$ and $\sigma(\beta_j, \beta_u)$.

$$SE(\beta_J) = \ \sigma^2 \ \beta_J \ ^{\frac{1}{2}}]$$

$$J = 0,1,2, \ldots\ldots, p.$$

(24)

We will use the formula above to decide the confidence intervals.

Information matrices can be used to discuss the compatibility of the estimated model.

$$I(\beta) = X'VX$$

(25)

X matrices has [n*(p+1)] dimensions and includes the all data for every observation.

$$X = \begin{matrix} 1 & \cdots & X_{1p} \\ \vdots & \ddots & \vdots \\ 1 & \cdots & X_{np} \end{matrix}$$

(26)

V matrices has (n*n) dimensions and its general observation is π_i=(1-π_ι) and π_ι is a diagonal matrices.

$$V = \begin{matrix} \pi_1(1-\pi_1) & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & \pi_n(1-\pi_n) \end{matrix}$$

(27)

2.2.1.5. The Importance of Significance Test

First step in this model is to check the importance level of the variables. Probability ratio test of p coefficient of independent variables in the model is same with the simple regression probability ratio test. Test depends on the G statistics as shown in equation (12) and (14). Our null hypothesis is all the p coefficients are equal to zero and G statistic has chi-square distribution. We can get the all variables by using Wald test W_j=$\beta_J/SE(\beta_J)$. Under the null of $\beta_J = 0$, Wald test has normal distribution (Gujarati, 1999). This statistics decide whether the variables have importance or not.

The most important point is to obtain the best-estimated model by using less variables. The next step will be adding the independent variables, which are important for the model and compare it with the full model.

Degrees of freedom of the model should be changed when the variables are included or excluded. Degrees of freedom can be decided as follows, if there are k categories then the degrees of freedom should be k-1.

2.2.1.6. Logistic Estimation with MLE

The MLE method gives the value to parameter, which maximizes the probability of observed variables. To implement this method, first we need to construct the maximum likelihood function. This function defines the probabilities of the observed variables in terms of unknown parameters. These unknown parameters are chosen in a way that maximizing these probabilities.

To predict the unknown parameters ordinary least squares (OLS) estimation can be used in linear regressions. In OLS, we choose β_0 and β_1 in a way that minimize the squares of the difference between the actual and the fitted values of the observed y. This method gives us estimates, which have the compatible statistical features. However, in multiple regressions this method does not provide compatible estimates.

In logistic regressions, this method is called maximum likelihood estimation. This method will be fundamental for our estimation process. Therefore, our estimates will be the most compatible estimates for our regressions.

In order to implement this method we need define the probability function. This function gives us probability of observed variables in terms of unknown parameters.

If y can be shown 1 or 0, π(x) which is given in (I.1) gives the value of x that makes y=0. This is shown as P(y=1|x). Random value of β'=(β_0,β_1) is vector of parameters also called as 1- π(x) indicates given value of which makes y=0 and shown as P(y=0|x).

Thereby, for (x_i ,y_i) couple, $\pi(x_i)$ denotes the π(x) value of x_i and the contribution of the y_i=1 into probability function is $\pi(x_i)$. To demonstrate the contribution of (x_i ,y_i) couple, we can follow this way:

$$z(x_i) = \pi(x_i)^{y_i}(1 - \pi\ x_i\ )^{1-y_i}$$

(28)

Since the observations are independent, we can obtain the probability function by multiplying the terms in (28).

$$l(B) = \prod_{i=1}^{n} z(x_i)$$

(29)

Maximum likelihood estimation emphasizes that we need to use B, which maximizes the equation. However, it is easier to deal with log of the equation mathematically as we can define the log probability as follows:

$$L(B) = ln(L(B)) = \sum_{i=1}^{N} y_i ln(\ \pi\ x_i\ ) + (1 - y_i) ln(1 - \pi\ x_i\ )$$

(30)

We can differentiate the equation subject to β_0 and β_1 so we can get the B that maximizes the L(B). Thereby, we will get the following equations:

$$\sum_{i=1}^{n} [\, y_i - \pi\ x_i\ ] = 0$$

(31)

$$\sum_{i=1}^{n} x_i \left[y_i - \pi \; x_i \; \right] = 0$$

(32)

These equations are called probability equations.

We can get these equations by taking the derivatives with respect to B in linear regressions. We can infer that the solutions might be easy to get as it is occurred by the unknown parameters.

However, in logistic regressions probability equations 31 and 32 are not linear in β_0 and β_1. Therefore, we need some other solutions, which are iterated solutions, but we are not going to deal with them. For a special interest, we can address McCullagh and Nelder (1983). In their work, they showed that equations 2.4 and 2.5 can be solved by Generalized least squares estimators. This method is iterative Hosmer and Lemeshow (1989):

Acquired all βs from the equations numbered (31) and (32) is named prediction of maximum likelihood estimator and shown as β. In general, the symbol shown in quotation marks, "^", indicates that it is just a quantity prediction made with a maximum likelihood estimator. This quantity shows the conditional probability of y=1 for x=x_i. Thus, we can infer the estimated value and the compatibility of the logistic regression model. According to this equation 2.4 can be written as :

$$\sum_{i=1}^{n} y_i = \sum_{i=1}^{n} \pi \; x_i$$

(33)

This equation gives us sum of observed values of y is equal to sum of the estimated values of y. This equation will be beneficial for the compatibility of the model.

2.3.Models and Variables

The econometric models specified below and presented in accordance with main research questions indicated in prior sections.

Model 1. Equity Issuance by Family Firms

$$IE_{it} = \alpha + \beta_1 FAMILY_{it} + \beta_2 AGE_{it} + \beta_3 LN(SIZE)_{it} + \beta_4 COLLATERAL_{it} + \beta_5 CASH_{it} + \beta_6 LEVERAGE_{it} + \beta_7 MB_{it} + \beta_8 ROA_{it} + \beta_9 GROWTH_{it} + \varepsilon_{it}$$

Model 2. Equity Issuance by Family Controlled Firms (less than 50% of shares)

$$IE_{it} = \alpha + \beta_1 FAMILYBR_{it} + \beta_2 AGE_{it} + \beta_3 LN(SIZE)_{it} + \beta_4 COLLATERAL_{it} + \beta_5 CASH_{it} + \beta_6 LEVERAGE_{it} + \beta_7 MB_{it} + \beta_8 ROA_{it} + \beta_9 GROWTH_{it} + \varepsilon_{it}$$

Model 3. Issuing Debt by Family Firms

$$ID_{it} = \alpha + \beta_1 FAMILY_{it} + \beta_2 AGE_{it} + \beta_3 LN(SIZE)_{it} + \beta_4 COLLATERAL_{it} + \beta_5 CASH_{it} + \beta_6 LEVERAGE_{it} + \beta_7 MB_{it} + \beta_8 ROA_{it} + \beta_9 GROWTH_{it} + \varepsilon_{it}$$

Model 4. Issuing Debt by Family Controlled Firms (less than 50% of shares)

$$ID_{it} = \alpha + \beta_1 FAMILYBR_{it} + \beta_2 AGE_{it} + \beta_3 LN(SIZE)_{it} + \beta_4 COLLATERAL_{it} + \beta_5 CASH_{it} + \beta_6 LEVERAGE_{it} + \beta_7 MB_{it} + \beta_8 ROA_{it} + \beta_9 GROWTH_{it} + \varepsilon_{it}$$

Model 5. Issuing Debt Yearly Basis by Family Firms

$$IDBR_{it} = \alpha + \beta_1 FAMILY_{it} + \beta_2 AGE_{it} + \beta_3 LN(SIZE)_{it} + \beta_4 COLLATERAL_{it} + \beta_5 CASH_{it} + \beta_6 LEVERAGE_{it} + \beta_7 MB_{it} + \beta_8 ROA_{it} + \beta_9 GROWTH_{it} + \varepsilon_{it}$$

Model 6. Issuing Debt Yearly Basis by Family Controlled Firms (less than 50% of shares)

$$IDBR_{it} = \alpha + \beta_1 FAMILYBR_{it} + \beta_2 AGE_{it} + \beta_3 LN(SIZE)_{it} + \beta_4 COLLATERAL_{it} + \beta_5 CASH_{it} + \beta_6 LEVERAGE_{it} + \beta_7 MB_{it} + \beta_8 ROA_{it} + \beta_9 GROWTH_{it} + \varepsilon_{it}$$

For all models, ε_{it} is an error term being homoscedastic. IE is a binary dependent variable and means issuing equity. If the company issues equity, dependent binary variable takes the value one, otherwise zero. ID and IDBR are binary dependent variables and mean Issuing Debt. ID means companies issue debt on any year, IDBR (debt broad) means companies issue debt in specific years. Equations are a binary choice model where dependent variable is one if firm issues its debt, zero otherwise. These models are multivariate logit models and maximum likelihood estimation is used. Variables and their explanations are presented in Table 1.

Models are run for BIST- 100, BIST-50, BIST-30, and for yearly fixed effects, that is change from base year of 2005. There is also analysis about the crisis effect on financing decisions for the family and family controlled firms.

Table 1. Definition of Variables

Variable	Symbol	Explanation
FAMILY	FAMILY	One means firm is a family controlled, zero means non-family controlled.
FAMILY BROAD	FAMILYBR	One means family member is a big shareholder, zero means non-family controlled.
ISSUING EQUITY	IE	One means that firms issued equity in year t, otherwise zero.
ISSUING DEBT	ID	One means that firms issued debt in year t, otherwise zero (2004 based).
ISSUING DEBT BROAD	IDBR	One means that firms issued debt in year t, otherwise zero (yearly).
AGE	AGE	Current year minus firm's establishment year
SIZE	SIZE	Market Value of Equity Size= LN(MVE)
COLLATERAL	COLLATERAL	Ratio of Tangible Assets to Total Assets
CASH HOLDINGS	CASH	Ratio of Cash & Marketable Securities to Total Assets
LEVERAGE	LEVERAGE	Ratio of Financial Debt to Total Assets
MARKET TO BOOK VALUE	MB	Ratio of Market Value of Equity to Common Equity
RETURN ON ASSETS	ROA	Return on Assets
GROWTH	GROWTH	Growth of Sales $Growth=(Sales_t - Sales_{t-1})/Sales_{t-1}$
PERIOD FOR CRISIS	PERIOD	2005,2006 and 2007 = 1 (Pre-Crisis) 2008 and 2009 = 2 (Crisis) 2010,2011 and 2012 = 3 (Post Crisis)

3. ANALYSIS

In this section, below, the number of firms classified under each group, that is, equity and debt issuing, family firms and non-family firms are presented.

According to the Tables 2 & 3, firms have made 187 times equity issuance and 351 times debt issuance. Additionally, debt issuance on yearly basis (IDBR), and the number of firms in this category is 280 (see Table 4). Issuance of equity and debt can be seen on yearly basis at Tables 5, 6 and 7. These table only shows that the number of firms issuing equity and debt. Since they have some missing financials, the number of firms analyzed in the models differentiates from them.

Table 2. Issuance of Equity – Family & Non-Family Firms

	FAMILY		
IE	0	1	Total
0	172	173	345
1	112	75	187
Total	284	248	532

Table 3. Issuance of Debt – Family & Non-Family Firms

	FAMILY		
ID	0	1	Total
0	55	100	155
1	195	156	351
Total	250	256	506

Table 4. Issuance of Debt (Broad) – Family & Non-Family Firms

	FAMILY		
IDBR	0	1	Total
0	113	139	252
1	161	119	280
Total	274	258	532

Table 5. Yearly Equity Issuance

	Year								
IE	2005	2006	2007	2008	2009	2010	2011	2012	Total
0	44	50	36	42	39	48	42	44	345
1	20	20	30	25	35	22	19	16	187
Total	64	70	66	67	74	70	61	60	532

Table 6. Yearly Debt Issuance

	Year								
ID	2005	2006	2007	2008	2009	2010	2011	2012	Total
0	33	27	26	18	23	16	8	4	155
1	32	42	41	47	46	50	49	44	351
Total	65	69	67	65	69	66	57	48	506

Table 7. Yearly Debt Issuance (Broad)

	Year								
IDBR	2005	2006	2007	2008	2009	2010	2011	2012	Total
0	33	27	46	21	51	32	19	23	252
1	32	40	19	48	24	38	47	32	280
Total	65	67	65	69	75	70	66	55	532

3.1.Equity Issuance

In tables below family firms' and family controlled firms' financial decision on Equity Issuance is presented. Tables could be grouped in four. First one is result table of Model 1 (FAMILY), second one is Model 2 (FAMILYBR) and last two are results of Year fixed Effects (Base = 2005) for Model 1 and 2 respectively.

The first four result tables demonstrate that a strong asset base is vital and have significant effect on equity issue. Size and age have also positive impact on equity issues for BIST-100 firms. Analyses are made both for family firms (more than 50.1% of shares owned) and family controlled by minority (minority shares owned and owner family controls the company) firms. It is interesting to see that the firms that controlled by minority shares are more reluctant to equity issues compared to family controlled firms. The reason behind that may be that a family firm controlled by minority shares is closer to losing controlling power of firm when there are more equity issues.

Year fixed results presented in Tables 10 and 11 confirms the same results as Tables 8 and 9, but it also shows that post-crisis years has significant effect on issuing equity at 5% significance level and lowers equity issuance on yearly basis.

It can be asserted that whole models in tables (8, 9, 10 and 11) have approximately .10-.16 R-square and significant according to Chi2 value at 5% significance level.

Table 8. Equity Issuance - BIST100 – Family Firms

	(1) IE		(2) IE	
IE				
FAMILY	-0.372*	(-1.73)	-0.085	(-0.36)
AGE	0.016**	(2.55)	0.012*	(1.84)
SIZE	-0.023	(-0.83)	0.239***	(3.23)
COLLATERAL	-1.859***	(-3.64)	-1.218**	(-2.20)
CASH	1.428	(0.67)	-0.274	(-0.13)
LEVERAGE	-0.080	(-0.14)	0.062	(0.10)
MV/BV	-0.002	(-1.59)	-0.002	(-1.22)
ROA	-2.576	(-1.30)	-1.403	(-0.71)
GROWTH	0.105	(1.13)	0.146	(1.45)
Constant			-3.815***	(-3.77)
Observations	422		422	
ll	-256.794		-248.906	
aic	531.588		517.811	
bic	567.993		558.261	
converged	1.000		1.000	
chi2	52.205		42.920	
p	0.000		0.000	
r2_p			0.096	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9. Equity Issuance - BIST100 - Family Controlled Firms

	(1) IE		(2) IE	
IE				
FAMILYBR	-0.720***	(-3.37)	-0.596***	(-2.63)
AGE	0.016**	(2.44)	0.012*	(1.69)
SIZE	-0.003	(-0.09)	0.244***	(3.35)
COLLATERAL	-1.933***	(-3.71)	-1.327**	(-2.39)
CASH	1.117	(0.51)	-0.625	(-0.28)
LEVERAGE	-0.181	(-0.33)	0.056	(0.10)
MV/BV	-0.002	(-1.18)	-0.003	(-1.23)
ROA	-2.427	(-1.21)	-1.145	(-0.57)
GROWTH	0.114	(1.25)	0.157	(1.64)
Constant			-3.549***	(-3.66)
Observations	422		422	
Ll	-252.648		-245.418	
Aic	523.297		510.836	
Bic	559.702		551.286	
Converged	1.000		1.000	
chi2	51.509		43.215	
P	0.000		0.000	
r2_p			0.108	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square))

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10. Equity Issuance - BIST100 - Year Fixed Effects (Base=2005) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-0.398*	(-1.75)	-0.130	(-0.54)
AGE	0.014**	(2.20)	0.010	(1.53)
SIZE	0.035	(0.92)	0.292***	(3.81)
COLLATERAL	-2.023***	(-3.88)	-1.371**	(-2.44)
CASH	1.007	(0.43)	-0.645	(-0.28)
LEVERAGE	0.137	(0.23)	0.234	(0.38)
MV/BV	-0.002*	(-1.71)	-0.002	(-1.34)
ROA	-2.623	(-1.21)	-1.503	(-0.70)
GROWTH	0.201	(1.43)	0.229	(1.45)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	-1.114**	(-2.16)	-0.748	(-1.33)
2007.Year	-0.114	(-0.25)	0.244	(0.51)
2008.Year	-0.670	(-1.50)	-0.122	(-0.25)
2009.Year	-0.137	(-0.32)	0.233	(0.51)
2010.Year	-1.068**	(-2.41)	-0.791*	(-1.70)
2011.Year	-1.360***	(-2.78)	-1.022**	(-1.97)
2012.Year	-1.350***	(-2.82)	-1.129**	(-2.30)
Constant			-4.041***	(-3.74)
Observations	422		422	
Ll	-245.319		-237.814	
Aic	522.639		509.629	
Bic	587.359		578.394	
Converged	1.000		1.000	
chi2	70.453		63.052	
P	0.000		0.000	
r2_p			0.136	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11. Equity Issuance - BIST100 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1) IE		(2) IE	
FAMILYBR	-0.789***	(-3.56)	-0.678***	(-2.91)
AGE	0.014**	(2.07)	0.010	(1.40)
SIZE	0.060	(1.50)	0.304***	(4.00)
COLLATERAL	-2.108***	(-3.95)	-1.484***	(-2.63)
CASH	0.619	(0.26)	-1.064	(-0.44)
LEVERAGE	0.046	(0.08)	0.238	(0.40)
MV/BV	-0.002	(-1.24)	-0.003	(-1.25)
ROA	-2.407	(-1.11)	-1.202	(-0.55)
GROWTH	0.217	(1.50)	0.242	(1.62)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	-1.151**	(-2.24)	-0.760	(-1.36)
2007.Year	-0.089	(-0.19)	0.277	(0.58)
2008.Year	-0.696	(-1.54)	-0.134	(-0.27)
2009.Year	-0.176	(-0.41)	0.215	(0.48)
2010.Year	-1.115**	(-2.48)	-0.812*	(-1.73)
2011.Year	-1.407***	(-2.87)	-1.069**	(-2.05)
2012.Year	-1.423***	(-2.95)	-1.206**	(-2.47)
Constant			-3.815***	(-3.66)
Observations	422		422	
Ll	-240.607		-233.652	
Aic	513.215		501.304	
Bic	577.935		570.070	
Converged	1.000		1.000	
chi2	71.503		63.039	
P	0.000		0.000	
r2_p			0.151	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The following tables (12, 13, 14 and 15) are the results of analyses for BIST-50. Being family controlled by minority having a significantly negative effect on equity issuance is found only Tables 13 and 15 for the model 2 with only no constant. However, size has significantly positive effects on equity issuance in all tables (Tables 12, 13, 14 and 15) for BIST-50. For yearly effects, there is no significant result at 5% level.

For BIST-50, constant is always significant and shows negative effect on equity issuance. That is, it indicates a firms' reluctancy towards issuing their equity. The dynamics of the effect of size is that growing firms may want to increase its financial health by issuing equity, then, the more equity issuance leads to more growth. There is a reciprocal interaction between these two factors.

It is no surprise to see that bigger firms that are the firms in BIST-50 size overweights the collateral requirement, compared to BIST-100 firms. Size seems to be most effective determinant, and even in the crisis period, the years are not that significant.

Table 12. Equity Issuance - BIST50 – Family Firms

	(1) IE		(2) IE	
FAMILY	-0.275	(-0.81)	0.144	(0.40)
AGE	0.013	(1.50)	0.004	(0.48)
SIZE	0.017	(0.44)	0.433***	(3.21)
COLLATERAL	-0.982	(-1.27)	0.345	(0.37)
CASH	-1.391	(-0.26)	-2.148	(-0.39)
LEVERAGE	-0.767	(-0.83)	-1.148	(-0.92)
MV/BV	-0.002	(-0.67)	-0.002	(-0.81)
ROA	-4.265	(-0.79)	-5.821	(-1.09)
GROWTH	0.136	(0.31)	0.325	(0.70)
Constant			-5.999***	(-3.30)
Observations	229		229	
Ll	-142.008		-134.346	
Aic	302.015		288.692	
Bic	332.919		323.029	
Converged	1.000		1.000	
chi2	25.638		30.531	
P	0.002		0.000	
r2_p			0.137	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13. Equity Issuance - BIST50 - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.732**	(-2.30)	-0.396	(-1.16)
AGE	0.013	(1.44)	0.003	(0.30)
SIZE	0.041	(1.04)	0.408***	(3.08)
COLLATERAL	-1.483*	(-1.86)	-0.201	(-0.21)
CASH	-1.259	(-0.25)	-2.556	(-0.48)
LEVERAGE	-0.475	(-0.54)	-0.765	(-0.66)
MV/BV	-0.003	(-1.05)	-0.003	(-1.04)
ROA	-3.506	(-0.69)	-4.736	(-0.92)
GROWTH	0.038	(0.09)	0.240	(0.54)
Constant			-5.277***	(-2.95)
Observations	229		229	
Ll	-139.721		-133.751	
Aic	297.442		287.502	
Bic	328.345		321.839	
Converged	1.000		1.000	
chi2	25.897		29.703	
P	0.002		0.000	
r2_p			0.141	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 14. Equity Issuance - BIST50 - Year Fixed Effects (Base=2005) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-0.317	(-0.90)	0.098	(0.26)
AGE	0.013	(1.40)	0.002	(0.24)
SIZE	0.029	(0.53)	0.482***	(3.33)
COLLATERAL	-1.044	(-1.29)	0.478	(0.48)
CASH	-0.999	(-0.18)	-2.104	(-0.37)
LEVERAGE	-0.526	(-0.53)	-0.982	(-0.74)
MV/BV	-0.001	(-0.55)	-0.001	(-0.61)
ROA	-5.066	(-0.91)	-6.835	(-1.27)
GROWTH	0.577	(1.03)	0.765	(1.25)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	-0.994	(-1.37)	-0.416	(-0.53)
2007.Year	0.620	(0.98)	1.252*	(1.88)
2008.Year	-0.446	(-0.70)	0.402	(0.56)
2009.Year	0.517	(0.83)	1.044	(1.58)
2010.Year	-0.492	(-0.81)	-0.098	(-0.16)
2011.Year	-0.953	(-1.45)	-0.451	(-0.65)
2012.Year	-0.247	(-0.39)	-0.084	(-0.13)
Constant			-6.906***	(-3.50)
Observations	229		229	
Ll	-134.862		-126.765	
Aic	301.724		287.530	
Bic	356.663		345.903	
Converged	1.000		1.000	
chi2	35.845		45.475	
P	0.003		0.000	
r2_p			0.186	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 15. Equity Issuance - BIST50 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1) IE		(2) IE	
IE				
FAMILYBR	-0.808**	(-2.45)	-0.457	(-1.28)
AGE	0.012	(1.35)	0.001	(0.06)
SIZE	0.054	(0.98)	0.458***	(3.20)
COLLATERAL	-1.595*	(-1.93)	-0.105	(-0.10)
CASH	-0.701	(-0.14)	-2.395	(-0.44)
LEVERAGE	-0.200	(-0.21)	-0.564	(-0.45)
MV/BV	-0.002	(-0.94)	-0.002	(-0.85)
ROA	-4.359	(-0.84)	-5.815	(-1.12)
GROWTH	0.507	(0.92)	0.701	(1.16)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	-1.024	(-1.36)	-0.478	(-0.59)
2007.Year	0.668	(1.00)	1.248*	(1.83)
2008.Year	-0.437	(-0.66)	0.336	(0.47)
2009.Year	0.542	(0.85)	1.021	(1.52)
2010.Year	-0.479	(-0.77)	-0.137	(-0.22)
2011.Year	-0.970	(-1.47)	-0.503	(-0.72)
2012.Year	-0.283	(-0.44)	-0.136	(-0.21)
Constant			-6.154***	(-3.14)
Observations	229		229	
Ll	-132.327		-125.966	
Aic	296.654		285.932	
Bic	351.593		344.306	
Converged	1.000		1.000	
chi2	36.976		44.769	
P	0.002		0.000	
r2_p			0.191	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The analyses made for BIST-30 in following group Tables (16, 17, 18 and 19) produced similar results that of in BIST-50; size has a positive coefficient and statistically significant at 5% (see Tables 16, 17, 18 and 19). Nevertheless, family and other variables have no effect on equity issuance. These results are also valid for year fixed effects.

The following 3 groups' results show that BIST-100, BIST-50 and BIST-30, companies' financial decisions are effected by slightly different factors. For example; Family, FamilyBr, Age, Size, Collateral has an effect for firms in BIST-100, however only Size effects the firms in BIST-30. This may show us, companies with high market values and whose shares are actively traded have better chances for equity issues.

Table 16. Equity Issuance - BIST30 – Family Firms

	(1) IE		(2) IE	
IE				
FAMILY	-0.543	(-1.28)	-0.100	(-0.23)
AGE	0.013	(1.19)	0.004	(0.38)
SIZE	0.039	(0.86)	0.537**	(2.31)
COLLATERAL	-1.522	(-1.60)	0.262	(0.19)
CASH	-3.358	(-0.46)	-3.846	(-0.50)
LEVERAGE	-0.481	(-0.37)	-1.414	(-0.79)
MV/BV	-0.002	(-1.04)	-0.003	(-1.11)
ROA	-2.646	(-0.37)	-5.440	(-0.69)
GROWTH	-0.215	(-0.36)	0.018	(0.03)
Constant			-7.309**	(-2.22)
Observations	157		157	
Ll	-93.884		-88.619	
Aic	205.767		197.237	
Bic	233.273		227.800	
Converged	1.000		1.000	
chi2	24.082		29.697	
P	0.004		0.000	
r2_p			0.182	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 17. Equity Issuance - BIST30 - Family Controlled Firms

	(1) IE		(2) IE	
IE				
FAMILYBR	-0.480	(-1.17)	-0.128	(-0.30)
AGE	0.014	(1.38)	0.004	(0.37)
SIZE	0.039	(0.84)	0.539**	(2.36)
COLLATERAL	-1.712*	(-1.75)	0.173	(0.12)
CASH	-2.559	(-0.36)	-3.669	(-0.49)
LEVERAGE	-0.515	(-0.41)	-1.396	(-0.79)
MV/BV	-0.003	(-1.13)	-0.003	(-1.12)
ROA	-2.780	(-0.39)	-5.406	(-0.69)
GROWTH	-0.224	(-0.39)	0.010	(0.02)
Constant			-7.303**	(-2.26)
Observations	157		157	
Ll	-94.123		-88.603	
Aic	206.246		197.206	
Bic	233.752		227.768	
Converged	1.000		1.000	
chi2	22.684		29.811	
P	0.007		0.000	
r2_p			0.182	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 18. Equity Issuance - BIST30 - Year Fixed Effects (Base=2005) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-0.542	(-1.23)	-0.051	(-0.11)
AGE	0.014	(1.29)	0.004	(0.34)
SIZE	0.033	(0.56)	0.553**	(2.17)
COLLATERAL	-1.956*	(-1.96)	0.119	(0.08)
CASH	-4.037	(-0.47)	-4.558	(-0.57)
LEVERAGE	-0.054	(-0.04)	-1.132	(-0.60)
MV/BV	-0.002	(-0.97)	-0.002	(-0.93)
ROA	-1.789	(-0.21)	-5.146	(-0.65)
GROWTH	0.074	(0.13)	0.240	(0.42)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	-1.669	(-1.63)	-1.249	(-1.14)
2007.Year	0.381	(0.53)	0.931	(1.27)
2008.Year	-0.501	(-0.64)	0.307	(0.35)
2009.Year	1.192	(1.49)	1.323	(1.60)
2010.Year	-0.039	(-0.05)	-0.011	(-0.02)
2011.Year	-0.472	(-0.59)	-0.318	(-0.38)
2012.Year	0.100	(0.14)	-0.050	(-0.07)
Constant			-7.794**	(-2.16)
Observations	157		157	
Ll	-86.580		-82.139	
Aic	205.160		198.277	
Bic	254.060		250.233	
Converged	1.000		1.000	
chi2	32.600		38.763	
P	0.008		0.001	
r2_p			0.241	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 19. Equity Issuance - BIST30 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.433	(-1.01)	-0.071	(-0.16)
AGE	0.015	(1.42)	0.004	(0.32)
SIZE	0.035	(0.54)	0.556**	(2.25)
COLLATERAL	-2.092**	(-2.07)	0.065	(0.04)
CASH	-3.120	(-0.37)	-4.459	(-0.56)
LEVERAGE	-0.102	(-0.07)	-1.115	(-0.60)
MV/BV	-0.002	(-1.05)	-0.002	(-0.93)
ROA	-2.132	(-0.25)	-5.139	(-0.66)
GROWTH	0.076	(0.14)	0.236	(0.42)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	-1.676	(-1.64)	-1.250	(-1.15)
2007.Year	0.373	(0.51)	0.928	(1.28)
2008.Year	-0.532	(-0.67)	0.304	(0.35)
2009.Year	1.139	(1.41)	1.316	(1.59)
2010.Year	-0.088	(-0.12)	-0.018	(-0.02)
2011.Year	-0.570	(-0.72)	-0.328	(-0.39)
2012.Year	0.015	(0.02)	-0.061	(-0.09)
Constant			-7.794**	(-2.25)
Observations	157		157	
Ll	-86.901		-82.133	
Aic	205.802		198.266	
Bic	254.702		250.222	
Converged	1.000		1.000	
chi2	31.154		38.197	
P	0.013		0.001	
r2_p			0.242	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.2. Debt Issuance

First four tables are the analysis results for BIST-100 firms' debt issues. Family control and family control by minority are significant at 5% significance level and affect debt issuance negatively (see Tables 20, 21, 22 and 23). Additionally, firms' size increases debt issuance, but more in models having constant term. If a firm does not have a strong asset base (Collateral), it will decrease the chance of issuing debt. Strong cash position increases the chance of debt issuance, additionally; leverage has a considerable positive effect on debt issuance for BIST-100. Market to Book ratio has no effect on debt issuance significant at 1% significance level, meaning that it is not a relevant factor for debt issuance.

In models regarding debt issues, R-square values are quite high, between 33-39%, which means that results are more explanatory rather than equity issue analyses conducted before.

Year fixed analyses show that in the post crisis period 2010 to 2012, debt issuance has increased on yearly basis (see Tables 22 and 23). These results indicate a critical increase in debt raising apetite.

All models estimated with MLE again are converged and are significant according to its Chi-square value at 5% significance level. Maximum likelihood estimation is resistant for heteroskedasticity and autocorrelation which are more frequent problems faced into time series econometrics.

Table 20. Debt Issuance - BIST100 – Family Firms

	(1) ID		(2) ID	
ID				
FAMILY	-1.448***	(-5.46)	-1.268***	(-4.50)
AGE	-0.014	(-1.60)	-0.014	(-1.48)
SIZE	0.060	(1.31)	0.243**	(2.24)
COLLATERAL	-2.629***	(-4.03)	-1.818**	(-2.31)
CASH	4.263*	(1.75)	2.940	(1.15)
LEVERAGE	11.126***	(6.54)	10.909***	(6.64)
MV/BV	-0.000***	(-2.97)	-0.000***	(-3.24)
ROA	-3.018	(-1.28)	-1.933	(-0.79)
GROWTH	-0.017	(-0.18)	0.015	(0.16)
Constant			-2.867**	(-2.04)
Observations	407		407	
Ll	-167.737		-165.366	
Aic	353.475		350.731	
Bic	389.554		390.820	
converged	1.000		1.000	
chi2	131.321		128.408	
P	0.000		0.000	
r2_p			0.332	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 21. Debt Issuance - BIST100 - Family Controlled Firms

	(1) ID		(2) ID	
ID				
FAMILYBR	-1.500***	(-4.83)	-1.343***	(-4.22)
AGE	-0.013	(-1.61)	-0.012	(-1.42)
SIZE	0.074*	(1.65)	0.289***	(2.71)
COLLATERAL	-3.070***	(-4.65)	-2.041**	(-2.56)
CASH	4.465**	(2.12)	2.673	(1.19)
LEVERAGE	11.314***	(5.95)	11.008***	(5.97)
MV/BV	-0.000***	(-3.34)	-0.000***	(-3.53)
ROA	-2.633	(-1.26)	-1.335	(-0.62)
GROWTH	-0.033	(-0.35)	0.013	(0.13)
Constant			-3.394**	(-2.46)
Observations	407		407	
Ll	-167.929		-164.474	
Aic	353.859		348.947	
Bic	389.938		389.035	
converged	1.000		1.000	
chi2	94.655		103.451	
P	0.000		0.000	
r2_p			0.336	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 22. Debt Issuance - BIST100 - Year Fixed Effects (Base=2005) – Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-1.602***	(-5.43)	-1.380***	(-4.39)
AGE	-0.014	(-1.54)	-0.013	(-1.38)
SIZE	-0.028	(-0.52)	0.230*	(1.88)
COLLATERAL	-2.705***	(-4.11)	-1.546**	(-1.98)
CASH	6.211***	(2.62)	4.448*	(1.76)
LEVERAGE	11.452***	(6.59)	11.319***	(6.70)
MV/BV	-0.000***	(-3.11)	-0.000***	(-3.45)
ROA	-4.156*	(-1.83)	-2.579	(-1.09)
GROWTH	-0.054	(-0.59)	-0.024	(-0.26)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	1.058	(1.64)	1.428**	(2.08)
2007.Year	0.853	(1.45)	1.124*	(1.82)
2008.Year	1.142**	(1.96)	1.704***	(2.61)
2009.Year	0.896	(1.57)	1.256**	(2.17)
2010.Year	1.596***	(2.73)	1.894***	(3.22)
2011.Year	2.467***	(3.91)	2.797***	(4.25)
2012.Year	2.432***	(3.31)	2.702***	(3.79)
Constant			-4.385***	(-2.71)
Observations	407		407	
Ll	-155.721		-151.200	
Aic	343.442		336.400	
Bic	407.583		404.550	
Converged	1.000		1.000	
chi2	139.285		135.276	
P	0.000		0.000	
r2_p			0.390	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 23. Debt Issuance - BIST100 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-1.582***	(-4.69)	-1.358***	(-3.95)
AGE	-0.012	(-1.49)	-0.011	(-1.27)
SIZE	-0.006	(-0.12)	0.268**	(2.14)
COLLATERAL	-3.111***	(-4.64)	-1.739**	(-2.13)
CASH	6.625***	(2.90)	4.468*	(1.79)
LEVERAGE	11.453***	(6.03)	11.032***	(6.11)
MV/BV	-0.000***	(-3.49)	-0.000***	(-3.68)
ROA	-3.939*	(-1.78)	-2.325	(-1.02)
GROWTH	-0.069	(-0.76)	-0.031	(-0.34)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.896	(1.41)	1.304*	(1.96)
2007.Year	0.805	(1.33)	1.061*	(1.72)
2008.Year	0.973	(1.63)	1.547**	(2.41)
2009.Year	0.744	(1.24)	1.103*	(1.86)
2010.Year	1.458**	(2.47)	1.770***	(2.98)
2011.Year	2.322***	(3.55)	2.689***	(3.94)
2012.Year	2.338***	(3.35)	2.591***	(3.55)
Constant			-4.682***	(-2.90)
Observations	407		407	
Ll	-156.876		-151.611	
Aic	345.752		337.221	
Bic	409.893		405.371	
Converged	1.000		1.000	
chi2	108.945		117.517	
P	0.000		0.000	
r2_p			0.388	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The results analyzing Models 3 and 4 for BIST-50 (Tables 24, 25, 26 and 27) indicate that family effect is negative and relatively more in comparison with BIST-100 (this effect is significant at 1% level). Age becomes a factor in BIST-50 that older firms more reluctant in issuing debt. Size has a positive effect; firms that are more valuable can be more comfortable to issue debt. Collateral surprisingly decreases debt issuance. Leverage positively effects issuing debt as its nature and compared to in BIST-100 it has nearly double effect.

The results which use family in its broad meaning (Tables 25 and 27), namely FAMILYBR, also show that Market to Book Value has a small positive effect on ID but the firm's age has a lowering effect on ID at 5% significance level. That is, the younger the firms, more the debt issuance. Additionally, in Tables 26 and 27, years covering the post-crisis period are significant and indicate that there is an increase significant at 5% level in terms of issuing debt for BIST-50 firms.

Table 24. Debt Issuance - BIST50 – Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-2.350***	(-4.30)	-2.272***	(-3.95)
AGE	-0.052***	(-2.83)	-0.053**	(-2.57)
SIZE	0.179**	(2.17)	0.393*	(1.65)
COLLATERAL	-4.885***	(-3.08)	-3.841**	(-2.20)
CASH	-6.622	(-0.81)	-8.815	(-1.01)
LEVERAGE	15.620***	(3.23)	14.970***	(3.28)
MV/BV	0.016	(1.38)	0.017	(1.10)
ROA	4.946	(0.56)	6.496	(0.68)
GROWTH	1.293	(1.01)	1.428	(1.09)
Constant			-3.330	(-1.14)
Observations	227		227	
ll	-73.611		-72.700	
aic	165.221		165.399	
bic	196.046		199.649	
converged	1.000		1.000	
chi2	71.011		60.763	
p	0.000		0.000	
r2_p			0.432	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 25. Debt Issuance - BIST50 - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-1.996***	(-4.01)	-1.823***	(-3.94)
AGE	-0.042***	(-3.49)	-0.040***	(-3.36)
SIZE	0.142**	(2.12)	0.291	(1.64)
COLLATERAL	-5.534***	(-4.60)	-4.425***	(-3.12)
CASH	-0.218	(-0.03)	-1.406	(-0.22)
LEVERAGE	16.844***	(3.53)	16.168***	(3.36)
MV/BV	0.010***	(2.72)	0.010**	(2.46)
ROA	3.049	(0.45)	3.381	(0.48)
GROWTH	0.481	(0.51)	0.648	(0.63)
Constant			-2.538	(-1.12)
Observations	227		227	
Ll	-77.930		-77.368	
Aic	173.860		174.737	
Bic	204.685		208.986	
Converged	1.000		1.000	
chi2	75.635		61.978	
P	0.000		0.000	
r2_p			0.395	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 26. Debt Issuance - BIST50 - Year Fixed Effects (Base=2005) – Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-2.498***	(-4.50)	-2.373***	(-4.21)
AGE	-0.051***	(-2.88)	-0.053***	(-2.59)
SIZE	0.071	(0.79)	0.404*	(1.65)
COLLATERAL	-4.574***	(-3.26)	-2.788*	(-1.77)
CASH	-3.089	(-0.34)	-6.993	(-0.61)
LEVERAGE	16.248***	(3.21)	15.562***	(3.37)
MV/BV	0.014**	(2.20)	0.016	(1.53)
ROA	1.194	(0.12)	3.996	(0.35)
GROWTH	1.494	(1.00)	1.714	(1.15)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.832	(0.89)	1.162	(1.18)
2007.Year	1.897**	(2.01)	2.215**	(2.17)
2008.Year	1.489	(1.62)	2.025**	(1.97)
2009.Year	1.792*	(1.79)	2.224**	(2.23)
2010.Year	1.795*	(1.74)	2.129**	(2.10)
2011.Year	2.348**	(2.20)	2.854**	(2.47)
2012.Year	2.058*	(1.94)	2.227*	(1.92)
Constant			-5.617*	(-1.83)
Observations	227		227	
Ll	-68.636		-66.418	
Aic	169.271		166.836	
Bic	224.071		225.060	
Converged	1.000		1.000	
chi2	66.879		54.575	
P	0.000		0.000	
r2_p			0.481	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 27. Debt Issuance - BIST50 |Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-2.066***	(-3.80)	-1.774***	(-3.47)
AGE	-0.041***	(-3.31)	-0.039***	(-3.07)
SIZE	0.032	(0.40)	0.277	(1.39)
COLLATERAL	-5.444***	(-4.43)	-3.618**	(-2.39)
CASH	1.444	(0.18)	-1.028	(-0.12)
LEVERAGE	17.132***	(3.63)	16.232***	(3.41)
MV/BV	0.011***	(3.34)	0.011***	(3.03)
ROA	2.082	(0.25)	3.076	(0.35)
GROWTH	0.639	(0.69)	0.862	(0.84)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.787	(0.68)	1.099	(0.95)
2007.Year	1.656	(1.57)	1.963*	(1.81)
2008.Year	1.323	(1.22)	1.775	(1.57)
2009.Year	1.737	(1.64)	2.082*	(1.95)
2010.Year	1.809*	(1.65)	2.091*	(1.90)
2011.Year	1.972*	(1.74)	2.334**	(2.02)
2012.Year	2.154*	(1.79)	2.168*	(1.79)
Constant			-4.444*	(-1.71)
Observations	227		227	
Ll	-73.854		-72.426	
Aic	179.708		178.851	
Bic	234.507		237.075	
Converged	1.000		1.000	
chi2	111.767		78.865	
P	0.000		0.000	
r2_p			0.434	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Models 3 and 4 for BIST-30 presented in Tables 28, 29, 30 and 31 mainly confirm previous results. The coefficient of Leverage increases nearly double again and is significant at 5% level. Variously, family negatively and significantly affects debt issuance in comparison with BIST-100 and BIST-50.

Market to Book Value has a positive effect on issuing debt for family controlled firms. First time, ROA has positive effect on debt issuance and significant in the Tables 30 and 31. This result is a surprise, because ROA is always insignificant throughout all models according to its t-value until there.

Leverage has positive and significant effect on debt issues, however significance is at 5% level. ROA and M/B indicate performance of firms; therefore, the improvements of financial well being strongly influenced debt issuance for BIST-30 firms.

Models 3 and 4 have better explanatory power for debt issues, around 30-40% for BIST-100, 40-50% for BIST-50 and between 50-65% for BIST-30 firms. Models are best describing the debt issues of the latter group.

Table 28. Debt Issuance - BIST30 - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-2.452**	(-2.50)	-2.466**	(-2.35)
AGE	-0.025	(-1.10)	-0.025	(-1.02)
SIZE	-0.027	(-0.15)	-0.048	(-0.14)
COLLATERAL	-3.360	(-1.38)	-3.538	(-0.89)
CASH	-27.014	(-1.53)	-26.746	(-1.49)
LEVERAGE	24.900***	(3.03)	24.866***	(2.99)
MV/BV	0.403***	(2.89)	0.399**	(2.43)
ROA	20.735	(1.15)	20.559	(1.13)
GROWTH	1.691	(1.04)	1.684	(1.02)
Constant			0.416	(0.06)
Observations	155		155	
Ll	-33.313		-33.310	
Aic	84.627		86.620	
Bic	112.018		117.054	
Converged	1.000		1.000	
chi2	58.168		32.940	
p	0.000		0.000	
r2_p			0.525	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 29. Debt Issuance - BIST30 - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-2.141***	(-2.79)	-2.068***	(-3.05)
AGE	-0.033*	(-1.79)	-0.029	(-1.22)
SIZE	-0.052	(-0.37)	0.017	(0.06)
COLLATERAL	-4.685**	(-2.57)	-3.920	(-1.06)
CASH	-17.299	(-1.61)	-17.988	(-1.54)
LEVERAGE	30.588***	(2.80)	30.783***	(2.64)
MV/BV	0.406	(1.25)	0.393*	(1.69)
ROA	16.817	(1.58)	17.238	(1.51)
GROWTH	0.893	(0.66)	0.961	(0.63)
Constant			-1.467	(-0.23)
Observations	155		155	
ll	-34.927		-34.883	
aic	87.855		89.765	
bic	115.246		120.199	
converged	1.000		1.000	
chi2	27.664		24.950	
p	0.001		0.003	
r2_p			0.502	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 30. Debt Issuance - BIST30 - Year Fixed Effects (Base=2005) – Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-2.667***	(-3.04)	-2.741***	(-2.65)
AGE	-0.002	(-0.07)	-0.005	(-0.14)
SIZE	-0.337	(-1.40)	-0.408	(-1.12)
COLLATERAL	-3.062*	(-1.78)	-3.705	(-0.90)
CASH	-42.420***	(-2.84)	-41.317**	(-2.27)
LEVERAGE	31.151**	(2.22)	31.116**	(2.27)
MV/BV	0.460**	(2.36)	0.446**	(2.01)
ROA	33.975***	(2.58)	33.225**	(2.18)
GROWTH	5.879	(1.43)	5.923	(1.53)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	2.656	(1.34)	2.670	(1.31)
2007.Year	5.326**	(2.54)	5.313**	(2.47)
2008.Year	0.654	(0.33)	0.572	(0.33)
2009.Year	4.691**	(2.47)	4.720**	(2.44)
2010.Year	2.917*	(1.77)	2.936*	(1.73)
2011.Year	1.731	(0.92)	1.677	(0.96)
2012.Year	2.731	(1.53)	2.714	(1.53)
Constant			1.427	(0.20)
Observations	155		155	
ll	-25.111		-25.080	
aic	82.222		84.159	
bic	130.917		135.898	
converged	1.000		1.000	
chi2	41.872		30.367	
p	0.000		0.016	
r2_p			0.642	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 31. Debt Issuance - BIST30 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-1.962*	(-1.87)	-1.820**	(-2.20)
AGE	-0.023	(-0.97)	-0.015	(-0.56)
SIZE	-0.315*	(-1.70)	-0.183	(-0.60)
COLLATERAL	-4.860**	(-2.54)	-3.410	(-0.97)
CASH	-38.925***	(-2.71)	-40.273**	(-2.52)
LEVERAGE	36.832**	(2.41)	37.202**	(2.25)
MV/BV	0.488	(1.07)	0.463	(1.64)
ROA	36.581***	(2.96)	37.311***	(2.86)
GROWTH	3.704	(1.04)	3.748	(1.04)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	2.510	(1.42)	2.587	(1.53)
2007.Year	4.865***	(2.91)	4.964***	(2.99)
2008.Year	0.603	(0.34)	0.794	(0.53)
2009.Year	3.712**	(2.56)	3.738***	(2.71)
2010.Year	2.135	(1.56)	2.141	(1.61)
2011.Year	1.112	(0.62)	1.207	(0.74)
2012.Year	2.451	(1.36)	2.457	(1.45)
Constant			-2.855	(-0.43)
Observations	155		155	
ll	-28.259		-28.125	
aic	88.517		90.250	
bic	137.212		141.988	
converged	1.000		1.000	
chi2	30.696		26.475	
p	0.015		0.048	
r2_p			0.599	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.3. Debt Issuance on Yearly Basis

In this section, debt issuance is investigated based on years and by running models 5 and 6. According to the results, both family firms and family controlled firms are reluctant in issuing debt for BIST-100, for the period 2005-2012 (see Tables 32, 33, 34 and 35). However, all of these coefficients are similar for those of equity issuance. Again, leverage has positively affected debt issuance and is significant at 5% level. However, R-square values of these models are lower than other analyses conducted with debt issuance.

Sales growth and size are also significant for models 5 and 6 (see Tables 33 and 35). But, while size has positive effect on debt issuance, growth of sales decreases debt issuance.

Year fixed analyses indicate that crisis has increased debt issuance in first hit year 2008 which may be related with currency rate fluctuation (see Tables 34 and 35). Crisis has significantly burst debt behavior in BIST-100.

Table 32. Debt Issuance (Yearly Basis) - BIST100 - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.565***	(-2.71)	-0.497**	(-2.29)
AGE	-0.009	(-1.42)	-0.010	(-1.54)
SIZE	0.043	(1.41)	0.112*	(1.68)
COLLATERAL	-0.895*	(-1.84)	-0.682	(-1.28)
CASH	0.110	(0.05)	-0.437	(-0.21)
LEVERAGE	2.378***	(3.65)	2.432***	(3.82)
MV/BV	-0.001	(-0.99)	-0.000	(-0.88)
ROA	-1.540	(-0.78)	-1.107	(-0.55)
GROWTH	-0.023**	(-2.01)	-0.021*	(-1.92)
Constant			-1.041	(-1.15)
Observations	433		433	
Ll	-278.713		-278.060	
Aic	575.425		576.119	
Bic	612.062		616.826	
converged	1.000		1.000	
chi2	27.832		30.733	
P	0.001		0.000	
r2_p			0.072	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 33. Debt Issuance (Yearly Basis) - BIST100 - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.434**	(-2.07)	-0.385*	(-1.81)
AGE	-0.008	(-1.35)	-0.010	(-1.53)
SIZE	0.046	(1.46)	0.138**	(2.07)
COLLATERAL	-0.945**	(-2.00)	-0.655	(-1.26)
CASH	0.221	(0.11)	-0.542	(-0.27)
LEVERAGE	2.180***	(3.36)	2.290***	(3.65)
MV/BV	-0.000	(-0.69)	-0.000	(-0.64)
ROA	-1.665	(-0.87)	-1.056	(-0.54)
GROWTH	-0.025**	(-2.09)	-0.022**	(-1.99)
Constant			-1.389	(-1.57)
Observations	433		433	
Ll	-280.319		-279.077	
Aic	578.638		578.155	
Bic	615.275		618.862	
converged	1.000		1.000	
chi2	24.951		29.614	
P	0.003		0.001	
r2_p			0.068	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 34. Debt Issuance (Yearly Basis) - BIST100 - Year Fixed Effects (Base=2005) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.615***	(-2.77)	-0.496**	(-2.14)
AGE	-0.010	(-1.42)	-0.011	(-1.62)
SIZE	0.034	(0.88)	0.169**	(2.29)
COLLATERAL	-0.969*	(-1.87)	-0.566	(-1.01)
CASH	-0.093	(-0.05)	-1.188	(-0.61)
LEVERAGE	2.385***	(3.45)	2.479***	(3.72)
MV/BV	-0.000	(-1.06)	-0.000	(-0.87)
ROA	-1.236	(-0.62)	-0.304	(-0.15)
GROWTH	-0.050	(-1.05)	-0.044	(-1.39)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.774*	(1.76)	1.026**	(2.25)
2007.Year	-0.878**	(-1.98)	-0.696	(-1.53)
2008.Year	0.868**	(2.04)	1.205***	(2.75)
2009.Year	-0.631	(-1.48)	-0.425	(-0.97)
2010.Year	0.279	(0.67)	0.464	(1.09)
2011.Year	0.904**	(2.08)	1.132**	(2.57)
2012.Year	0.220	(0.48)	0.374	(0.82)
Constant			-2.234**	(-2.20)
Observations	433		433	
Ll	-260.031		-257.658	
Aic	552.061		549.316	
Bic	617.193		618.519	
converged	1.000		1.000	
chi2	53.962		61.658	
P	0.000		0.000	
r2_p			0.140	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 35. Debt Issuance (Yearly Basis) - BIST100 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.442**	(-2.01)	-0.369*	(-1.66)
AGE	-0.009	(-1.34)	-0.011	(-1.60)
SIZE	0.039	(0.99)	0.194***	(2.62)
COLLATERAL	-1.015**	(-2.00)	-0.543	(-0.99)
CASH	0.078	(0.04)	-1.264	(-0.66)
LEVERAGE	2.158***	(3.17)	2.323***	(3.57)
MV/BV	-0.000	(-0.69)	-0.000	(-0.64)
ROA	-1.392	(-0.71)	-0.262	(-0.13)
GROWTH	-0.059	(-0.85)	-0.047	(-1.23)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.691	(1.60)	1.000**	(2.22)
2007.Year	-0.906**	(-2.09)	-0.686	(-1.53)
2008.Year	0.795*	(1.87)	1.197***	(2.73)
2009.Year	-0.703*	(-1.69)	-0.450	(-1.05)
2010.Year	0.224	(0.54)	0.448	(1.05)
2011.Year	0.848**	(1.98)	1.123**	(2.57)
2012.Year	0.206	(0.46)	0.381	(0.84)
Constant			-2.560***	(-2.59)
Observations	433		433	
Ll	-261.966		-258.673	
Aic	555.931		551.346	
Bic	621.063		620.549	
converged	1.000		1.000	
chi2	51.810		60.908	
P	0.000		0.000	
r2_p			0.136	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In the results of models 5 and 6, it is found that the family effect on debt issuance for BIST-50 is lower than BIST-100 and significant at 5% level (see Tables 36, 37, 38 and 39). Nevertheless, it is not valid for family controlled firms.

Leverage is again significant and increases debt issuance according to the results. Surprisingly, whole results indicate growth of sales may trigger debt issuance and its coefficient is significant at a 5% level.

Crisis, only for first year 2008, is also significant and increases the chance of debt issuance according to year fixed results. It can also be claimed that crisis has relatively higher impacts debt issues more than other years namely the pre-crisis and post-crisis periods.

Table 36. Debt Issuance (Yearly Basis) - BIST50 - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.795**	(-2.47)	-0.749**	(-2.24)
AGE	-0.013	(-1.36)	-0.014	(-1.46)
SIZE	0.028	(0.58)	0.100	(0.86)
COLLATERAL	-1.445*	(-1.77)	-1.160	(-1.17)
CASH	-3.275	(-0.68)	-3.777	(-0.80)
LEVERAGE	3.925***	(3.06)	3.944***	(3.19)
MV/BV	-0.001	(-0.30)	-0.001	(-0.34)
ROA	1.987	(0.42)	2.205	(0.47)
GROWTH	2.307***	(2.94)	2.355***	(3.04)
Constant			-1.119	(-0.66)
Observations	238		238	
Ll	-141.511		-141.258	
Aic	301.021		302.516	
Bic	332.272		337.239	
converged	1.000		1.000	
chi2	25.407		26.125	
P	0.003		0.002	
r2_p			0.126	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 37. Debt Issuance (Yearly Basis) - BIST50 - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.407	(-1.32)	-0.341	(-1.08)
AGE	-0.010	(-1.06)	-0.011	(-1.21)
SIZE	0.012	(0.26)	0.108	(0.94)
COLLATERAL	-1.377	(-1.62)	-0.968	(-0.94)
CASH	-1.068	(-0.23)	-1.855	(-0.40)
LEVERAGE	3.838***	(2.85)	3.861***	(3.03)
MV/BV	-0.001	(-0.29)	-0.001	(-0.31)
ROA	0.588	(0.13)	0.896	(0.20)
GROWTH	2.094***	(2.79)	2.177***	(2.91)
Constant			-1.508	(-0.91)
Observations	238		238	
Ll	-143.830		-143.364	
Aic	305.660		306.727	
Bic	336.911		341.450	
converged	1.000		1.000	
chi2	22.411		23.941	
P	0.008		0.004	
r2_p			0.113	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 38. Debt Issuance (Yearly Basis) - BIST50 - Year Fixed Effects (Base=2005) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.853**	(-2.52)	-0.749**	(-2.09)
AGE	-0.015	(-1.49)	-0.017*	(-1.73)
SIZE	0.025	(0.46)	0.199	(1.50)
COLLATERAL	-1.549*	(-1.78)	-0.848	(-0.77)
CASH	-3.260	(-0.62)	-4.637	(-0.90)
LEVERAGE	3.960***	(2.82)	3.948***	(3.01)
MV/BV	-0.001	(-0.41)	-0.001	(-0.48)
ROA	1.845	(0.38)	2.422	(0.50)
GROWTH	1.541**	(2.02)	1.634**	(2.15)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.928	(1.50)	1.146*	(1.76)
2007.Year	-0.902	(-1.57)	-0.722	(-1.21)
2008.Year	1.011	(1.59)	1.341**	(2.14)
2009.Year	-0.166	(-0.27)	0.020	(0.03)
2010.Year	0.338	(0.58)	0.484	(0.82)
2011.Year	1.142*	(1.87)	1.370**	(2.14)
2012.Year	0.098	(0.15)	0.134	(0.21)
Constant			-2.845	(-1.42)
Observations	238		238	
Ll	-132.331		-131.103	
Aic	296.663		296.207	
Bic	352.219		355.235	
converged	1.000		1.000	
chi2	40.664		44.871	
P	0.001		0.000	
r2_p			0.189	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 39. Debt Issuance (Yearly Basis) - BIST50 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.431	(-1.30)	-0.288	(-0.82)
AGE	-0.011	(-1.13)	-0.013	(-1.44)
SIZE	0.006	(0.11)	0.201	(1.53)
COLLATERAL	-1.461	(-1.58)	-0.590	(-0.51)
CASH	-0.774	(-0.16)	-2.519	(-0.52)
LEVERAGE	3.840***	(2.64)	3.818***	(2.86)
MV/BV	-0.001	(-0.39)	-0.001	(-0.40)
ROA	0.324	(0.07)	0.913	(0.20)
GROWTH	1.340*	(1.86)	1.485**	(2.02)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.910	(1.44)	1.177*	(1.76)
2007.Year	-0.880	(-1.54)	-0.668	(-1.12)
2008.Year	0.969	(1.53)	1.360**	(2.14)
2009.Year	-0.190	(-0.31)	0.033	(0.05)
2010.Year	0.397	(0.68)	0.565	(0.95)
2011.Year	1.119*	(1.84)	1.387**	(2.17)
2012.Year	0.159	(0.24)	0.208	(0.31)
Constant			-3.256	(-1.64)
Observations	238		238	
Ll	-134.733		-133.117	
Aic	301.465		300.235	
Bic	357.022		359.263	
converged	1.000		1.000	
chi2	38.295		41.913	
P	0.001		0.000	
r2_p			0.176	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In these results examining Models 5 and 6 for BIST-30, the family effect on debt issuance reaches its lowest values compared to BIST-100 and BIST-50. These coefficients of family are again significant at 5% level (see Tables 40, 41, 42 and 43).

It can be claimed that the younger firm, the more debt issuance according to its significant coefficient. While leverage has positive sign for all tables, sales growth is only positive and significant at Table 40.

In the crisis, year 2008's effect is again positive and significant. But this time, its effects are similar with 2011. It can be explained by microeconomics theory. First, debt increased significantly in the crisis. Debt fuels debt if firms were not able to manage intelligently. Consequently, the debt wave that came after the crisis term came back three years later and became stronger.

All tables indicate relatively higher R-square and models are insignificant according to their Chi-Square values compared to results of BIST-100 and BIST-50.

Table 40. Debt Issuance (Yearly Basis) - BIST30 - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.894**	(-2.12)	-0.969**	(-2.31)
AGE	-0.027**	(-2.04)	-0.026**	(-1.99)
SIZE	0.073	(1.19)	-0.099	(-0.45)
COLLATERAL	-1.511	(-1.56)	-2.285	(-1.43)
CASH	-12.156	(-1.63)	-11.178	(-1.59)
LEVERAGE	5.803**	(2.35)	5.993**	(2.18)
MV/BV	-0.001	(-0.35)	-0.001	(-0.30)
ROA	6.386	(0.92)	6.176	(0.91)
GROWTH	2.291**	(2.18)	2.188**	(2.03)
Constant			2.755	(0.83)
Observations	165		165	
Ll	-93.015		-92.423	
Aic	204.030		204.846	
Bic	231.984		235.905	
converged	1.000		1.000	
chi2	18.140		15.718	
P	0.034		0.073	
r2_p			0.161	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 41. Debt Issuance (Yearly Basis) - BIST30 - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.727*	(-1.85)	-0.770*	(-1.93)
AGE	-0.026**	(-2.01)	-0.026**	(-1.97)
SIZE	0.075	(1.25)	-0.063	(-0.30)
COLLATERAL	-1.830*	(-1.75)	-2.457	(-1.50)
CASH	-10.791	(-1.42)	-10.036	(-1.37)
LEVERAGE	5.957**	(2.22)	6.076**	(2.10)
MV/BV	-0.001	(-0.45)	-0.001	(-0.42)
ROA	6.107	(0.85)	5.948	(0.84)
GROWTH	2.128**	(2.06)	2.019*	(1.94)
Constant			2.223	(0.70)
Observations	165		165	
Ll	-93.912		-93.505	
Aic	205.823		207.011	
Bic	233.777		238.070	
converged	1.000		1.000	
chi2	16.313		14.217	
P	0.061		0.115	
r2_p			0.151	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 42. Debt Issuance (Yearly Basis) - BIST30 - Year Fixed Effects (Base=2005) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-1.185***	(-2.71)	-1.194***	(-2.63)
AGE	-0.036**	(-2.53)	-0.035***	(-2.62)
SIZE	0.126**	(1.98)	0.106	(0.41)
COLLATERAL	-1.953*	(-1.78)	-2.042	(-1.13)
CASH	-12.571	(-1.39)	-12.479	(-1.41)
LEVERAGE	6.584**	(2.11)	6.615**	(2.00)
MV/BV	-0.001	(-0.50)	-0.001	(-0.49)
ROA	4.990	(0.62)	5.011	(0.62)
GROWTH	1.365	(1.37)	1.361	(1.36)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.549	(0.69)	0.538	(0.66)
2007.Year	-1.485**	(-1.98)	-1.503*	(-1.86)
2008.Year	2.345*	(1.93)	2.311**	(2.08)
2009.Year	-0.581	(-0.73)	-0.582	(-0.73)
2010.Year	-0.150	(-0.20)	-0.146	(-0.19)
2011.Year	0.835	(1.17)	0.830	(1.14)
2012.Year	-0.784	(-1.07)	-0.781	(-1.07)
Constant			0.323	(0.08)
Observations	165		165	
Ll	-80.640		-80.635	
Aic	193.280		195.269	
Bic	242.975		248.070	
converged	1.000		1.000	
chi2	31.180		30.337	
P	0.013		0.016	
r2_p			0.268	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 43. Debt Issuance (Yearly Basis) - BIST30 - Year Fixed Effects (Base=2005) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.925**	(-2.18)	-0.916**	(-2.13)
AGE	-0.035**	(-2.42)	-0.035**	(-2.56)
SIZE	0.129*	(1.94)	0.168	(0.72)
COLLATERAL	-2.222*	(-1.89)	-2.055	(-1.16)
CASH	-9.973	(-1.12)	-10.138	(-1.14)
LEVERAGE	6.660**	(2.00)	6.616*	(1.93)
MV/BV	-0.001	(-0.58)	-0.001	(-0.58)
ROA	3.763	(0.47)	3.725	(0.45)
GROWTH	1.273	(1.28)	1.285	(1.32)
2005b.Year	0.000	(.)	0.000	(.)
2006.Year	0.528	(0.64)	0.552	(0.66)
2007.Year	-1.405*	(-1.79)	-1.373*	(-1.68)
2008.Year	2.184*	(1.89)	2.251**	(2.04)
2009.Year	-0.626	(-0.77)	-0.623	(-0.77)
2010.Year	-0.164	(-0.21)	-0.169	(-0.22)
2011.Year	0.609	(0.80)	0.623	(0.80)
2012.Year	-0.868	(-1.13)	-0.874	(-1.14)
Constant			-0.615	(-0.18)
Observations	165		165	
Ll	-82.169		-82.148	
Aic	196.339		198.296	
Bic	246.034		251.098	
converged	1.000		1.000	
chi2	26.154		27.000	
P	0.052		0.041	
r2_p			0.254	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.4. Equity Issuance (Crisis Based)

In this section, determinants of Equity Issuance are analyzed based on 2008 global crisis. Period is divided in 3 sub-periods; Pre-Crisis for 2005-2007, Crisis for 2008-2009 and Post-Crisis for 2010-2012, covering the same period of our analyses.

To get a very general idea about crisis-based analyses; when we look at the constant, it can be seen that issuing equity willingness is very low in all three periods.

Equity issuance need is decreased by strong asset base in balance sheet in pre-crisis period, however, in crisis and post-crisis period it is not a strong determinant. Family has a negative effect in crisis time for issuing equity, that is family firms are not eager to issue equity. On the other hand, bigger size and increase in sales support equity issuance. For post-crisis older firms, in BIST-100, have more willingness to issue equity.

Table 44. Equity Issuance - BIST100 (Pre-Crisis) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-0.367	(-0.89)	-0.146	(-0.31)
AGE	-0.001	(-0.08)	-0.002	(-0.18)
SIZE	-0.006	(-0.12)	0.147	(0.96)
COLLATERAL	-3.810***	(-3.64)	-3.253***	(-2.94)
CASH	4.969	(1.44)	4.267	(1.25)
LEVERAGE	2.021*	(1.69)	1.835	(1.59)
MV/BV	-0.001	(-0.97)	-0.001	(-0.86)
ROA	-0.537	(-0.19)	0.138	(0.05)
GROWTH	0.453	(0.93)	0.483	(1.04)
Constant			-2.324	(-1.07)
Observations	132		132	
Ll	-78.030		-77.347	
aic	174.059		174.693	
bic	200.004		203.521	
converged	1.000		1.000	
chi2	23.781		18.215	
P	0.005		0.033	
r2_p			0.122	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 45. Equity Issuance - BIST100 (Crisis) – Family Firms

	(1) IE		(2) IE	
IE				
FAMILY	-1.143***	(-2.67)	-0.876**	(-1.99)
AGE	0.010	(0.69)	0.006	(0.39)
SIZE	0.047	(0.84)	0.297**	(2.24)
COLLATERAL	-1.704*	(-1.90)	-1.223	(-1.29)
CASH	-1.395	(-0.28)	-3.620	(-0.73)
LEVERAGE	0.657	(0.63)	0.906	(0.85)
MV/BV	-0.009	(-1.12)	-0.010	(-1.31)
ROA	-2.399	(-0.50)	-1.280	(-0.26)
GROWTH	0.163*	(1.74)	0.206**	(2.07)
Constant			-3.501**	(-2.02)
Observations	123		123	
Ll	-72.136		-70.181	
aic	162.272		160.363	
bic	187.582		188.485	
converged	1.000		1.000	
chi2	17.442		17.388	
P	0.042		0.043	
r2_p			0.165	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 46. Equity Issuance - BIST100 (Post-Crisis) – Family Firms

	(1) IE		(2) IE	
IE				
FAMILY	0.198	(0.52)	0.644	(1.52)
AGE	0.031***	(2.84)	0.022*	(1.93)
SIZE	-0.067	(-1.40)	0.434***	(3.52)
COLLATERAL	-1.674*	(-1.74)	-0.718	(-0.63)
CASH	1.636	(0.46)	-1.536	(-0.40)
LEVERAGE	-1.787	(-1.46)	-1.428	(-0.95)
MV/BV	-0.001	(-0.81)	-0.002	(-0.68)
ROA	-4.940	(-1.32)	-2.881	(-0.70)
GROWTH	-0.331	(-0.50)	-0.193	(-0.26)
Constant			-7.334***	(-4.23)
Observations	167		167	
Ll	-89.440		-80.577	
aic	196.879		181.154	
bic	224.941		212.334	
converged	1.000		1.000	
chi2	33.263		33.240	
P	0.000		0.000	
r2_p			0.188	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In BIST-50 among all analyses for the first time, Family is prone to issue equity in pre-crisis period that may be related with high profits or/and existence of high liquidity in market to sell the shares. Being more valuable, a firm increases the chance of issuing equity.

Collateral has a negative effect in the pre-crisis period and the opposite effect in the post-crisis period. This opposition can be explained by the special financial conditions of Turkey for BIST-50. That is, firms in BIST-50 dealt with crisis and strengthened their financial status after crisis. The analyses gives strong results for Leverage and ROA in post-crisis period that both decreases the chance of equity issuance by nature.

Table 47. Equity Issuance - BIST50 (Pre-Crisis) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	0.661	(1.08)	1.096*	(1.76)
AGE	0.005	(0.36)	-0.003	(-0.18)
SIZE	-0.054	(-0.86)	0.387*	(1.84)
COLLATERAL	-3.510**	(-2.38)	-1.687	(-1.11)
CASH	3.396	(0.46)	3.230	(0.43)
LEVERAGE	0.697	(0.36)	-0.066	(-0.03)
MV/BV	0.002	(0.42)	0.002	(0.38)
ROA	1.394	(0.18)	-0.471	(-0.06)
GROWTH	1.215	(1.32)	1.399	(1.51)
Constant			-6.398**	(-2.19)
Observations	78		78	
ll	-46.786		-44.386	
aic	111.572		108.771	
bic	132.783		132.338	
converged	1.000		1.000	
chi2	13.719		12.033	
p	0.133		0.211	
r2_p			0.159	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 48. Equity Issuance - BIST50 (Crisis) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-1.552**	(-2.10)	-1.221	(-1.57)
AGE	-0.001	(-0.04)	-0.008	(-0.41)
SIZE	0.093	(1.15)	0.421*	(1.69)
COLLATERAL	-0.230	(-0.16)	0.812	(0.44)
CASH	-2.394	(-0.30)	-5.420	(-0.61)
LEVERAGE	1.400	(0.70)	1.584	(0.72)
MV/BV	-0.008	(-1.00)	-0.009	(-1.06)
ROA	-6.556	(-0.87)	-6.248	(-0.82)
GROWTH	-0.670	(-0.55)	-0.637	(-0.57)
Constant			-4.693	(-1.30)
Observations	61		61	
ll	-34.268		-33.059	
aic	86.535		86.117	
bic	105.533		107.226	
converged	1.000		1.000	
chi2	16.723		16.536	
p	0.053		0.056	
r2_p			0.218	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 49. Equity Issuance - BIST50 (Post-Crisis) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	0.199	(0.35)	0.893	(1.04)
AGE	0.041**	(2.43)	0.018	(0.86)
SIZE	0.049	(0.71)	1.096***	(3.44)
COLLATERAL	1.553	(0.91)	4.773**	(2.03)
CASH	-3.710	(-0.28)	1.916	(0.14)
LEVERAGE	-7.639**	(-2.39)	-10.984***	(-3.11)
MV/BV	-0.004	(-1.11)	-0.004	(-1.08)
ROA	-13.950	(-0.99)	-28.519*	(-1.91)
GROWTH	-0.559	(-0.44)	0.403	(0.25)
Constant			-14.358***	(-3.24)
Observations	90		90	
ll	-42.045		-34.633	
aic	102.090		89.266	
bic	124.589		114.264	
converged	1.000		1.000	
chi2	22.450		25.246	
p	0.008		0.003	
r2_p			0.420	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

For BIST-30 analyses, size effect is similar to BIST-50 firms and increases the chance of issuing equity. Collateral has negative effect in pre-crisis period and opposite effect in post-crisis period. That is clear evidence that firms in BIST-30 are relatively stronger assets rather than other firms in BIST-100 and BIST-50.

The analyses gives strong results for Leverage and ROA in post-crisis period that both decreases the chance of equity issuance as its nature. After the crisis period, if a firm has more cash they issued equity, namely it was dependent to each other.

In general, it can be asserted that there is no significant implication on equity issuance in the pre-crisis and crisis period. Specifically, ROA lowers more than other variables for the post-crisis period.

Table 50. Equity Issuance - BIST30 (Pre-Crisis) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-0.745	(-0.87)	0.498	(0.42)
AGE	0.003	(0.16)	-0.021	(-0.97)
SIZE	-0.045	(-0.50)	1.301*	(1.77)
COLLATERAL	-4.829*	(-1.86)	1.416	(0.47)
CASH	4.676	(0.43)	-1.714	(-0.13)
LEVERAGE	1.779	(0.80)	-2.840	(-0.81)
MV/BV	0.001	(0.26)	0.000	(0.05)
ROA	1.916	(0.18)	-4.346	(-0.39)
GROWTH	1.637	(0.60)	1.515	(1.10)
Constant			-18.758*	(-1.82)
Observations	51		51	
ll	-28.158		-24.684	
aic	74.315		69.368	
bic	91.702		88.686	
converged	1.000		1.000	
chi2	8.454		11.601	
p	0.489		0.237	
r2_p			0.277	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 51. Equity Issuance - BIST30 (Crisis) – Family Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILY	-1.055	(-1.16)	-0.640	(-0.63)
AGE	-0.005	(-0.21)	-0.012	(-0.58)
SIZE	0.097	(1.04)	0.442	(1.25)
COLLATERAL	-0.358	(-0.22)	0.594	(0.32)
CASH	-3.249	(-0.35)	-5.252	(-0.52)
LEVERAGE	2.251	(0.96)	2.670	(0.90)
MV/BV	-0.008	(-0.94)	-0.008	(-0.96)
ROA	-5.158	(-0.60)	-5.793	(-0.66)
GROWTH	-2.060	(-1.00)	-1.776	(-1.10)
Constant			-5.078	(-0.97)
Observations	43		43	
ll	-23.416		-22.518	
aic	64.832		65.035	
bic	80.682		82.647	
converged	1.000		1.000	
chi2	14.964		12.730	
p	0.092		0.175	
r2_p			0.237	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 52. Equity Issuance - BIST30 (Post-Crisis) – Family Firms

	(1) IE		(2) IE	
IE				
FAMILY	0.127	(0.18)	1.308	(1.00)
AGE	0.054*	(1.92)	0.033	(1.24)
SIZE	0.054	(0.53)	1.175*	(1.89)
COLLATERAL	2.520	(1.11)	7.376*	(1.66)
CASH	25.345	(0.98)	46.611*	(1.92)
LEVERAGE	-7.444*	(-1.70)	-11.356**	(-2.20)
MV/BV	-0.002	(-0.67)	-0.000	(-0.16)
ROA	-40.751	(-1.39)	-74.806**	(-2.13)
GROWTH	-3.212	(-1.13)	-3.095	(-1.06)
Constant			-15.685*	(-1.82)
Observations	63		63	
ll	-25.793		-22.167	
aic	69.586		64.334	
bic	88.874		85.765	
converged	1.000		1.000	
chi2	20.662		15.763	
p	0.014		0.072	
r2_p			0.488	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

For all indices and mainly all periods, size is a positive effect for equity issuance. In BIST-100, family controlled by minority is only a negative effect in pre-crisis and crisis period for firms and decreases the chance of issuing equity. Older firms are more prone to issue equity.

Pre-crisis period, a strong asset base resulted in less equity issuance. The analyses gives strong results for Leverage and ROA in post-crisis period that both decreases the chance of equity issuance as its nature for BIST-50 and BIST-30. After crisis period, if a firm has more cash, they issued equity, which is similar to previous set of results in BIST-30. Growth is not a common reason for equity issuance in crisis period for BIST-100 firms.

Table 53. Equity Issuance - BIST100 (Pre-Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.929**	(-2.33)	-0.841**	(-2.07)
AGE	-0.005	(-0.42)	-0.006	(-0.49)
SIZE	0.035	(0.62)	0.156	(1.10)
COLLATERAL	-3.878***	(-3.66)	-3.345***	(-2.97)
CASH	4.295	(1.16)	3.618	(0.99)
LEVERAGE	2.189*	(1.70)	2.099*	(1.69)
MV/BV	-0.001	(-0.68)	-0.001	(-0.61)
ROA	-0.194	(-0.07)	0.305	(0.11)
GROWTH	0.425	(0.91)	0.444	(0.98)
Constant			-1.836	(-0.94)
Observations	132		132	
ll	-75.873		-75.407	
aic	169.747		170.815	
bic	195.692		199.643	
converged	1.000		1.000	
chi2	24.967		20.955	
p	0.003		0.013	
r2_p			0.144	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 54. Equity Issuance - BIST100 (Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-1.039**	(-2.44)	-0.950**	(-2.10)
AGE	0.014	(0.94)	0.008	(0.50)
SIZE	0.052	(0.86)	0.361***	(2.61)
COLLATERAL	-1.722*	(-1.81)	-1.132	(-1.14)
CASH	-0.297	(-0.06)	-3.869	(-0.72)
LEVERAGE	0.264	(0.28)	0.765	(0.76)
MV/BV	-0.011	(-1.33)	-0.013	(-1.55)
ROA	-3.624	(-0.75)	-1.496	(-0.30)
GROWTH	0.148	(1.56)	0.216**	(2.08)
Constant			-4.256**	(-2.39)
Observations	123		123	
ll	-72.879		-69.729	
aic	163.758		159.457	
bic	189.067		187.579	
converged	1.000		1.000	
chi2	13.249		16.762	
p	0.152		0.053	
r2_p			0.171	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 55. Equity Issuance - BIST100 (Post-Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.574	(-1.57)	-0.363	(-0.89)
AGE	0.029**	(2.50)	0.019*	(1.66)
SIZE	-0.035	(-0.69)	0.409***	(3.31)
COLLATERAL	-1.793*	(-1.89)	-1.050	(-0.94)
CASH	1.149	(0.32)	-2.167	(-0.54)
LEVERAGE	-1.761	(-1.49)	-1.372	(-0.95)
MV/BV	-0.001	(-0.66)	-0.002	(-0.86)
ROA	-4.053	(-1.10)	-1.601	(-0.41)
GROWTH	-0.233	(-0.33)	-0.084	(-0.10)
Constant			-6.406***	(-3.72)
Observations	167		167	
ll	-88.392		-81.357	
aic	194.783		182.713	
bic	222.845		213.893	
converged	1.000		1.000	
chi2	34.568		29.919	
p	0.000		0.000	
r2_p			0.180	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 56. Equity Issuance - BIST50 (Pre-Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.229	(-0.40)	-0.016	(-0.03)
AGE	-0.002	(-0.13)	-0.010	(-0.65)
SIZE	-0.015	(-0.23)	0.331	(1.49)
COLLATERAL	-3.428**	(-2.20)	-1.745	(-1.02)
CASH	2.677	(0.36)	1.392	(0.19)
LEVERAGE	1.657	(0.82)	1.085	(0.57)
MV/BV	0.001	(0.26)	0.001	(0.27)
ROA	1.613	(0.21)	0.447	(0.06)
GROWTH	1.005	(1.16)	1.082	(1.24)
Constant			-4.946*	(-1.66)
Observations	78		78	
ll	-47.329		-45.896	
aic	112.657		111.793	
bic	133.868		135.360	
converged	1.000		1.000	
chi2	11.256		9.842	
p	0.259		0.363	
r2_p			0.131	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 57. Equity Issuance - BIST50 (Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.935	(-1.52)	-0.516	(-0.77)
AGE	0.010	(0.52)	-0.001	(-0.05)
SIZE	0.059	(0.76)	0.438*	(1.74)
COLLATERAL	-0.285	(-0.18)	0.946	(0.51)
CASH	0.240	(0.03)	-3.042	(-0.34)
LEVERAGE	0.904	(0.45)	1.122	(0.49)
MV/BV	-0.010	(-1.14)	-0.009	(-1.12)
ROA	-7.434	(-0.88)	-7.366	(-0.88)
GROWTH	-0.834	(-0.72)	-0.801	(-0.77)
Constant			-5.406	(-1.50)
Observations	61		61	
ll	-35.933		-34.217	
aic	89.866		88.435	
bic	108.864		109.543	
converged	1.000		1.000	
chi2	9.813		14.220	
p	0.366		0.115	
r2_p			0.191	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 58. Equity Issuance - BIST50 (Post-Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-1.317*	(-1.89)	-0.856	(-1.27)
AGE	0.035*	(1.69)	0.010	(0.42)
SIZE	0.121	(1.63)	1.038***	(3.60)
COLLATERAL	-0.481	(-0.25)	2.492	(1.17)
CASH	-2.704	(-0.27)	-0.951	(-0.08)
LEVERAGE	-6.452*	(-1.91)	-9.292**	(-2.50)
MV/BV	-0.005	(-1.50)	-0.006	(-1.32)
ROA	-10.936	(-1.06)	-21.677*	(-1.85)
GROWTH	-0.855	(-0.55)	0.270	(0.16)
Constant			-12.541***	(-3.20)
Observations	90		90	
ll	-40.143		-34.595	
aic	98.286		89.190	
bic	120.784		114.188	
converged	1.000		1.000	
chi2	23.981		28.319	
p	0.004		0.001	
r2_p			0.420	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 59. Equity Issuance - BIST30 (Pre-Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-0.915	(-1.20)	-0.277	(-0.31)
AGE	0.004	(0.20)	-0.024	(-0.97)
SIZE	-0.035	(-0.39)	1.218*	(1.82)
COLLATERAL	-5.606**	(-2.43)	0.828	(0.25)
CASH	7.888	(0.70)	-1.192	(-0.09)
LEVERAGE	1.801	(0.78)	-1.621	(-0.61)
MV/BV	0.000	(0.02)	-0.000	(-0.06)
ROA	1.708	(0.16)	-3.593	(-0.33)
GROWTH	1.770	(0.70)	1.508	(1.01)
Constant			-17.365*	(-1.87)
Observations	51		51	
ll	-27.926		-24.737	
aic	73.851		69.475	
bic	91.238		88.793	
converged	1.000		1.000	
chi2	13.130		12.656	
p	0.157		0.179	
r2_p			0.276	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 60. Equity Issuance - BIST30 (Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	0.302	(0.35)	0.632	(0.69)
AGE	0.007	(0.40)	-0.005	(-0.23)
SIZE	0.028	(0.32)	0.462	(1.48)
COLLATERAL	0.633	(0.33)	1.526	(0.81)
CASH	-0.759	(-0.08)	-2.230	(-0.23)
LEVERAGE	1.094	(0.43)	1.794	(0.54)
MV/BV	-0.006	(-0.75)	-0.006	(-0.77)
ROA	-6.677	(-0.74)	-8.126	(-0.89)
GROWTH	-2.114	(-1.28)	-2.029	(-1.40)
Constant			-6.243	(-1.40)
Observations	43		43	
ll	-24.143		-22.507	
aic	66.286		65.014	
bic	82.137		82.626	
converged	1.000		1.000	
chi2	9.739		12.084	
p	0.372		0.209	
r2_p			0.237	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 61. Equity Issuance - BIST30 (Post-Crisis) - Family Controlled Firms

	(1)		(2)	
	IE		IE	
IE				
FAMILYBR	-1.228	(-1.10)	-0.710	(-0.70)
AGE	0.041	(1.33)	0.021	(0.74)
SIZE	0.143	(1.15)	0.947**	(2.47)
COLLATERAL	0.328	(0.14)	3.980	(1.27)
CASH	26.538	(1.13)	42.472*	(1.81)
LEVERAGE	-5.999	(-1.24)	-8.646*	(-1.86)
MV/BV	-0.003	(-1.02)	-0.001	(-0.54)
ROA	-39.581	(-1.42)	-64.453**	(-2.05)
GROWTH	-3.681	(-1.12)	-3.375	(-1.05)
Constant			-11.163**	(-2.18)
Observations	63		63	
ll	-25.180		-22.739	
aic	68.361		65.478	
bic	87.649		86.910	
converged	1.000		1.000	
chi2	19.278		20.915	
p	0.023		0.013	
r2_p			0.475	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.5. Debt Issuance (Crisis Based)

In this last section, determinants of Debt Issuance were analyzed based on the 2008 crisis.

Debt issuance differentiates from equity issuance mainly that only crisis period is low season for getting new debt. Family control has more negative effect on debt issuance compared to equity issuance. Having strong asset base in the balance sheet in pre-crisis period lowers the issuance of debt chance, however in the crisis and post-crisis periods there are no significant results.

As expected, high leverage results in high debt issuance or vice versa. Alternatively, high market value is not a strong determinant as in equity issuance. For post-crisis older firms, in BIST-100, have more willingness to issue debt, but not in crisis period. Due to all of these, leverage is the only significant factor in pre, post and crisis period as shown in Table 62, 63, and 64.

Table 62. Debt Issuance - BIST100 (Pre-Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-0.865**	(-2.01)	-0.637	(-1.42)
AGE	-0.021	(-1.22)	-0.020	(-1.11)
SIZE	0.100	(1.36)	0.292	(1.61)
COLLATERAL	-4.629***	(-3.75)	-3.797***	(-2.93)
CASH	5.854	(1.41)	5.001	(1.19)
LEVERAGE	6.246***	(3.64)	6.085***	(3.70)
MV/BV	0.019	(1.50)	0.015	(1.45)
ROA	-2.708	(-0.76)	-1.852	(-0.51)
GROWTH	0.836	(0.97)	0.877	(1.11)
Constant			-3.097	(-1.30)
Observations	136		136	
ll	-70.174		-69.127	
aic	158.347		158.255	
bic	184.561		187.381	
converged	1.000		1.000	
chi2	32.335		37.549	
p	0.000		0.000	
r2_p			0.255	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 63. Debt Issuance - BIST100 (Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-2.029***	(-3.38)	-1.729***	(-2.73)
AGE	-0.040*	(-1.92)	-0.042*	(-1.83)
SIZE	0.089	(1.01)	0.458*	(1.75)
COLLATERAL	-1.678	(-1.38)	0.150	(0.10)
CASH	1.770	(0.25)	-3.817	(-0.43)
LEVERAGE	14.640***	(3.12)	14.506***	(3.46)
MV/BV	-0.000	(-1.60)	-0.000	(-1.39)
ROA	-1.595	(-0.25)	2.782	(0.34)
GROWTH	0.011	(0.10)	0.102	(0.81)
Constant			-5.643*	(-1.84)
Observations	117		117	
ll	-41.717		-39.489	
aic	101.433		98.978	
bic	126.293		126.600	
converged	1.000		1.000	
chi2	34.584		37.064	
p	0.000		0.000	
r2_p			0.459	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 64. Debt Issuance - BIST100 (Post-Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-2.489***	(-2.58)	-2.224**	(-2.34)
AGE	0.069	(1.50)	0.082*	(1.69)
SIZE	-0.597***	(-2.68)	-1.164*	(-1.93)
COLLATERAL	-2.204	(-0.75)	-3.263	(-1.20)
CASH	31.885***	(2.90)	37.417***	(2.97)
LEVERAGE	62.208***	(4.53)	71.410***	(3.41)
MV/BV	-0.000*	(-1.71)	-0.000	(-0.91)
ROA	-8.942	(-1.13)	-10.721	(-1.38)
GROWTH	-1.226	(-0.60)	-1.843	(-0.75)
Constant			6.354	(1.19)
Observations	154		154	
ll	-17.330		-16.464	
aic	52.660		52.927	
bic	79.993		83.297	
converged	1.000		1.000	
chi2	45.152		37.812	
p	0.000		0.000	
r2_p			0.765	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The analyses conducted for BIST-50 and presented in Table 65, 66 and 67 are only significant for pre-crisis and post-crisis periods. Our model is not significant according to Chi-Square value, post-crisis period is not meaningful.

Family is again negative, namely, it is valid again reluctancy of issuing debt for BIST-50 firms for pre-crisis and crisis period. Age is only significant at crisis period. It can be explained that older firms could easily managed debt issuance rather than younger ones.

Leverage is significant for crisis period while M/B is significant for pre-crisis period. It is reasonable and compatible with financial theory. Firms forced debt channels when they were in crisis.

Table 65. Debt Issuance - BIST50 (Pre-Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-1.306**	(-2.11)	-1.328**	(-2.09)
AGE	-0.038	(-1.36)	-0.041	(-1.41)
SIZE	0.257*	(1.83)	0.408	(1.35)
COLLATERAL	-5.568**	(-2.56)	-4.743**	(-2.05)
CASH	-11.165	(-1.29)	-12.532	(-1.41)
LEVERAGE	3.818	(1.05)	3.967	(1.10)
MV/BV	0.010***	(2.77)	0.009***	(2.66)
ROA	7.268	(0.83)	7.705	(0.83)
GROWTH	2.044	(1.37)	1.850	(1.19)
Constant			-2.284	(-0.57)
Observations	80		80	
ll	-34.702		-34.530	
aic	87.405		89.060	
bic	108.843		112.880	
converged	1.000		1.000	
chi2	58.597		50.703	
p	0.000		0.000	
r2_p			0.341	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 66. Debt Issuance - BIST50 (Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-4.720***	(-3.20)	-4.406***	(-3.40)
AGE	-0.147**	(-2.36)	-0.137**	(-2.16)
SIZE	0.313	(1.41)	0.499	(1.09)
COLLATERAL	-6.091	(-1.39)	-4.101	(-0.81)
CASH	28.648	(1.31)	25.146	(1.05)
LEVERAGE	43.502***	(3.60)	40.866***	(3.60)
MV/BV	0.013	(1.51)	0.012	(1.35)
ROA	-30.907	(-1.42)	-29.056	(-1.27)
GROWTH	3.355*	(1.73)	3.855*	(1.74)
Constant			-3.313	(-0.51)
Observations	62		62	
ll	-13.006		-12.878	
aic	44.011		45.756	
bic	63.156		67.028	
converged	1.000		1.000	
chi2	51.876		42.112	
p	0.000		0.000	
r2_p			0.625	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 67. Debt Issuance - BIST50 (Post-Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-660.303	(.)	-389.949	(.)
AGE	-16.350	(.)	-8.168	(.)
SIZE	-22.280	(.)	30.956	(.)
COLLATERAL	-1238.789	(.)	-502.200	(.)
CASH	-9869.275	(.)	-5108.104	(.)
LEVERAGE	7955.242	(.)	4142.922	(.)
MV/BV	292.641	(.)	5.761	(.)
ROA	7385.835	(.)	6194.934	(.)
GROWTH	191.404	(.)	-118.131	(.)
Constant			-554.769	(.)
Observations	85		85	
ll	0.000		0.000	
aic	0.000		0.000	
bic	0.000		0.000	
converged	1.000		1.000	
chi2	.		.	
p	.		.	
r2_p			1.000	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Examination of our models regarding BIST-30 family companies' debt issues showed that only pre-crisis period produced meaningful results. (Table 68, 69 and 70) Crisis and post-crisis analyses do not have significant Chi-Square values and therefore ignored. At pre-crisis period, collateral has negative impact at 1% significance; cash has negative and significant effect while MV/BV has positive relation at 5% significance level.

There is no significant effect for the pre-crisis period according to the results indicating insignificant t-values for model. However, results numbered 1 in Table 68 indicate and confirm previous results for BIST-30 for pre-crisis period. While Collateral and Cash have a negative impact on Debt issuance, Size and M/B are again positive effects on issuing debt for pre-crisis in general.

Table 68. Debt Issuance - BIST30 (Pre-Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-1.297	(-1.22)	-1.284	(-1.18)
AGE	-0.020	(-0.84)	-0.018	(-0.66)
SIZE	0.225**	(2.17)	0.070	(0.07)
COLLATERAL	-5.412***	(-2.64)	-6.117	(-1.33)
CASH	-31.444**	(-2.22)	-29.809	(-1.63)
LEVERAGE	7.848	(1.38)	7.727	(1.36)
MV/BV	0.010**	(2.15)	0.011*	(1.91)
ROA	21.880	(1.40)	21.598	(1.41)
GROWTH	1.347	(0.53)	1.812	(0.45)
Constant			2.264	(0.15)
Observations	53		53	
ll	-15.357		-15.336	
aic	48.714		50.672	
bic	66.447		70.375	
converged	1.000		1.000	
chi2	74.099		50.614	
p	0.000		0.000	
r2_p			0.481	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 69. Debt Issuance - BIST30 (Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	-88.136	(.)	-173.560	(.)
AGE	-0.307	(.)	0.604	(.)
SIZE	-0.162	(.)	5.004	(.)
COLLATERAL	102.635	(.)	391.754	(.)
CASH	710.119	(.)	1292.005	(.)
LEVERAGE	532.052	(.)	1227.115	(.)
MV/BV	-0.313	(.)	-0.910	(.)
ROA	-742.130	(.)	-1419.070	(.)
GROWTH	-29.401	(.)	-76.421	(.)
Constant			-188.455	(.)
Observations	43		43	
ll	0.000		0.000	
aic	0.000		0.000	
bic	0.000		0.000	
converged	1.000		1.000	
chi2	.		.	
p	.		.	
r2_p			1.000	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 70. Debt Issuance - BIST30 (Post-Crisis) - Family Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILY	0.000	(.)	0.000	(.)
AGE	33.061	(.)	0.443	(.)
SIZE	-212.626	(.)	-4.284	(.)
COLLATERAL	1808.096	(.)	122.590	(.)
CASH	-40078.856	(.)	-1097.489	(.)
LEVERAGE	4535.893	(.)	392.337	(.)
MV/BV	453.251	(.)	24.151	(.)
ROA	27131.273	(.)	736.376	(.)
GROWTH	2440.075	(.)	51.806	(.)
Constant			-78.885	(.)
Observations	21		21	
ll	0.000		0.000	
aic	0.000		0.000	
bic	0.000		0.000	
converged	1.000		1.000	
chi2	.		.	
p	.		.	
r2_p			1.000	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

From this point, debt issuance was measured with its alternative meanings, yearly basis. According to Table 71, 72 and 73, Collateral is significant for pre-crisis period for BIST-100, but Leverage is significant at a 5% level for pre-crisis and crisis periods. Family does not affect debt issuance for BIST-100.

Table 71. Debt Issuance (Yearly Basis) BIST100 (Pre-Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.429	(-0.98)	-0.354	(-0.76)
AGE	-0.007	(-0.58)	-0.007	(-0.58)
SIZE	-0.040	(-0.65)	0.030	(0.19)
COLLATERAL	-3.852***	(-3.56)	-3.548***	(-2.94)
CASH	5.844*	(1.65)	5.441	(1.50)
LEVERAGE	5.624***	(3.68)	5.619***	(3.75)
MV/BV	-0.000	(-0.68)	-0.000	(-0.65)
ROA	-1.621	(-0.56)	-1.194	(-0.39)
GROWTH	1.256	(1.61)	1.271*	(1.69)
Constant			-1.119	(-0.52)
Observations	135		135	
ll	-74.375		-74.223	
aic	166.750		168.446	
bic	192.897		197.499	
converged	1.000		1.000	
chi2	29.092		28.042	
p	0.001		0.001	
r2_p			0.195	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 72. Debt Issuance (Yearly Basis) BIST100 (Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.754*	(-1.87)	-0.718*	(-1.73)
AGE	-0.004	(-0.35)	-0.005	(-0.39)
SIZE	0.001	(0.03)	0.036	(0.30)
COLLATERAL	1.051	(1.17)	1.155	(1.17)
CASH	5.827	(1.15)	5.481	(1.03)
LEVERAGE	2.041**	(2.05)	2.097**	(2.06)
MV/BV	-0.000	(-1.17)	-0.000	(-1.22)
ROA	-6.627	(-1.42)	-6.418	(-1.34)
GROWTH	-0.052	(-0.70)	-0.047	(-0.71)
Constant			-0.517	(-0.31)
Observations	126		126	
ll	-80.447		-80.397	
aic	178.894		180.794	
bic	204.420		209.157	
converged	1.000		1.000	
chi2	12.892		13.317	
p	0.168		0.149	
r2_p			0.079	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 73. Debt Issuance (Yearly Basis) BIST100 (Post-Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.523	(-1.53)	-0.495	(-1.41)
AGE	-0.009	(-0.75)	-0.009	(-0.79)
SIZE	0.068	(1.16)	0.112	(1.04)
COLLATERAL	-0.388	(-0.49)	-0.308	(-0.37)
CASH	-2.373	(-0.86)	-2.775	(-0.98)
LEVERAGE	1.150	(1.15)	1.211	(1.22)
MV/BV	-0.004	(-1.38)	-0.004	(-1.41)
ROA	-0.578	(-0.16)	-0.220	(-0.06)
GROWTH	1.089*	(1.92)	1.113*	(1.96)
Constant			-0.674	(-0.45)
Observations	172		172	
ll	-105.488		-105.386	
aic	228.975		230.773	
bic	257.303		262.248	
converged	1.000		1.000	
chi2	15.876		9.004	
p	0.070		0.437	
r2_p			0.076	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

BIST-50 and BIST 30 generally differentiate from BIST-100 in terms of their dynamics. Family effect is observed only crisis term and is negative (Table 75). Collateral is again negative and significant for pre-crisis (Table 74). In the crisis period (Table 75), M/B is positive but not post-crisis period (Table 76). Leverage's positive effect on debt issuance is again proved for BIST-50 for post-crisis period.

Table 74. Debt Issuance (Yearly Basis) BIST50 (Pre-Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.622	(-0.95)	-0.578	(-0.91)
AGE	-0.015	(-0.85)	-0.007	(-0.35)
SIZE	-0.021	(-0.24)	-0.396	(-1.31)
COLLATERAL	-5.754***	(-2.95)	-8.135***	(-3.50)
CASH	-13.853	(-1.05)	-11.375	(-0.91)
LEVERAGE	4.925*	(1.95)	4.520*	(1.87)
MV/BV	0.002	(0.48)	0.002	(0.55)
ROA	19.327	(1.27)	20.089	(1.43)
GROWTH	3.437**	(2.41)	3.964**	(2.26)
Constant			5.521	(1.29)
Observations	78		78	
ll	-37.459		-36.705	
aic	92.917		93.411	
bic	114.128		116.978	
converged	1.000		1.000	
chi2	34.501		31.318	
p	0.000		0.000	
r2_p			0.321	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 75. Debt Issuance (Yearly Basis) BIST50 (Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-1.120**	(-2.06)	-1.016*	(-1.84)
AGE	0.004	(0.21)	0.003	(0.15)
SIZE	-0.038	(-0.42)	0.098	(0.49)
COLLATERAL	1.829	(1.13)	2.392	(1.12)
CASH	-4.884	(-0.57)	-6.273	(-0.63)
LEVERAGE	1.391	(0.89)	1.759	(1.08)
MV/BV	0.023**	(2.45)	0.022**	(2.43)
ROA	5.251	(0.68)	5.797	(0.69)
GROWTH	1.949	(1.47)	2.205	(1.56)
Constant			-2.157	(-0.70)
Observations	66		66	
ll	-39.159		-38.862	
aic	96.318		97.724	
bic	116.025		119.621	
converged	1.000		1.000	
chi2	17.847		17.332	
p	0.037		0.044	
r2_p			0.136	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 76. Debt Issuance (Yearly Basis) BIST50 (Post-Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.253	(-0.42)	-0.307	(-0.49)
AGE	-0.019	(-1.02)	-0.018	(-0.95)
SIZE	0.039	(0.48)	-0.101	(-0.46)
COLLATERAL	-1.143	(-0.68)	-1.535	(-0.80)
CASH	2.121	(0.15)	3.556	(0.23)
LEVERAGE	5.655**	(2.20)	5.961**	(2.08)
MV/BV	-0.004	(-1.02)	-0.003	(-0.92)
ROA	-4.815	(-0.37)	-5.764	(-0.40)
GROWTH	1.907	(1.33)	1.601	(1.09)
Constant			2.183	(0.65)
Observations	94		94	
ll	-50.688		-50.434	
aic	119.376		120.868	
bic	142.266		146.301	
converged	1.000		1.000	
chi2	17.702		12.173	
p	0.039		0.204	
r2_p			0.154	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

For BIST-30, Family has only a negative effect on debt issuance for crisis period (Table 78). While Cash negatively affects debt issuance, ROA and Growth have a positive effect for pre-crisis period. (Table 77, Table 78). For post-crisis period, besides leverage and growth, age lowers debt issuance for post-crisis period for BIST-30 firms.

Table 77. Debt Issuance (Yearly Basis) BIST30 (Pre-Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-0.709	(-0.58)	-0.722	(-0.56)
AGE	-0.037	(-1.25)	-0.039	(-0.80)
SIZE	0.109	(0.72)	0.180	(0.17)
COLLATERAL	-9.546**	(-2.16)	-9.165	(-1.47)
CASH	-152.807***	(-3.54)	-154.725***	(-3.19)
LEVERAGE	5.428	(1.62)	5.430	(1.61)
MV/BV	-0.000	(-0.02)	-0.000	(-0.04)
ROA	123.089***	(3.59)	123.822***	(3.59)
GROWTH	6.335***	(2.96)	6.234**	(2.56)
Constant			-0.968	(-0.07)
Observations	53		53	
ll	-14.779		-14.775	
aic	47.557		49.550	
bic	65.290		69.253	
converged	1.000		1.000	
chi2	19.388		17.533	
p	0.022		0.041	
r2_p			0.598	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 78. Debt Issuance (Yearly Basis) BIST30 (Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-1.758**	(-2.51)	-2.347***	(-2.80)
AGE	-0.004	(-0.17)	-0.006	(-0.28)
SIZE	0.054	(0.52)	-0.479	(-1.58)
COLLATERAL	1.004	(0.45)	-1.562	(-0.59)
CASH	2.168	(0.18)	7.162	(0.82)
LEVERAGE	1.267	(0.70)	-0.148	(-0.05)
MV/BV	0.018**	(2.13)	0.019**	(2.28)
ROA	-0.589	(-0.06)	-2.767	(-0.38)
GROWTH	1.009	(0.71)	-0.439	(-0.26)
Constant			9.358*	(1.81)
Observations	47		47	
ll	-24.641		-22.627	
aic	67.282		65.253	
bic	83.933		83.755	
converged	1.000		1.000	
chi2	20.234		18.446	
p	0.017		0.030	
r2_p			0.231	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 79. Debt Issuance (Yearly Basis) BIST30 (Post-Crisis) - Family Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILY	-1.891	(-1.62)	-1.873*	(-1.66)
AGE	-0.162***	(-3.33)	-0.160***	(-3.36)
SIZE	0.332**	(2.32)	0.236	(0.33)
COLLATERAL	-6.628*	(-1.83)	-7.015	(-1.31)
CASH	-33.538	(-1.23)	-31.673	(-1.06)
LEVERAGE	31.132***	(3.32)	31.124***	(3.37)
MV/BV	-0.002	(-0.52)	-0.002	(-0.46)
ROA	-0.978	(-0.04)	-1.530	(-0.06)
GROWTH	4.435**	(2.37)	4.268**	(2.17)
Constant			1.424	(0.13)
Observations	65		65	
ll	-23.100		-23.085	
aic	64.200		66.169	
bic	83.770		87.913	
converged	1.000		1.000	
chi2	21.039		18.020	
p	0.012		0.035	
r2_p			0.453	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Family controlled firms' debt issues (FamilyBR) at pre-crisis periods negatively associated with being family controlled and collateral at 1% confidence level while leverage positively effecting debt issues with significance level of 1%. Only leverage is effective for crisis period. (Table 81) Leverage is always correlated positively with debt issuance according to the tables. The coefficients of collateral are larger than previous results and are positive again. Size is only significant at crisis and post-crisis periods while Cash positively affects debt issuance for the post-crisis period.

Table 80. Debt Issuance - BIST100 (Pre-Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-1.558***	(-3.18)	-1.446***	(-2.90)
AGE	-0.025	(-1.61)	-0.022	(-1.40)
SIZE	0.152**	(2.23)	0.344*	(1.88)
COLLATERAL	-5.114***	(-3.94)	-4.090***	(-2.92)
CASH	5.449	(1.33)	4.303	(1.04)
LEVERAGE	6.960***	(3.71)	6.761***	(3.85)
MV/BV	0.014	(1.47)	0.011	(1.45)
ROA	-2.179	(-0.65)	-1.491	(-0.44)
GROWTH	0.808	(0.91)	0.891	(1.01)
Constant			-3.116	(-1.34)
Observations	136		136	
ll	-66.377		-65.309	
aic	150.755		150.618	
bic	176.969		179.744	
converged	1.000		1.000	
chi2	36.487		39.074	
p	0.000		0.000	
r2_p			0.296	

t statistics in parentheses
The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 81. Debt Issuance - BIST100 (Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-1.176*	(-1.84)	-0.961	(-1.44)
AGE	-0.029*	(-1.78)	-0.033*	(-1.89)
SIZE	0.054	(0.79)	0.506**	(2.28)
COLLATERAL	-1.833	(-1.55)	0.321	(0.23)
CASH	4.047	(0.73)	-2.567	(-0.37)
LEVERAGE	13.117***	(2.92)	13.406***	(3.24)
MV/BV	-0.000*	(-1.84)	-0.000	(-1.25)
ROA	-3.358	(-0.66)	1.611	(0.26)
GROWTH	-0.055	(-0.56)	0.065	(0.56)
Constant			-6.823**	(-2.44)
Observations	117		117	
ll	-45.909		-42.098	
aic	109.817		104.196	
bic	134.677		131.818	
converged	1.000		1.000	
chi2	22.537		35.356	
p	0.007		0.000	
r2_p			0.423	

t statistics in parentheses
The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 82. Debt Issuance - BIST100 (Post-Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-2.079**	(-2.04)	-2.779**	(-2.52)
AGE	0.070**	(2.04)	0.078*	(1.84)
SIZE	-0.559***	(-2.96)	-1.376**	(-2.37)
COLLATERAL	-2.120	(-0.80)	-3.455	(-1.39)
CASH	29.371***	(3.38)	38.882***	(3.25)
LEVERAGE	56.766***	(4.41)	72.740***	(3.24)
MV/BV	-0.000**	(-2.03)	-0.000	(-0.87)
ROA	-9.235	(-1.35)	-13.096*	(-1.68)
GROWTH	-0.207	(-0.10)	-1.159	(-0.45)
Constant			10.218*	(1.72)
Observations	154		154	
ll	-18.167		-15.666	
aic	54.334		51.332	
bic	81.667		81.701	
converged	1.000		1.000	
chi2	41.986		31.563	
p	0.000		0.000	
r2_p			0.776	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The post-crisis period is not significant according to its invalid Chi-Square value (Table 85). Family effects are not only again negative, but also significant for BIST-50 for each period (Table 84 and 85). While Leverage positively associated with debt issuance and is significant at a 1% level for crisis period, Collateral is negative and significant at a 1% level again.

Table 83. Debt Issuance – BIST50 (Pre-Crisis) - Family Controlled Firms

	(1) ID		(2) ID	
ID				
FAMILYBR	-1.619**	(-2.07)	-1.596**	(-2.08)
AGE	-0.030	(-1.32)	-0.031	(-1.34)
SIZE	0.251**	(2.23)	0.332	(0.95)
COLLATERAL	-6.849***	(-3.60)	-6.339***	(-2.60)
CASH	-9.522	(-1.13)	-10.189	(-1.16)
LEVERAGE	3.912	(1.18)	3.940	(1.20)
MV/BV	0.008*	(1.79)	0.007*	(1.71)
ROA	10.517	(1.21)	10.576	(1.19)
GROWTH	1.717	(1.25)	1.625	(1.13)
Constant			-1.254	(-0.26)
Observations	80		80	
ll	-33.689		-33.641	
aic	85.378		87.283	
bic	106.816		111.103	
converged	1.000		1.000	
chi2	60.093		61.543	
p	0.000		0.000	
r2_p			0.358	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 84. Debt Issuance – BIST50 (Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-3.283**	(-2.43)	-3.069**	(-2.52)
AGE	-0.068**	(-2.10)	-0.064*	(-1.85)
SIZE	0.101	(0.52)	0.193	(0.50)
COLLATERAL	-5.519**	(-2.19)	-4.332	(-1.17)
CASH	0.722	(0.04)	-0.235	(-0.01)
LEVERAGE	33.525***	(3.75)	32.617***	(3.53)
MV/BV	0.008	(0.80)	0.007	(0.80)
ROA	2.731	(0.15)	2.758	(0.15)
GROWTH	-0.725	(-0.28)	-0.318	(-0.10)
Constant			-1.815	(-0.31)
Observations	62		62	
ll	-15.592		-15.560	
aic	49.184		51.119	
bic	68.328		72.390	
converged	1.000		1.000	
chi2	36.484		37.980	
p	0.000		0.000	
r2_p			0.546	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 85. Debt Issuance – BIST50 (Post-Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-850.661	(.)	-1005.617	(.)
AGE	-19.544	(.)	-19.576	(.)
SIZE	-10.091	(.)	88.636	(.)
COLLATERAL	-2328.174	(.)	-1123.701	(.)
CASH	-7489.833	(.)	-21631.200	(.)
LEVERAGE	10587.291	(.)	20471.825	(.)
MV/BV	-1.080	(.)	111.206	(.)
ROA	11649.427	(.)	24173.060	(.)
GROWTH	-190.295	(.)	-438.282	(.)
Constant			-3449.762	(.)
Observations	85		85	
ll	0.000		0.000	
aic	0.000		0.000	
bic	0.000		0.000	
converged	1.000		1.000	
chi2	.		.	
p	.		.	
r2_p			1.000	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

First of all, according to non-valid Chi-Square values, models presented in Tables 87 and 88 for crisis and post-crisis period are not significant. In the Table 86, it can be observed that cash and collateral negatively effects debt issuance with its greatest impact, namely higher coefficients. In addition to this, ROA positively effects debt issuance. The highest coefficients can be explained by BIST-30's firms' strong reaction to financing decisions.

Table 86. Debt Issuance – BIST30 (Pre-Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-15.966*	(-1.83)	-199.840	(-1.28)
AGE	0.038*	(1.74)	0.995	(1.22)
SIZE	1.984*	(1.71)	2.033	(1.52)
COLLATERAL	-34.158**	(-2.34)	-591.851	(-1.27)
CASH	-117.244**	(-2.24)	-1322.772	(-1.28)
LEVERAGE	-16.506	(-1.49)	-264.448	(-1.28)
MV/BV	-0.068	(-1.46)	-1.060	(-1.26)
ROA	93.196***	(2.94)	1203.776	(1.27)
GROWTH	-3.549	(-0.84)	17.546	(1.53)
Constant			358.660	(1.25)
Observations	53		53	
ll	-8.645		-5.565	
aic	35.290		31.130	
bic	53.022		50.833	
converged	1.000		1.000	
chi2	64.075		28.881	
p	0.000		0.001	
r2_p			0.812	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 87. Debt Issuance – BIST30 (Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	-268.969	(.)	-5.320	(.)
AGE	-3.384	(.)	0.456	(.)
SIZE	-46.441	(.)	30.560	(.)
COLLATERAL	-282.249	(.)	320.172	(.)
CASH	2249.463	(.)	-141.231	(.)
LEVERAGE	6817.490	(.)	1292.637	(.)
MV/BV	91.217	(.)	-0.695	(.)
ROA	-2221.737	(.)	-186.192	(.)
GROWTH	293.594	(.)	262.316	(.)
Constant			-711.306	(.)
Observations	43		43	
ll	0.000		0.000	
aic	0.000		0.000	
bic	0.000		0.000	
converged	1.000		1.000	
chi2	.		.	
p	.		.	
r2_p			1.000	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 88. Debt Issuance – BIST30 (Post-Crisis) - Family Controlled Firms

	(1)		(2)	
	ID		ID	
ID				
FAMILYBR	136.557	(.)	0.455	(.)
AGE	17.301	(.)	4.208	(.)
SIZE	-124.786	(.)	-64.609	(.)
COLLATERAL	727.888	(.)	-60.283	(.)
CASH	-4338.615	(.)	-91.680	(.)
LEVERAGE	4322.427	(.)	1361.316	(.)
MV/BV	-0.793	(.)	0.021	(.)
ROA	7903.856	(.)	2009.152	(.)
GROWTH	103.303	(.)	18.114	(.)
Constant			510.184	(.)
Observations	59		59	
ll	0.000		0.000	
aic	0.000		0.000	
bic	0.000		0.000	
converged	1.000		1.000	
chi2	.		.	
p	.		.	
r2_p			1.000	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In the following tables, family controlled firms and debt on yearly basis were used. Except the pre-crisis period, there are not significant results in the Tables 90 and 91 for BIST-100. Table 89 shows again positive Leverage effect and negative Collateral for BIST-100 for pre-crisis period. There is no family controlling effect at 5% significance level according to these tables.

Table 89. Debt Issuance (Yearly Basis) - BIST100 (Pre-Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.817*	(-1.85)	-0.782*	(-1.71)
AGE	-0.011	(-0.88)	-0.011	(-0.87)
SIZE	-0.008	(-0.13)	0.059	(0.39)
COLLATERAL	-3.968***	(-3.53)	-3.625***	(-2.78)
CASH	5.340	(1.43)	4.923	(1.29)
LEVERAGE	5.791***	(3.56)	5.818***	(3.72)
MV/BV	-0.000	(-0.52)	-0.000	(-0.52)
ROA	-1.209	(-0.42)	-0.808	(-0.27)
GROWTH	1.302	(1.63)	1.329*	(1.72)
Constant			-1.102	(-0.53)
Observations	135		135	
ll	-73.088		-72.935	
aic	164.176		165.870	
bic	190.324		194.923	
converged	1.000		1.000	
chi2	28.037		28.278	
p	0.001		0.001	
r2_p			0.209	

t statistics in parentheses
The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 90. Debt Issuance (Yearly Basis) - BIST100 (Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.650*	(-1.66)	-0.620	(-1.57)
AGE	-0.003	(-0.23)	-0.004	(-0.32)
SIZE	0.006	(0.11)	0.077	(0.61)
COLLATERAL	1.085	(1.25)	1.285	(1.36)
CASH	6.509	(1.34)	5.690	(1.09)
LEVERAGE	1.713*	(1.75)	1.856*	(1.85)
MV/BV	-0.000	(-1.44)	-0.000	(-1.41)
ROA	-7.362	(-1.64)	-6.826	(-1.46)
GROWTH	-0.064	(-0.74)	-0.050	(-0.69)
Constant			-1.039	(-0.61)
Observations	126		126	
ll	-80.940		-80.724	
aic	179.880		181.447	
bic	205.406		209.810	
converged	1.000		1.000	
chi2	13.583		14.151	
p	0.138		0.117	
r2_p			0.076	

t statistics in parentheses
The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 91. Debt Issuance (Yearly Basis) - BIST100 (Post-Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.076	(-0.22)	-0.048	(-0.14)
AGE	-0.008	(-0.68)	-0.009	(-0.76)
SIZE	0.056	(0.96)	0.124	(1.13)
COLLATERAL	-0.351	(-0.45)	-0.229	(-0.28)
CASH	-1.909	(-0.71)	-2.545	(-0.91)
LEVERAGE	0.999	(1.02)	1.099	(1.14)
MV/BV	-0.003	(-1.22)	-0.004	(-1.28)
ROA	-0.997	(-0.28)	-0.440	(-0.12)
GROWTH	0.985*	(1.80)	1.031*	(1.84)
Constant			-1.039	(-0.70)
Observations	172		172	
ll	-106.680		-106.432	
aic	231.359		232.864	
bic	259.687		264.339	
converged	1.000		1.000	
chi2	16.094		8.401	
p	0.065		0.494	
r2_p			0.067	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

BIST-50 firms analysis produce different results than BIST-100 firms. In the Table 92, 93 and 94, there is no family controlling effect for BIST-50 firms for each period. Leverage has positive effect on debt issuance for BIST for the pre-crisis and post-crisis periods. M/B is only significant at a 5% level in Table 93. Collateral has a larger and negative impact on debt issuance according to Table 92 for the pre-crisis period.

Table 92. Debt Issuance (Yearly Basis) – BIST50 (Pre-Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-1.146	(-1.48)	-1.172	(-1.55)
AGE	-0.018	(-1.01)	-0.009	(-0.50)
SIZE	-0.003	(-0.04)	-0.394	(-1.28)
COLLATERAL	-7.263***	(-2.81)	-9.748***	(-3.13)
CASH	-16.413	(-1.07)	-13.758	(-0.95)
LEVERAGE	5.481**	(2.32)	5.127**	(2.25)
MV/BV	0.001	(0.24)	0.001	(0.30)
ROA	25.517	(1.39)	26.154	(1.53)
GROWTH	3.712***	(2.67)	4.349**	(2.43)
Constant			5.811	(1.32)
Observations	78		78	
ll	-36.588		-35.744	
aic	91.175		91.488	
bic	112.386		115.055	
converged	1.000		1.000	
chi2	30.344		26.683	
p	0.000		0.002	
r2_p			0.339	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 93. Debt Issuance (Yearly Basis) – BIST50 (Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-1.130*	(-1.92)	-1.021*	(-1.73)
AGE	0.009	(0.40)	0.007	(0.32)
SIZE	-0.033	(-0.35)	0.096	(0.49)
COLLATERAL	1.560	(0.94)	2.146	(1.00)
CASH	-3.901	(-0.45)	-5.225	(-0.52)
LEVERAGE	1.292	(0.82)	1.662	(1.04)
MV/BV	0.020**	(2.07)	0.020**	(2.06)
ROA	5.404	(0.67)	5.791	(0.66)
GROWTH	1.771	(1.38)	2.021	(1.48)
Constant			-2.075	(-0.69)
Observations	66		66	
ll	-39.154		-38.882	
aic	96.309		97.765	
bic	116.016		119.661	
converged	1.000		1.000	
chi2	15.303		15.488	
p	0.083		0.078	
r2_p			0.136	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 94. Debt Issuance (Yearly Basis) – BIST50 (Post-Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	0.679	(1.06)	0.634	(0.97)
AGE	-0.015	(-0.94)	-0.015	(-0.87)
SIZE	-0.007	(-0.09)	-0.082	(-0.36)
COLLATERAL	-0.222	(-0.12)	-0.448	(-0.23)
CASH	4.121	(0.29)	5.160	(0.35)
LEVERAGE	5.614**	(2.18)	5.811**	(2.07)
MV/BV	-0.002	(-0.62)	-0.002	(-0.56)
ROA	-7.509	(-0.56)	-8.212	(-0.59)
GROWTH	1.831	(1.44)	1.649	(1.21)
Constant			1.185	(0.36)
Observations	94		94	
ll	-50.011		-49.940	
aic	118.022		119.880	
bic	140.911		145.313	
converged	1.000		1.000	
chi2	17.015		13.457	
p	0.048		0.143	
r2_p			0.162	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In the following tables for BIST-30 (Table 95, 96 and 97), it is clear that there are higher coefficients again like Table 86. Nevertheless, there is no significant family control effect for all periods except the crisis period at 5% significance level. In Table 95, Collateral and Cash negatively effects debt issuance but Growth and ROA has positive effects on debt issuance for pre-crisis period. Leverage is just significant at post-crisis term at 1% level. However, in addition to all of these, Age is again negatively effects debt issuance.

Table 95. Debt Issuance (Yearly Basis) – BIST30 (Pre-Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-1.625	(-1.33)	-1.625	(-1.33)
AGE	-0.051	(-1.30)	-0.051	(-0.93)
SIZE	0.182	(0.90)	0.213	(0.21)
COLLATERAL	-11.366***	(-2.89)	-11.217**	(-2.29)
CASH	-165.102***	(-3.41)	-166.057***	(-2.99)
LEVERAGE	5.647*	(1.74)	5.632*	(1.72)
MV/BV	-0.001	(-0.19)	-0.001	(-0.20)
ROA	136.403***	(3.64)	136.831***	(3.50)
GROWTH	7.129***	(3.14)	7.077***	(2.92)
Constant			-0.426	(-0.03)
Observations	53		53	
ll	-14.119		-14.119	
aic	46.239		48.237	
bic	63.971		67.940	
converged	1.000		1.000	
chi2	21.708		18.877	
p	0.010		0.026	
r2_p			0.616	

t statistics in parentheses
The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 96. Debt Issuance (Yearly Basis) – BIST30 (Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-1.719**	(-2.33)	-2.110**	(-2.55)
AGE	-0.002	(-0.10)	-0.003	(-0.14)
SIZE	0.078	(0.70)	-0.317	(-1.16)
COLLATERAL	0.335	(0.15)	-2.004	(-0.69)
CASH	1.187	(0.10)	3.787	(0.40)
LEVERAGE	1.086	(0.54)	-0.175	(-0.06)
MV/BV	0.016	(1.63)	0.016	(1.59)
ROA	0.842	(0.08)	0.793	(0.10)
GROWTH	1.029	(0.64)	-0.085	(-0.05)
Constant			7.076	(1.50)
Observations	47		47	
ll	-25.288		-23.993	
aic	68.576		67.987	
bic	85.227		86.488	
converged	1.000		1.000	
chi2	21.198		17.567	
p	0.012		0.041	
r2_p			0.185	

t statistics in parentheses
The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 97. Debt Issuance (Yearly Basis) – BIST30 (Post-Crisis) - Family Controlled Firms

	(1) IDBR		(2) IDBR	
IDBR				
FAMILYBR	-0.787	(-0.80)	-0.773	(-0.80)
AGE	-0.141***	(-3.53)	-0.140***	(-3.44)
SIZE	0.278*	(1.94)	0.215	(0.30)
COLLATERAL	-5.968**	(-2.05)	-6.220	(-1.33)
CASH	-21.821	(-0.83)	-20.816	(-0.75)
LEVERAGE	28.029***	(3.96)	28.086***	(3.89)
MV/BV	-0.001	(-0.30)	-0.001	(-0.26)
ROA	-6.018	(-0.25)	-6.259	(-0.26)
GROWTH	3.497**	(2.05)	3.402*	(1.74)
Constant			0.929	(0.09)
Observations	65		65	
ll	-24.369		-24.362	
aic	66.738		68.724	
bic	86.307		90.468	
converged	1.000		1.000	
chi2	28.513		25.676	
p	0.001		0.002	
r2_p			0.423	

t statistics in parentheses

The results report logit regressions. All variables are explained in detail at Section 3.4, Current year for age estimation is 2012. t-statistics are obtained with White's Heteroskedasticity-Consistent Standart Errors (Robust). Denotations (ll:Log Likelihood, aic:Akaike Information Criteria; bic:Schwarz-Bayesian Criteria; converged: One if ML Estimator is converged, otherwise Zero; chi2:Chi-Square of Regression, p:Prob>Chi2; r2_p:Pseudo R-Square)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

CONCLUSION

The importance and effects of family companies in both developed and developing economies cannot be disregarded. More than 50% of companies are controlled by families in the USA and Europe, and due to their economic importance, numerous studies have been conducted. For Turkey, this ratio is similar, 47%[1]. Despite the fact that the percentage of family controlled companies in Turkey is similar in comparison with such developed countries, research in this regard is very limited. Moreover, it is also necessary to investigate whether family controlled firms' financing decisions are affected by the crisis.

Mainly this study investigates whether family controlled and non-family controlled firms differentiate with respect to their financing decisions, that is, equity and debt issuance made by these firms in BIST. Firms that are quoted in BIST-100 and sub-indices of BIST-50 and BIST-30 are investigated for the period 2005-2012. The time interval also covers the global financial crisis that emerged in the USA and spread to many countries and also effected Turkish economy. The influence of the crisis on BIST is also examined in this study.

This study mainly focused on the question that whether the family companies and family controlled companies differentiate with respect to equity and debt issuance. Family company is described as the major shareholder management with majority shares. Family controlled companies are the ones that have control of family with minority shares. The effects of variables as firms' age, size, collateral, cash, leverage, mb, roa and growth on financing decisions are investigated. The analyses were conducted for BIST-100, BIST-50 and BIST-30 firms in order to see the effect of being relatively big have any influence on debt or equity capital raising. Finally, the analyses were conducted to see the effect of recent global economic crisis on the financing decisions. Results indicate that family firms quoted in BIST-

[1] BIST 2012.

100 are more reluctant to issue equity rather than non-family firms for the period 2005-2012, but it is partially true for BIST-50 and BIST-30. Size for all firms quoted in BIST-100, BIST-50 and BIST-30 increases equity issuances. Another important outcome from analyses is that collateral is a factor reducing equity issuance for firms in BIST-100 including sub-indices such as BIST-50 and BIST-30 since Collateral indicates a firm's strong asset structure. Additionally, it can be asserted that there are more equity issuances in the crisis period (2008 to 2009) rather than post-crisis and pre-crisis periods. These are signs of good steering of companies with respect to financing decisions.

The results are significant and show that there are significant behavioral differences between equity issuance and debt issuance for the firms quoted in BIST-100, BIST-50 and BIST-30. Also it can be clearly asserted that family firms are reluctant more than non-family firms for issuing debt rather than issuing equity. This result is valid for all BIST indices examined in this research. Again, firm size positively affects debt issuance. Apart from equity issuance, leverage increases debt issuance for all indices as expected. Sales growth only positively affects firms listed in BIST-50 and BIST-30 but not BIST-100. Collateral is also a negative factor for all firms. In addition to all of these, ROA, scaled by total assets, can increase debt issuance for BIST-30 firms. It can also be claimed that younger firms are more willing to issue debt rather than older firms, namely age negatively affects debt issuance.

In finance field, most research excluding the ones investigating deterministic relationships suffer from low R-squares, explaining total variance of dependent variable with independent variables. Lower R-squares are natural in most financial studies, because human behavior, other unquantifiable factors and macroeconomic facts play a role and the majority of research face such an issue. Also financing decision making behavior is not a mechanical or a determistic system predicted with certain financials indicators and strong mathematical

structures. Research on financing decisions covered at literature section also suffers from relatively lower R-squares.

This study opens pathways for future research on financial decisions, especially in Turkey with its comprehensive coverage, may shed light to other studies in this respect. The base for this research, was Borsa Istanbul and its main indices and within the crisis environment. For further studies, sectorial works such as manufacturing firms or service sector can be investigated. Although we call them, family controlled firms in BIST, Capital Markets Board and Borsa Istanbul are the regulator bodies over these companies and that affects their financial decision-making.

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