COMPARISON OF FINANCIAL DISTRESS MODELS ACROSS EMERGING MARKETS

İBRAHİM ONUR ÖZ

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COMPARISON OF FINANCIAL DISTRESS MODELS ACROSS EMERGING MARKETS

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Prof. Dr. Cengiz Erol
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor of Philosophy.

Prof. Dr. Serdar Özkan
Head of Department

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

Prof. Dr. Serdar Özkan
Supervisor

Examining Committee Members

Prof. Dr. F.N.Can Şimga Mugan

Prof. Dr. Serdar Özkan

Prof. Dr. Türker Susmuş

Doç. Dr. Erdal Özkol

Doç. Dr. Çağnur Kaytmaz Balsarı

ÖZET

FİNANSAL BATMA RİSKİ MODELLERİNİN GELİŞMEKTE OLAN ÜLKELERDE KARŞILAŞTIRMALI OLARAK İNCELENMESİ

İbrahim Onur Öz

İşletme Doktora, Sosyal Bilimler Enstitüsü

Tez Yöneticisi: Prof. Dr. Serdar Özkan

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Bu çalışma muhasebe temelli beş finansal batma riski modelinin MSCI (Morgan Stanley Gelişmekte Olan Piyasalar Endeski) endeksinde yer alan ülkelerin endüstriyel firmaları göz önünde bulundurularak 2000-2012 yılları için gerçekleştirilmiştir. Çalışma kapsamında kullanılmış olan modellerin ilgili ülke sektörleri için finansal sıkıntı durumlarını tahminleme yoluyla açıklayıcılıkları karşılaştırmalı olarak analiz edilmiştir. Finansal sıkıntı riski modellerinin tahminleyici modeller olarak kullanılabilmeye uygun olup olmadığının araştırılması adına çalışma dahilinde yer alan fianansal sıkıntı riski modellerinin orijinal katsayı değerlerinin genel örneklem üzerindeki başarı yüzdeleri ve ülkesel bazdaki başarı yüzdeleri incelenmiştir. Bunun yanı sıra örneklem yılları dahilindeki veriler üzerinden kat sayılar tekrar ilgili modellerin metodolojileri göz önünde bulundurularak tahminlenmiş, elde edilen katsayılar ve orijinal kasayılar göz önünde bulundurularak finansal sıkıntı riski modellerinin başarı yüzdeleri yeni katsayılar üzerinden tekrar incelenmiştir. Sonuçlar göstermektedir ki katsayıların güncellenmesi Taffler, Ohlson ve Zmijewski modellerinde iyileşmeye yol açmıştır. Çalışma aynı zamanda finansal sıkıntı riski modellerinin orijinal ve yeniden tahminlenmiş katsayılar için örneklem dahilindeki gelişmekte olan ülkeler açısından genelleştirilebilir olup olmadığını da incelemektedir. Ülkesel bazda elde edilen katsayılar üzerinden belirlenen başarı yüzdeleri ile bütün örneklem dahilinde elde edilen katsayılar üzerinden belirlenen başarı yüzdeleri karşılaştırılarak üretilen sonuçlar göstermektedir ki Taffler, Ohlson, Zmijewski ve Shumway modelleri MSCI endeksi dahilindeki gelişmekte olan ülkeler için finansal sıkıntı riskinin öngörülmesi için kullanılabilir.

Anahtar Kelimeler:

Finansal Batma Riski, Logit, Probit, Gelişmekte Olan Ülkeler, Diskriminant Analizi, Model Kıyası

ABSTRACT

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Supervisor: Prof. Dr. Serdar Özkan

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This study analysis five accounting based financial distress models considered in terms of their accuracy levels for the entire sample of MSCI emerging market countries for 2000-2012 in terms of their accuracy levels of early prediction of financial distress in advance of one to five years. The models are also considered for their individual country effects over the original coefficients to see whether the original coefficients of the accounting based financial distress models can be used as financial distress predictors. Additionally, all the models are re-estimated for new coefficients to analyze whether there is a change of the coefficients, and it is seen that coefficients give better prediction results than the original models when re-estimated for Taffler, Ohlson and Zmijewski models. The study also analysis the generalizablity of the distress models both for the original and re-estimated coefficients to identify whether the models can be used for specific emerging market countries taking place for the analysis. The results indicate that, depending on the comparison of individual country prediction results with the entire sample, Taffler, Ohlson, Zmijewski and Shumway models can be used for financial distress predicting models for the industrial companies of the MSCI Emerging countries in the sample of the current study.

Keywords:

Financial Distress Models, Logit, Probit, Discriminant Analysis, Emerging Countries, Model Comparison

To My Parents

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1. INTRODUCTION

The economic, political, and environmental developments in time affect companies' way of doing business. This effect leads to the inevitable change in business activity needed to be understood by the management to sustain the survival of a company for the foreseeable future. The foreseeable future of a company in contrast is eternal due to its legal body, in other words, making the aim of the company to survive forever. However, the eternal life for a business can be achieved through the precise prediction of uncertain future with the external and internal business factors of the company. Although the external factors are composed of endless unknown macro and micro variables which are hard to analyze or even model in terms of measurement concerns, and even important constraints for any business against their endless survival, the internal factors, especially, the financial factors, items, of a company enable a measurement for its future through predictions.

The financials of a company can be seen as the numerical identifiers for the business process of a company. These identifiers can be found at the financial statements where they are classified depending on their functions and qualitative specifications, enabling understandability of the given numbers, and indirectly showing what the business has done so far. Despite the fact that the position or performance of a company in time can be found through those financials, these cannot be interpreted only as the current identifiers of the situation of the company as these also reflect the future concerns for the business itself. Besides some of the numbers' future orientation, the relationship among numbers on the financial statements also help the interpretation of current and expected future positions of companies which can be established through the financial ratios.

The emphasis put into financial ratios started in the nineteenth century in the US with the development of industrial production which triggered the credit lending process of firms from banks. Especially, the financial information requirements of banks from its creditors led firms to prepare detailed financial statements which later raised the need of scrutinized analysis of financial statement items. The separation of financial statements into parts depending on the classification of financial statement

items, such as dividing the asset side of the balance sheet into current and non- current assets, and/or the increase in the number of items in the balance sheet, started the analysis of the relationships among them emerged the use of financial ratios. The very first financial ratio used was the current ratio, which emerged through the comparison of current assets with the current liabilities in the financial statements. Although this ratio was taken into consideration by financial analysts and firm managers, the need for use of distinct ratios took place due to the increased level of financial information disclosed in the statements. Different studies in time, such as the ones in the US, increased the variety of the ratios and their use for the businesses. For instance, in 1920s, financial ratios were used by most of the industries, and several studies were held to explain the importance of using ratios. 1930s, in comparison, were the start of studies questioning the measurement ability of the financial ratios for the firm distress through new ratios like working capital to total assets whereas 1940s were the years of studies measuring the predictive power of financial ratios through mean comparison among industries and ratios (Horrigan, 1968).

Especially after 1960s, the financial ratio studies became more sophisticated in terms of their statistical approach to the financial distress prediction, which constitutes the basics of the current dissertation. The following financial ratio studies after 60s were depending on the simultaneous analysis of the financial ratios in the financial models, over distinct statistical approaches, aiming to find out whether financial ratios predict the bankruptcy or financial distress in advance with a certain level of accuracy. Moreover, one of the intentions of the studies was to find out whether financial ratios consistently predict the failure of the businesses in time while the other has been the generalization of the developed models for different circumstances, economic periods, and countries through the financial ratios. Especially the analysis of the well known financial distress models, whether these can be generalized, for the Morgan Stanley Capital International (MSCI) Emerging Markets Index for the ten emerging markets countries for their industrials is a part of the study.

The aim of financial distress models is to represent the possible bankruptcy and/or financial distress prediction before, which is important for the participants of the

business and the economy in general. This prediction is important due to the cost of failure to the business owners, shareholders, employees, investors and the rest of the stakeholders in an economy. Despite the fact that business failure has always been an important issue of the economy, the globalization and the integration process of economies throughout the world makes the business failure prediction more important than ever. Especially, the recent financial crisis of 2008 indicated the systemic effects of the crisis for the entire world economy which led substantial amount of firms to demolish. That is why, the models could provide information about the weak firms which were exposed to financial distress and disappeared during the crisis. In other words, models could help economic activity in the long run by classifying firms into financially distress or not. Present dissertation measures the models predicting accuracy before and after the financial crisis to find out whether the models work well in advance of the crisis. The study focuses on the emerging markets due to lack of studies and the importance of the emerging market economies in the world.

The reason of specifically focusing on Altman (1968), Ohlson (1980), Taffler (1983), Zmijewski (1984), and Shumway (2001) models is that they are the well known and leading ones for other studies in the literature. Since these five models were for the developed markets, I would like to measure the reliability of the models with their original coefficients to see the accuracy of the prediction results on the industrials of each developing country. The arguments mentioned in previous paragraphs underpin the main theme of the current dissertation. The core of our study is to measure accuracy and applicability of Altman (1968), Ohlson (1980), Taffler (1983), Zmijewski (1984), and Shumway (2001) models over the ten MSCI Emerging Market countries to see whether the models are working on these countries. The reason behind the application of this study is being the first one aiming to analyze these models simultaneously over the emerging markets of a well known index. Additionally, I also ran the models over the re-estimated coefficients to see the difference and/or change in time and among countries while considering pre and post prediction results of the financial crisis of 2008. One point to indicate here is that, according to our knowledge, our study is the first one considering all these models with their performance before and after the financial crisis which I believe is another contribution to the literature.

The literature puts the importance of these models through their distinct econometric approaches. Chronologically the first one, Altman (1968), makes a classification of the bankrupt and non bankrupt firms over multi discriminant analysis for the manufacturing firms in the US. Ohlson (1980) study represents its prediction through logit regression for the classification of bankrupt and non-bankrupt firms, whereas Taffler (1983) applies multi discriminant analysis of Altman's study over distinct ratios for the UK manufacturing firms. Alternatively, Zmijewski (1984) measures the significance of the probit analysis over the US firms. Following these studies there were held several country analysis for the bankrupt or distressed firms by using these models. Most of the literature is composed of bankruptcy and financial distress studies through using discriminant, logit and probit analysis. However, in 2001 Shumway classified the bankrupt and non-bankrupt firms by using a different method called simple hazard model, which is a kind of proportional logit analysis, enabling him to establish his model by using firm specific, micro and macro variables simultaneously. Present dissertation analyzes all the models indicated for the industrial sector of ten countries of MSCI Emerging Markets Index for the years 2000-2012.

My dissertation is composed of five parts which scrutinize the arguments briefly discussed in previous paragraphs. The first part represents the literature review for the development process of financial distress models from the beginnings of financial ratio analysis to the recent studies of the financial distress models. The literature review also focuses on the empirical applications of the previous studies as the key point of the financial distress studies is the econometric approach and results for the prediction and classification process.

The second part discusses the details of gathering data through the databases, Bloomberg Terminal and Thomson Reuters Datastream. My dataset is composed of 850 industrial firms for ten countries between 2000-2012 period. The data used in my model are gathered through Thomson Reuters Datastream other than the share price of the firms in the study. The third part, on the other hand, indicates the methodology of the models that are used in the dissertation. The models that are analyzed within the study uses different econometric methodologies to collect the coefficients for their relating

variables which are multi discriminant analysis, linear discriminant analysis, logistic regression, probit regression and hazard model.

The fourth part presents the findings regarding the calculations through the models that are mentioned in methodology and the interpretations of these findings for each model and each country in detail. The interpretations also includes the comparison of accuracy rates for the each model with respect to their original coefficients and re-estimated coefficients. Moreover, the study also includes the models' prediction results before and after the financial crisis of 2008 which deteriorates the economic activities throughout the world. That's why the current study indicates the prediction results to see whether the results indicate financial distress in advance of the crisis, and also after the crisis.The fifth and the last part is composed of summary of the findings. The conclusion is composed of not only with the comments in the findings section but also re-calculated summary tables and the interpretation of these tables for each model.

Especially, results of the Altman model have no significance for the countries in my sample, since for the emerging markets countries the model's prediction accuracy is very low. Although, the re-estimated results increased the chance for better prediction of the model and showing us that the model's prediction accuracy is very low through the new coefficients gathered as well. Hence, Altman model's generalizability does not seem plausible for the emerging markets countries. On the other hand, Taffler and Zmijewski models have very high accurate prediction levels before and after the re-estimation of the coefficients. Although the re-estimated coefficients increased the accuracy levels, both models' original coefficients have high level of accurate prediction results when compared with the Altman's. To conclude, results of this study clearly indicate the need for adjustment to these models before they can be adopted for emerging markets for a better prediction of financial distress for the companies in these markets.

2. LITERATURE REVIEW

The literature on financial distress modeling mainly indicates that the reason of modeling financial ratios is to explore the failure prediction ability of financial ratios. This ability is important as the failure of an economic activity deteriorates costs to its stakeholders. The accounting based financial distress models are the main theme of this dissertation and the used models are developed in distinct time periods. The literature is separated into time periods to indicate the developments in the model literature clearly.

2.1. The literature between 1970 and 1980

The very first steps of financial distress modeling could be seen at Beaver (1966). The study introduces univariate analysis of financial ratios to explore whether financial ratios had predictive ability for financial failure of firms individually as the claim of the study is that the financial ratios are composed of numbers taken from financial statements which actually represented events, important or not, about the firm. Moreover, Beaver indicates the usefulness of financial ratios in their predictive ability, in other words, predictive ability of accounting numbers in financial statements were indirectly measured in his study and found to be significant. The sample size of his study was composed of 79 failed to 79 non-failed firms. Non corporate, privately held and non industrial firms were not included in the sample. The failed and non- failed firms were gathered from the Moody's Industrial Manual as being the only source available. The firms were grouped according to their industries and asset size, so the used method was the matching of firms in pairs in the sample. Moreover, the sample of the study represented 90 % of the invested capital of all industrial firms, having a potential to affect substantial number of stakeholders. The descriptive importance of the study was important as the chosen ratios, six ratios, are analyzed descriptively in detail and the mean differences of the financial ratios increase in time when the firms close to failure. As a result Beaver in his 1966 study emphasized the importance of financial ratio analysis to capture the financially unhealthy firms before their bankruptcy.

The following study of Altman (1968), one of the most cited studies of financial distress modeling indicated the importance of financial ratio analysis over bivariate analysis of the ratios used in his model. The bivariate analysis is suitable for

measuring the simultaneous contribution of the ratios to the explanatory power of the model developed making it different than the previous studies, measuring the individual effect of the selected ratios for failure prediction, which he named “traditional”, Altman developed a model composed of distinct ratios. The presented model aimed to classify the bankrupt and non- bankrupt manufacturing firms over Multi Discriminant Analysis (MDA). The ratios used in the model were expected to explain the bankruptcy of a firm earlier through their simultaneous contribution to the model since the earlier studies over univariate analysis indicate questionable results due to their individual effects. For instance, a firm could be classified as bankrupt because of its high level debt ratio while its performance indicators made a non bankrupt grouping of the same firm. The sample of the study consisted of 66 manufacturing firms which were equally grouped in two, composed of 33 firms and matched in accordance with their asset size, as in the study of Beaver 1966. The study indicated the importance of multivariate analysis of the financial ratios to predict the bankruptcy in advance with a prediction accuracy of 95% prior to two years of the failure other than the individual comparison of each financial ratio in a sequence.

The studies before Edmister (1972) were mainly focused on the financial ratio predictions of large asset size firms (Beaver, 1966; Altman, 1968; Deakin, 1972) whereas Edmister (1972) measured the failure prediction of small businesses between 1958-1965 period through MDA of the financial ratios. The study aimed to measure the accurate classification of loss& non-loss borrowers, and guarantee recipients through 7 different ratios for the 42 observations. The results of the study indicated that the model accurately defined the 39 of the 42 selected firms, 93% of accuracy.

Altman (1973) study was on the bankruptcy estimation of the US railroads over the Linear Discriminant Analysis for the period of 1946 to 1969. The results of his model indicated a 97.7% of accurate failure prediction in advance of one and two years. Moreover, in another study, Blum (1974) established “Failing Company Model” over MDA for the period of 1954 to 1968. His sample is composed of 115 failed industrial firms to 115 non- failed industrial firms and the model consisted of 12 variables. The failed firms were chosen depending on their liability, which was over one million

dollars and the rest of the matching criteria are industry, sales, employee, and fiscal year. The results of the study were indicating the powerful results of the MDA analysis with a 94% accurate classification of failed and non failed firms before one year of the failure. Although the accuracy levels decrease in advance of two years of the failure, 80%, and three years of the failure, 70%, Blum's results were encouraging in terms of the robustness of the MDA results.

Altman and McGough (1974) measured the going concern evaluation of the auditors through their MDA model. The auditor opinions for the related bankrupt firms between 1970 and 1973 are measured by the Altman's 1968 bankruptcy prediction. Since the auditor opinion gives clues for the foreseeable future of the company, the accuracy of their opinions, qualified or disclaimed, are compared with the prediction model results for the same firms. The model identified the bankrupted firms their failure with an accuracy of 58%, whereas the auditor opinions see 21% of the firms are going to have a going concern for the two years before their bankruptcy.

The following prediction model developed, on the other hand, was Zeta, by (Altman et al., 1977), found superior to Altman 1968 Z-score model in terms of in advance of five year failure prediction with 70% accuracy, and one year prior failure prediction of 90% accuracy. The sample was composed of 53 failed firms to 58 non failed retail firms during the period of 1969-1975 over seven variables. The ZETA model was found superior to 1968 model when it was applied to 1968 sample and as well as its own sample. Moreover, the ZETA model's prediction results were also superior to 1968 model when the five variables model of 1968 was applied to the ZETA sample.

Altman et al. (1979) study for Brazilian industrial firms, textiles, furniture, pulp and paper, retail stores, plastics, metallurgy, and others, considers whether the problematic and non problematic firms could be differentiated in advance over the linear discriminant analysis. The period of the study covers January 1975 to June 1977. The accuracy level of the model is 88% over the 58 firms considered which indicates that information content of an emerging market is important. Moreover, another study by (Yim and Mitchell, 2005) emphasizes that neural networks can be used for one year

before predictions of failure instead of logit and discriminant analysis for the years 1999 and 2000 for 121 firms of which 29 are bankrupt.

2.2. The literature between 1980 and 1990

In his 1980 study Ohlson represents his early prediction model by using logistic regression method. Ohlson's research is different than the previous studies by the econometric model and the chosen sample used. The conditional logit model, a maximum likelihood estimator, analyzes the data composed of 105 bankrupt firms to 2058 non- bankrupt firms for the years between 1970 and 1976. The sample is also unique as the Moody's Manual is not used for the selection of bankrupt firms instead the year end 10-K financial statements are preferred which have the potential to indicate whether the company falls into bankruptcy before or after the release of the related data to public. In other words, the timing of bankruptcy could be caught in a better way than the rest of the studies using a given bankruptcy sample of the firms. The results of the study also support the claim that the one year before bankruptcy prediction better offs the previous studies with an accuracy of 96.12%.

Swanson and Tybout (1981) used probit regression analysis to find out the prediction level accuracy of the failed and non failed firms before and after 1979 to 1981 period which is the devaluation period of Argentinean peso. The sample considered is composed of 19 to 22 failed firms to 190 to 324 non failed ones. Although the considered variables for the study are distinct, in other words, macroeconomic variables are included with the failure rates of some of the industries by considering the firm level failure factors, the study is not obvious about the classification of firms.

Taffler (1982) explores the bankruptcy predictability of the UK firms over linear discriminant analysis. The sample is composed of 23 failed to 45 non failed firms for the years between 1968 and 1973. The used variables were selected from the factor analysis of 50 ratios reduced to five ratios which are EBIT/TA(t-1) , TL/NCE, QA/TA, WC/NW and Stockturn. The model sample is not matched for the failed and non failed ones and that is why, being non collinear better offs the results' accuracy compared to US based studies in which the matching criteria is the common approach of most of the studies.

Taffler (1983) establishes his research on the manufacturing firms for the period between 1969 and 1976 quoted in London Stock Exchange. The research uses the matching of the firms in terms of their asset size and industry covering 46 bankrupt to 46 non-bankrupt firms. The ratios selected for this study, after reducing the number from 80 to 4, are Profit Before Tax/ Average Current Liabilities, Current Assets / Total Liabilities, Current Liabilities/ Total Assets and No Credit Interval which is Current Assets – Inventory – Current Liabilities/ Sales- Profit Before Tax +Depreciation. The accuracy of his model through the MDA is that 95.7% for the bankrupt firms and 100% for the non bankrupt firms.

The used models have changed in time and different statistical approaches take place other than MDA. In 1984, Zmijewski applied probit analysis to the industrial firms of 129 bankrupt firms from the total of 2241 firms in NYSE and AMEX. The ratios used in this model are return on asset, total debt to total asset and current assets to current liabilities. Zmijewski used different approaches for his study and measured the different accuracy levels of his sample by considering matched sample, non matched sample and Weighted Exogenous Sample Maximum Likelihood (WESML) probit analysis. Accuracy results of this study changes depending on the used sample. The result for the matched sample is 92.5% for failed firms and 100% for the non- failed firms, whereas the accuracy of classification changes when the used sample is non-matched with accuracy level of failed firms is 62.5% and 99.5% for the non failed ones. The results for using WESML even decreases the accuracy to 52.5% for failed ones of the matched sample, and 42.5% for the non matched sample.

Lau (1987) developed a five state financial distress model, which indicates the different stages of financial position of a company. The states of the model are from zero to four, state 0: financial stability; state 1: omitting or reducing dividend payments; state 2: technical default and default on loan payments, state 3: protection under Chapter X or XI of the Bankruptcy act; and state 4: bankruptcy and liquidation. The firms are matched depending on their asset size and the used statistical technique is logit regression. The sample is composed of 350 healthy firms for state 0, 20 firms for state 1, 12 firms for state 2, 5 firms for state 3 and 4. The prediction is measured by one, two

and three years before the financial distress in 1976. The variables used are "loan restrictive terms, industry normalized debt to equity ratio, working capital flow to total debt ratio, trend of common stock prices, industry normalized operating expenses to sales ratio, distribution of common stock dividends, liquidation of operating assets, trend of capital expenditure, trend of working capital flow, omission or reduction of dividend payments". The accuracy of the overall prediction result is 96% in advance of 1 year and 92% in advance of 2 years.

Bhatia (1988) measured the classification accuracy of 18 distressed and 18 non distressed firms over MDA model for 1976- 1985 period and found 87% of accuracy for type I and 86.6% of accuracy for type II errors. Another study by Ramana et al. (2012) for India over Altman Z score indicates for the 2001 to 2010 period for cement industry to see the classification accuracy of the MDA model represent the estimation results for three cement companies.

Bidin (1988) study represents the evaluation of companies owned by an investment trust fund of the government of Malaysia. The related firms in the portfolio of the entity, Permodalan Nasional Berhad (PNB), are measured by a multivariate discriminant analysis distress model mainly for the manufacturing, transportation and service sector. The sample is composed of 21 distressed companies to non in which the number of healthy firms is not clear. It is indicated that the government uses the revised version of the same model up to 1997. Moreover, another study in Singapore in 1981 is held over multi discriminant analysis as well by considering 24 failed to 21 non failed firms for the period of 1975 to 1983. The companies in the sample are manufacturing and commercial firms. The accuracy level of type I error 77.3% one year prior to the failure while type II accuracy level is 93.5%.

2.3. The literature between 1990 and 2000

Gilbert et al. (1990) measures the prediction accuracy of two models over the US firms to find out which one better offs. The sample is divided into two groups which are also separated into other two sub groups established to see the prediction results of the two models. The variables are chosen from models of Casey and Bartczak (1985), and Altman (1968). The sub samples are, on the other hand, are composed of Bankrupt

to non bankrupt, and bankrupt to distressed firms to see the classification accuracy. Logistic regression model is used to measure the classification of bankrupt firms from non bankrupt ones, and Altman model is used for measuring the separation of bankrupt firms from distress ones. Bankrupt and non bankrupt group data are collected through Compustat Annual Industrial or Research Files. The Bankrupt group is composed of 76 firms and non bankrupt group is 304 firms. It is found that the accuracy level decreases when the model is run for the classification of bankrupt and distressed firms. The study concludes that the logistic regression model performance for the classification of bankrupt and distressed firms is poor.

The financial distress of firms is also measured by the neural network models (Tam and Kiang, 1992; Fanning and Cogger, 1994; Wong et al., 1997; Selvi and Wong, 1998; Atiya, 2001; Chen and Du, 2009; Lin et al. 2014). Coats and Fant (1993) used the data of Standard& Poor's between 1970 and 1989 and divided their sample into two groups "financially distressed" and "viable". Sample is composed of 94 distressed firms and 188 viable firms in which distressed firms are chosen depending on the cease of operations and/or having going concern problems, in other words, disclaimer reports of auditors. To classify the patterns of healthy and distressed firms MDA models are established depending on the "Altman's Z score ratios by using the same data as Cascor models to compare the results with neural network approach". The results of the study indicated that the neural network approach better offs the multi discriminant analysis.

Altman et al. (1995) study explores the bankruptcy classification of 34 distressed to 34 non distressed listed firms of South Korea. The sample period covers the 1991-1993 while the used method for the classification is linear discriminant analysis or logit regression method. The results indicate that before one year of failure the model's accuracy for the prediction of distressed firms is 97.06%, and 88.24% in advance of two years for the 34 firms. The study is claimed to be important in terms of its emphasis on the possible failure prediction of a growing economy as the research period is covering the significant growth of South Korean economy which may be followed by a deep contraction in the future.

2.4. The literature between 2000 and 2010

Shumway (2001) established a dynamic model, binary logit model, for his calculation of financial bankruptcy for the firms. The sample is composed of 300 bankrupt firms for the years between 1962 and 1992. The bankruptcy is defined as the firms which went bankrupt within 5 years of delisting. Shumway differentiates his model from the others in the literature through the calculation of firms' trading years which would help not losing the firms in the sample emerged in time. His simple hazard model is a kind of survival analysis which let the inclusion of market driven variables into his model for the prediction of corporate bankruptcy. In order to emphasize the accuracy power of his model he adjusts Altman's and Zmijewski's model by adding new market driven variables. There are two model estimates one is just with market driven variables and the other one is through the accounting variables by considering the studies of Altman and Zmijewski. The Altman and Zmijewski models are improved through including the trading age of the corporations and then the market models are considered over the sample of Shumway for the years between 1962 and 1992. The emphasis of Shumway is that the Altman's model decreases the observations, and working capital divided by total assets variable can be decreased just due to the omission of the variables which also deteriorates the results of the statistical significance tests. The model develops another point of view on the risk adjustment over the life of the corporations in the sample through correcting the risk at distinct periods. The developed model through accounting and market based variables indicates the most accurate results in which Shumway emphasizes as one of the main outcomes of his study with 95% of accuracy over the market driven variables.

Low et al. (2001) examines the accuracy of bankruptcy prediction of the Malaysian firms for 1998 in advance of two years from their failure. The sample is composed of 26 distressed companies from 9 industries and also 42 non-distress firms are selected randomly. The model used for the study is logistic analysis and the 11 ratios selected are depending on the literature by combining distinct ratios from different well known studies. The accuracy of the model is 82.4% and the results indicate that Sales to Current assets, Current assets to current liabilities, and the percentage change in net income are found significant for the prediction accuracy of

failure for the firms whether companies have higher coefficients for these ratios. The cash is also found significant for the prediction of the firm failure in advance for Malaysian companies.

Shazly (2002) used a non parametric signaling approach to identify the banking and currency crises for Egypt by aiming to use his approach as an early warning system. The early warning system is based on the indicators which would give the details and the scope of the financial crisis that was going to occur. The indicators used in the model are based on the monthly data of the given variables and the indicators for the study are mainly for to see the change in the macroeconomic development in time which are exports, imports, trade balance, net international reserves, money in flow for deposit accounts divided by net international reserves, interest rate differential, real exchange rate, domestic credit divided by GDP, stock price index. All these sources are chosen by considering the international financial statistics of international monetary fund and the central bank of Egypt. The result of the study emphasizes that using signals can be used as early predictors for the identification of the crises in Egypt.

Chava and Jarrow (2004) study on the prediction accuracy of hazard models by comparing the Shumway's hazard model with the Altman's multi discriminant analysis and Zmijewski's probit model. The study is held over the period of 1962 and 1999 by using the monthly and yearly observations. The results indicate that hazard model is better for identifying the industry effects for the estimation through their effects on intercept and slope coefficients in the US. The bankruptcy data of the study is gathered through the Wall Street Journal Index the Reorganizations module (SDC) database and the capital changers reporter. The bankrupt firms are from distinct industries with a total number of 1461 for the related observation period. On the other hand, Gruszczynski (2004) explores the financial distress prediction accuracy of unlisted 200 firms in Poland for 1995 to 1997 period through their annual financial statements. The used method for this study is the logistic regression and the results show that the accuracy level for one year before the failure is 90.70 and 84.60 two years before the failure.

Jones and Heshner (2004) develop a model by considering three different observations in one model. The observations are grouped into non-failed, failed, who

are distressed but not failed, having solvency problems. The observation period covers 1996 to 2000 over 2838 non failed firms and 76 firms which are bankrupt and 116 firms which are in financial distress. The sample, on the other hand, is observed over the multi logit regression model by considering its advantages over the standard logit model in terms of the distribution of the error term which enables error terms to be correlated unlike identical distribution of standard logit model. It is claimed that the multi logit model better offs the standard logit model in terms of its estimates.

Chen et al. (2006) study explores the classification accuracy of the financial distress models in China between 1999 and 2003. The sample covers 89 distressed firms to 940 non distressed firms. Four prediction models are used to measure the accuracy of the models and significance of distinct financial statement ratios. The used models are linear discriminant analysis, logistic regression, decision trees and neural networks, and the indicated optimal models are found as logit and neural network with accuracy levels change between 78% and 93%. The type I and type II error rates are also measured in terms of each model with error rates of 41.57% and 3.09% for LDA, 12.36% to 12.66% for logit, 28.09% to 5.11% for decision tree CHI, 21.35% to 5.85% for decision tree entropy, 26.97% to 5.21% for decision tree GNI, and 6.74% to 23.62% for neural networks. On the other hand, the study emphasizes that the number of ratios selected by the models are significantly model dependent and different from one another.

Ugurlu (2006) measured the prediction accuracy of Turkish manufacturing firms between 1996 and 2003 period over the multi discriminant and logit analysis. The logistic regression is found to be more accurate in years and the models results indicate that logit regression results give 35.6 percent of accuracy for overall fit of the model. The model classifies 97.5 for the non failed model percent with a percent of 91.4 percent for the failed firms. Moreover, the predictive results of the logit model are 94.3,91 and 87.1 percent depending on the years from year one to year four respectively.

Campbell et al. (2008) explores the factors for corporate failure through the estimation of dynamic logit analysis. The sample period covers 1963 to 2003 in which the related data is gathered through the Wall Street Journal Index from the Capital

Changes Reporter. The bankruptcy density for the decades also considered and it is found that the failure level is low in the mids of the 1960s and increases up to the mids of 1980s making the study also helpful to see the trend of corporate failure in years for the US, which means a time series change. The study covers a wide range of accounting and marketing data as well with the former is gathered through the quarterly data of COMPUSTAT and latter is from CRSP. Other than the previous studies the used accounting ratios are also more market based. Especially for the calculation of Net Income to Total Assets (NITA), the market based form of the same ratio is used as Net Income divided by market valued total assets (NIMTA) and it is emphasized in the study that market based form of the ratio has more explanatory power due to containing more updated market based information. The results of the study indicate that the simple hazard model of Shumway is better off in terms of indicating the stock returns of the distressed firms in years.

Erdogan (2008) examines the 42 commercial banks for the period between 1999 and 2001. The data of the failed firms are taken from Savings Deposits Insurance Fund (SDIF), and in total, there are 18 firms failed in different years. The prediction accuracy of the failed firms two years in advance of the failure is 80% over the logistic regression analysis and it is calculated that a capital ratio, two profitability, two income expenditures and a provision for loan losses variables gives accurate results for the financial distress prediction of banking firms.

Vuran (2009) investigated the performance of two prediction methods, discriminant and logistic regression, for the 122 publicly traded and non traded firms over the period of 1999-2007 for Istanbul Stock Exchange. The firms are randomly matched with one another and they are the financially distressed firms. The results of the study indicated no statistically significant difference found between the two predictable models and the choice of the variables for each of the models. The lag year considered for the study is one and two years prior to the failure with accuracy level of 84.4% to 82% respectively with the misclassification of failed firms is smaller than the misclassification of non failed firms.

Lin (2009) studies on the industrial firms of Taiwan to examine the best prediction models over the period between 1998 and 2005. Multi discriminant analysis, logit and probit methods are used for the matched sample of failed and non-failed firms and reached a conclusion that the probit model derives the best and stable conclusions when compared to others. Moreover, the models in this study give better results than Altman (1968), Ohlson (1980), and Zmijewski (1984) models' results and indicated as generalizable. Moreover, Lin et al. (2007) applied learning vector quantization (LVQ), probabilistic neural network, feedword network with "backpropagation" over the sample year of 1993 to 2003 for Thailand firms. The sample is composed of 41 financial firms of which are distressed for the indicated sample period LVQ is found better than the other two methods.

2.5. The literature between 2010 and 2014

Another study is held by (Maeteletsa and Kruger, 2011) on South Africa Stock exchange for the period between 1998 and 2007 over the 71 failed and non failed firms. The used method for the prediction of the failure is multi discriminant analysis over the subdivided sample into three distinct parts to examine whether the narrow time period has an effect on the prediction accuracy of the model. Moreover, a study held by (Karas and Reznakova, 2012) on the failure prediction in Czech Republic for the companies over the period of 1966 to 2010 for the financial ratios, which can be used for the failure prediction in advance of one year from the bankruptcy. The results indicate that three of the variables, over the 44, have prediction accuracy of 81.25% for the failed firms.

Kwak et al. (2012) study examines the effect of Sarbanes – Oxley Act (SOX) (2002) over the US firms for the period between 2007 and 2008 in order to identify the effects of changes in firms' internal control mechanisms on the financial distress through the help of the increased quality of the financial statements after the SOX. The sample is composed of 306 firms in total and 130 of the firms are bankrupt. The model, on the other hand, consists of 13 financial ratios, internal control weakness, dividend payout and market return variables. The used methods for the prediction quality of the study are Bayesian Net Method with a performance of 85% overall prediction, J48 with a performance of 85%, Decision Table with a performance of 83.52%, and Decision

Tree with a performance of 82%. These results are claimed to be better than the rest of the bankruptcy prediction studies before the SOX.

Cinca and Nieto (2012) study indicates that partial least square discriminant analysis results give very close outcomes to those of linear discriminant analysis and support vector machine. The study period starts with the banking crisis of 2008 and includes 2011 in the US. The related data of the study is reached from Federal Deposit Insurance Corporation (FDIC) for the 8293 banks and seventeen ratios are considered for each bank. 140 failed banks in the sample are matched in terms of size with 140 non failed ones for the holdout sample. The entire sample, on the other hand, consists of 180 failed banks to 7833 non failed banks. The seventeen ratios are highly correlated making the partial least square method to be considered to overcome the multicollinearity problem, as that method turns the correlated ratios into uncorrelated ones for the health of the study. The results are compared with 8 distinct algorithms and found that they are very close to the results of linear discriminant analysis in terms of "accuracy, precision, F-score, Type-I and Type-II errors,".

Federova et al. (2013) examines the failure of manufacturing firms in Russia for the period between 2007 and 2011. The sample is composed of 504 bankrupt and 3001 non bankrupt firms. The bankrupt firms in the sample are identified depending on the financial analysis and the related requirement of the Russian Government for the firms. The prediction accuracy is 88.8 % over the artificial neural networks (ANN) method. Likewise another study is held in Tunisia over 528 firms, by (Hamdi and Mestiri, 2014), for the period of 1999 to 2006 for Tunisian firms. The used methods for the study are semi parametric logistic regression model and artificial neural networks. The results of the study indicate that ANN better offs the logistic regression model.

Kasgari et al. (2013) study indicates the importance of bankruptcy prediction for the Iranian firms between 1999 and 2006. The firms in the study are belong to Tehran Stock exchange and there remains 65 bankrupt and 71 non bankrupt firms. The study is done by considering the results of multilayer perceptron (MLP) a neural network model and probit method. The considered ratios for this study are sales to current ratio, operational income to sales, quick assets to total assets and total liability to

total assets. The results of the study indicate that the MLP method gives better results than the probit method for the related firms in the sample in Iran.

Bauer and Agarwal (2014) are measuring the comparability of the hazard model of Shumway (2001) with the linear multi discriminant analysis of Taffler (1983) and the contingent claims based model of Bharath and Shumway (2008). The study outcome indicates that the Shumway's simple hazard model gives better results for the prediction of failure for the corporations in the UK over the period of 1979 to 2009 compared to other methods in the research for the 2748 firms. When the market based variables are added to the model the insignificant coefficients become significant at 10% level and it is emphasized that hazard models of Shumway in 2001 and 2008 gives better results for the accuracy of the failure prediction than the contingency based and Z- score based models. Moreover, Trabelsi et al. (2014) examines the effect of cut off points, sampling procedures, and business cycles on the prediction accuracy of the models over the sample of 219 bankrupt and 2660 non bankrupt firms. Bayesian, logit and hazard models are compared to find out which model has the better accuracy for distress classification in terms of the cut off points and it is found out that mixed logit model better offs the other two models. On the other hand, when the sample is considered for the business cycles the Bayesian model becomes the pioneer in terms of the prediction accuracy rates.

Rim and Roy (2014) study is measuring the accuracy of Altman's Z score of 1983 study for the classification of manufacturing firms in Lebanon over the period between 2009 and 2011. The manufacturing firms in this study are private firms not listed; hence, the used model is the Altman's 1983 study instead of 1968. The classification results are then compared with the actual classification of risk of the firms by one of the banks in Lebanon, the name of the commercial bank is not given in the study, depending on the assigned ratings for each of the firms, through the Moody's analytic software. The result of the study indicates that the Altman model can also be used for the risk classification of the companies as well as their bankruptcy predictions as the outcome of the model is very similar to the risk classification of manufacturing firms by the commercial bank indicated in the research.

Trabelsi et al. (2014) examines the bankruptcy prediction accuracy of the Bayesian, Hazard and Mixed Logit models on the US firms for the period of 1980 to 2010. The related sample is taken from the Bankruptcy Research Database of the US firms. The selected firms for the observation period are those having $100 million or more in their assets in terms of US dollars and filed for bankruptcy under Chapter 7 or Chapter 11 in the US. The cut off points of the models are compared in order to reach the result of bankruptcy classification and the results indicate that Mixed Logit model gives slightly better classification results than the other two methods when the data is run over the randomly chosen samples.

The literature of financial bankruptcy prediction or distress prediction is, in general, composed of the analysis held on the developed markets. Essentially, the models that current dissertation covers are well known and most cited ones in the literature of financial distress for the developed countries. Although these models are applied to developed countries at different times, the models are also used by some of the other non developed countries. To my knowledge, this study is the first one bringing ten different emerging market countries together held in the Morgan Stanley Emerging Market Index (MSCI) for the financial distress prediction over the five well known prediction models in the literature in a comparative way. The countries taking place in this dissertation sample are also unique as most of them are not considered by previous studies in an industry specific way since all the countries in this dissertation are examined over their industrial firms. On the other hand, as the countries of the dissertation are taken from a well known index, MSCI Emerging Market, the results of this study become more robust that can be a good benchmark for the future studies which could be held on emerging markets making these points believed as the contributions of this dissertation to the financial distress literature.

3. DATA

One of the most striking preferences of this study is handling a huge dataset that contains 243.095 data points. The study covers the period between 2000 and 2012 and its scope is emerging markets. In order to analyze most important emerging markets, this study includes components of Morgan Stanley Emerging Markets Index. However, due to data validity and the restriction on minimum required amount of data point for each country, some of the countries taking place within the index included to the study. The included countries are listed below:

- Brazil
- China
- Egypt
- South Africa
- Mexico
- Morocco
- Philippines
- Poland
- South Korea
- Turkey

All countries that are the constitutes of MSCI Emerging Market Index as follows: Brazil, Chile, Colombia, Mexico, Peru, Czech Republic, Egypt, Greece, Hungary, Poland, Russia, South Africa, Turkey, China, India, Indonesia, South Korea, Malaysia, Philippines, Taiwan, Thailand. When these countries are compared with the study's sample countries, it is seen that 11 countries are not included in the study. There are three main reason for the exclusion of these countries:

1) The relating country's stock market constituents fails to provide sufficient number of firms (less than 5) that are match the criteria of this study. The countries excluded regarding to the situation are Colombia, Peru, Greece, Hungary and Czech Republic.

2) The relating country's firms do not have consistent and proper accounting data within the sample period. The countries excluded regarding to the situation are India, Indonesia, Malaysia and Russia.
3) Historical stock price data of the firms for the relating countries are not available. As a result of that, the financial distress models which includes market driven variables, wouldn't be estimated. Because of using identical dataset for each model is a must in order to produce appropriate and comparable results, these countries are also excluded. The countries excluded regarding to the situation are Chile and Taiwan.

Whole dataset is collected from two very reliable sources of Bloomberg Professional Data Terminal and Thomson Reuters Eikon Data Terminal. The data of every sample country's whole industrial stock market participants collected. After the collection of the data, in order to acquire accurate estimation results outliers within the dataset are extracted in terms of 95% confidence level. Besides being an industrial firm another condition was to be listed in the stock market between the years 2000 and 2012, otherwise the dataset would have been failed in terms of consistency and bias. Regarding to these criterias total of 850 firms are covered in the study.

The variables collected from each firm, in order to run the estimation on five different financial distress models, are as follow:

- Current ratio (CA/CL): Represents total current assets divided by total current liabilities.
- Working Capital / Total Assets (WC/TA): This is the ratio of Working Capital at the end of the fiscal period to Total Assets for the same period. Working Capital is defined as Current Assets minus Current Liabilities.
- Accumulated Retained Earnings / Total Assets (RE/TA): This is the ratio of Accumulated Retained Earnings at the end of the fiscal period to Total Assets for the same period.
- EBIT / Total Assets (EBIT/TA): This is the ratio of Earnings Before Interest and Taxes for the fiscal year to the average Total Assets for the same period.

- Revenue / Total Assets (SALES/TA): This is the ratio of Total Revenue for the fiscal period to the Average Total Assets for the same period. Average Total Assets is the average of Total Assets at the beginning and the end of the fiscal period.
- Total Liabilities / Total Assets (TL/TA): This is the ratio of Total Liabilities at the end of the fiscal period divided by the Total Assets for the same period and is expressed as percentage.
- Net Income / Total Assets (ROA): This value is calculated as the Income After Taxes for the trailing twelve months divided by the Average Total Assets and is expressed as percentage. Average Total Assets is the average of Total Assets at the beginning and the end of the TTM period.
- Operational Cash Flow / Total Liabilities (OCF/TL): This ratio is calculated by diving Total Cash From Operaing Activities for the fiscal year by the Average Total Liabilities for the same period and is expressed as percent. Average Total Liabilities are the sum of all current and long term liabilities reported at the beginning and the end of the year.
- Current Liabilities / Total Assets (CL/TA): This is the ratio of Total Current Liabilities at the end of the fiscal period divided by the Total Assets for the same period and is expressed as percentage.
- Current Assets / Total Assets (CA/TA): This is the ratio of Total Current Assets at the end of the fiscal period divided by the Total Assets for the same period and is expressed as percentage.
- Market Value of Equity / Total Liabilities (MVE/TL): This is the ratio of Market Value Equity at the end of the fiscal period divided by the Total Liabilities for the same period.
- Profit Before Tax / Average Current Liabilities (PBT/ACL)
- Current Asset-Inventory-Current Liabilities / Sales-NBIT-Depreciation
- CHIN: $(NI_t - NI_{ti})/(|NI_t| + |NI_{t-1}|)$, where NI_t is net income for the most recent period. The denominator acts as a level indicator. The variable is thus intended to measure change in net income.
- OENEG: One if total liabilities exceeds total assets, zero otherwise.

- Relative Size: The ratio of market value of each firm to its capital market value.
- Return: Year end return of each equity.
- Sigma: Standard deviation of the returns.

After the collection of the data, descriptive statistics are produced in order to check if everything is appropriate for estimation after necessary adjustments. Below table represents descriptive statistics for all countries; however, besides joint estimation, because each country will be estimated by its own firms, the descriptive statistics for each country are represented in Appendix 8.1.

Table 1: Descriptive statistics regarding to all sample countries

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	2,32	0,12	0,06	0,06	0,98	2660,30	0,54	0,01	3,65	0,05	3,06	0,03	0,03	0,77	2,21	0,38	-1,89
Standard Error	0,26	0,00	0,01	0,00	0,04	669,56	0,00	0,00	0,11	0,00	0,01	0,00	0,00	0,51	0,33	0,00	1,02
Median	1,38	0,13	0,10	0,05	0,76	4,47	0,53	0,00	3,60	0,02	2,87	0,00	0,03	0,12	1,00	0,35	0,35
Mode	1,38	0,04	0,00	0,01	0,76	0,00	0,01	0,00	0,58	0,00	7,86	0,00	0,01	0,02	0,58	0,41	-2097,13
Standard Deviation	22,04	0,33	0,58	0,35	4,64	70383,44	0,34	0,11	11,68	0,48	0,73	0,48	0,03	51,74	33,49	0,30	102,76
Kurtosis	2807,47	356,67	378,05	9668,54	4380,77	3956,38	307,63	71,25	808,11	0,42	8,76	2,94	161,99	10167,74	1549,77	520,11	690,51
Skewness	51,33	-12,48	-16,26	95,11	60,69	59,57	11,82	8,56	13,86	-0,14	2,08	0,20	10,40	100,76	38,06	15,34	4,75

4. METHODOLOGY

4.1. Altman's Model

Altman (1968) makes his bankruptcy prediction for the bankrupt manufacturing firms in the US over the sample period of 1946 to 1965. For the classification of his model prediction, he uses Multiple Discriminant Analysis (MDA) as it enables the analysis of the dependent variable in qualitative form helping the classification of bankrupt firms from the non bankrupt ones with an accuracy level of 95%. The sample is composed of 66 firms with 33 bankrupt and 33 non bankrupt by considering their mean asset size. The ratios of the study are chosen depending on the basis of their popularity in the literature and the potential relevancy to the study by considering the contribution of each of the variables and the statistical significance while considering the inter-correlations among the independent variables.

The model he uses shown below over the coefficients derived through the MDA and the ratios chosen are:

$$Z = 0.012WC/TA + 0.014RE/TA + 0.033EBIT/TA + 0.006MVE/TL + 0.999SALES/TA$$

WC/TA : Working Capital / Total Assets

RE/TA : Retained Earnings / Total Assets

$EBIT/TA$: Earnings Before Interest and Taxes / Total Assets

MVE/TL : Market Value of Equity / Book Value of Total Liabilities

$SALES/TA$: Sales / Total Assets

Altman also applied financial distress prediction of his sample for the period of 1958 and 1961 for the ongoing firms and finds the prediction accuracy rate of 79% for the ongoing financially distress firms. Following Altman I used his original coefficients for the MSCI sample of this current study to see whether the original coefficients also

work for the industrials in the current sample, and also the sample is run for the re-estimated coefficients to see whether the new coefficients give better prediction results.

4.2. Taffler's Model

Taffler (1983) explores the bankruptcy predictability of the UK firms over linear discriminant analysis (LDA). Essentially, LDA aims distinguishing between two or more distinct populations on the basis of certain characteristics of their members, and the classification of further individuals as belonging to one of the populations more than to any of the others. Taffler (1983) establishes his research on the manufacturing firms for the period between 1969 and 1976 quoted in London Stock Exchange. The research uses the matching of the firms in terms of their asset size and industry covering 46 bankrupt to 46 non-bankrupt firms. The accuracy of his model through the LDA is that 95.7% for the bankrupt firms and 100% for the non-bankrupt firms.

The model he uses shown below over the coefficients derived through the LDA and the ratios chosen are:

$$Z = 3.20 + 12.18PBT/ACL + 2.50CA/TL - 10.68\text{CL}/TA + 0.03\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

PBT/ACL : Profit Before Tax / Average Current Liabilities

CA/TL : Current Assets / Total Liabilities

CL/TA : Current Liabilities / Total Assets

$\frac{CA-INV-CL}{SALES-NIBT+DEPR}$: (Current Assets – Inventory – Current Liabilities) / (Sales – Profit Before Tax +Depreciation)

Further researches and models prefer to use Logit & Probit estimation models instead of MDA or LDA like Altman and Taffler. The most important reason rather than being more complex and accurate is one of the most important preferences of logistic regression and probit regression is not requiring normally distributed independent variables while LDA strictly requires its independent variables normally distributed

(Huberty & Olejnik, 2006). Following Taffler I used his original coefficients for the MSCI sample of this current study to see whether the original coefficients also work for the industrials in the current sample, and also the sample is run for the re-estimated coefficients to see whether the new coefficients give better prediction results.

4.3. Ohlson's Model

Ohlson (1980) represents his prediction model by using logistic regression method. One of the most important differences between Ohlson's research and previous studies is the econometric model which is the conditional logit model within the framework of maximum likelihood estimation. He analyzes the data composed of 105 bankrupt firms to 2058 non- bankrupt firms for the years between 1970 and 1976. The results of the study also support the claim that the one year before bankruptcy prediction better offs the previous studies with an accuracy of 96.12%.

The model he uses shown below over the coefficients derived through the logit model and the ratios chosen are:

$$Z = -1.32 - 0.41SIZE + \frac{6.03TL}{TA} - \frac{1.43WC}{TA} + \frac{0.0757CL}{CA} - 2.37ROA - \frac{1.83OCF}{TA} - 1.72OENEG - 0.52CHIN$$

$SIZE$: Log(Total Assets / GNP Price Level Index)

TL/TA : Total Liabilities / Total Assets

WC/TA : Working Capital / Total Assets

CL/CA : Current Liabilities / Current Assets

$OENEG$: One If Total Liabilities Exceeds Total Assets, Zero Otherwise

ROA : Net Income / Total Assets

OCF/TA : Operational Cash Flow / Total Assets

$CHIN$: (NIt – NIt-1) / (|NIt|+|NIt-1|), where NIt Is Net Income For The Most Recent Period. The Denominator Acts As A Level Indicator. The Variable Is Thus Intended To Measure Change In Net Income.

Besides, the timing of bankruptcy could be caught in a better way than the rest of the studies using a given bankruptcy sample of the firms. Because, while constructing his sample Ohlson prefers to use the year end 10-K financial statements which have the potential to indicate whether the company falls into bankruptcy before or after the release of the related data to public.

The power of logit model comes from perfect match with the nature of the dependent variable which can take only two type of values, such as a firm is financially distressed or not. If we wish to explain economic variables like these in an econometric model, we must take into account of their discrete nature. These type of dependent variables are conventionally coded as 0 and 1, a convention that turns out to be very convenient. Models that attempt to explain 0-1 dependent variables are often called binary response models or, less often, binary choice models. Following Ohlson I used his original coefficients for the MSCI sample of this current study to see whether the original coefficients also work for the industrials in the current sample, and also the sample is run for the re-estimated coefficients to see whether the new coefficients give better prediction results.

4.4. Zmijewski's Model

Zmijewski (1984) applied probit analysis to the industrial firms of 129 bankrupt firms from the total of 2241 firms in NYSE and AMEX. Zmijewski used different approaches for his study and measured the different accuracy levels of his sample by considering matched sample, non-matched sample and Weighted Exogenous Sample Maximum Likelihood (WESML) probit analysis. Because of the use of different samples accuracy results of this study varies. The result for the matched sample is 92.5% for failed firms and 100% for the non- failed firms, whereas the accuracy of classification changes when the used sample is non-matched with accuracy level of failed firms is 62.5% and 99.5% for the non-failed ones. The results for using

WESML even decreases the accuracy to 52.5% for failed ones of the matched sample, and 42.5% for the non-matched sample.

The model he uses shown below over the coefficients derived through the probit model and the ratios chosen are:

$$Z = -4.336 + 0.004CA/CL - 4.513ROA + 5.70TL/TA$$

CA/CL : Current Assets / Current Liabilities

ROA: Return on Assets

TL/TA : Total Liabilities / Total Assets

More specifically, there are primarily three available estimation techniques which are appropriate for estimating models using choice-based samples: weighted exogenous sample maximum likelihood (WESML), conditional maximum likelihood (CML), and full information concentrated maximum likelihood (FICML). All three techniques provide asymptotically consistent normal parameter estimates; however, only FICML's estimates are asymptotically efficient. Computationally, WESML is the least complex of these techniques, that's why Zmijewski prefers to use it to examine the financial distress.

The logit and probit models are quite similar. In practice, the logit and probit models tend to yield extremely similar results. In most cases, the only real difference between them is in the way the elements of β are scaled. This difference in scaling occurs because the variance of the distribution for which the logistic function is the cumulative distribution function can be shown to be π^2/3, while that of the standard normal is of course unity (Judge et al. 1985). In view of their similar properties, it is perhaps curious that both the logit and the probit models continue to be widely used, while models that genuinely differ from them are rarely encountered. Following Zmijewski I used his original coefficients for the MSCI sample of this current study to see whether the original coefficients also work for the industrials in the current sample,

and also the sample is run for the re-estimated coefficients to see whether the new coefficients give better prediction results.

4.5. Shumway's Model

Shumway (2001) established kind of a dynamic model, which is binary logit model, for his calculation of financial bankruptcy for the firms. The sample is composed of 300 bankrupt firms for the years between 1962 and 1992. His simple hazard model is a kind of survival analysis which let the inclusion of market driven variables into his model for the prediction of corporate bankruptcy. In order to emphasize the accuracy power of his model he adjusts Altman's and Zmijewski's model by adding new market driven variables. There are two model estimates one is just with market driven variables and the other one is through the accounting variables by considering the studies of Altman and Zmijewski. The Altman and Zmijewski models are improved through including the trading age of the corporations and then the market models are considered over the sample of Shumway for the years between 1962 and 1992. The developed model through accounting and market based variables indicates the most accurate results in which Shumway emphasizes as one of the main outcomes of his study with 95% of accuracy over the market driven variables.

The model he uses shown below over the coefficients derived through the simple hazard model and the ratios chosen are:

$$Z = -13.30 - 0.48SIZE - 1.81RETURN - 1.98ROA + 5.79SIGMA + 3.59TL/TA$$

$SIZE$: Relative Size

$RETURN$: Yearly Return

ROA : Return on Assets / Total Assets

$SIGMA$: Standard Deviation of Daily Returns Within A Year

TL/TA : Total Liabilities / Total Assets

Since the logit and hazard models have the same likelihood function, they have the same asymptotic variance-covariance matrix (Amemiya1985). However, the test statistics produced by a logit program are incorrect for the hazard model because they assume that the number of independent observations used to estimate the model is the number of firm years in the data. Calculating correct test statistics requires adjusting the sample size assumed by the logit program to account for the lack of independence between firm-year observations. Following Shumway I used his original coefficients for the MSCI sample of this current study to see whether the original coefficients also work for the industrials in the current sample, and also the sample is run for the re-estimated coefficients to see whether the new coefficients give better prediction results.

4.6. Summary of Methodology

Regardings to the models that are mentioned above five accounting based financial distress models considered in terms of their accuracy levels for the entire sample of MSCI emerging market countries for 2000-2012 and 850 firms. The accuracy levels of early prediction of financial distress in advance of one to five years is the prediction period for the entire sample of the dissertation. The models are also considered for their individual country effects over the original coefficients. In addition, all the models are re-estimated via their original estimation methodology (Altman – Multi Discriminant Analysys, Taffler – Linear Discriminant Analysis, Ohlson - Logit Model, Zmijewski Probit Model, and Shumway – Simple Hazard Model) for new coefficients.

5. FINDINGS

The findings part of the dissertation is explained by considering the results which are gathered through the coefficients applied by considering each country's variables over the original coefficients of the financial distress prediction models, and the coefficients calculated over the entire sample are applied to each country exclusively. More specifically, three methods are used to re-restimate financial distress models. The first one is getting accuracy results through the application of each model via their own original coefficients with respect to sample data. The second is the collection of the coefficients for each sample country via re-estimation through each sample country's data (country specific coefficients) and defining accuracy rates for each model and each country via country specific coefficients. The third one refers to the collection of the coefficients via re-estimation through whole sample data and gathering model accuracy results regarding to these coefficients.

Then the The five models that are taken into calculation for the ten countries are explained through considering the financial distress levels depending on two years, three years and five years of financial distress and prediction period covering from the previous one year to five year period. The results indicated in this part are over the lag year of one and two years for the financial distress period of two years as the lag year prediction period in the literature is emphasized over the one and two years period.

5.1. Altman Results

5.1.1. Coefficients are estimated through the relevant country's data

This part of the research represents the results gathered from the original coefficients of the entire sample and the re-estimated coefficients of the entire sample. Moreover, the prediction results for the each country in the sample are calculated by considering the original Altman coefficients to reach the Altman prediction results, and the re-estimated prediction results are gathered by running the data of each country sample over the Altman variables with new coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Original Altman Model:

$$Z = 0.012WC/TA + 0.014RE/TA + 0.033EBIT/TA + 0.006MVE/TL + 0.999SALES/TA$$

WC/TA : Working Capital / Total Assets

RE/TA : Retained Earnings / Total Assets

$EBIT/TA$: Earnings Before Interest and Taxes / Total Assets

MVE/TL : Market Value of Equity / Book Value of Total Liabilities

$SALES/TA$: Sales / Total Assets

Re-estimated Altman Model:

$$Z = 0.64WC/TA + 0.56RE/TA + 10.34EBIT/TA + 0.00MVE/TL - 0.06SALES/TA$$

Table 2: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (All Countries)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	30,4%	30,8%	29,8%	18,1%	17,8%	17,8%
3	28,9%	28,6%	29,1%	15,0%	15,1%	14,5%
5	25,7%	23,7%	28,1%	11,8%	11,3%	12,2%

5.1.1.1. The accuracy level for the entire sample over the original coefficients of the model

The results for two years of financial distress and lag years of the early prediction of financial distress indicates that the prediction accuracy of the Altman coefficients decrease when the in advance prediction period extents with the original coefficients. The Altman results over the original coefficients for the entire sample show that the most accurate result belongs to one year before prediction of financial distress with a low level of accuracy which is 31% when compared to Altman's original study of 79% of accuracy over the period of 1958 to 1961. On the other hand, prediction accuracy for the before two years for the financial distress of two years is 30% for the entire sample slightly lower than the one year before prediction accuracy. The pre and

post financial crisis of 2008 results are calculated for the model over the indicated constraints and it is found that the pre crisis estimation accuracy of the model in advance of one year before the financial distress is 32.3% and 29.7% after the crisis, and 30.7% pre crisis and 29.9 % for the post crisis estimation of financial distress in advance of two years. Nevertheless, the prediction accuracy of the model after the crisis period is lower than before the crisis period especially for the financial distress years of two to three years with a one lag year. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

5.1.1.2. The accuracy level for the entire sample over the re-estimated coefficients of the model

The results for two years of financial distress and two lag years of the early prediction of financial distress indicate that the prediction accuracy of the re-estimated coefficients decrease when the in advance prediction period extents through the re-estimated coefficients. The most accurate prediction result over the re-estimated coefficients belongs to the one year before prediction for the financial distress of two years which is 19.1% highly lower than the result reached through the original Altman coefficients. The prediction accuracy also decreases to 18.1% for the lag year of two with the two years of financial distress. Likewise the accuracy levels for the pre and post crisis period also decrease for the prediction results for the re-estimated sample. The result for the pre crisis estimation is 20.6% and post crisis is 18% before one year of the prediction and 16% to 14.8% after the crisis. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

5.1.1.3. Altman results for each of the countries

The individual country results are given for the Altman and re-estimated Altman coefficients here in this part by comparing each of the country results with the original and re-estimated model results of the entire sample.

5.1.1.3.1. Brazil

The two years of distress with the one year before prediction for financial distress is 23.6% for the estimation which is calculated over the original Altman model

coefficients and it is 40% for the re-estimated form of the sample for Brazil. The in advance of two years of lag for the prediction decreases to 22% for the estimation of the model over the original Altman coefficients and it is 40% for the re-estimated coefficients of Brazil. When the results for the pre and post crisis comparison for the original coefficients are considered before two years of financial distress, the results indicate that the pre-crisis period accuracy of estimation through the original coefficients is 32% whereas it is 44% for the re-estimated model. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 2.98WC/TA + 4.91RE/TA + 2.83EBIT/TA - 0.02MVE/TL + 0.36SALES/TA$$

Table 3: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Brazil)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	23,2%	31,5%	14,7%	39,7%	44,1%	34,0%
3	18,2%	30,1%	6,7%	35,3%	42,2%	27,3%
5	13,2%	24,8%	2,7%	29,7%	35,7%	23,3%

The results indicate for Brazil that the accuracy level for the prediction of financial distress is increased when the sample is re-estimated for each of the observation years for the entire lag year and financial distress periods. Moreover, the accuracy of the prediction decreases after the crisis period but it is again significantly higher than the estimation through original coefficients and when compared with the entire sample.

5.1.1.3.2. China

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 5.4% of accuracy level for China while it becomes 12.9% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to

5.1% but still the re-estimated coefficients give better estimation result of 12.1%. The pre crisis results of the original coefficients give lower accuracy levels than the re-estimated ones as the pre crisis level for the two and three years of lag are 5.8 and 5.9 respectively, whereas the re-estimated crisis estimation becomes 12.9 to 13.3 %. The post crisis effects, on the other hand, for the original coefficients are still lower over the lag year of two and three years than the re-estimated model coefficients which are 5% and 4.5% for the original coefficients and 12.8% to 11.7% for the re-estimated one. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 0.88WC/TA - 0.03RE/TA + 14.13EBIT/TA - 0.03MVE/TL + 0.11SALES/TA$$

Table 4: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (China)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	6,9%	7,8%	6,0%	14,0%	15,1%	13,0%
3	5,3%	5,8%	4,9%	12,5%	13,0%	11,9%
5	4,5%	4,5%	4,6%	11,0%	10,6%	11,7%

The prediction results for China over the original coefficients are lower than the re-estimated sample in each of the lag and financial distress periods. Although the accuracy level when compared with the entire sample is lower, the re-estimated coefficients give better results for China.

5.1.1.3.3. Egypt

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 10.7% of accuracy level for Egypt while it becomes 22.1% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is increased to 11.1% but still the re-estimated coefficients give better estimation result of 22.2%. On

the other hand, the pre crisis results of the original coefficients give lower accuracy levels than the re-estimated ones as the pre crisis level for the two and three years of lag are 12.9% and 7.1% respectively, whereas the re-estimated crisis estimation becomes 21.4 % for both of the lag years. The post crisis effects, on the other hand, for the original coefficients are still lower over the lag year of two and three years than the re-estimated model coefficients which are 8.6% for the original coefficients and 22.9% for the re-estimated one. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 0.52WC/TA + 1.42RE/TA + 5.22EBIT/TA - 0.09MVE/TL + 0.58SALES/TA$$

Table 5: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Egypt)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	13,3%	18,8%	8,3%	24,3%	26,9%	21,9%
3	11,0%	13,9%	8,3%	21,9%	21,9%	21,9%
5	7,2%	6,2%	8,3%	17,6%	13,1%	21,9%

The re-estimated coefficients give better results in each of the observation years. Although the estimation results for the original coefficients are lower than the entire sample the re-estimated coefficients give better results than the entire sample of the re-estimated prediction results.

5.1.1.3.4. South Africa

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 50% of accuracy level for South Africa while it becomes 44.1% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is increased to 51% and the re-estimated coefficient slightly decreases from its level of 44.1% to 43.4%. The pre crisis results of the original coefficients, on the other hand,

give lower accuracy levels than the re-estimated ones as the pre crisis level for the two and three years of lag are 64.5% and 62.5% respectively, whereas the re-estimated crisis estimation becomes 44.5% and 44.3% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 35.5% and 41.8% for the lag years of two to three whereas it increases to 43.6% to 42.7% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 1.55WC/TA + 1.65RE/TA + 8.85EBIT/TA + 0.00MVE/TL + 0.16SALES/TA$$

Table 6: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Africa)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	50,8%	62,6%	39,2%	45,2%	44,9%	45,5%
3	50,1%	61,1%	39,5%	43,4%	43,4%	43,6%
5	45,0%	51,9%	39,5%	39,9%	37,0%	43,6%

The re-estimated sample for South African industrials indicates that the estimation results over Altman coefficients are higher than the estimation coefficients of the entire sample for the original coefficients of the Altman model. On the other hand, although the re-estimated country sample results gathered through the re-estimated coefficients are slightly lower than the results gathered through the original country coefficients of the country sample, it is higher than prediction results reached through the re-estimated coefficients of the entire sample.

5.1.1.3.5. Mexico

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 30% of accuracy level for Mexico while it becomes 24% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to

26.7% and the re-estimated coefficient sharply decreases from its level of 24% to 20%. The pre crisis results of the original coefficients, on the other hand, give similar results for the re-estimated ones as the pre crisis level for the two and three years of lag are 20% and 15% respectively, whereas the re-estimated crisis estimation becomes 20% and 15% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 40% and 36% for the lag years of two to three whereas it decreases to 28% to 24% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 1.65WC/TA + 7.26RE/TA + 15.24EBIT/TA + 0.00MVE/TL - 1.36SALES/TA$$

Table 7: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Mexico)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	28,2%	20,2%	34,7%	25,1%	19,2%	30,7%
3	27,6%	19,3%	34,7%	24,8%	18,7%	30,7%
5	25,2%	14,9%	34,7%	22,5%	14,5%	30,7%

The re-estimated sample for industrials of Mexico stock exchange indicates that the estimation results over Altman coefficients are very similar to the estimation results through the coefficients of the entire sample for the original coefficients of the Altman model. On the other hand, the re-estimated country sample results gathered through the re-estimated coefficients are lower than the results gathered through the original country coefficients of the country sample, it is higher than the prediction results reached through the re-estimated coefficients of the entire sample.

5.1.1.3.6. Morocco

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 29.2% of accuracy level for Morocco while

it becomes 16.7% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to 28.7% and the re-estimated coefficient sharply decreases from its level of 16.7% to 14.8%. The pre crisis results of the original coefficients for the two and three years of lag are 28.3% and 25% respectively, whereas the re-estimated pre crisis estimation becomes 18.3% and 16.7% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 30% and 31.7% for the lag years of two to three whereas it decreases to 15% to 13.3% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = -0.4WC/TA + 7.71RE/TA + 3.89EBIT/TA - 0.00MVE/TL + 0.19SALES/TA$$

Table 8: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Morocco)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	29,5%	28,0%	30,0%	16,4%	18,2%	14,7%
3	28,1%	27,0%	28,3%	15,1%	17,6%	13,1%
5	23,6%	22,1%	25,0%	11,2%	13,6%	9,7%

The prediction results reached through the re-estimated coefficients of the country are very similar to the prediction results calculated through the re-estimated coefficients for the entire sample. The prediction results reached through the original coefficients of the model are lower than prediction results of the original model for the entire sample.

5.1.1.3.7. Philippines

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates a 14.4% of accuracy level for Philippines while it becomes 15% after the re-estimation of the sample. For the third year accuracy of the

prediction, it is seen that the accuracy level over the original coefficients is decreased to 11.7% and the re-estimated coefficient sharply decreases from its level of 15% to 11.7%. The pre crisis results of the original coefficients for the two and three years of lag are 15.6% and 9.7% respectively, whereas the re-estimated pre crisis estimation becomes 14.4% and 8.3% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 13.3% and 13.3% for the lag years of two to three whereas it increases to 15.6% to 14.4% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 1.89WC/TA - 0.07RE/TA + 10.84EBIT/TA - 0.00MVE/TL - 1.00SALES/TA$$

Table 9: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Philippines)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	13,8%	13,7%	13,1%	14,5%	13,1%	15,2%
3	10,9%	12,3%	9,1%	11,4%	11,7%	10,7%
5	5,8%	8,2%	3,5%	6,3%	7,6%	5,2%

The prediction results reached through the re-estimated coefficients of the country is lower than the prediction results calculated through the re-estimated coefficients for the entire sample. The prediction results reached through the original coefficients of the model are lower than prediction results of the original model for the entire sample.

5.1.1.3.8. Poland

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates a 24.8% of accuracy level for Poland while it becomes 25.5% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to

22.8% and the re-estimated coefficient sharply decreases from its level of 25.5% to 23%. The pre crisis results of the original coefficients for the two and three years of lag are 24.2% and 18.3% respectively, whereas the re-estimated pre crisis estimation becomes 20% and 14.1% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 25.4% and 26.5% for the lag years of two to three whereas it increases to 31% to 30.1% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 1.24WC/TA + 1.57RE/TA + 7.61EBIT/TA + 0.01MVE/TL - 0.05SALES/TA$$

Table 10: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Poland)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	24,2%	23,0%	24,1%	25,0%	19,7%	28,8%
3	22,2%	20,4%	22,8%	22,6%	17,0%	26,9%
5	18,0%	14,8%	20,5%	18,8%	11,9%	24,6%

The prediction results reached through the re-estimated coefficients of the country is higher than the prediction results calculated through the re-estimated coefficients for the entire sample. The prediction results reached through the original coefficients of the model are lower than prediction results of the original model for the entire sample.

5.1.1.3.9. South Korea

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates 84.7% of accuracy level for South Korea while it becomes 31.2% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is increased to 85.1% and the re-estimated coefficient decreases from its level of 31.2% to 29.9%. The

pre crisis results of the original coefficients for the two and three years of lag are 83.5% and 83.8% respectively, whereas the re-estimated pre crisis estimation becomes 28.5% and 26% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 85.9% and 86.2% while for the lag years of two to three whereas it decreases to 33.9% to 33% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 0.82WC/TA + 2.17RE/TA + 9.73EBIT/TA + 0.00MVE/TL + 0.18SALES/TA$$

Table 11: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Korea)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	84,9%	83,5%	86,3%	31,0%	28,2%	33,1%
3	87,3%	83,1%	91,6%	27,1%	25,9%	27,8%
5	83,5%	73,5%	94,6%	22,6%	20,8%	24,5%

The prediction results reached through the re-estimated coefficients of the country is higher than the prediction results calculated through the re-estimated coefficients for the entire sample. The prediction results reached through the original coefficients of the model are also higher than the prediction results of the original model for the entire sample.

5.1.1.3.10. Turkey

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates 30.4% of accuracy level for Turkish industrial firms while it becomes 32.2% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is nearly the same as the previous lag year with 30.1% and the re-estimated coefficient decreases from its level of 32.2% to 31.9%. The pre crisis results of the original

coefficients for the two and three years of lag are 34.7% and 36.1% respectively, whereas the re-estimated pre crisis estimation becomes 38.2% and 38.9% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 26.2% and 25.3% while for the lag years of two to three whereas it decreases to 26.2% for the re-estimated sample for both of the lag years. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Altman Model:

$$Z = 1.42WC/TA + 0.31RE/TA + 8.05EBIT/TA + 0.00MVE/TL - 0.02SALES/TA$$

Table 12: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Turkey)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	30,8%	36,4%	25,7%	32,5%	39,4%	26,0%
3	26,0%	30,1%	22,3%	26,7%	32,8%	21,3%
5	19,8%	24,0%	16,7%	19,7%	25,3%	15,5%

The prediction results reached through the re-estimated coefficients of the country is found higher than the prediction results calculated through the re-estimated coefficients for the entire sample. The prediction results reached through the original coefficients of the model are also higher than the prediction results of the original model for the entire sample.

5.1.2. Coefficients are estimated through the whole sample for each country

The representation of each country's financial distress prediction by applying the coefficients derived for the re-estimated financial distress prediction coefficients of the entire sample is to examine whether the derived coefficients of the entire sample can be applicable to each country in terms of the accuracy stability of the financial distress prediction in other words the dissertation tries to shed light to the point that whether the derived coefficients could be generalizable. The details of the results dependending on

financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Original Altman Model:

$$Z = 0.012WC/TA + 0.014RE/TA + 0.033EBIT/TA + 0.006MVE/TL + 0.999SALES/TA$$

WC/TA : Working Capital / Total Assets

RE/TA : Retained Earnings / Total Assets

$EBIT/TA$: Earnings Before Interest and Taxes / Total Assets

MVE/TL : Market Value of Equity / Book Value of Total Liabilities

$SALES/TA$: Sales / Total Assets

Re-estimated Altman Model:

$$Z = 0.64WC/TA + 0.56RE/TA + 10.34EBIT/TA + 0.00MVE/TL - 0.06SALES/TA$$

Table 13: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (All Countries)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	30,4%	30,8%	29,8%	18,1%	17,8%	17,8%
3	28,9%	28,6%	29,1%	15,0%	15,1%	14,5%
5	25,7%	23,7%	28,1%	11,8%	11,3%	12,2%

The results for two years of financial distress and two lag years of the early prediction of financial distress indicate that the prediction accuracy of the re-estimated coefficients decrease when the in advance prediction period extents through the re-estimated coefficients. The most accurate prediction result over the re-estimated coefficients belongs to the one year before prediction for the financial distress of two years which is 19.1% highly lower than the result reached through the original Altman

coefficients. The prediction accuracy also decreases to 18.1% for the lag year of two with the two years of financial distress. Likewise the accuracy levels for the pre and post crisis period also decrease for the prediction results for the re-estimated sample. The result for the pre crisis estimation is 20.6% and post crisis is 18% before one year of the prediction and 16% to 14.8% after the crisis. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

5.1.2.1. Altman results for each of the countries

The individual country results are given for the Altman and re-estimated Altman coefficients here in this part by comparing each of the country results with the original and re-estimated model results of the entire sample.

5.1.2.1.1. Brazil

The two years of distress with the two years before prediction for financial distress is 23.6% for the estimation which is calculated over the original Altman model coefficients and it is 38% for the re-estimated form of the sample for Brazil. The in advance of three years of lag for the prediction increases to 22.2 % for the estimation of the model over the original Altman coefficients and it is 40% for the re-estimated coefficients of Brazil. When the results for the pre and post crisis comparison for the original coefficients are considered before two years of financial distress, the results indicate that the pre-crisis period accuracy of estimation through the original coefficients is 32% whereas it is 44% for the re-estimated model. On the other hand, the post crisis estimation over the original coefficients is 12% while it is 32% for the re-estimated coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 14: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Brazil)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	23,2%	31,5%	14,7%	40,2%	43,6%	35,3%
3	18,2%	30,1%	6,7%	35,0%	41,7%	27,3%

5	13,2%	24,8%	2,7%	29,3%	35,2%	23,3%

Another comparison is done over the re-estimated coefficients of the Brazil sample in which the coefficients are derived over the Brazil's sample exclusively with the one in which the coefficients, derived from entire re-estimated model and applied to each country. The results are indicating that the estimation accuracy is 40% for the initial calculation, and it decreases to 38% for the second calculation. When the pre and post calculations are considered the pre calculation is 44% for the initial application whereas it is also 44% for the second calculation. However, the result for post crisis calculation for the first application is 36% whereas it becomes 32% in the second case. That's why we can interpret that the application differences change the result of the estimations.

5.1.2.1.2. China

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 7 % of accuracy level for China while it is again 7 % after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to 6.5% and the estimation result for decreases to 6.4% after the re-estimation process. The pre crisis results of the original coefficients give higher accuracy levels than the re-estimated ones as the pre crisis level for the two and three years of lag are 7.9 and 7.7 respectively, whereas the re-estimated crisis estimation becomes 7.1 to 6.5 %. The post crisis effects, on the other hand, for the original coefficients are lower over the lag year of two and three years than the re-estimated model coefficients which are 6.1% and 5.5% for the original coefficients and 6.9% to 6.4% for the re-estimated one. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 15: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (China)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	6,9%	7,8%	6,0%	6,6%	6,8%	6,4%
3	5,3%	5,8%	4,9%	5,1%	4,7%	5,4%
5	4,5%	4,5%	4,6%	4,3%	3,5%	5,1%

The prediction accuracy levels decreases when the re-estimation results are reached different than the previously observed re-estimation results for China at the initial calculation of financial distress.

5.1.2.1.3. Egypt

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 12.9% of accuracy level for Egypt while it becomes 24.3% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is increased to 13.5% but still the re-estimated coefficients give better estimation result of 24.6%. On the other hand, the pre crisis results of the original coefficients give lower accuracy levels than the re-estimated ones as the pre crisis level for the two and three years of lag are 17.1% and 19.6% respectively, whereas the re-estimated crisis estimation becomes 25.7% and 26.8% for both of the lag years. The post crisis effects, on the other hand, for the original coefficients are still lower over the lag year of two and three years than the re-estimated model coefficients which are 8.6% for the original coefficients and 18.6% for the re-estimated one. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 16: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Egypt)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	13,3%	18,8%	8,3%	24,1%	29,3%	19,0%
3	11,0%	13,9%	8,3%	21,6%	24,3%	19,0%
5	7,2%	6,2%	8,3%	17,4%	15,5%	19,0%

The calculation results indicate that the re-estimation of the model works for Egypt. However, the re-estimated coefficients over each country's exclusive coefficients give better results than the results reached by applying the entire country coefficients to each of the countries.

5.1.2.1.4. South Africa

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 50% of accuracy level for South Africa while it becomes 24.5% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is increased to 51% and the re-estimated coefficient slightly decreases from its level of 24.5% to 23.7%. The pre crisis results of the original coefficients, on the other hand, give lower accuracy levels than the re-estimated ones as the pre crisis level for the two and three years of lag are 64.5% and 62.5% respectively, whereas the re-estimated crisis estimation becomes 25.5% and 20.5% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 35.5% and 41.8% for the lag years of two to three whereas it increases to 23.6% to 26.4% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 17: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Africa)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	50,8%	62,6%	39,2%	24,5%	23,9%	24,2%
3	50,1%	61,1%	39,5%	22,3%	21,6%	22,4%
5	45,0%	51,9%	39,5%	20,7%	18,6%	22,4%

The re-estimation results indicate that other than the first application of the re-estimated coefficients for the prediction of financial distress results for South Africa is deteriorated after the application of the re-estimated coefficients of the entire sample to the South African industrials' variables.

5.1.2.1.5. Mexico

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 30% of accuracy level for Mexico while it decreases to 2% after the re-estimation of the sample with the coefficients derived for the entire sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to 26.7% and the re-estimated coefficient sharply decreases from its level of 2% level to 0.98%. The pre crisis results of the original coefficients, on the other hand, give similar results for the re-estimated ones as the pre crisis level for the two and three years of lag are 20% and 15% respectively, whereas the re-estimated crisis estimation becomes 4% and 0% for both of the lag years. The post crisis effects, in contrast, for the estimation over the original coefficients are 40% and 36% for the lag years of two to three whereas it decreases to 28% to 24% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 18: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Mexico)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	28,2%	20,2%	34,7%	1,8%	3,2%	0,0%
3	27,6%	19,3%	34,7%	1,5%	2,7%	0,0%
5	25,2%	14,9%	34,7%	0,0%	0,0%	0,0%

The re-estimation results indicate that other than the first application of the re-estimated coefficients for the prediction of financial distress results for Mexico are deteriorated after the application of the re-estimated coefficients of the entire sample to the Mexico industrials' variables.

5.1.2.1.6. Morocco

The estimation result over the original coefficients for the two years of distress period with lag year of two years indicates a 29.2% of accuracy level for Morocco while it becomes 11.7% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to 28.7% and the re-estimated coefficient sharply decreases from its level of 11.7% to 10.2%. The pre crisis results of the original coefficients for the two and three years of lag are 28.3% and 25% respectively, whereas the re-estimated pre crisis estimation becomes 18.3% and 16.7% for both of the lag years. The post crisis effects, in comparison for the estimation over the original coefficients are 30% and 31.7% for the lag years of two to three whereas it decreases to 15% to 13.3% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 19: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Morocco)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	29,5%	28,0%	30,0%	11,5%	10,7%	11,7%
3	28,1%	27,0%	28,3%	10,3%	10,1%	10,0%
5	23,6%	22,1%	25,0%	7,1%	7,4%	6,7%

The re-estimation results indicate that like the results for the first calculation of the re-estimated coefficients for the prediction of financial distress results for Morocco are deteriorated after the application of the re-estimated coefficients of the entire sample to the industrials' variables in Morocco.

5.1.2.1.7. Philippines

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates a 14.4% of accuracy level for Philippines while it becomes 21.7% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to 11.7% and the re-estimated coefficient sharply decreases from its level of 21.7% to 17.9%. The pre crisis results of the original coefficients for the two and three years of lag are 15.6% and 9.7% respectively, whereas the re-estimated pre crisis estimation becomes 20% and 11.1% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 13.3% and 13.3% for the lag years of two to three whereas it increases to 23.3% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 20: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Philippines)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	13,8%	13,7%	13,1%	20,6%	17,1%	22,8%
3	10,9%	12,3%	9,1%	17,7%	15,7%	18,7%
5	5,8%	8,2%	3,5%	12,6%	11,6%	13,1%

The re-estimation results indicate that the results for the first calculation of the re-estimated coefficients for the prediction of financial distress results for Philippines are better off after the application of the re-estimated coefficients of the entire sample to the industrials' variables in Philippines.

5.1.2.1.8. Poland

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates a 24.8% of accuracy level for Poland while it becomes 23.4% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is decreased to 22.8% and the re-estimated coefficient sharply decreases from its level of 23.4% to 21.9%. The pre crisis results of the original coefficients for the two and three years of lag are 24.2% and 18.3% respectively, whereas the re-estimated pre crisis estimation becomes 21.1% and 14.1% for both of the lag years. The post crisis effects, contrarily, for the estimation over the original coefficients are 25.4% and 26.5% for the lag years of two to three whereas it increases to 25.6% to 28.2% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 21: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Poland)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	24,2%	23,0%	24,1%	23,4%	20,1%	25,1%
3	22,2%	20,4%	22,8%	21,0%	17,3%	23,1%
5	18,0%	14,8%	20,5%	17,2%	12,3%	20,8%

The re-estimation results indicate that the results for the first calculation of the re-estimated coefficients for the prediction of financial distress results for Poland are deteriorated after the application of the re-estimated coefficients of the entire sample to the industrials' variables in Poland.

5.1.2.1.9. South Korea

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates 84.7% of accuracy level for South Korea while it becomes 17.2% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is increased to 85.1% and the re-estimated coefficient decreases from its level of 17.2% to 16.1%. The pre crisis results of the original coefficients for the two and three years of lag are 83.5% and 83.8% respectively, whereas the re-estimated pre crisis estimation becomes 16% and 14.4% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 85.9% and 86.2% while for the lag years of two to three whereas it decreases to 18.3% to 17.4% for the re-estimated sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 22: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Korea)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	84,9%	83,5%	86,3%	17,1%	16,0%	17,8%
3	87,3%	83,1%	91,6%	12,9%	13,8%	11,9%
5	83,5%	73,5%	94,6%	9,1%	9,9%	8,5%

The re-estimation results indicate that the results for the first calculation of the re-estimated coefficients for the prediction of financial distress results for South Korea are deteriorated after the application of the re-estimated coefficients of the entire sample to the industrials' variables in South Korea.

5.1.2.1.10. Turkey

The estimation result over the original coefficients for the two years of distress period with lag year of two indicates 30.4% of accuracy level for Turkish industrial firms while it becomes 33.1% after the re-estimation of the sample. For the third year accuracy of the prediction, it is seen that the accuracy level over the original coefficients is nearly the same as the previous lag year with 30.1% and the re-estimated coefficient decreases from its level of 33.1% to 32.6%. The pre crisis results of the original coefficients for the two and three years of lag are 34.7% and 36.1% respectively, whereas the re-estimated pre crisis estimation becomes 39.6% and 40.6% for both of the lag years. The post crisis effects, on the other hand, for the estimation over the original coefficients are 26.2% and 25.3% while for the lag years of two to three whereas it decreases to 26.7 % and 26.2% for the re-estimated sample for both of the lag years. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.1. The below table indicates the averages of lag years for each financial distress year.

Table 23: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Turkey)

	Altman			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**

2	30,8%	36,4%	25,7%	33,1%	40,7%	26,2%
3	26,0%	30,1%	22,3%	27,3%	34,0%	21,5%
5	19,8%	24,0%	16,7%	20,2%	26,1%	15,7%

The re-estimation results indicate that the results for the first calculation of the re-estimated coefficients for the prediction of financial distress results for Turkey are improved after the application of the re-estimated coefficients of the entire sample to the industrials' variables of Turkey.

5.2. Ohlson Results

5.2.1. Coefficients are estimated through the relevant country's data

This part of the research represents the results gathered from the original coefficients of the entire sample and the re-estimated coefficients of the entire sample. Moreover, the prediction results for the each country in the sample are calculated by considering the original Ohlson coefficients to reach the Ohlson prediction results, and the re-estimated prediction results are gathered by running the data of each country sample over the Ohlson variables with new coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Original Ohlson Model

$$Z = -1.32 - 0.41SIZE + \frac{6.03TL}{TA} - \frac{1.43WC}{TA} + \frac{0.0757CL}{CA} - 2.37ROA - \frac{1.83OCF}{TA} - 1.72OENEG - 0.52CHIN$$

$SIZE$: Log(Total Assets / GNP Price Level Index)

TL/TA : Total Liabilities / Total Assets

WC/TA : Working Capital / Total Assets

CL/CA : Current Liabilities / Current Assets

$OENEG$: One If Total Liabilities Exceeds Total Assets, Zero Otherwise

ROA : Net Income / Total Assets

OCF/TA : Operational Cash Flow / Total Assets

$CHIN$: (NI_t – NI_{t-1}) / ($|NI_t|+|NI_{t-1}|$), where NI_t Is Net Income For The Most Recent Period. The Denominator Acts As A Level Indicator. The Variable Is Thus Intended To Measure Change In Net Income.

Re-estimated Ohlson Model

$$Z = -0.54 - 0.01SIZE - 0.32TL/TA - 0.42WC/TA + 0.01CL/CA - 0.02ROA + 0.00OCF/TA + 0.64OENEG + 0.08CHIN$$

Table 24: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (All Countries)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,4%	90,3%	92,8%	91,3%	90,1%	92,6%
3	93,1%	90,6%	96,2%	92,9%	90,2%	96,0%
5	88,4%	79,8%	98,5%	88,1%	79,4%	98,3%

5.2.1.1. The accuracy level for the entire sample over the original coefficients of the model

The accuracy of the Ohlson model over its original coefficients for the entire sample of the ten countries gives powerful results for the estimation of the entire sample. Ohlson's accuracy rate, in his study in 1980, for one year before the bankruptcy is 82.6% and the results found in current dissertation for one year before bankruptcy over the financial distress period of two years is 90.4%. It should be indicated that although Ohlson examined the bankrupt firms, the results of current dissertation indicates that Ohlson model over its original coefficients gives better results for the MSCI emerging market countries. The prediction result for distress firms in advance of two years is 91.6% and three years is 92.3% for the entire sample results. On the other hand, the pre and post crisis results are also very high indicating the robustness of the results.

5.2.1.2. The accuracy levels for the entire sample over the re-estimated coefficients of the model

The results for one, two and three years of before failure for the re-estimated sample are 90.3%, 91.3% and 92% respectively. In comparison, the pre crisis results for one, two and three years in advance of the financial distress are 88.3%, 90.1% and 91.4% respectively. Likewise the results for the post crisis are 92.6%, 92.6% and 92.5% in a row for the lag years of one, two and three respectively. The results indicate that Ohlson model seems reliable for the Emerging market countries of the MSCI index as the results seem very accurate in years depending on the coefficient re-estimations and slight increases are seen for the results.

5.2.1.3. Ohlson results for each of the countries

Ohlson results, depending on each country, are examined. The results derived through the original coefficients of the Ohlson model first and then the re-estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.2.1.3.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 83.6% while it becomes 87.3% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 86% of non distress prediction accuracy while the rate decreases to 82% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 86.7% for the original model and 77.8% for the re-adjusted model. The results for Brazil indicates that the re-estimation improves the prediction results only for the prediction of one year before financial distress and the results deteriorates for the following periods. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = 7.32 - 1.33SIZE - 4.09TL/TA + 12.26WC/TA - 10.72CL/CA - 0.25ROA + 0.00OCF/TA + 0.64OENEG + 0.26CHIN$$

Table 25: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Brazil)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,1%	82,5%	88,0%	82,6%	84,6%	80,0%
3	88,7%	81,5%	96,0%	84,5%	82,2%	86,7%
5	86,2%	73,2%	100,0%	80,4%	71,0%	90,7%

5.2.1.3.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 97.6% while it becomes 97% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 97.6% of non distress prediction accuracy while the rate decreases to 96.8% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 97.9% for the original model and 97.3% for the re-adjusted model. The results for China indicate that the re-estimation does not improve the prediction results for the financial distress and the results are deteriorated very slightly for the following periods which show that the Ohlson model works very well for China. The pre and post crisis estimation results are also very high for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = -1.32 + 0.60SIZE - 0.15TL/TA - 0.10WC/TA - 0.25CL/CA - 0.18ROA + 0.00OCF/TA + 0.23OENEG + 1.28CHIN$$

Table 26: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (China)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	97,7%	96,7%	98,7%	97,2%	96,6%	97,7%
3	97,9%	96,4%	99,7%	97,1%	96,0%	98,6%
5	90,9%	83,5%	100,0%	90,1%	83,0%	98,8%

5.2.1.3.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 87.7% while it becomes 94.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 87.9% of non distress prediction accuracy while the rate increases to 90.7% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 87.3% for the original model and 89.7% for the re adjusted model. The results for Egypt indicate that the re-estimation improves the prediction results for the financial distress and Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also very high for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = 42.70 + 13.40SIZE - 12.11TL/TA + 19.52WC/TA - 2.91CL/CA - 1.79ROA + 0.00OCF/TA + 0.23OENEG + 1.28CHIN$$

Table 27: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Egypt)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,4%	81,4%	92,9%	92,5%	88,5%	96,0%
3	88,4%	83,9%	92,9%	92,1%	88,2%	96,0%
5	84,6%	78,0%	92,9%	86,1%	78,0%	96,0%

5.2.1.3.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 94.2% while it becomes 92.1% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 94.5% of non distress prediction accuracy while the rate decreases to 93.2% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 96% for the original model and 88.6% for the re-adjusted model. The results for South Africa indicate that the re-estimation does not improve the prediction results for the financial distress however even after the re estimation Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = 5.37 + 1.33SIZE + 5.85TL/TA + 22.03WC/TA - 8.89CL/CA - 0.31ROA + 0.00OCF/TA - 11.89OENEG + 1.11CHIN$$

Table 28: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Africa)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	95,3%	92,3%	98,2%	93,2%	89,0%	97,1%
3	96,3%	92,8%	100,0%	94,2%	89,4%	98,9%
5	89,3%	80,2%	100,0%	87,5%	77,2%	98,9%

5.2.1.3.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 96.4% while it becomes 98.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 98% of non distress prediction accuracy while the rate decreases to 96% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 100% for the original model and 93.3% for the re-adjusted model. The results for Mexico indicate that the re-estimation does not improve the prediction results for the financial distress however even after the re estimation Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = -2.07 + 3.04SIZE + 0.40TL/TA - 0.07WC/TA - 6.52CL/CA - 12.70ROA + 0.00OCF/TA + 0.00OENEG - 0.01CHIN$$

Table 29: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Mexico)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	98,2%	96,8%	100,0%	95,6%	89,8%	100,0%
3	97,1%	94,9%	100,0%	94,2%	87,4%	100,0%
5	91,1%	84,0%	100,0%	86,7%	73,7%	100,0%

5.2.1.3.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 91.7% while it becomes 95.5% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 93.3% of non distress prediction accuracy while the rate remains as 93.3% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 94.4% for the original model and 92.6% for the re adjusted model. The results for Morocco indicate that the re-estimation improves the prediction results for the financial distress one year before however even after the re estimation Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = 43.67 + 0.27SIZE - 4.39TL/TA + 53.24WC/TA - 39.73CL/CA - 0.24ROA + 0.00OCF/TA + 0.23OENEG - 2.02CHIN$$

Table 30: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Morocco)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	93,2%	91,6%	95,0%	93,5%	93,9%	93,3%
3	93,0%	89,8%	96,7%	93,1%	91,7%	95,0%
5	88,7%	78,8%	100,0%	87,5%	79,7%	96,7%

5.2.1.3.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 85.4% while it becomes 88.9% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 87.2% of non distress prediction accuracy while the rate remains as 85.6% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 89.5% for the original model and 80.9% for the re-adjusted model. The results for Philippines indicate that the re-estimation improves the prediction results for the financial distress before one year of financial distress however even after the re estimation Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = -1.47 + 0.32SIZE - 0.03TL/TA - 1.36WC/TA - 0.03CL/CA - 0.27ROA + 0.00OCF/TA + 0.68OENEG + 0.14CHIN$$

Table 31: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Philippines)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,4%	87,7%	87,8%	84,3%	82,9%	85,0%
3	89,1%	86,7%	92,2%	85,0%	80,8%	88,7%
5	86,8%	77,1%	97,8%	80,6%	68,3%	93,1%

5.2.1.3.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 88.6 % while it becomes 90.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 90.8% of non distress prediction accuracy while the rate remains as 89.7% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 92.8% for the original model and 89.7% for the re-adjusted model. The results for Poland indicate that the re-estimation improves the prediction results for the financial distress one year before, however even after the re estimation Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = 3.89 + 1.13SIZE - 2.12TL/TA - 2.29WC/TA - 0.29CL/CA - 0.32ROA + 0.00OCF/TA - 0.01OENEG + 1.15CHIN$$

Table 32: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Poland)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,0%	87,6%	94,6%	90,1%	85,3%	94,5%
3	92,2%	87,9%	96,9%	90,4%	84,2%	96,5%
5	88,3%	79,0%	99,2%	85,1%	74,0%	97,1%

5.2.1.3.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.4% while it remains as 87.4% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 88.6% of non distress prediction accuracy while the rate becomes 88% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 89.3% for the original model and 88.5% for the re-adjusted model. The results for South Korea indicate that the re-estimation does not improve the prediction results for the financial distress one year before, however even after the re estimation, Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = -0.4 - 0.09SIZE - 1.03TL/TA - 1.15WC/TA + 0.01CL/CA - 0.05ROA + 0.00OCF/TA + 0.97OENEG + 0.18CHIN$$

Table 33: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Korea)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	88,5%	88,5%	88,8%	88,1%	88,0%	88,7%
3	91,4%	88,3%	95,0%	90,9%	87,4%	94,8%
5	87,5%	77,9%	98,5%	86,7%	77,0%	97,8%

5.2.1.3.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 75.5% while it becomes 80.6% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 77.3% of non distress prediction accuracy while the rate becomes 77.8% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 77.8% for the original model and 73.3% for the re-adjusted model. The results for Turkey indicate that the re-estimation improves the prediction results for the financial distress one and two years before, however even after the re-estimation, Ohlson model gives high level of accurate results. The pre and post crisis estimation results are also high, above 80%, for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Ohlson Model

$$Z = -1.34 - 0.21SIZE - 0.45TL/TA - 2.13WC/TA + 0.01CL/CA - 0.30ROA + 0.00OCF/TA - 1.06OENEG + 1.09CHIN$$

Table 34: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Turkey)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	76,9%	72,0%	81,8%	78,3%	73,7%	82,7%
3	81,2%	75,8%	86,7%	79,8%	73,6%	85,9%
5	79,6%	67,8%	92,4%	76,4%	64,4%	88,8%

5.2.2. Coefficients are estimated through the whole sample for each country

The representation of each country's financial distress prediction by applying the coefficients derived for the re-estimated financial distress prediction coefficients of the entire sample is to examine whether the derived coefficients of the entire sample can be applicable to each country in terms of the accuracy stability of the financial distress prediction, in other words the dissertation tries to shed light to the point that whether the derived coefficients could be generalizable for Ohlson model. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Original Ohlson Model

$$Z = -1.32 - 0.41SIZE + \frac{6.03TL}{TA} - \frac{1.43WC}{TA} + \frac{0.0757CL}{CA} - 2.37ROA - \frac{1.83OCF}{TA} - 1.72OENEG - 0.52CHIN$$

$SIZE$: Log(Total Assets / GNP Price Level Index)

TL/TA : Total Liabilities / Total Assets

WC/TA : Working Capital / Total Assets

CL/CA : Current Liabilities / Current Assets

$OENEG$: One If Total Liabilities Exceeds Total Assets, Zero Otherwise

ROA : Net Income / Total Assets

OCF/TA : Operational Cash Flow / Total Assets

$CHIN$: (NI_t – NI_{t-1}) / ($|NI_t|+|NI_{t-1}|$), where NI_t Is Net Income For The Most Recent Period. The Denominator Acts As A Level Indicator. The Variable Is Thus Intended To Measure Change In Net Income.

Re-estimated Ohlson Model

$$Z = -0.54 - 0.01SIZE - 0.32TL/TA - 0.42WC/TA + 0.01CL/CA - 0.02ROA + 0.00OCF/TA + 0.64OENEG + 0.08CHIN$$

Table 35: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (All Countries)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,4%	90,3%	92,8%	91,3%	90,1%	92,6%
3	93,1%	90,6%	96,2%	92,9%	90,2%	96,0%
5	88,4%	79,8%	98,5%	88,1%	79,4%	98,3%

5.2.2.1. Ohlson results for each of the countries

Ohlson results, depending on each country, are examined. The results derived through the original coefficients of the Ohlson model first and then the re-estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.2.2.1.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 83.6% while it becomes 87.3% for the previous reestimation in the sample depending on the country specific coefficients of the prediction and it remains with 83% of estimation accuracy for the coefficients of the entire sample after the re-estimation. The estimation in advance of two years over the original coefficients indicate 86% of non distress prediction accuracy while the rate remains as 86% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 86.7% for the original model, and

again 86% for the re-adjusted model. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 36: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Brazil)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,1%	82,5%	88,0%	85,1%	82,5%	88,0%
3	88,7%	81,5%	96,0%	88,7%	81,5%	96,0%
5	86,2%	73,2%	100,0%	86,2%	73,2%	100,0%

Despite the fact that the results for Brazil indicate that the re-estimation improves the prediction results only for the prediction of one year before financial distress and the results deteriorates for the following periods, the re-estimation over the adjusted coefficients of the entire sample gives better prediction results for Brazil.

5.2.2.1.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 97.6% while it becomes 97% after the re-estimation. Likewise the accuracy rate remains nearly the same as 97.3% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 97.6% of non distress prediction accuracy while the rate decreases to 96.8% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 97.2%. Similar conclusion is reached for the lag of three years prediction as a result of 97.9% for the original model and 97.3% for the re-adjusted model and remains very close as 97.6 % for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 37: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (China)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	97,7%	96,7%	98,7%	97,4%	96,8%	98,1%
3	97,9%	96,4%	99,7%	97,5%	96,2%	99,2%
5	90,9%	83,5%	100,0%	90,5%	83,3%	99,4%

Although the results for China indicate that the re-estimation does not improve the prediction results for the financial distress and the results are deteriorated very slightly for the following periods which show that the Ohlson model works very well for China in the first prediction over the individual country coefficients, the prediction over the adjusted coefficients of the entire sample for China improves the estimation accuracy slightly. The pre and post crisis estimation results are also very high for the original and re-estimated model as well. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

5.2.2.1.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 87.7% while it becomes 94.8% after the re-estimation. The accuracy rate decreases to 90.3% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 87.9% of non distress prediction accuracy while the rate increases to 90.7% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 90.7%. Similar conclusion is reached for the lag of three years prediction as a result of 87.3% for the original model and 89.7% for the re-adjusted model and remains very close as 90.5% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 38: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Egypt)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,4%	81,4%	92,9%	90,4%	85,1%	94,8%
3	88,4%	83,9%	92,9%	91,4%	87,7%	94,8%
5	84,6%	78,0%	92,9%	87,5%	81,6%	94,8%

Although the results for Egypt indicate that the re-estimation does not improve the prediction results for the financial distress and the results are deteriorated very slightly for the following periods which show that the Ohlson model works very well for Egypt in the first prediction over the individual country coefficients, the prediction over the adjusted coefficients of the entire sample for Egypt, on the other hand, improves the estimation accuracy slightly just for the lag year of three in advance of financial distress. The pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 94.2% while it becomes 92.1% after the re-estimation. The accuracy rate increases to 94.6% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 94.5% of non distress prediction accuracy while the rate decreases to 93.2% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 94.1%. Similar conclusion is reached for the lag of three years prediction as a result of 96% for the original model and 88.6% for the re-adjusted model and increases to 95.5% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 39: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Africa)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	95,3%	92,3%	98,2%	94,9%	91,5%	98,2%
3	96,3%	92,8%	100,0%	95,8%	91,8%	100,0%
5	89,3%	80,2%	100,0%	88,9%	79,2%	100,0%

The results for South Africa indicate that the re-estimation does not improve the prediction results for the financial distress and the results are deteriorated very slightly for the following periods which show that the Ohlson model works very well for South Africa in the first prediction over the individual country coefficients, the prediction over the adjusted coefficients of the entire sample for South Africa, on the other hand, improves the estimation accuracy for the first, second and third years before financial distress. That's why, it can be concluded that Ohlson model over the coefficients of the entire adjusted model gives good results. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 96.4% while it becomes 98.2% after the re-estimation. The accuracy rate decreases to 96.4% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 98% of non distress prediction accuracy while the rate decreases to 96% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 98%. Similar conclusion is reached for the lag of three years prediction as a result of 100% for the original model and 93.3% for the re-adjusted model and increases to 100% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at

Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 40: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Mexico)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	98,2%	96,8%	100,0%	98,2%	96,8%	100,0%
3	97,1%	94,9%	100,0%	97,1%	94,9%	100,0%
5	91,1%	84,0%	100,0%	91,1%	84,0%	100,0%

The results for Mexico indicate that the re-estimation does not improve the prediction results for the financial distress and the results are deteriorated very slightly for the following periods showing that the Ohlson model works very well for Mexico in the first prediction over the individual country coefficients, the prediction over the adjusted coefficients of the entire sample for Mexico, on the other hand, improves the estimation accuracy for the first, second and third years before financial distress. That's why, it can be concluded that Ohlson model over the coefficients of the entire adjusted model gives good results and also strong for financial distress prediction results of Mexico. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 91.7% while it becomes 95.5% after the re-estimation. The accuracy rate decreases to 91.7% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 93.3% of non distress prediction accuracy while the rate remains as 93.3% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 93.3% again. Similar conclusion is reached for the lag of three years prediction as a result of 94.4% for the original model and 92.6% for the re-adjusted model and increases to 94.4% for the new prediction. The

details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 41: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Morocco)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	93,2%	91,6%	95,0%	93,2%	91,6%	95,0%
3	93,0%	89,8%	96,7%	93,0%	89,8%	96,7%
5	88,7%	78,8%	100,0%	88,7%	78,8%	100,0%

The results for Morocco indicate that the re-estimation improves the prediction results for the financial distress and the results are not deteriorated for the following periods showing that the Ohlson model also works very well for Morocco in the first prediction over the individual country coefficients, the prediction over the adjusted coefficients of the entire sample for Morocco, on the other hand, does not improve the estimation accuracy for the first, second and third years before financial distress and also does not deteriorates the prediction results. This leads to the conclusion that Ohlson model over the coefficients of the entire adjusted model gives good results and also strong for financial distress prediction results of Morocco. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 85.4% while it becomes 88.9% after the re-estimation. The accuracy rate increases to 86.4% % after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 87.2% of non distress prediction accuracy while the rate remains as 85.6% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 88.3%. Similar conclusion is reached

for the lag of three years prediction as a result of 89.5% for the original model and 80.9% for the re-adjusted model and increases to 89.5% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 42: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Philippines)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,4%	87,7%	87,8%	87,9%	88,6%	87,8%
3	89,1%	86,7%	92,2%	89,5%	87,4%	92,2%
5	86,8%	77,1%	97,8%	86,8%	77,1%	97,8%

The results for Philippines indicate that the re-estimation improves the prediction results for the financial distress for the first year before the financial distress and the results are not deteriorated for the following periods showing that the Ohlson model also works very well for Philippines in the first prediction over the individual country coefficients The prediction over the adjusted coefficients of the entire sample for Philippines, on the other hand, significantly improves the estimation accuracy for the first, second and third years before financial distress and also does not deteriorate the prediction results which leads us to conclude that Ohlson model over the coefficients of the entire adjusted model gives good results and also strong for financial distress prediction results of Philippines. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 88.6 % while it becomes 90.8% after the re-estimation. The accuracy rate remains as 88.5% % after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 90.8% of non distress prediction accuracy while the rate remains as 89.7% for the re-estimation over the adjusted

coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 90.7%. Similar conclusion is reached for the lag of three years prediction as a result of 92.8% for the original model and 89.7% for the re-adjusted model and increases to 92.6% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 43: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Poland)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,0%	87,6%	94,6%	90,9%	87,4%	94,6%
3	92,2%	87,9%	96,9%	92,0%	87,7%	96,9%
5	88,3%	79,0%	99,2%	88,2%	78,8%	99,1%

The results for Poland indicate that the re-estimation improves the prediction results for the financial distress other than the first year before the financial distress and the results are not deteriorated for the following periods showing that the Ohlson model also works very well for Poland in the first prediction over the individual country coefficients, the prediction over the adjusted coefficients of the entire sample for Poland, on the other hand, improves the estimation accuracy for the first, second and third years before financial distress. That is why, it can be concluded that Ohlson model over the coefficients of the entire adjusted model gives good results and also strong for financial distress prediction results of Poland. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.4% while it becomes 87.4% after the re-estimation. The accuracy rate slightly decreases to 86.9% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 88.6% of non distress prediction

accuracy while the rate becomes 88% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 88% again. Similar conclusion is reached for the lag of three years prediction as a result of 89.3% for the original model and 88.5% for the re-adjusted model and decreases to 88.8% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 44: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Korea)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	88,5%	88,5%	88,8%	88,1%	88,0%	88,6%
3	91,4%	88,3%	95,0%	91,0%	87,7%	94,7%
5	87,5%	77,9%	98,5%	87,1%	77,4%	98,2%

The results for South Korea indicate that the re-estimation does not improve the prediction results for the financial distress but the results are not deteriorated for the related estimation periods showing that the Ohlson model also works very well for South Korea in the first prediction over the individual country coefficients. On the other hand, the prediction over the adjusted coefficients of the entire sample for South Korea does not improve the estimation accuracy for the first, second and third years before financial distress and also does not deteriorate the prediction results. That's why, it can be concluded that Ohlson model over the coefficients of the entire adjusted model gives good results and also strong for financial distress prediction results of South Korea. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.2.2.1.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 75.5% while it becomes 80.6% after the re-estimation. The accuracy rate slightly decreases to 75.2% after the re

estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate that 77.3% of non distress prediction accuracy while the rate becomes 77.8% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 76.7% again. Similar conclusion is reached for the lag of three years prediction as a result of 77.8% for the original model and 73.3% for the re-adjusted model and decreases to 77% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.2. The below table indicates the averages of lag years for each financial distress year.

Table 45: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Turkey)

	Ohlson			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	76,9%	72,0%	81,8%	76,3%	70,7%	81,7%
3	81,2%	75,8%	86,7%	80,2%	74,0%	86,6%
5	79,6%	67,8%	92,4%	78,8%	66,4%	92,1%

The results for Turkey indicate that the re-estimation does not improve the prediction results for the financial distress but the results are not deteriorated for the related estimation periods showing that the Ohlson model also works very well for Turkey in the first prediction over the individual country coefficients. On the other hand, the prediction over the adjusted coefficients of the entire sample for Turkey does not improve the estimation accuracy for the first, second and third years before financial distress and also does not deteriorate the prediction results. That's why, it can be concluded that Ohlson model over the coefficients of the entire adjusted model gives good results and also strong for financial distress prediction results of Turkey. Additionally, the pre and post crisis estimation results are also very high for the original and re-estimated model as well.

5.3. Shumway Results

5.3.1. Coefficients are estimated through the relevant country's data

This part of the research represents the results gathered from the original coefficients of the entire sample and the re-estimated coefficients of the entire sample. Moreover, the prediction results for the each country in the sample are calculated by considering the original Shumway model coefficients to reach the Shumway prediction results, and the re-estimated prediction results are gathered by running the data of each country sample over the Shumway variables with new coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Original Shumway Model

$$Z = -13.30 - 0.48SIZE - 1.81RETURN - 1.98ROA + 5.79SIGMA + 3.59TL/TA$$

$SIZE$: Relative Size

$RETURN$: Yearly Return

ROA : Return on Assets / Total Assets

$SIGMA$: Standard Deviation of Daily Returns Within A Year

TL/TA : Total Liabilities / Total Assets

Re-estimated Shumway Model

$$Z = -2.06 + 0.09SIZE - 0.30RETURN - 0.20ROA/TA + 2.71SIGMA - 0.64TL/TA$$

Table 46: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (All Countries)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	89,7%	87,7%	91,5%	87,9%	87,9%	88,3%
3	90,0%	86,5%	93,6%	89,6%	88,2%	91,6%
5	84,2%	75,1%	94,5%	84,9%	77,6%	93,9%

5.3.1.1. The accuracy level for the entire sample over the original coefficients of the model

The accuracy of Shumway model over its original coefficients for the entire sample of the ten countries is analyzed. Shumway in his 1984 study makes his analysis over the market variables that are added as an improvement for the comparison of Altman and Zmijewski models. The contribution over this model is the examination of bankrupt firms over hazard model named as simple hazard model. The accuracy result of this model is 69% for the market driven variables, and 75% for the accounting variables gathered through the studies of Altman 1968 and Zmijewski 1984 one year prior to failure.

5.3.1.2. The accuracy levels for the Entire Sample over the re-estimated coefficients of the model

The results for one, two and three years of before failure for the re-estimated sample are 91.1%, 89.1% and 88.9% respectively. On the other hand, the pre crisis results for one, two and three years in advance of the financial distress are 89.1%, 87.1% and 86.9% respectively. Likewise the results for the post crisis are 93.5%, 91.1% and 90.5% in a row for the lag years of one, two and three respectively. The results indicate that Shumway model seems reliable for the Emerging market countries of the MSCI index as the results seem very accurate in years depending on the coefficient re-estimations and slight increases are seen for the results.

5.3.1.3. Shumway results for each of the countries

Shumway results, depending on each country, are examined. The results derived through the original coefficients of the Shumway model first and then the re-

estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.3.1.3.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 85.5% while it becomes 61.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 82% of non distress prediction accuracy while the rate decreases to 50% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 82.2% for the original model and 51.1% for the re-adjusted model. The results for Brazil indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Brazil over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = 58.61 - 11.46SIZE - 0.03RETURN - 0.08ROA - 25.26SIGMA - 1.68TL/TA$$

Table 47: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Brazil)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	84,3%	90,0%	78,7%	56,4%	54,0%	56,7%
3	83,1%	88,1%	78,7%	53,1%	52,1%	52,7%
5	78,9%	78,2%	81,3%	49,9%	46,2%	52,7%

5.3.1.3.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 96.1% while it becomes 49.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 93.9% of non distress prediction accuracy while the rate decreases

to 50.2% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 94.4% for the original model and 49% for the re-adjusted model. The results for China indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results. As a result, the re-estimation of the coefficients by considering exclusively the variables of China over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = -10.72 + 2.81SIZE + 0.12RETURN - 0.19ROA - 14.07SIGMA + 0.30TL/TA$$

Table 48: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (China)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	95,0%	94,8%	95,2%	50,1%	47,2%	52,8%
3	94,2%	93,5%	95,4%	50,4%	47,0%	53,8%
5	87,1%	80,5%	95,5%	47,3%	41,0%	54,1%

5.3.1.3.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 95.5% while it becomes 78.6% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 92.9% of non distress prediction accuracy while the rate decreases to 75.7% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 93.7% for the original model and 70.6% for the re-adjusted model. The results for Egypt indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Egypt over Shumway model deteriorates the model results. The details of the results dependending

on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = 8.43 - 2.10SIZE + 0.77RETURN - 0.86ROA + 6.96SIGMA - 6.76TL/TA$$

Table 49: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Egypt)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	94,4%	89,3%	99,0%	73,9%	72,8%	76,2%
3	94,4%	89,5%	99,0%	71,8%	68,9%	76,2%
5	89,4%	81,1%	99,0%	64,0%	54,0%	76,2%

5.3.1.3.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 94.2% while it becomes 43.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 91.8% of non distress prediction accuracy while the rate decreases to 45.5% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 91.9% for the original model and 48.5% for the re-adjusted model. The results for South Africa indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results. As a result, the re-estimation of the coefficients by considering exclusively the variables of South Africa over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = -11.46 + 2.17SIZE - 0.55RETURN - 0.14ROA - 10.55SIGMA + 3.06TL/TA$$

Table 50: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Africa)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,7%	87,4%	97,3%	46,9%	52,8%	41,5%
3	93,1%	86,9%	99,1%	46,6%	52,1%	41,8%
5	86,5%	74,7%	99,1%	42,7%	44,9%	41,8%

5.3.1.3.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 96.4% while it becomes 65.5% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 94% of non distress prediction accuracy while the rate decreases to 68% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 91.1% for the original model and 75.6% for the re-adjusted model. The results for Mexico indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results without a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Mexico over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = -26.26 + 34.29SIZE - 14.15RETURN - 4.95ROA - 9.63SIGMA + 4.39TL/TA$$

Table 51: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Mexico)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	93,5%	89,8%	96,0%	69,8%	80,2%	61,3%
3	92,1%	87,4%	96,0%	68,7%	78,3%	61,3%
5	84,6%	73,7%	96,0%	62,7%	67,3%	61,3%

5.3.1.3.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 94.7% while it becomes 72% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 92.5% of non distress prediction accuracy while the rate decreases to 70% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 90.7% for the original model and 68.5% for the re-adjusted model. The results for Morocco indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results without a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Morocco over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = 12.74 - 3.13SIZE - 3.39RETURN - 0.16ROA - 62.19SIGMA - 2.28TL/TA$$

Table 52: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Morocco)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,2%	91,8%	92,8%	69,4%	62,3%	75,3%
3	91,5%	89,6%	93,9%	68,4%	61,1%	74,7%
5	85,5%	77,8%	94,4%	63,8%	54,2%	73,1%

5.3.1.3.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 89.9% while it becomes 85.4% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 87.2% of non distress prediction accuracy while the rate decreases to 87.2% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 82.1% for the original model and 89.5% for the re-adjusted model. The results for Philippines indicate that the re-estimation does not improve the accuracy of prediction results for the first year but for the second and third years in advance of financial distress an improvement is seen for the prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Philippines over Shumway model gives accurate results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = -4.67 - 0.06SIZE - 0.66RETURN - 0.27ROA + 2.66SIGMA + 3.27TL/TA$$

Table 53: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Philippines)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,8%	82,6%	88,1%	87,4%	87,7%	87,8%
3	86,0%	80,6%	90,7%	89,1%	86,7%	92,2%
5	80,4%	68,1%	93,0%	86,8%	77,1%	97,8%

5.3.1.3.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 91.3% while it becomes 71.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 89.7% of non distress prediction accuracy while the rate decreases to 73.9% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 89% for the original model and 75.7% for the re-adjusted model. The results for Poland indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Poland over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = -2.68 - 0.34SIZE + 0.05RETURN - 0.28ROA - 0.15SIGMA + 0.00TL/TA$$

Table 54: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Poland)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	89,6%	84,8%	94,0%	73,8%	78,3%	71,3%
3	89,6%	83,6%	95,5%	74,7%	78,7%	73,0%
5	83,7%	73,2%	95,0%	70,9%	70,2%	74,8%

5.3.1.3.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.5% while it becomes 73.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 86.2% of non distress prediction accuracy while the rate decreases to 70.1% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 86.1% for the original model and 68.2% for the re-adjusted model. The results for South Korea indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of South Korea over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = 1.57 - 0.52SIZE - 0.53RETURN - 0.21ROA - 9.76SIGMA - 2.05TL/TA$$

Table 55: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Korea)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	86,5%	86,2%	88,9%	70,4%	65,1%	75,9%
3	88,0%	85,0%	93,0%	69,7%	63,2%	76,2%
5	82,9%	74,2%	94,4%	64,8%	54,8%	75,3%

5.3.1.3.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 80.6% while it becomes 78.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 77.1% of non distress prediction accuracy while the rate decreases to 68.9% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 76.5% for the original model and 64.4% for the re-adjusted model. The results for Turkey indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Turkey over Shumway model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Shumway Model

$$Z = 2.81 - 1.44SIZE + 0.02RETURN - 0.25ROA - 6.99SIGMA + 0.26TL/TA$$

Table 56: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Turkey)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	77,6%	72,5%	82,6%	69,6%	73,4%	66,1%
3	79,1%	73,3%	85,0%	67,4%	69,8%	65,6%
5	75,4%	64,3%	87,2%	60,8%	59,2%	63,6%

5.3.2. Coefficients are estimated through the whole sample for each country

The representation of each country's financial distress prediction by applying the coefficients derived for the re-estimated financial distress prediction coefficients of the entire sample is to examine whether the derived coefficients of the entire sample can

be applicable to each country in terms of the accuracy stability of the financial distress prediction, in other words, the dissertation tries to shed light to the point that whether the derived coefficients could be generalizable for Shumway. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Original Shumway Model

$$Z = -13.30 - 0.48SIZE - 1.81RETURN - 1.98ROA + 5.79SIGMA + 3.59TL/TA$$

$SIZE$: Relative Size

$RETURN$: Yearly Return

ROA/TA : Return on Assets / Total Assets

$SIGMA$: Standard Deviation of Daily Returns Within A Year

TL/TA : Total Liabilities / Total Assets

Re-estimated Shumway Model

$$Z = -2.06 + 0.09SIZE - 0.30RETURN - 0.20ROA + 2.71SIGMA - 0.64TL/TA$$

Table 57: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (All Countries)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	89,7%	87,7%	91,5%	90,7%	89,0%	92,4%
3	90,0%	86,5%	93,6%	91,6%	88,3%	95,2%
5	84,2%	75,1%	94,5%	86,3%	77,1%	96,7%

5.3.2.1. Shumway results for each of the countries

Shumway results, depending on each country, are examined. The results derived through the original coefficients of the Shumway model first and then the re-

estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.3.2.1.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 85.5% while it becomes 61.8% for the previous reestimation in the sample depending on the country specific coefficients of the prediction and it becomes 80% of estimation accuracy for the coefficients of the entire sample after the re-estimation. The estimation in advance of two years over the original coefficients indicate 82% of non distress prediction accuracy while the rate decreases to 50% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 82.2% for the original model which decreases to 51.1% for the re-adjusted model of the coefficients of the individual coefficients and it increases to 82.2% for the coefficients derived from the entire sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 58: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Brazil)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	84,3%	90,0%	78,7%	82,6%	79,0%	86,0%
3	83,1%	88,1%	78,7%	84,5%	77,5%	91,3%
5	78,9%	78,2%	81,3%	82,7%	70,4%	95,3%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients but not more than the original coefficients of the sample.

5.3.2.1.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 96.1% while it becomes 49.8% after the re-estimation. Likewise the accuracy rate remains nearly the same as 96.8%

after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 93.9% of non distress prediction accuracy while the rate decreases to 50.2% for the re-estimation over the adjusted coefficients of the individual sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 95.6%. Similar conclusion is reached for the lag of three years prediction as a result of 94.4% for the original model and 49% for the re-adjusted model over the individual country and remains very close as 96 % for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 59: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (China)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	95,0%	94,8%	95,2%	96,3%	95,9%	96,7%
3	94,2%	93,5%	95,4%	95,9%	94,9%	97,4%
5	87,1%	80,5%	95,5%	88,8%	81,8%	97,5%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients but not more than the original coefficients of the sample.

5.3.2.1.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 95.5% while it becomes 78.6% after the re-estimation. The accuracy rate decreases to 94.8% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 92.9% of non distress prediction accuracy while the rate decreases to 75.7% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 94.3%. Similar conclusion is reached for the lag of three years prediction as a result of 93.7% for the original model and 70.6% for the re-

adjusted model and remains very close as 93.7% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 60: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Egypt)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	94,4%	89,3%	99,0%	94,2%	88,4%	99,3%
3	94,4%	89,5%	99,0%	94,7%	89,8%	99,3%
5	89,4%	81,1%	99,0%	90,4%	83,0%	99,3%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients but not more than the original coefficients of the sample, increases the prediction result only for the second year in advance of two years from the prediction.

5.3.2.1.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 94.2% while it becomes 43.8% after the re-estimation. The accuracy rate increases to 93.8% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 91.8% of non distress prediction accuracy while the rate decreases to 45.5% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 92.3%. Similar conclusion is reached for the lag of three years prediction as a result of 91.9% for the original model and 48.5% for the re-adjusted model and increases to 93.4% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 61: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Africa)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,7%	87,4%	97,3%	93,6%	88,6%	98,0%
3	93,1%	86,9%	99,1%	94,2%	88,5%	99,8%
5	86,5%	74,7%	99,1%	87,5%	76,2%	99,8%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Shumway model.

5.3.2.1.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 96.4% while it becomes 65.5% after the re-estimation. The accuracy rate decreases to 98.2% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 94% of non distress prediction accuracy while the rate decreases to 68% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 100%. Similar conclusion is reached for the lag of three years prediction as a result of 91.1% for the original model and 75.6% for the re-adjusted model and increases to 97.8% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 62: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Mexico)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	93,5%	89,8%	96,0%	98,0%	95,7%	100,0%
3	92,1%	87,4%	96,0%	96,6%	93,3%	100,0%
5	84,6%	73,7%	96,0%	90,0%	81,2%	100,0%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Shumway model.

5.3.2.1.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 94.7% while it becomes 72% after the re-estimation. The accuracy rate decreases to 93.9% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 92.5% of non distress prediction accuracy while the rate remains as 70% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 91.7% again. Similar conclusion is reached for the lag of three years prediction as a result of 90.7% for the original model and 68.5% for the re-adjusted model and increases to 90.7% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 63: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Morocco)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,2%	91,8%	92,8%	91,7%	91,8%	91,7%
3	91,5%	89,6%	93,9%	91,3%	89,6%	93,3%
5	85,5%	77,8%	94,4%	86,0%	77,8%	95,6%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients but not more than the original coefficients of Shumway model.

5.3.2.1.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 89.9% while it becomes 85.4% after the re-estimation. The accuracy rate increases to 91.4% % after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 87.2% of non distress prediction accuracy while the rate remains as 87.26% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 90%. Similar conclusion is reached for the lag of three years prediction as a result of 82.1% for the original model and 89.5% for the re-adjusted model and increases to 87% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 64: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Philippines)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,8%	82,6%	88,1%	88,6%	86,5%	90,4%
3	86,0%	80,6%	90,7%	89,5%	84,9%	93,7%
5	80,4%	68,1%	93,0%	84,4%	73,0%	96,3%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Shumway model.

5.3.2.1.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 91.3 % while it becomes 71.2% after the re-estimation. The accuracy rate remains as 89.8% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 89.7% of non distress prediction accuracy while the rate remains as 73.9% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 94.9%. Similar conclusion is reached for the lag of three years prediction as a result of 89% for the original model and 75.7% for the re-adjusted model and increases to 90.9% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 65: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Poland)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	89,6%	84,8%	94,0%	90,2%	85,6%	94,6%
3	89,6%	83,6%	95,5%	90,7%	84,8%	96,7%
5	83,7%	73,2%	95,0%	85,9%	75,1%	97,7%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Shumway model.

5.3.2.1.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.5% while it becomes 73.2% after the re-estimation. The accuracy rate slightly decreases to 87.5% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 88.6% of non distress prediction accuracy while the rate becomes 86.2% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 70.1% again. Similar conclusion is reached for the lag of three years prediction as a result of 86.1% for the original model and 68.2% for the re-adjusted model and decreases to 87.3% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 66: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Korea)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	86,5%	86,2%	88,9%	87,3%	87,2%	89,5%
3	88,0%	85,0%	93,0%	89,4%	86,3%	94,6%
5	82,9%	74,2%	94,4%	84,7%	75,7%	96,7%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Shumway model.

5.3.2.1.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 80.6% while it becomes 78.2% after the re-estimation. The accuracy rate slightly decreases to 77.6% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicates that 77.1% of non distress prediction accuracy while the rate becomes 68.9% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 76.9% again. Similar conclusion is reached for the lag of three years prediction as a result of 76.5% for the original model and 64.4% for the re-adjusted model and increases to 77% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.3. The below table indicates the averages of lag years for each financial distress year.

Table 67: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Turkey)

	Shumway			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	77,6%	72,5%	82,6%	76,6%	70,8%	82,3%
3	79,1%	73,3%	85,0%	79,6%	72,6%	86,7%
5	75,4%	64,3%	87,2%	77,5%	64,4%	91,2%

The coefficients that are derived through the entire sample do not increase the prediction results for Turkey. Turkey is the only country that the improvement is not seen.

5.4. Zmijewski Results

5.4.1. Coefficients are estimated through the relevant country's data

This part of the research represents the results gathered from the original coefficients of the entire sample and the re-estimated coefficients of the entire sample. Moreover, the prediction results for the each country in the sample are calculated by considering the original Zmijewski model coefficients to reach the Zmijewski prediction results, and the re-estimated prediction results are gathered by running the data of each country sample over the Zmijewski variables with new coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Original Zmijewski Model

$$Z = -4.336 + 0.004CA/CL - 4.50ROA + 5.70TL/TA$$

CA/CL : Current Assets / Current Liabilities

ROA : Return on Assets / Total Assets

TL/TA : Total Liabilities / Total Assets

Re-estimated Zmijewski Model

$$Z = -1.09 + 0.003CA/CL - 0.09ROA - 0.20TL/TA$$

Table 68: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (All Countries)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	86,0%	83,7%	88,0%	91,0%	89,5%	92,6%
3	84,8%	81,3%	88,2%	92,3%	89,1%	95,7%
5	78,2%	69,6%	87,5%	87,1%	78,1%	97,5%

5.4.1.1. The accuracy level for the entire sample over the original coefficients of the model

The results over the original model represent the accuracy levels of 90.4%, 84.9%, 83.6% for the lag years of one, two and three. On the other hand, the rates after the re-estimation are 90.7%, 90.9%, and 91.4% respectively. The pre and post crisis estimations after the crisis have increased for the entire sample over the Zmijewski model.

5.4.1.2. The accuracy levels for the entire sample over the re-estimated coefficients of the model

The results for one, two and three years of before failure for the re-estimated sample are 90.4%, 84.9% and 83.6% respectively. On the other hand, the pre crisis results for one, two and three years in advance of the financial distress are 88.5%, 82.5% and 80.5% respectively. Likewise the results for the post crisis are 92.5%, 87.4% and 86% in a row for the lag years of one, two and three respectively. The results indicate that Zmijewski model seems reliable for the Emerging market countries of the MSCI index as the results seem very accurate in years depending on the coefficient re-estimations and slight increases are seen for the results.

5.4.1.3. Zmijewski results for each of the countries

Zmijewski results, depending on each country, are examined. The results derived through the original coefficients of the Zmijewski model first and then the re-estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.4.1.3.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 87.3% while it becomes 89.1% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 78% of non distress prediction accuracy while the rate increases to 88% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 77.8% for the original model and 84.4% for the re-adjusted model. The results for Brazil indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Brazil over Zmijewski model improves the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = 3.01 - 4.25CA/CL - 0.14ROA - 3.63TL/TA$$

Table 69: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Brazil)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	82,8%	84,1%	80,7%	86,8%	94,0%	80,7%
3	80,7%	81,7%	79,3%	88,8%	92,6%	86,0%
5	74,5%	70,5%	79,3%	84,8%	81,5%	90,0%

The results for post crisis period also decrease for the re-estimated prediction results and the details can be seen at Appendix 8.2.5.

5.4.1.3.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 94.1% while it becomes 97.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 90.8% of non distress prediction accuracy while the rate increases

to 97.3% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 91.2% for the original model and 97.7% for the re-adjusted model. The results for China indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of China over Zmijewski model improves the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -1.76 - 0.25CA/CL - 0.07ROA + 0.04TL/TA$$

Table 70: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (China)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,0%	92,1%	91,9%	97,5%	96,7%	98,2%
3	90,6%	90,1%	91,5%	97,6%	96,3%	99,3%
5	83,4%	77,2%	91,3%	90,6%	83,3%	99,5%

5.4.1.3.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 95.5% while it becomes 94.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 90% of non distress prediction accuracy while the rate increases to 92.9% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 87.3% for the original model and 93.7% for the re-adjusted model. The results for Egypt indicate that the re-estimation does improve the accuracy of prediction results for the second and third years. As a result, the re-estimation of the coefficients by considering exclusively the variables of Egypt over Zmijewski model improves the model results. The details of the results dependending on financial distress

of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = 0.63 - 0.60CA/CL - 0.32ROA - 1.75TL/TA$$

Table 71: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Egypt)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	90,3%	87,9%	92,9%	94,2%	89,3%	98,6%
3	88,8%	85,3%	92,9%	94,1%	89,5%	98,6%
5	81,1%	71,4%	92,9%	89,1%	81,1%	98,6%

5.4.1.3.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 95% while it becomes 94.6% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 90.5% of non distress prediction accuracy while the rate increases to 94.1% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 88.9% for the original model and 95.5% for the re-adjusted model. The results for South Africa indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of South Africa over Zmijewski model improves the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -0.81 - 0.86CA/CL - 0.05ROA + 0.06TL/TA$$

Table 72: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Africa)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,0%	87,9%	93,5%	94,9%	91,5%	98,2%
3	90,6%	86,3%	94,7%	95,8%	91,8%	100,0%
5	84,1%	74,5%	94,7%	88,9%	79,2%	100,0%

5.4.1.3.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 94.5% while it becomes 96.4% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 92% of non distress prediction accuracy while the rate increases to 98% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 88.9% for the original model and 95.6% for the re-adjusted model. The results for Mexico indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Mexico over Zmijewski model improves the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -2.74 + 0.03CA/CL - 0.27ROA + 1.10TL/TA$$

Table 73: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Mexico)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,4%	89,3%	92,7%	95,9%	95,7%	96,0%
3	90,0%	86,9%	92,7%	94,5%	93,3%	96,0%
5	82,6%	73,3%	92,7%	87,9%	81,2%	96,0%

5.4.1.3.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 95.5% while it becomes 94.7% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 93.3% of non distress prediction accuracy while the rate decreases to 92.5% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 91.7% for the original model and 91.7% for the re-adjusted model. The results for Morocco indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results slightly for the first and second years. As a result, the re-estimation of the coefficients by considering exclusively the variables of Morocco over Zmijewski model does not deteriorate the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = 0.09 - 0.98CA/CL - 0.08ROA - 0.83TL/TA$$

Table 74: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Morocco)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,6%	91,8%	93,6%	92,7%	92,0%	93,3%
3	91,7%	89,6%	94,2%	92,2%	89,8%	95,0%
5	84,9%	77,8%	93,1%	87,0%	78,0%	97,2%

5.4.1.3.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 89.9% while it becomes 87.4% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 82.2% of non distress prediction accuracy while the rate decreases to 86.7% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 77.2% for the original model and 84% for the re-adjusted

model. The results for Philippines indicate that the re-estimation does improve the accuracy of prediction results for the second and third years in advance. As a result, the re-estimation of the coefficients by considering exclusively the variables of Philippines over Zmijewski model gives accurate results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -2.28 - 0.001CA/CL - 0.16ROA + 1.35TL/TA$$

Table 75: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Philippines)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	82,0%	77,7%	85,0%	85,8%	86,4%	85,4%
3	81,3%	75,2%	86,1%	86,8%	84,7%	89,1%
5	74,4%	63,5%	84,6%	83,0%	73,1%	93,9%

5.4.1.3.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 91.3% while it becomes 89.8% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 85.4% of non distress prediction accuracy while the rate decreases to 89.4% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 81.7% for the original model and 90.6% for the re-adjusted model. The results for Poland indicate that the re-estimation does improve the accuracy of prediction results without the first year but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Poland over Zmijewski model improves the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -0.42 - 0.34CA/CL - 0.14ROA - 0.62TL/TA$$

Table 76: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Poland)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,1%	79,7%	89,5%	90,1%	85,4%	94,5%
3	84,3%	77,6%	90,3%	90,6%	84,6%	96,6%
5	77,5%	66,2%	89,2%	85,8%	75,0%	97,7%

5.4.1.3.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.1% while it becomes 87.9% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 82.1% of non distress prediction accuracy while the rate decreases to 87.9% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 82.1% for the original model and 87.9% for the re-adjusted model. The results for South Korea indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of South Korea over Zmijewski model increases the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -0.47 + 0.003CA/CL - 0.11ROA - 1.15TL/TA$$

Table 77: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Korea)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	83,3%	80,9%	85,3%	88,1%	87,6%	89,0%
3	82,7%	78,8%	86,2%	90,4%	86,8%	94,4%
5	76,7%	68,4%	85,5%	86,0%	76,1%	97,1%

5.4.1.3.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 85.9% while it becomes 80% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 81.2% of non distress prediction accuracy while the rate decreases to 80.6% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 72.3% for the original model and 77% for the re-adjusted model. The results for Turkey indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Turkey over Zmijewski model deteriorates the model results. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Re-estimated Zmijewski Model

$$Z = -0.60 + 0.001CA/CL - 0.13ROA - 0.06TL/TA$$

Table 78: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Turkey)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	78,3%	79,2%	77,7%	78,1%	72,7%	83,6%
3	75,7%	75,1%	76,6%	79,6%	73,9%	85,5%
5	69,0%	63,7%	75,3%	76,4%	65,2%	88,4%

5.4.2. Coefficients are estimated through the whole sample for each country

The representation of each country's financial distress prediction by applying the coefficients derived for the re-estimated financial distress prediction coefficients of the entire sample is examined to see whether the derived coefficients of the entire sample can be applicable to each country in terms of the accuracy stability of the financial distress prediction, in other words, the dissertation tries to shed light to the point that whether the derived coefficients could be generalizable for Zmijewski. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Original Zmijewski Model

$$Z = 14.30 - 0.004CA/CL - 4.50ROA + 5.70TL/TA$$

CA/CL : Current Assets / Current Liabilities

ROA/TA : Return on Assets / Total Assets

TL/TA : Total Liabilities / Total Assets

Re-estimated Zmijewski Model

$$Z = -1.09 + 0.003CA/CL - 0.09ROA - 0.20TL/TA$$

Table 79: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (All Countries)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	86,0%	83,7%	88,0%	91,0%	89,5%	92,6%
3	84,8%	81,3%	88,2%	92,3%	89,1%	95,7%
5	78,2%	69,6%	87,5%	87,1%	78,1%	97,5%

5.4.2.1. Zmijewski results for each of the countries

Zmijewski results, depending on each country, are examined. The results derived through the original coefficients of the Zmijewski model first and then the re-estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.4.2.1.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 87.3% while it becomes 89.1% for the previous re-estimation in the sample depending on the country specific coefficients of the prediction and it becomes 80% of estimation accuracy for the coefficients of the entire sample after the re-estimation. The estimation in advance of two years over the original coefficients indicate 78% of non distress prediction accuracy while the rate increases to 88% for the re-estimation and 88% for the coefficients derived from the entire sample, and similar conclusion is reached for the lag of three years prediction as a result of 77.8% for the original model which decreases to 84.4% for the re-adjusted model of the coefficients of the individual coefficients and it increases to 82.2% for the coefficients derived from the entire sample. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 80: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Brazil)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	82,8%	84,1%	80,7%	82,3%	79,0%	85,3%
3	80,7%	81,7%	79,3%	84,8%	77,5%	92,0%
5	74,5%	70,5%	79,3%	83,0%	70,4%	96,0%

The coefficients that are derived through the entire sample gives mixed results depending on the years, and it is seen for Brazil that the coefficients gathered through the entire sample do not increase the prediction accuracy.

5.4.2.1.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 94.1% while it becomes 97.2% after the re-estimation. Likewise the accuracy rate remains nearly the same as 96.8% after the re-estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 90.8% of non distress prediction accuracy while the rate increases to 97.2% for the re-estimation over the adjusted coefficients of the individual sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 96.5%. Similar conclusion is reached for the lag of three years prediction as a result of 91.2 % for the original model and 97.7% for the re-adjusted model over the individual country and remains very close as 97.1 % for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 81: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (China)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,0%	92,1%	91,9%	97,0%	96,4%	97,5%
3	90,6%	90,1%	91,5%	96,8%	95,7%	98,3%
5	83,4%	77,2%	91,3%	89,8%	82,8%	98,5%

The coefficients that are derived through the entire sample increases the estimation results for China as much as the results gathered from the coefficients of individual countries. That is why, the results reached for China over the entire sample coefficients can also be used as a good predictor also for the generalizability of the model.

5.4.2.1.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 95.5% while it becomes 94.8% after the re-estimation. The accuracy rate becomes 94.2% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 90% of non distress prediction accuracy while the rate increases to 92.9% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 95%. Similar conclusion is reached for the lag of three years prediction as a result of 87.3% for the original model and 93.7% for the re-adjusted model and remains very close as 94.4% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 82: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Egypt)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	90,3%	87,9%	92,9%	94,3%	88,5%	99,3%
3	88,8%	85,3%	92,9%	95,1%	90,9%	99,3%
5	81,1%	71,4%	92,9%	90,8%	84,0%	99,3%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the prediction results that are gathered through the original coefficients.

5.4.2.1.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 95% while it becomes 94.6% after the re-estimation. The accuracy rate increases to 93.8% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 90.5% of non distress prediction accuracy while the rate decreases to 94.1% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 93.2%. Similar conclusion is reached for the lag of three years prediction as a result of 88.9% for the original model and 95.5% for the re-adjusted model and increases to 94.4% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 83: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Africa)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,0%	87,9%	93,5%	94,1%	89,7%	98,2%
3	90,6%	86,3%	94,7%	95,1%	90,1%	100,0%
5	84,1%	74,5%	94,7%	88,3%	77,7%	100,0%

The coefficients that are derived through the entire sample increases the estimation results more than the original model but less than the individual country coefficients of the Zmijewski model.

5.4.2.1.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 94.5% while it becomes 96.4% after the re-estimation. The accuracy rate decreases to 98.2% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 92% of non distress prediction accuracy while the rate increases to 98% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 100%. Similar conclusion is reached for the lag of three years prediction as a result of 88.9% for the original model and 95.6% for the re-adjusted model and increases to 97.8% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 84: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Mexico)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	91,4%	89,3%	92,7%	98,0%	95,7%	100,0%
3	90,0%	86,9%	92,7%	96,6%	93,3%	100,0%
5	82,6%	73,3%	92,7%	90,0%	81,2%	100,0%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Zmijewski model.

5.4.2.1.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 95.5% while it becomes 94.7% after the re-estimation. The accuracy rate decreases to 93.9% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 93.3% of non distress prediction accuracy while the rate decreases to 92.5% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 91.7% again. Similar conclusion is reached for the lag of three years prediction as a result of 91.7% for the original model and 91.7% for the re-adjusted model and increases to 90.7% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 85: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Morocco)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,6%	91,8%	93,6%	91,7%	91,8%	91,7%
3	91,7%	89,6%	94,2%	91,3%	89,6%	93,3%
5	84,9%	77,8%	93,1%	86,0%	77,8%	95,6%

The coefficients that are derived through the entire sample does not increase the estimation results more than the individual country coefficients and the original coefficients of Zmijewski model for Morocco.

5.4.2.1.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 89.9% while it becomes 87.4% after the re-estimation. The accuracy rate increases to 87.9% % after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 82.2% of non distress prediction accuracy while the rate increases to 86.7% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 87.7%. Similar conclusion is reached for the lag of three years prediction as a result of 77.2% for the original model and 84% for the re-adjusted model and increases to 93.2% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 86: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Philippines)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	82,0%	77,7%	85,0%	87,7%	86,6%	88,5%
3	81,3%	75,2%	86,1%	89,0%	85,0%	93,0%
5	74,4%	63,5%	84,6%	85,3%	73,5%	97,8%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Zmijewski model.

5.4.2.1.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 91.3% while it becomes 89.8% after the re-estimation. The accuracy rate remains as 88.9% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 85.4% of non distress prediction accuracy while the rate increases to 89.4% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 90.1%. Similar conclusion is reached for the lag of three years prediction as a result of 81.7% for the original model and 90.6% for the re-adjusted model and increases to 92% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 87: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Poland)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,1%	79,7%	89,5%	90,7%	86,4%	95,2%
3	84,3%	77,6%	90,3%	91,4%	85,8%	97,3%
5	77,5%	66,2%	89,2%	87,0%	76,8%	98,5%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Zmijewski model.

5.4.2.1.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.1% while it becomes 87.9% after the re-estimation. The accuracy rate slightly decreases to 87.8% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicates 82.1% of non distress prediction accuracy while the rate becomes 87.9% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 87.7% again. Similar conclusion is reached for the lag of three years prediction as a result of 81.2% for the original model and 88.3% for the re-adjusted model and decreases to 88.2% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 88: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Korea)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	83,3%	80,9%	85,3%	88,0%	87,5%	88,9%
3	82,7%	78,8%	86,2%	90,3%	86,7%	94,3%
5	76,7%	68,4%	85,5%	86,0%	76,1%	97,1%

The coefficients that are derived through the entire sample increase the estimation results more than the original coefficients of Zmijewski model but not more than the individual country coefficients.

5.4.2.1.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 85.9% while it becomes 80%

after the re-estimation. The accuracy rate decreases to 76.2% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicates that 75.1% of non-distress prediction accuracy while the rate becomes 80.6% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 76.4% again. Similar conclusion is reached for the lag of three years prediction as a result of 72.3% for the original model and 77% for the re-adjusted model and increases to 85.4% for the new prediction. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.5. The below table indicates the averages of lag years for each financial distress year.

Table 89: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Turkey)

	Zmijewski			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	77,3%	78,2%	76,6%	76,4%	71,1%	81,6%
3	75,7%	75,1%	76,6%	79,8%	73,2%	86,4%
5	69,0%	63,7%	75,3%	78,2%	65,6%	91,6%

The coefficients that are derived through the entire sample do not increase the prediction results for Turkey.

5.5. Taffler Results

5.5.1. Coefficients are estimated through the relevant country's data

This part of the research represents the results gathered from the original coefficients of the entire sample and the re-estimated coefficients of the entire sample. Moreover, the prediction results for the each country in the sample are calculated by considering the original Taffler model coefficients to reach the Taffler prediction results, and the re-estimated prediction results are gathered by running the data of each country sample over the Taffler variables with new coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The below table indicates the averages of lag years for each financial distress year.

Original Taffler Model

$$Z = 3.20 + 12.18PBT/ACL + 2.50CA/TL - 10.68\text{CL}/TA + 0.03\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

PBT/ACL : Profit Before Tax / Average Current Liabilities

CA/TL : Current Assets / Total Liabilities

CL/TA : Current Liabilities / Total Assets

$\frac{CA-INV-CL}{SALES-NIBT+DEPR}$: (Current Assets – Inventory – Current Liabilities) / (Sales – Profit Before Tax- Depreciation)

Re-estimated Taffler Model

$$Z = -0.95 - 0.10PBT/ACL + 0.03CA/TL + 2.39\text{CL}/TA - 0.001\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 90: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (All Countries)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,3%	86,2%	88,2%	91,2%	90,1%	92,6%
3	87,6%	85,1%	90,2%	93,0%	90,4%	96,0%
5	81,9%	73,7%	91,3%	88,2%	79,6%	98,4%

5.5.1.1. The accuracy level for the entire sample over the original coefficients of the model

The results for the model represent over the original coefficients that the model gives high level of accuracy over its original coefficients. The results over the financial distress of two years for the one, two and three years of lag are 88.9%, 87% and 86.4% respectively. These scores are high but not higher than the original result of Taffler in his 1982 study with 95.7% of bankruptcy accuracy. Although the scores after the re-

estimation of the coefficients increase as 90.2%, 91.4% and 92.1% for the lag years of one, two and three, these accuracy rates are not higher than his original study for the UK manufacturing firms. The pre and post crisis of the model are also increased after the re-estimation of the coefficients.

5.5.1.2. The accuracy levels for the entire sample over the re-estimated coefficients of the model

The results for one, two and three years of before failure for the re-estimated sample are 88.3%, 90.2% and 91.6% respectively. On the other hand, the pre crisis results for one, two and three years in advance of the financial distress are 87.8%, 86% and 85.4% respectively for the original sample. Likewise the results for the post crisis are 92.6%, 92.6% and 91.6% in a row for the lag years of one, two and three respectively for the re-estimation sample. The results indicate that Taffler model seems reliable for the Emerging market countries of the MSCI index as the results seem very accurate in years depending on the coefficient re-estimations and slight increases are seen for the results.

5.5.1.3. Taffler results for each of the countries

Taffler results, depending on each country, are examined. The results derived through the original coefficients of the Taffler model first and then the re-estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.5.1.3.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 80% while it becomes 90.9% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 76% of non distress prediction accuracy while the rate increases to 90% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 75.6% for the original model and 86.7% for the re-adjusted model. The results for Brazil indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Brazil over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = -1.44 + 2.29PBT/ACL + 0.17CA/TL + 3.17\text{CL}/TA + 0.02\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 91: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Brazil)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	78,1%	68,6%	86,0%	87,8%	94,0%	82,7%
3	79,2%	66,7%	90,0%	91,1%	92,6%	90,7%
5	77,1%	59,2%	94,0%	87,1%	81,5%	94,7%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 91% while it becomes 97% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 89.7% of non distress prediction accuracy while the rate increases to 97.1% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 89.9% for the original model and 97.4% for the re-adjusted model. The results for China indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of China over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = -0.03 + 1.61PBT/ACL + 0.20CA/TL - 1.18\text{CL}/TA + 0.002\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 92: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (China)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	90,3%	92,2%	88,5%	97,2%	96,6%	97,8%
3	89,3%	90,6%	88,6%	97,2%	96,1%	98,9%
5	82,2%	77,8%	88,5%	90,2%	83,0%	99,1%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 82.5% while it becomes 89% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 82.9% of non distress prediction accuracy while the rate increases to 89.3% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 80.2% for the original model and 88.9% for the re-adjusted model. The results for Egypt indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Egypt over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = -0.29 + 2.43PBT/ACL + 0.12CA/TL - 0.65\mathrm{CL}/TA + 0.01\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 93: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Egypt)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	81,0%	75,5%	86,0%	88,9%	82,3%	94,5%
3	81,0%	76,0%	86,0%	89,9%	84,9%	94,5%
5	76,0%	67,1%	86,0%	86,1%	78,9%	94,5%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 94.2% while it becomes 94.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 91.4% of non distress prediction accuracy while the rate increases to 92.7% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 91.4% for the original model and 92.9% for the re-adjusted model. The results for South Africa indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of South Africa over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = -2.35 + 2.02PBT/ACL + 0.43CA/TL + 3.35\mathrm{CL}/TA + 0.004\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 94: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Africa)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,1%	86,1%	97,4%	93,5%	88,4%	98,0%
3	92,4%	85,7%	98,9%	93,9%	87,8%	99,8%
5	85,9%	73,7%	98,9%	87,1%	75,4%	99,8%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 96.4% while it becomes 96.4% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 98% of non distress prediction accuracy while the rate remains 98% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 95.6% for the original model and 100% for the re-adjusted model. The results for Mexico indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Mexico over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = -2.54 + 0.52PBT/ACL - 0.13CA/TL + 14.34\text{CL}/TA - 0.05\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 95: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Mexico)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	95,9%	95,7%	96,0%	98,2%	96,8%	100,0%
3	94,5%	93,3%	96,0%	97,1%	94,9%	100,0%
5	87,9%	81,2%	96,0%	91,1%	84,0%	100,0%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 88.6% while it becomes 96.2% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 85.8% of non distress prediction accuracy while the rate increases to 94.2% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 83.3% for the original model and 92.6% for the re-adjusted model. The results for Morocco indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of Morocco over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = -1.58 + 8.82PBT/ACL - 0.21CA/TL + 1.62\mathrm{CL}/TA - 0.02\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 96: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Morocco)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,4%	87,7%	84,2%	93,9%	93,9%	94,2%
3	84,8%	85,5%	85,3%	93,3%	91,7%	95,3%
5	78,8%	73,7%	85,8%	87,2%	79,7%	95,8%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 86.4% while it becomes 85.4% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 83.3% of non distress prediction accuracy while the rate increases to 87.2% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 80.9% for the original model and 89.5% for the re-adjusted model. The results for Philippines indicate that the re-estimation does improve the accuracy of prediction results for the second and third years in advance. As a result, the re-estimation of the coefficients by considering exclusively the variables of Philippines over Taffler model gives accurate results.

Re-estimated Taffler Model

$$Z = -1.12 - 0.01PBT/ACL + 0.04CA/TL + 2.95\mathrm{CL}/TA - 0.001\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 97: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Philippines)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	83,0%	82,5%	83,0%	87,3%	87,7%	87,6%
3	82,2%	80,5%	83,7%	89,0%	86,7%	92,0%
5	75,8%	67,9%	84,4%	86,7%	77,1%	97,6%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 88.9% while it becomes 88.7% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 87% of non distress prediction accuracy while the rate increases to 90% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 86.4% for the original model and 91.5% for the re-adjusted model. The results for Poland indicate that the re-estimation does improve the accuracy of prediction results without the first year but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Poland over Taffler model improves the model results.

Re-estimated Taffler Model

$$Z = 0.19 + 1.95PBT/ACL - 0.35CA/TL - 0.30\mathrm{CL}/TA + 0.008\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 98: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Poland)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,0%	82,1%	91,6%	90,2%	86,2%	94,4%
3	87,3%	81,2%	93,3%	91,1%	86,0%	96,6%
5	82,4%	71,1%	94,7%	86,9%	76,8%	98,3%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.9% while it becomes 88.1% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 84.9% of non distress prediction accuracy while the rate increases to 88.5% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 83.7% for the original model and 88.5% for the re-adjusted model. The results for South Korea indicate that the re-estimation does improve the accuracy of prediction results. As a result, the re-estimation of the coefficients by considering exclusively the variables of South Korea over Taffler model increases the model results.

Re-estimated Taffler Model

$$Z = 0.17 + 0.99PBT/ACL - 0.002CA/TL - 0.68\mathrm{CL}/TA - 0.001\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 99: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (South Korea)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,1%	82,6%	87,2%	88,2%	88,1%	88,5%
3	86,3%	81,5%	90,8%	91,1%	87,6%	94,7%
5	81,1%	70,5%	92,2%	86,8%	76,8%	98,1%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.1.3.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 80.6% while it becomes 73.3% after the re-estimation. The estimation in advance of two years over the original coefficients indicate 76.7% of non distress prediction accuracy while the rate decreases to 74.9% for the re-estimation, and similar conclusion is reached for the lag of three years prediction as a result of 75.8% for the original model and 75.6% for the re-adjusted model. The results for Turkey indicate that the re-estimation does not improve the accuracy of prediction results even it deteriorates the results but the decrease does not have a significant impact. As a result, the re-estimation of the coefficients by considering exclusively the variables of Turkey over Taffler model deteriorates the model results.

Re-estimated Taffler Model

$$Z = -0.87 - 0.09PBT/ACL + 0.009CA/TL + 2.59\mathrm{CL}/TA - 0.03\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 100: Comparison of accuracy with the coefficients that are estimated through the relevant country's data (Turkey)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	77,6%	76,4%	79,0%	74,6%	69,3%	79,7%
3	78,4%	76,0%	81,3%	78,9%	73,2%	84,6%
5	74,9%	67,0%	83,9%	77,6%	65,6%	90,4%

The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2. Coefficients are estimated through the whole sample for each country

The representation of each country's financial distress prediction by applying the coefficients derived for the re-estimated financial distress prediction coefficients of the entire sample is examined to see whether the derived coefficients of the entire sample can be applicable to each country in terms of the accuracy stability of the financial distress prediction, in other words, the dissertation tries to shed light to the point that whether the derived coefficients could be generalizable for Taffler. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The below table indicates the averages of lag years for each financial distress year.

Original Taffler Model

$$Z = 3.20 + 12.18PBT/ACL + 2.50CA/TL - 10.68\text{CL}/TA + 0.03\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

PBT/CL : Profit Before Tax / Current Liabilities

CA/TL : Current Assets / Total Liabilities

CL/TA : Current Liabilities / Total Assets

$\frac{CA-INV-CL}{SALES-NIBT+DEPR}$: (Current Assets – Inventory – Current Liabilities) / (Sales – Profit Before Tax- Depreciation)

Re-estimated Taffler Model

$$Z = -0.95 - 0.10PBT/ACL + 0.03CA/TL + 2.39\text{CL}/TA - 0.001\frac{CA - INV - CL}{SALES - NIBT + DEPR}$$

Table 101: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (All Countries)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,3%	86,2%	88,2%	91,2%	90,1%	92,6%
3	87,6%	85,1%	90,2%	93,0%	90,4%	96,0%
5	81,9%	73,7%	91,3%	88,2%	79,6%	98,4%

5.5.2.1. Taffler results for each of the countries

Taffler results, depending on each country, are examined. The results derived through the original coefficients of the Taffler model first and then the re-estimation of each of the coefficients are held for each of the countries to see whether there is any kind of change for the prediction results.

5.5.2.1.1. Brazil

The results indicate that the one year lag over the financial distress of two years for Brazil according to original coefficient estimation is 80% while it becomes 90.9% for the previous re-estimation in the sample depending on the country specific coefficients of the prediction and it becomes 80% of estimation accuracy for the coefficients of the entire sample after the re-estimation. The estimation in advance of two years over the original coefficients indicate 76% of non distress prediction accuracy while the rate increases to 90% for the re-estimation and 84% for the coefficients derived from the entire sample, and similar conclusion is reached for the lag of three years prediction as a result of 75.6% for the original model which decreases to 86.7%

for the re-adjusted model of the coefficients of the individual coefficients and it remains as 86.7% for the coefficients derived from the entire sample.

Table 102: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Brazil)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	78,1%	68,6%	86,0%	85,1%	82,5%	88,0%
3	79,2%	66,7%	90,0%	88,7%	81,5%	96,0%
5	77,1%	59,2%	94,0%	86,2%	73,2%	100,0%

The coefficients that are derived through the entire sample and applied to Brazil indicate that the results are better than the original coefficients of the model but worse than the re-estimated coefficient predictions for Brazil. That is why the re-estimated Taffler model cannot be generalizable for Brazil. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.2. China

The results indicate that the one year lag over the financial distress of two years for China according to original coefficient estimation is 91% while it becomes 97% after the re-estimation. Likewise the accuracy rate remains nearly the same as 97.5% after the re-estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 89.7% of non-distress prediction accuracy while the rate increases to 97.1% for the re-estimation over the adjusted coefficients of the individual sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 97.9%. Similar conclusion is reached for the lag of three years prediction as a result of 89.9 % for the original model and 97.4% for the re-adjusted model over the individual country and remains very close as 97.9 % for the new prediction.

Table 103: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (China)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	90,3%	92,2%	88,5%	97,7%	96,6%	98,7%
3	89,3%	90,6%	88,6%	97,9%	96,4%	99,7%
5	82,2%	77,8%	88,5%	90,9%	83,4%	100,0%

The coefficients that are derived through the entire sample increases the estimation results for China as much as the results gathered from the coefficients of individual countries. That is why, the results reached for China over the entire sample coefficients can also be used as a good predictor also for the generalizability of the model. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.3. Egypt

The results indicate that the one year lag over the financial distress of two years for Egypt according to original coefficient estimation is 82.5% while it becomes 89% after the re-estimation. The accuracy rate becomes 87.7% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicates 82.9% of non-distress prediction accuracy while the rate increases to 89.3% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 87.9%. Similar conclusion is reached for the lag of three years prediction as a result of 80.2% for the original model and 88.9% for the re-adjusted model and remains very close as 87.3% for the new prediction.

Table 104: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Egypt)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	81,0%	75,5%	86,0%	87,4%	81,4%	92,9%

3	81,0%	76,0%	86,0%	88,4%	83,9%	92,9%
5	76,0%	67,1%	86,0%	84,6%	78,0%	92,9%

The coefficients that are derived through the entire sample increases the estimation results more than the original estimations but slightly less than the individual country coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.4. South Africa

The results indicate that the one year lag over the financial distress of two years for South Africa according to original coefficient estimation is 94.2% while it becomes 94.2% after the re-estimation. The accuracy rate increases to 94.2% after the re-estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 91.4% of non distress prediction accuracy while the rate increases to 92.7% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 94.5%. Similar conclusion is reached for the lag of three years prediction as a result of 91.4% for the original model and 92.9% for the re-adjusted model and increases to 96% for the new prediction.

Table 105: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Africa)

	Taffler			**Re-estimated**		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	92,1%	86,1%	97,4%	95,3%	92,3%	98,2%
3	92,4%	85,7%	98,9%	96,3%	92,8%	100,0%
5	85,9%	73,7%	98,9%	89,3%	80,2%	100,0%

The coefficients that are derived through the entire sample increases the estimation results more than the original model and the individual country coefficients of the Taffler model. The details of the results dependending on financial distress of 3

and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.5. Mexico

The results indicate that the one year lag over the financial distress of two years for Mexico according to original coefficient estimation is 96.4% while it becomes 96.4% after the re-estimation. The accuracy rate decreases to 96.4% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 98% of non distress prediction accuracy while the rate remains as 98% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 100%. Similar conclusion is reached for the lag of three years prediction as a result of 95.6% for the original model and 100% for the re-adjusted model and increases to 100% for the new prediction.

Table 106: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Mexico)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	95,9%	95,7%	96,0%	98,2%	96,8%	100,0%
3	94,5%	93,3%	96,0%	97,1%	94,9%	100,0%
5	87,9%	81,2%	96,0%	91,1%	84,0%	100,0%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Taffler model. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.6. Morocco

The results indicate that the one year lag over the financial distress of two years for Morocco according to original coefficient estimation is 88.6% while it becomes 96.2% after the re-estimation. The accuracy rate decreases to 91.7% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance

of two years over the original coefficients indicate 85.8% of non distress prediction accuracy while the rate remains as 94.2% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 93.3% again. Similar conclusion is reached for the lag of three years prediction as a result of 83.3% for the original model and 92.6% for the re-adjusted model and increases to 94.4% for the new prediction.

Table 107: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Morocco)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,4%	87,7%	84,2%	93,2%	91,6%	95,0%
3	84,8%	85,5%	85,3%	93,0%	89,8%	96,7%
5	78,8%	73,7%	85,8%	88,7%	78,8%	100,0%

The coefficients that are derived through the entire sample does not increase the estimation results more than the individual country coefficients but increased more than the original coefficients of Taffler model for Morocco. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.7. Philippines

The results indicate that the one year lag over the financial distress of two years for Philippines according to original coefficient estimation is 86.4% while it becomes 85.4% after the re-estimation. The accuracy rate increases to 84.8% % after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 83.3% of non distress prediction accuracy while the rate increases to 87.2% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 86.7%. Similar conclusion is reached for the lag of three years prediction as a result of 80.9% for the original model and 89.5% for the re-adjusted model and increases to 88.9% for the new prediction.

Table 108: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Philippines)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	83,0%	82,5%	83,0%	87,0%	87,2%	87,4%
3	82,2%	80,5%	83,7%	88,5%	86,2%	91,5%
5	75,8%	67,9%	84,4%	86,1%	76,7%	97,0%

The coefficients that are derived through the entire sample does not increase the estimation results more than the individual country coefficients but increased more than the original coefficients of Taffler model for Philippines. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.8. Poland

The results indicate that the one year lag over the financial distress of two years for Poland according to original coefficient estimation is 88.9% while it becomes 88.7% after the re-estimation. The accuracy rate remains as 88.6% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicate 87% of non distress prediction accuracy while the rate remains as 90% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 90.8%. Similar conclusion is reached for the lag of three years prediction as a result of 86.4% for the original model and 91.5% for the re-adjusted model and increases to 92.8% for the new prediction.

Table 109: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Poland)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	87,0%	82,1%	91,6%	91,0%	87,6%	94,6%
3	87,3%	81,2%	93,3%	92,2%	87,9%	96,9%
5	82,4%	71,1%	94,7%	88,3%	79,0%	99,2%

The coefficients that are derived through the entire sample increases the estimation results more than the individual country coefficients and the original coefficients of Taffler model. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.9. South Korea

The results indicate that the one year lag over the financial distress of two years for South Korea according to original coefficient estimation is 87.9% while it becomes 88.1% after the re-estimation. The accuracy rate slightly decreases to 87.4% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicates 84.9% of non distress prediction accuracy while the rate becomes 88.5% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 88.5% again. Similar conclusion is reached for the lag of three years prediction as a result of 83.7% for the original model and 88.5% for the re-adjusted model and decreases to 89.3% for the new prediction.

Table 110: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (South Korea)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	85,1%	82,6%	87,2%	88,4%	88,5%	88,7%
3	86,3%	81,5%	90,8%	91,4%	88,2%	95,0%
5	81,1%	70,5%	92,2%	87,5%	77,9%	98,5%

The coefficients that are derived through the entire sample increase the estimation results more than the original coefficients of Taffler model and more than the individual country coefficients. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

5.5.2.1.10. Turkey

The results indicate that the one year lag over the financial distress of two years for Turkey according to original coefficient estimation is 80.6% while it becomes 73.3% after the re-estimation. The accuracy rate decreases to 73.5% after the re estimation over the adjusted coefficients of the entire sample. The estimation in advance of two years over the original coefficients indicates that 76.7% of non- distress prediction accuracy while the rate becomes 74.9% for the re-estimation over the adjusted coefficients of the entire sample. However, the rate for the new prediction over the adjusted coefficients of the entire sample becomes 75.1% again. Similar conclusion is reached for the lag of three years prediction as a result of 75.8% for the original model and 75.6% for the re-adjusted model and increases to 75.6% for the new prediction.

Table 111: Comparison of accuracy with the coefficients that are estimated through the whole sample for each country (Turkey)

	Taffler			Re-estimated		
FD-Year	**Full**	**Post-Crisis**	**Pre-Crisis**	**Full**	**Post-Crisis**	**Pre-Crisis**
2	77,6%	76,4%	79,0%	74,7%	69,3%	80,0%
3	78,4%	76,0%	81,3%	79,0%	73,2%	84,9%
5	74,9%	67,0%	83,9%	77,7%	65,6%	90,7%

The coefficients that are derived through the entire sample do not increase the prediction results for Turkey. The details of the results dependending on financial distress of 3 and 5 years can be seen at Appendix 8.2.4. The above table indicates the averages of lag years for each financial distress year.

6. ANALYSIS AND INTERPRETATION

The analysis and interpretation of each models' findings are given below by considering the importance of the re-estimation and the generalizability of each model.

6.1. Analysis and Interpretation of Altman Model Findings

The results of dissertation indicate for Altman model that the accuracy levels of the model is very low for the ten countries in the sample. The average of the estimation results for the financial distress of two years over the average of the entire lag years is 30.4%. When the sub sample is considered to calculate the pre and post crisis period of accuracy over the original model for the distress of two years it is found that the accuracy levels are still very low with 30.8% to 29.8% respectively. That's why it can be concluded that the accuracy levels over the original coefficients are not well classifiers of financial distress for the MSCI emerging market countries.

The results of the re-estimated sample, on the other hand, represent worse accuracy levels than the outcomes reached through the original coefficients of the Altman model. The average of the re-estimated sample for the two years of distress gives 18.1% of accuracy. The sub sample for the pre and post financial crisis gives even worse accuracy results than the full sample by 17.8% both for the pre and post financial crisis.

As the results of Altman model are very low for specific countries, the generalizability of the model would be meaningless. That's why the model cannot be recommended as a generalizable one for the individual countries in the sample of the current presentation. It can be concluded for Altman model, both for its results over the original and the re-estimated coefficients and the generalizability of the model, that it is not explaining the financial distress of the industrial firms of the MSCI countries for the period between 2000 and 2012. Altman model cannot be suggested as an early indicator of the financial distress prediction of the industrial firms in emerging markets.

6.2. Analysis and Interpretation of Ohlson Model Findings

The results of Ohlson model over its original coefficients indicate that the model gives better results than his study in 1980. The results of the study indicates that the average estimation with a two years of financial distress is 91.4% for the MSCI

emerging markets countries, which is 82.6% in his study, covering 1970-1976 period. Moreover, the dissertation results for the pre and post crisis periods are also very high with scores of 90.3% to 92.8% respectively. That's why it can be concluded that the accuracy levels over the original coefficients work well for the Ohlson model over the MSCI emerging markets countries.

The re-estimation sample, on the other hand, is also indicating very high average prediction results. The re-estimation result for the full sample is 91.3% while the pre and post crisis predictions are 90.1% to 92.6% respectively. The re-estimated prediction results are very close to those derived over the original coefficients of the model. However, the individual country re-estimations over the country specific variables are not improved but also are not decreased significantly the details can be seen at Appendix 8.5.1

In order to see whether the Ohlson model is generalizable for the individual countries, the re-estimated coefficients for the full sample are applied for the each country in the sample exclusively. The results indicate that the re-estimated coefficients applied to each country give better prediction results than the predictions over the country specific coefficients. Additionally, the coefficients of the full sample when applied to each country, the predictions remain higher or slightly lower than the predictions of the full sample. That's why, it can be concluded for the Ohlson model that the re-estimation improves the prediction results and the model can be generalizable before and after the re-estimation for the MSCI countries in the present dissertation.

6.3. Analysis and Interpretation of Shumway Model Findings

The results of Shumway model over the full sample through original coefficients indicate that the model gives average accuracy level of 89% for the distress period of two years. Although the result is not better than the original result of his study with 95% of accuracy, the prediction outcomes through his original coefficients are around 90% of accuracy which can be accepted as a good model for the early prediction. The details of the study for the pre and post crisis of the study through original coefficients are 87.1% to 91.1% respectively.

The re-estimation result for the full sample, on the other hand, is slightly decreased to 87.9% and for the pre and post crisis, the estimation results become 88% to 87.8% respectively. Although the re-estimation results for the full sample gives high level of accuracy for the early prediction, the individual country based calculations deteriorates the prediction results. That's why, Shumway model does not work well depending on the country specific coefficients after the re-estimation of the sample. However, the original coefficients explain the country specific estimation results.

The model is re-estimated and the original coefficients are used for each of the countries in the sample to understand whether the model is generalizable. It is seen that unlike the estimation results reached by considering the each country's ratios, the coefficients of the entire sample applied to individual countries increase the prediction results. That's why it can be indicated for Shumway model the re-estimation does not work for the individual country specific factors. However, it gives high level of prediction results over the coefficients of the entire sample when applied to the each country exclusively. In addition the original model coefficients also are the good indicators of country based prediction models so the model can be recommended as an early predictor of financial distress for the MSCI Emerging Market countries. The details for the prediction results can be seen at Appendix 8.5.3.

6.4. Analysis and Interpretation of Taffler Model Findings

The results of Taffler model over the full sample through original coefficients indicate that the model gives average accuracy level of 87% for the distress period of two years. Although the result is not better than the original result of his study with 95.7% of accuracy, the prediction outcomes through his original coefficients are around 90% of accuracy which can be accepted as a good model for the early prediction. The details of the study for the pre and post crisis of the study through original coefficients are 87% to 87.9% respectively.

The re-estimation result for the full sample, on the other hand, is increased to 91.4%, and for the pre and post crisis, the estimation results become 90.2% to 92.6% respectively. Although the re-estimation results for the full sample gives high level of accuracy for the early prediction, the individual country based calculations over the

original coefficients also gives high level of prediction results. That's why, it can be indicated that Taffler model works well depending on the original country specific coefficients after the re-estimation of the sample.

The model is re-estimated and the original coefficients are used for each of the countries in the sample to understand whether the model is generalizable. The model is generalizable over the original coefficients for each country. The derived coefficients for the re-estimated sample are also used for each country and give very close prediction results to the entire sample's accuracy which indicates that the model is also generalizable over the re-estimated coefficients of the entire sample applied to the each country, so the model can be recommended as an early predictor of financial distress for the MSCI Emerging Market countries. The details for the prediction results can be seen at Appendix 8.5.4.

6.5. Analysis and Interpretation of Zmijewski Model Findings

The results of Zmijewski model over the full sample through original coefficients indicate that the model gives average accuracy level of 86% for the distress period of two years. The result reached over the original coefficients of the model for the entire sample is very close to the original study result of which is 84.7%. The financial distress prediction over the original coefficients also works for the individual country predictions.

The re-estimation result for the full sample, on the other hand, is increased to 91%, and for the pre and post crisis, the estimation results increases to 89.5% from 83.7% to 92.65% from 88% respectively. Although the re-estimation results for the full sample gives high level of accuracy for the early prediction, the individual country based calculations over the original coefficients also gives high level of prediction results. That's why, it can be indicated that Zmijewski model works well depending on the original country specific coefficients after the re-estimation of the sample.

The model is re-estimated and the original coefficients are used for each of the countries in the sample to understand whether the model is generalizable. The model is generalizable over the original coefficients for each country. The derived coefficients for the re-estimated sample are also used for each country and give very close

prediction results to the entire sample's accuracy which indicates that the model is also generalizable over the re-estimated coefficients of the entire sample applied to the each country, so the model can be recommended as an early predictor of financial distress for the MSCI Emerging Market countries as well. The details for the prediction results can be seen at Appendix 8.5.5.

6.6. Summary of Analysis and Interpretation

Table 112: Comparison of the Accuracy of Financial Distress Models (Lag Year = 1)

	Original Coefficients			Country Specific Coefficients			Entire Sample Coefficients		
	Full	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
All	Shumway [91,1%]	Shumway [89,1%]	Shumway [93,5%]	Zmijewski [90,7%]	Zmijewski [88,5%]	Zmijewski [93,2%]	Shumway [91,1%]	Shumway [89,2%]	Shumway [93,4%]
Brazil	Zmijewski [87,3%]	Shumway [90%]	Ohlson [88%]	Taffler [90,9%]	Taffler [93,3%]	Taffler [88%]	Ohlson [83,6%]	Ohlson [80%]	Ohlson [88%]
China	Shumway [95,5%]	Zmijewski [92,9%]	Shumway [100%]	Ohlson [94,8%]	Ohlson [91,7%]	Ohlson [98,6%]	Shumway [94,8%]	Shumway [91,7%]	Shumway [98,6%]
Egypt	Zmijewski [95%]	Zmijewski [94,7%]	Taffler [99,1%]	Zmijewski [94,6%]	Zmijewski [91,7%]	Taffler [98,2%]	Ohlson [94,6%]	Ohlson [91,7%]	Ohlson [98,2%]
South Africa	Ohlson [96,4%]	Shumway [96,7%]	Ohlson [100%]	Ohlson [98,2%]	Ohlson [96,7%]	Ohlson [100%]	Shumway [98,2%]	Shumway [96,7%]	Ohlson [100%]
Mexico	Zmijewski [95,5%]	Shumway [93,1%]	Zmijewski [98,3%]	Taffler [96,2%]	Ohlson [94,4%]	Taffler [98,3%]	Shumway [93,9%]	Shumway [93,1%]	Ohlson [95%]
Morocco	Shumway [89,9%]	Shumway [88%]	Shumway [92,2%]	Ohlson [88,9%]	Ohlson [88,9%]	Ohlson [88,9%]	Shumway [91,4%]	Shumway [90,7%]	Shumway [92,2%]
Philippines	Taffler [87,9%]	Taffler [86,4%]	Shumway [91,1%]	Taffler [88,1%]	Taffler [87,5%]	Zmijewski [90,3%]	Zmijewski [87,8%]	Shumway [86,6%]	Shumway [90,9%]
Poland	Zmijewski [85,9%]	Zmijewski [85,9%]	Shumway [88%]	Ohlson [80,6%]	Shumway [81,1%]	Zmijewski [86,7%]	Shumway [77,6%]	Shumway [71,5%]	Shumway [84,9%]
South Korea	Ohlson [97,6%]	Ohlson [96,6%]	Ohlson [98,7%]	Zmijewski [97,2%]	Taffler [96,5%]	Zmijewski [98,2%]	Taffler [97,5%]	Ohlson [96,6%]	Taffler [98,7%]
Turkey	Shumway [91,3%]	Zmijewski [88,7%]	Shumway [96,3%]	Ohlson [90,8%]	Ohlson [86,9%]	Ohlson [95,5%]	Shumway [89,8%]	Shumway [85,2%]	Zmijewski [95,5%]

Table 113: Comparison of the Accuracy of Financial Distress Models (Lag Year = 2)

	Original Coefficients			Country Specific Coefficients			Entire Sample Coefficients		
	Full	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
All	Ohlson [91,6%]	Ohlson [90,4%]	Ohlson [92,8%]	Taffler [91,4%]	Taffler [90,2%]	Taffler [92,6%]	Taffler [91,4%]	Taffler [90,2%]	Shumway [93,4%]
Brazil	Ohlson [86%]	Shumway [92%]	Ohlson [88%]	Taffler [90%]	Taffler [96%]	Taffler [84%]	Ohlson [86%]	Ohlson [84%]	Ohlson [88%]
China	Shumway [92,9%]	Shumway [85,7%]	Shumway [100%]	Zmijewski [92,9%]	Ohlson [85,7%]	Zmijewski [100%]	Zmijewski [95%]	Shumway [91,7%]	Zmijewski [100%]
Egypt	Ohlson [94,5%]	Ohlson [90,9%]	Ohlson [98,2%]	Zmijewski [94,1%]	Zmijewski [90%]	Taffler [98,2%]	Taffler [94,5%]	Taffler [90,9%]	Ohlson [98,2%]
South Africa	Ohlson [98%]	Taffler [100%]	Ohlson [100%]	Taffler [98%]	Zmijewski [100%]	Ohlson [100%]	Zmijewski [100%]	Zmijewski [100%]	Ohlson [100%]
Mexico	Ohlson [93,3%]	Ohlson [91,7%]	Ohlson [95%]	Taffler [94,2%]	Ohlson [93,3%]	Taffler [95%]	Shumway [93,9%]	Shumway [93,1%]	Ohlson [95%]
Morocco	Ohlson [87,2%]	Ohlson [86,7%]	Shumway [88,9%]	Shumway [87,2%]	Zmijewski [88,9%]	Shumway [87,8%]	Shumway [91,4%]	Shumway [90,7%]	Shumway [92,2%]
Philippines	Ohlson [88,6%]	Ohlson [88,4%]	Ohlson [88,8%]	Taffler [88,5%]	Taffler [88,4%]	Ohlson [88,8%]	Taffler [88,5%]	Taffler [88,4%]	Shumway [90,9%]
Poland	Zmijewski [81,2%]	Zmijewski [80,7%]	Shumway [82,2%]	Zmijewski [80,6%]	Zmijewski [74,4%]	Zmijewski [88%]	Shumway [77,6%]	Shumway [71,5%]	Shumway [84,9%]
South Korea	Ohlson [97,6%]	Ohlson [96,6%]	Ohlson [98,7%]	Zmijewski [97,3%]	Zmijewski [96,5%]	Zmijewski [98,1%]	Taffler [97,6%]	Taffler [96,6%]	Taffler [98,7%]
Turkey	Ohlson [90,8%]	Ohlson [87%]	Shumway [94,9%]	Taffler [90%]	Taffler [85,6%]	Ohlson [94,6%]	Taffler [90,8%]	Taffler [87%]	Shumway [95,2%]

Table 114: Comparison of the Accuracy of Financial Distress Models (Lag Year = Default Lag Year of Each Model)

	Original Coefficients			Country Specific Coefficients			Entire Sample Coefficients		
	Full	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
All	Shumway [91,1%]	Shumway [89,1%]	Shumway [93,5%]	Zmijewski [90,9%]	Zmijewski [89,3%]	Taffler [92,6%]	Shumway [91,1%]	Shumway [89,2%]	Shumway [93,4%]
Brazil	Shumway [85,5%]	Shumway [90%]	Ohlson [88%]	Taffler [90,9%]	Zmijewski [96%]	Taffler [88%]	Ohlson [83,6%]	Ohlson [80%]	Ohlson [88%]
China	Shumway [95,5%]	Shumway [91,7%]	Shumway [100%]	Ohlson [94,8%]	Ohlson [91,7%]	Zmijewski [100%]	Shumway [94,8%]	Shumway [91,7%]	Shumway [98,6%]
Egypt	Ohlson [94,2%]	Shumway [91,7%]	Taffler [99,1%]	Taffler [94,2%]	Taffler [90,9%]	Taffler [98,2%]	Ohlson [94,6%]	Ohlson [91,7%]	Ohlson [98,2%]
South Africa	Ohlson [96,4%]	Shumway [96,7%]	Ohlson [100%]	Ohlson [98,2%]	Zmijewski [100%]	Ohlson [100%]	Shumway [98,2%]	Shumway [96,7%]	Ohlson [100%]
Mexico	Shumway [94,7%]	Shumway [93,1%]	Shumway [96,7%]	Taffler [96,2%]	Ohlson [94,4%]	Taffler [98,3%]	Shumway [93,9%]	Shumway [93,1%]	Ohlson [95%]
Morocco	Shumway [89,9%]	Shumway [88%]	Shumway [92,2%]	Ohlson [88,9%]	Ohlson [88,9%]	Ohlson [88,9%]	Shumway [91,4%]	Shumway [90,7%]	Shumway [92,2%]
Philippines	Taffler [87,9%]	Taffler [86,4%]	Shumway [91,1%]	Taffler [88,1%]	Taffler [87,5%]	Ohlson [89,3%]	Zmijewski [87,8%]	Shumway [86,6%]	Shumway [90,9%]
Poland	Zmijewski [81,2%]	Zmijewski [80,7%]	Shumway [88%]	Ohlson [80,6%]	Shumway [81,1%]	Zmijewski [88%]	Shumway [77,6%]	Shumway [71,5%]	Shumway [84,9%]
South Korea	Ohlson [97,6%]	Ohlson [96,6%]	Ohlson [98,7%]	Zmijewski [97,3%]	Taffler [96,5%]	Zmijewski [98,1%]	Taffler [97,5%]	Ohlson [96,6%]	Taffler [98,7%]
Turkey	Shumway [91,3%]	Shumway [87,1%]	Shumway [96,3%]	Ohlson [90,8%]	Ohlson [86,9%]	Ohlson [95,5%]	Shumway [89,8%]	Shumway [85,2%]	Zmijewski [95,5%]

Table 115: Comparison of the Accuracy of Financial Distress Models (Lag Year = 3)

	Original Coefficients			Country Specific Coefficients			Entire Sample Coefficients		
	Full	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
All	Ohlson [92,3%]	Ohlson [91,7%]	Ohlson [92,8%]	Taffler [92,1%]	Taffler [91,6%]	Taffler [92,6%]	Taffler [92,1%]	Taffler [91,6%]	Taffler [92,6%]
Brazil	Ohlson [86,7%]	Shumway [90%]	Ohlson [88%]	Taffler [86,7%]	Taffler [95%]	Taffler [80%]	Ohlson [86,7%]	Ohlson [85%]	Ohlson [88%]
China	Shumway [93,7%]	Shumway [87,5%]	Shumway [98,6%]	Zmijewski [93,7%]	Zmijewski [87,5%]	Zmijewski [98,6%]	Zmijewski [94,4%]	Zmijewski [87,5%]	Shumway [100%]
Egypt	Ohlson [96%]	Ohlson [93,2%]	Ohlson [98,2%]	Zmijewski [95,5%]	Zmijewski [92%]	Taffler [98,2%]	Taffler [96%]	Taffler [93,2%]	Ohlson [98,2%]
South Africa	Ohlson [100%]	Ohlson [100%]	Ohlson [100%]	Taffler [100%]	Taffler [100%]	Ohlson [100%]	Ohlson [100%]	Ohlson [100%]	Ohlson [100%]
Mexico	Ohlson [94,4%]	Ohlson [93,8%]	Ohlson [95%]	Ohlson [92,6%]	Ohlson [93,8%]	Ohlson [91,7%]	Ohlson [94,4%]	Ohlson [93,8%]	Ohlson [95%]
Morocco	Ohlson [89,5%]	Ohlson [91,7%]	Ohlson [87,8%]	Shumway [89,5%]	Shumway [91,7%]	Shumway [87,8%]	Ohlson [89,5%]	Ohlson [91,7%]	Shumway [88,9%]
Philippines	Ohlson [89,3%]	Ohlson [90%]	Ohlson [88,8%]	Ohlson [88,5%]	Ohlson [88,7%]	Taffler [88,5%]	Taffler [89,3%]	Taffler [90%]	Shumway [89%]
Poland	Ohlson [77,8%]	Taffler [76,1%]	Ohlson [81,8%]	Ohlson [77%]	Ohlson [73,3%]	Zmijewski [80,4%]	Ohlson [77%]	Shumway [72,2%]	Ohlson [81,3%]
South Korea	Ohlson [97,9%]	Ohlson [97%]	Ohlson [98,7%]	Zmijewski [97,7%]	Zmijewski [97,2%]	Zmijewski [98,1%]	Taffler [97,9%]	Ohlson [97,2%]	Taffler [98,7%]
Turkey	Ohlson [92,8%]	Ohlson [90,5%]	Ohlson [94,6%]	Taffler [91,5%]	Taffler [88,4%]	Zmijewski [94,4%]	Taffler [92,8%]	Taffler [90,5%]	Zmijewski [95,2%]

The country based results over the lag period of one year through the re-estimation of the coefficients for the entire sample applied to each country indicate that Shumway model gives better prediction results. The countries Shumway model works best with one year lag are China with 95%, South Africa with 98%, Mexico 94%, Morocco with 91%, Poland with 78%, and Turkey with 90%. That's why the given results represent that Shumway model dominates the MSCI emerging markets countries when the entire sample coefficients are applied to each country. Brazil and Egypt for their industrial markets are best predicted through Ohlson model with 84% and 95% while Taffler model best predicts South Korea with 97.5%, and Zmijewski model gives best prediction results for Philippines with 88%.

The prediction results over the original coefficients with lag one year indicates that four countries are best represented with Zmijewski model. The prediction results of Zmijewski for Brazil is 87%, Egypt 95%, Mexico 96%, and Poland 86%. The Shumway model works best for the three countries China, Morocco and Turkey with 96%, 96%, and 86% respectively while South Africa and South Korea are best predicted by Ohlson with 97% and 98%. The pre and post crisis period applications represent that before the crisis Shumway model gives the best prediction results for Brazil, South Africa, Mexico, Morocco and Turkey with 90%, 97%, 93%, and 88% respectively. Zmijewski model, moreover, predicts China 93%, Egypt 95%, Poland 86% and Turkey 89%. Only South Korea with 97% is best predicted by Ohlson model and Taffler with 86% predicts Philippines. The post crisis period gives distinct results and Shumway model best predicts five countries which are China, Morocco, Philippines, Poland and Turkey. The number of countries which are best predicted by Shumway is increased and also the prediction accuracies are increased with Shumway model after the crisis period.

The coefficients derived by considering country specific factors with one year lag represent Ohlson as the best predictor for five countries which are China, South Africa, Morocco, Poland and Turkey. Taffler model is the best financial distress predictor for Brazil, Mexico, and Philippines, whereas Zmijewski model gives the best results for Egypt and South Korea. The model comparison by considering pre and post financial crisis indicates that the Taffler model gives the best prediction results for

Brazil, Philippines and South Korea before the financial crisis of 2008. After the crisis Taffler is the best financial distress predictor for Brazil, Egypt, and Mexico. The Ohlson model, on the other hand, gives the best prediction results for China, South Africa, Mexico, Morocco, and Turkey before the crisis wheras it represents the best predictions for China, South Africa, Morocco and Turkey. Moreover, Zmijewski gives the best prediction results for Egypt before the crisis of 2008 and it also gives the best predictions for Philippines, Poland and South Korea after the crisis.

The prediction results for each of the countries for lag year one indicate that Shumway model is the most accurate one for the prediction over the re-estimated sample. Even before the financial crisis of 2008 Shumway model gives the most accurate prediction rates for seven countries. Despite the fact that the model dominates good prediction results before the crisis, the model loses its strength after the financial crisis and it becomes the best financial distress predictor for the four countries which are China, Morocco, Philippines, and Poland. As the Shumway model bases on market driven variables, the decrease of country based prediction can be an indicator that the market based variables are not working very well after the financial crisis.

The prediction of country specific coefficients derived for each country results indicate that Ohlson model gives the best accuracy levels for five countries for the full sample and before the financial crisis. After the financial crisis, on the other hand, Ohlson represents the best financial prediction results for China, South Africa, Morocco and Turkey. The best prediction results for each country decreases to four after the financial crisis and it is seen that Ohlson model is more consistent than Shumway's after the financial crisis.

7. CONCLUSION

To conclude, this study analysis five accounting based financial distress models considered in terms of their accuracy levels for the entire sample of MSCI emerging market countries for 2000-2012. The accuracy levels of early prediction of financial distress in advance of one to five years is the prediction period for the entire sample of the dissertation. The models are also considered for their individual country effects over the original coefficients to see whether the original coefficients of the accounting based financial distress models can be used as financial distress predictors. Additionally, all the models are re-estimated for new coefficients to analyze whether there is a change of the coefficients and it is seen that coefficients give better results than the original models' when they are re-estimated for Taffler, Ohlson and Zmijewski models.

The study also analysis the generalizablity of the distress models through the re-estimated coefficients to identify whether the models can be used for specific emerging market countries taking place for the analysis. The results indicate that, depending on the comparison of individual country prediction results with the re-estimation through entire sample, Taffler, Ohlson, and Zmijewski models can be generalized for financial distress predictions for the industrial companies of the MSCI Emerging market countries in the sample of the current study. Additionally, country specific re-estimation of the models also gives significant prediction results for Taffler, Ohlson and Zmijewski models in which similar results are also found in the study of Grice and Dugan (2003) for the US over the re-estimation of Zmijewski and Ohlson models.

The study also indicates the pre and post crisis results for the recent financial crisis. For the accuracy of the models, the results indicate that Zmijewski and Shumway models give slightly better results prior to the crisis period while the prediction results for Taffler model slightly improves the post crisis results and Ohlson model gives stable prediction results before and after the crisis. These represent that the models' accuracy levels are not deteriorated before and after the crisis significantly and can be used as prediction tools for the industrial firms of the Emerging markets taken place in this dissertation.

When the post crisis periods are considered depending on lag year 1 results in terms of countries' accounting applications, it is found that for the countries who switched to International Financial Reporting Standards (IFRS), instead of their local Generally Accepted Accounting Principles (GAAP), reached better accuracy results through the Shumway model after the financial crisis period. These countries are Philippines, Poland, and Turkey. However, only in South Africa after the financial crisis the best accuracy is reached by Taffler model. That's why, the fluctuation for the post crisis period results for the financial distress models may be because of the IFRS using countries differences in accounting applications when compared with the non- IFRS using countries in the current sample. That's why, IFRS process may cause the differences among the countries which mandatorily apply IFRS or not.

To the researcher's knowledge, this study is the first one comparing the well known accounting based financial distress models in the literature over the emerging market countries for the ongoing firms through the consideration of prediction accuracy before and after the financial crisis of 2008. The sample length of the study enables to reach overall prediction results for the industrial firms of emerging market economies while comparing before and after financial crisis prediction results for each of the countries in the study. For further research the original and the re-estimated version of the models can be considered in terms of the generalizability of the models for different country samples by considering more accounting based financial distress models on distinct industries. Additionally, Brazil, Russia, India and China (BRIC) can be considered in terms of the financial distress model responses. As China and Brazil have the highest accuracy rates for the Ohlson model for the lag years of two and three. The results can also be considered for Russia and India depending on the availability of the financial ratios as the results may suggest that these countries may have some commonalities and it would be beneficial to check for the results of these countries as well. Especially, the decision making process of the international investors, both for their short and long term investments, matters for these countries. That's why, financial distress modeling may help both these countries' state owned or private firms for their country based investments.

8. APPENDICES

8.1. Descriptive Statistics

8.1.1. All Countries

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	2,32	0,12	0,06	0,06	0,98	2660,30	0,54	0,01	3,65	0,05	3,06	0,03	0,03	0,77	2,21	0,38	-1,89
Standard Error	0,26	0,00	0,01	0,00	0,04	669,56	0,00	0,00	0,11	0,00	0,01	0,00	0,00	0,51	0,33	0,00	1,02
Median	1,38	0,13	0,10	0,05	0,76	4,47	0,53	0,00	3,60	0,02	2,87	0,00	0,03	0,12	1,00	0,35	0,35
Mode	1,38	0,04	0,00	0,01	0,76	0,00	0,01	0,00	0,58	0,00	7,86	0,00	0,01	0,02	0,58	0,41	-2097,13
Standard Deviation	22,04	0,33	0,58	0,35	4,64	70383,44	0,34	0,11	11,68	0,48	0,73	0,48	0,03	51,74	33,49	0,30	102,76
Kurtosis	2807,47	356,67	378,05	9668,54	4380,77	3956,38	307,63	71,25	808,11	0,42	8,76	2,94	161,99	10167,74	1549,77	520,11	690,51
Skewness	51,33	-12,48	-16,26	95,11	60,69	59,57	11,82	8,56	13,86	-0,14	2,08	0,20	10,40	100,76	38,06	15,34	4,75

8.1.2. Brazil

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	2,32	0,12	0,06	0,06	0,98	2660,30	0,54	0,01	3,65	0,05	3,06	0,03	0,03	0,77	2,21	0,38	-1,89
Standard Error	0,26	0,00	0,01	0,00	0,04	669,56	0,00	0,00	0,11	0,00	0,01	0,00	0,00	0,51	0,33	0,00	1,02
Median	1,38	0,13	0,10	0,05	0,76	4,47	0,53	0,00	3,60	0,02	2,87	0,00	0,03	0,12	1,00	0,35	0,35
Mode	1,38	0,04	0,00	0,01	0,76	0,00	0,01	0,00	0,58	0,00	7,86	0,00	0,01	0,02	0,58	0,41	-2097,13
Standard Deviation	22,04	0,33	0,58	0,35	4,64	70383,44	0,34	0,11	11,68	0,48	0,73	0,48	0,03	51,74	33,49	0,30	102,76
Kurtosis	2807,47	356,67	378,05	9668,54	4380,77	3956,38	307,63	71,25	808,11	0,42	8,76	2,94	161,99	10167,74	1549,77	520,11	690,51
Skewness	51,33	-12,48	-16,26	95,11	60,69	59,57	11,82	8,56	13,86	-0,14	2,08	0,20	10,40	100,76	38,06	15,34	4,75

8.1.3. China

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,90	0,09	0,04	0,05	0,77	2,82	0,56	0,01	3,94	0,04	2,54	0,03	0,03	0,20	1,12	0,44	-0,83
Standard Error	0,09	0,01	0,01	0,00	0,02	0,10	0,01	0,00	0,14	0,01	0,00	0,01	0,00	0,01	0,02	0,01	0,88
Median	1,79	0,10	0,09	0,05	0,61	1,36	0,55	0,00	3,71	0,04	2,53	0,00	0,03	0,10	1,00	0,42	0,50
Mode	1,53	-0,05	0,01	0,04	0,74	0,25	0,83	0,00	2,53	0,00	#N/A	0,00	0,02	0,05	0,56	0,47	-0,32
Standard Deviation	0,77	0,33	0,56	0,07	0,87	5,28	0,37	0,10	7,34	0,42	0,19	0,45	0,01	0,47	0,89	0,33	47,25
Kurtosis	0,59	0,11	0,32	0,00	0,76	27,84	0,14	0,01	53,80	0,18	0,03	0,21	0,00	0,22	0,80	0,11	2232,48
Skewness	-0,42	585,69	525,90	9,55	55,64	112,21	374,88	87,29	68,76	1,34	-0,04	1,34	45,65	193,74	42,08	552,23	485,83

8.1.4. Egypt

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,61	0,22	0,06	0,04	0,58	7,45	0,67	0,04	3,99	0,03	3,57	0,09	0,04	0,19	1,44	0,54	-0,83
Standard Error	0,06	0,02	0,04	0,01	0,03	1,23	0,03	0,02	1,07	0,03	0,04	0,06	0,00	0,03	0,07	0,02	1,02
Median	1,40	0,22	0,13	0,05	0,57	2,80	0,64	0,00	5,44	0,02	3,56	0,00	0,03	0,11	1,23	0,48	0,49
Mode	2,69	0,06	0,04	0,06	0,85	5,26	0,82	0,00	1,06	0,00	#N/A	0,00	0,03	0,00	1,06	0,82	-4,01
Standard Deviation	0,80	0,30	0,47	0,14	0,38	15,88	0,43	0,20	13,84	0,37	0,53	0,74	0,03	0,38	0,93	0,31	13,17
Kurtosis	0,64	0,09	0,22	0,02	0,14	252,20	0,19	0,04	191,54	0,14	0,29	0,55	0,00	0,14	0,86	0,10	173,57
Skewness	4,01	11,30	18,86	5,50	0,07	29,34	14,34	19,66	6,03	2,35	1,37	3,43	29,73	16,26	7,38	8,00	41,57

8.1.5. South Africa

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,89	0,12	0,21	0,11	1,41	100,73	0,62	0,02	6,83	0,08	3,12	0,12	0,03	0,31	0,94	0,40	1,04
Standard Error	0,08	0,01	0,02	0,00	0,05	18,97	0,02	0,01	0,52	0,03	0,04	0,03	0,00	0,03	0,03	0,01	0,98
Median	1,54	0,09	0,22	0,09	1,43	10,01	0,63	0,00	6,95	0,07	3,21	0,16	0,02	0,23	0,93	0,40	0,10
Mode	1,07	-0,11	0,03	0,07	0,68	104,53	0,75	0,00	-0,55	0,00	3,12	0,00	0,04	0,03	0,29	0,19	-0,37
Standard Deviation	1,37	0,15	0,37	0,08	0,83	308,30	0,25	0,12	8,51	0,42	0,61	0,48	0,03	0,52	0,48	0,20	15,95
Kurtosis	1,86	0,02	0,14	0,01	0,69	95048,80	0,06	0,01	72,44	0,18	0,37	0,23	0,00	0,27	0,23	0,04	254,25
Skewness	21,59	1,98	18,71	2,03	0,88	127,54	20,80	62,21	24,45	1,31	0,17	7,11	46,73	29,68	1,05	-0,63	231,92

8.1.6. Mexico

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,26	0,07	0,11	0,06	0,44	197,88	0,42	0,00	3,18	0,11	5,24	0,07	0,02	1,54	1,32	0,14	0,68
Standard Error	0,04	0,01	0,02	0,00	0,04	54,84	0,04	0,00	0,63	0,05	0,06	0,06	0,00	0,22	0,29	0,02	1,58
Median	1,18	0,07	0,10	0,06	0,30	8,64	0,52	0,00	4,11	0,09	5,36	0,00	0,02	0,46	0,69	0,06	-0,78
Mode	1,02	-0,10	0,13	0,08	0,30	8,64	0,52	0,00	5,44	0,00	5,18	0,00	0,01	0,40	0,05	0,06	-0,88
Standard Deviation	0,33	0,09	0,12	0,03	0,35	424,79	0,30	0,00	4,90	0,37	0,43	0,48	0,01	1,72	2,22	0,14	12,26
Kurtosis	0,11	0,01	0,01	0,00	0,12	180447,70	0,09	0,00	23,99	0,13	0,19	0,23	0,00	2,98	4,91	0,02	150,36
Skewness	1,68	0,92	1,33	0,78	0,77	32,38	-1,68	0,00	12,83	2,76	-0,25	3,08	9,62	0,21	18,47	-0,26	17,99

8.1.7. Morocco

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,27	0,18	0,10	0,04	0,81	77,47	0,64	0,01	2,55	0,05	4,13	-0,03	0,03	0,11	1,18	0,53	0,93
Standard Error	0,05	0,02	0,01	0,01	0,04	9,01	0,01	0,01	0,79	0,03	0,02	0,02	0,00	0,01	0,04	0,02	0,58
Median	1,11	0,17	0,10	0,07	0,83	52,76	0,62	0,00	4,26	0,00	4,08	0,00	0,02	0,10	1,08	0,51	0,91
Mode	1,13	0,04	0,09	0,14	0,63	70,45	0,47	0,00	9,90	0,00	4,02	0,00	0,03	0,20	1,05	0,46	1,12
Standard Deviation	0,60	0,20	0,16	0,10	0,42	108,17	0,17	0,08	9,51	0,32	0,24	0,20	0,01	0,17	0,43	0,18	6,95
Kurtosis	0,37	0,04	0,03	0,01	0,18	11701,52	0,03	0,01	90,44	0,10	0,06	0,04	0,00	0,03	0,18	0,03	48,34
Skewness	5,70	-0,30	6,15	2,32	-0,56	32,30	-0,97	144,00	5,19	2,47	1,73	4,92	6,72	4,09	1,62	-0,99	42,76

8.1.8. Philippines

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,50	-0,01	-0,50	0,20	2,30	17,10	0,58	0,03	5,06	0,11	3,66	0,09	0,08	24,24	9,80	0,36	1,49
Standard Error	0,06	0,03	0,17	0,17	1,75	10,55	0,03	0,01	3,06	0,03	0,03	0,04	0,01	24,18	8,16	0,02	12,03
Median	1,25	0,05	0,11	0,05	0,53	1,05	0,55	0,00	4,56	0,08	3,64	0,00	0,03	0,16	0,65	0,29	-1,37
Mode	1,43	-0,09	0,03	0,10	0,81	37,07	0,53	0,00	5,29	0,00	3,24	0,00	0,50	0,04	0,89	0,38	-3,90
Standard Deviation	0,94	0,44	2,46	2,44	25,74	155,07	0,46	0,18	44,99	0,49	0,43	0,64	0,11	355,32	119,96	0,35	176,74
Kurtosis	0,89	0,19	6,05	5,96	662,35	24047,56	0,21	0,03	2024,16	0,24	0,18	0,42	0,01	126253,76	14389,25	0,12	31235,27
Skewness	5,15	14,34	23,55	215,09	215,93	191,89	29,25	26,53	186,48	0,36	2,27	2,81	8,32	215,98	213,86	24,31	82,91

8.1.9. Poland

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,26	-0,01	0,12	0,07	1,24	1,90	0,48	0,01	4,42	0,06	2,48	0,01	0,03	0,24	1,45	0,34	-5,07
Standard Error	0,04	0,01	0,01	0,00	0,04	0,30	0,01	0,00	0,31	0,02	0,01	0,02	0,00	0,02	0,07	0,01	1,00
Median	1,18	0,18	0,11	0,06	1,07	0,00	0,47	0,00	4,08	0,00	2,50	0,00	0,03	0,13	1,12	0,30	-0,28
Mode	1,02	0,11	0,01	0,02	0,56	0,00	0,34	0,00	1,27	0,00	2,46	0,00	0,04	0,04	0,95	0,24	-2,20
Standard Deviation	0,33	0,24	0,27	0,10	1,09	8,81	0,23	0,11	9,13	0,48	0,30	0,48	0,03	0,71	1,92	0,19	29,07
Kurtosis	0,11	0,06	0,07	0,01	1,20	77,57	0,05	0,01	83,38	0,23	0,09	0,23	0,00	0,51	3,68	0,04	845,28
Skewness	1,68	1,26	8,93	4,97	52,06	350,75	0,45	80,69	4,83	0,31	0,75	4,43	69,78	51,40	108,41	2,36	84,12

8.1.10. South Korea

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,87	0,11	0,14	0,05	0,99	13561,10	0,57	0,01	2,26	0,03	3,81	0,03	0,03	0,05	3,88	0,34	-6,28
Standard Error	0,03	0,00	0,01	0,00	0,02	3472,75	0,01	0,00	0,20	0,01	0,01	0,01	0,00	0,02	1,21	0,00	3,96
Median	1,53	0,08	0,11	0,05	0,91	1172,80	0,61	0,00	2,17	0,00	3,74	0,00	0,03	0,10	0,81	0,34	0,07
Mode	0,97	-0,07	0,00	-0,01	1,24	12536,48	0,01	0,00	-1,81	0,00	3,97	0,00	0,01	-0,08	0,61	0,35	-2097,13
Standard Deviation	1,36	0,21	0,24	0,06	0,83	160048,07	0,25	0,10	9,19	0,53	0,33	0,48	0,02	1,14	55,93	0,20	182,42
Kurtosis	1,84	0,04	0,06	0,00	0,69	25178,62	0,06	0,01	84,44	0,29	0,11	0,23	0,00	1,31	3128,32	0,04	33278,64
Skewness	16,05	7,83	8,99	5,31	86,07	762,27	2,40	101,45	34,36	-0,15	0,60	2,02	4,29	50,22	397,16	7,12	229,96

8.1.11. Turkey

	CL/CA	*WC/TA*	*RE/TA*	*EBIT/TA*	*SALES/TA*	*MVE/TL*	*TL/TA*	*OENEG*	*ROA*	*CHIN*	*SIZE*	*Return*	*Sigma*	*PBT/ACL*	*CA/TL*	*CA/CL*	*CA-INV-CL/SALES-NIBT+DEPR*
Mean	1,51	-0,01	0,00	0,08	0,98	4,57	0,60	0,04	5,68	0,07	3,07	0,06	0,04	0,32	1,08	0,42	-2,88
Standard Error	0,10	0,03	0,03	0,00	0,03	0,50	0,03	0,01	0,54	0,02	0,01	0,02	0,00	0,04	0,05	0,03	1,10
Median	1,16	0,07	0,11	0,07	0,90	1,15	0,53	0,00	5,20	0,05	3,02	0,00	0,03	0,19	0,84	0,35	-0,13
Mode	0,96	-2,53	-2,38	0,09	0,91	0,00	0,45	0,00	28,61	0,00	3,04	0,00	0,04	-0,03	0,21	0,15	-29,80
Standard Deviation	2,49	0,71	0,74	0,12	0,69	12,85	0,69	0,20	14,02	0,53	0,29	0,47	0,02	1,02	1,30	0,66	28,61
Kurtosis	6,20	0,51	0,55	0,01	0,48	165,18	0,47	0,04	196,43	0,28	0,08	0,22	0,00	1,05	1,70	0,43	818,58
Skewness	340,69	116,88	105,53	11,79	5,08	48,91	140,69	19,19	18,06	-0,16	0,92	6,48	10,17	35,44	143,48	174,71	217,75

8.2. Detailed Accuracy Results

8.2.1. Altman's Model

Coefficients are estimated through the relevant country's data

Whole Sample

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	31.7%	33.7%	29.0%	20.0%	22.9%	16.0%
3	0	27.6%	27.3%	28.0%	15.0%	16.8%	12.6%
5	0	21.3%	17.4%	26.9%	10.0%	9.7%	10.3%
2	1	31.1%	32.3%	29.7%	19.1%	20.6%	17.3%
3	1	30.1%	31.1%	28.8%	16.4%	18.4%	13.9%
5	1	23.3%	19.6%	27.7%	10.9%	10.4%	11.6%
2	2	30.3%	30.7%	29.9%	18.1%	18.0%	18.2%
3	2	29.3%	29.4%	29.2%	15.4%	16.0%	14.8%
5	2	25.5%	22.8%	28.2%	11.9%	11.4%	12.5%
2	3	29.8%	29.4%	30.0%	17.2%	15.7%	18.4%
3	3	28.8%	28.1%	29.4%	14.6%	13.9%	15.2%
5	3	28.1%	27.6%	28.5%	12.9%	12.8%	12.9%
2	4	29.9%	29.3%	30.3%	16.9%	13.9%	18.6%
3	4	28.8%	27.5%	29.6%	14.1%	11.7%	15.5%
5	4	28.1%	27.1%	28.8%	12.4%	10.9%	13.3%
2	5	29.8%	29.4%	30.0%	17.2%	15.7%	18.4%
3	5	28.8%	28.1%	29.4%	14.6%	13.9%	15.2%
5	5	28.1%	27.6%	28.5%	12.9%	12.8%	12.9%

Brazil

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	26.7%	37.1%	12.0%	43.3%	57.1%	24.0%
3	0	18.3%	28.6%	4.0%	33.3%	45.7%	16.0%
5	0	8.3%	14.3%	0.0%	23.3%	31.4%	12.0%
2	1	23.6%	33.3%	12.0%	40.0%	50.0%	28.0%
3	1	20.0%	33.3%	4.0%	36.4%	50.0%	20.0%
5	1	10.9%	20.0%	0.0%	25.5%	33.3%	16.0%
2	2	22.0%	32.0%	12.0%	40.0%	44.0%	36.0%
3	2	18.0%	32.0%	4.0%	36.0%	44.0%	28.0%
5	2	14.0%	28.0%	0.0%	30.0%	36.0%	24.0%
2	3	22.2%	30.0%	16.0%	40.0%	40.0%	40.0%
3	3	17.8%	30.0%	8.0%	35.6%	40.0%	32.0%
5	3	15.6%	30.0%	4.0%	33.3%	40.0%	28.0%
2	4	22.5%	26.7%	20.0%	35.0%	33.3%	36.0%

3	4	17.5%	26.7%	12.0%	35.0%	33.3%	36.0%
5	4	15.0%	26.7%	8.0%	32.5%	33.3%	32.0%
2	5	22.2%	30.0%	16.0%	40.0%	40.0%	40.0%
3	5	17.8%	30.0%	8.0%	35.6%	40.0%	32.0%
5	5	15.6%	30.0%	4.0%	33.3%	40.0%	28.0%

China

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	7.4%	8.2%	6.3%	14.3%	15.9%	12.0%
3	0	5.4%	5.5%	5.2%	11.5%	11.9%	10.9%
5	0	3.7%	2.9%	5.0%	8.8%	7.4%	10.7%
2	1	7.2%	7.9%	6.4%	14.6%	15.5%	13.5%
3	1	5.8%	6.2%	5.3%	13.1%	13.7%	12.4%
5	1	4.2%	3.4%	5.0%	9.9%	7.9%	12.2%
2	2	7.0%	7.9%	6.1%	14.5%	15.0%	13.9%
3	2	5.4%	5.8%	5.0%	12.9%	12.9%	12.8%
5	2	4.5%	4.3%	4.8%	11.1%	9.6%	12.5%
2	3	6.5%	7.7%	5.5%	13.6%	14.7%	12.8%
3	3	5.1%	5.9%	4.5%	12.4%	13.3%	11.7%
5	3	4.8%	5.5%	4.2%	12.1%	12.9%	11.4%
2	4	6.5%	7.7%	5.8%	13.7%	14.7%	13.0%
3	4	4.9%	5.3%	4.7%	12.4%	12.9%	12.1%
5	4	4.8%	5.3%	4.5%	12.2%	12.9%	11.8%
2	5	6.5%	7.7%	5.5%	13.6%	14.7%	12.8%
3	5	5.1%	5.9%	4.5%	12.4%	13.3%	11.7%
5	5	4.8%	5.5%	4.2%	12.1%	12.9%	11.4%

Egypt

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	13.7%	18.4%	7.1%	24.4%	27.6%	20.0%
3	0	10.1%	12.2%	7.1%	20.2%	20.4%	20.0%
5	0	6.0%	5.1%	7.1%	14.9%	11.2%	20.0%
2	1	13.0%	16.7%	8.6%	24.0%	26.2%	21.4%
3	1	11.0%	13.1%	8.6%	22.1%	22.6%	21.4%
5	1	6.5%	4.8%	8.6%	16.2%	11.9%	21.4%
2	2	12.9%	17.1%	8.6%	24.3%	25.7%	22.9%
3	2	10.7%	12.9%	8.6%	22.1%	21.4%	22.9%
5	2	7.1%	5.7%	8.6%	17.9%	12.9%	22.9%
2	3	13.5%	19.6%	8.6%	24.6%	26.8%	22.9%
3	3	11.1%	14.3%	8.6%	22.2%	21.4%	22.9%

5	3	7.9%	7.1%	8.6%	19.0%	14.3%	22.9%
2	4	13.4%	21.4%	8.6%	24.1%	28.6%	21.4%
3	4	11.6%	16.7%	8.6%	22.3%	23.8%	21.4%
5	4	8.0%	7.1%	8.6%	18.8%	14.3%	21.4%
2	5	13.5%	19.6%	8.6%	24.6%	26.8%	22.9%
3	5	11.1%	14.3%	8.6%	22.2%	21.4%	22.9%
5	5	7.9%	7.1%	8.6%	19.0%	14.3%	22.9%

South Africa

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	49.2%	61.0%	32.7%	46.6%	46.8%	46.4%
3	0	44.3%	51.3%	34.5%	40.9%	38.3%	44.5%
5	0	33.3%	32.5%	34.5%	33.3%	25.3%	44.5%
2	1	50.4%	62.9%	35.5%	46.7%	47.0%	46.4%
3	1	50.0%	62.1%	35.5%	44.6%	44.7%	44.5%
5	1	37.6%	39.4%	35.5%	36.4%	29.5%	44.5%
2	2	50.0%	64.5%	35.5%	45.0%	44.5%	45.5%
3	2	50.0%	64.5%	35.5%	44.1%	44.5%	43.6%
5	2	43.2%	50.9%	35.5%	39.1%	34.5%	43.6%
2	3	51.0%	62.5%	41.8%	44.4%	44.3%	44.5%
3	3	51.0%	62.5%	41.8%	43.4%	44.3%	42.7%
5	3	51.0%	62.5%	41.8%	43.4%	44.3%	42.7%
2	4	53.4%	62.1%	48.2%	44.3%	42.4%	45.5%
3	4	54.0%	63.6%	48.2%	43.8%	43.9%	43.6%
5	4	54.0%	63.6%	48.2%	43.8%	43.9%	43.6%
2	5	51.0%	62.5%	41.8%	44.4%	44.3%	44.5%
3	5	51.0%	62.5%	41.8%	43.4%	44.3%	42.7%
5	5	51.0%	62.5%	41.8%	43.4%	44.3%	42.7%

Mexico

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	31.7%	31.4%	32.0%	35.0%	28.6%	44.0%
3	0	28.3%	25.7%	32.0%	33.3%	25.7%	44.0%
5	0	23.3%	17.1%	32.0%	26.7%	14.3%	44.0%
2	1	29.1%	26.7%	32.0%	29.1%	23.3%	36.0%
3	1	29.1%	26.7%	32.0%	29.1%	23.3%	36.0%
5	1	23.6%	16.7%	32.0%	23.6%	13.3%	36.0%
2	2	30.0%	20.0%	40.0%	24.0%	20.0%	28.0%
3	2	30.0%	20.0%	40.0%	24.0%	20.0%	28.0%
5	2	26.0%	12.0%	40.0%	22.0%	16.0%	28.0%

2	3	26.7%	15.0%	36.0%	20.0%	15.0%	24.0%
3	3	26.7%	15.0%	36.0%	20.0%	15.0%	24.0%
5	3	26.7%	15.0%	36.0%	20.0%	15.0%	24.0%
2	4	25.0%	13.3%	32.0%	22.5%	13.3%	28.0%
3	4	25.0%	13.3%	32.0%	22.5%	13.3%	28.0%
5	4	25.0%	13.3%	32.0%	22.5%	13.3%	28.0%
2	5	26.7%	15.0%	36.0%	20.0%	15.0%	24.0%
3	5	26.7%	15.0%	36.0%	20.0%	15.0%	24.0%
5	5	26.7%	15.0%	36.0%	20.0%	15.0%	24.0%

Morocco

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	31.3%	35.7%	25.0%	20.1%	21.4%	18.3%
3	0	27.1%	29.8%	23.3%	17.4%	17.9%	16.7%
5	0	19.4%	19.0%	20.0%	9.7%	7.1%	13.3%
2	1	30.3%	31.9%	28.3%	18.2%	19.4%	16.7%
3	1	29.5%	31.9%	26.7%	17.4%	19.4%	15.0%
5	1	21.2%	19.4%	23.3%	10.6%	9.7%	11.7%
2	2	29.2%	28.3%	30.0%	16.7%	18.3%	15.0%
3	2	28.3%	28.3%	28.3%	15.8%	18.3%	13.3%
5	2	23.3%	21.7%	25.0%	12.5%	15.0%	10.0%
2	3	28.7%	25.0%	31.7%	14.8%	16.7%	13.3%
3	3	27.8%	25.0%	30.0%	13.9%	16.7%	11.7%
5	3	25.9%	25.0%	26.7%	12.0%	16.7%	8.3%
2	4	29.2%	22.2%	33.3%	13.5%	16.7%	11.7%
3	4	28.1%	22.2%	31.7%	12.5%	16.7%	10.0%
5	4	26.0%	22.2%	28.3%	10.4%	16.7%	6.7%
2	5	28.7%	25.0%	31.7%	14.8%	16.7%	13.3%
3	5	27.8%	25.0%	30.0%	13.9%	16.7%	11.7%
5	5	25.9%	25.0%	26.7%	12.0%	16.7%	8.3%

Philippines

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	18.1%	21.4%	13.3%	19.4%	21.4%	16.7%
3	0	12.5%	15.1%	8.9%	13.9%	15.1%	12.2%
5	0	5.1%	6.3%	3.3%	6.5%	6.3%	6.7%
2	1	16.2%	18.5%	13.3%	17.2%	18.5%	15.6%
3	1	13.6%	17.6%	8.9%	14.6%	17.6%	11.1%
5	1	5.6%	7.4%	3.3%	6.6%	7.4%	5.6%

2	2	14.4%	15.6%	13.3%	15.0%	14.4%	15.6%
3	2	11.7%	14.4%	8.9%	12.2%	13.3%	11.1%
5	2	6.1%	8.9%	3.3%	6.7%	7.8%	5.6%
2	3	11.7%	9.7%	13.3%	11.7%	8.3%	14.4%
3	3	9.3%	9.7%	8.9%	9.3%	8.3%	10.0%
5	3	6.2%	9.7%	3.3%	6.2%	8.3%	4.4%
2	4	10.4%	7.4%	12.2%	11.8%	7.4%	14.4%
3	4	9.0%	7.4%	10.0%	9.0%	7.4%	10.0%
5	4	5.6%	7.4%	4.4%	5.6%	7.4%	4.4%
2	5	11.7%	9.7%	13.3%	11.7%	8.3%	14.4%
3	5	9.3%	9.7%	8.9%	9.3%	8.3%	10.0%
5	5	6.2%	9.7%	3.3%	6.2%	8.3%	4.4%

Poland

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	27.0%	32.6%	19.2%	29.2%	32.2%	25.1%
3	0	22.2%	25.6%	17.5%	24.4%	25.6%	22.8%
5	0	15.5%	15.7%	15.2%	18.1%	16.3%	20.6%
2	1	26.1%	29.8%	21.7%	27.8%	27.5%	28.2%
3	1	24.5%	27.7%	20.6%	25.4%	24.9%	25.9%
5	1	16.9%	15.7%	18.3%	18.7%	14.6%	23.7%
2	2	24.8%	24.2%	25.4%	25.5%	20.0%	31.0%
3	2	22.8%	22.5%	23.1%	23.8%	18.3%	29.3%
5	2	17.9%	14.9%	20.8%	19.4%	11.8%	27.0%
2	3	22.8%	18.3%	26.5%	23.0%	14.1%	30.1%
3	3	21.4%	16.5%	25.4%	21.3%	12.3%	28.5%
5	3	19.6%	15.1%	23.1%	19.4%	10.9%	26.2%
2	4	21.3%	14.6%	25.4%	21.7%	10.3%	28.5%
3	4	20.6%	13.6%	24.8%	19.5%	8.5%	26.2%
5	4	18.7%	12.2%	22.5%	17.6%	7.0%	23.9%
2	5	22.8%	18.3%	26.5%	23.0%	14.1%	30.1%
3	5	21.4%	16.5%	25.4%	21.3%	12.3%	28.5%
5	5	19.6%	15.1%	23.1%	19.4%	10.9%	26.2%

South Korea

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	83.7%	81.8%	86.4%	34.0%	35.2%	32.4%
3	0	80.7%	73.2%	91.3%	27.1%	27.5%	26.4%
5	0	69.2%	51.8%	93.4%	19.6%	17.3%	22.9%

2	1	84.3%	82.4%	86.7%	32.9%	31.6%	34.4%
3	1	87.6%	84.0%	92.0%	29.1%	29.7%	28.4%
5	1	75.2%	59.3%	94.4%	21.3%	18.4%	24.9%
2	2	84.7%	83.5%	85.9%	31.2%	28.5%	33.9%
3	2	88.2%	84.7%	91.6%	28.0%	27.5%	28.6%
5	2	82.5%	70.2%	94.9%	22.9%	20.7%	25.1%
2	3	85.1%	83.8%	86.2%	29.9%	26.0%	33.0%
3	3	88.6%	85.0%	91.5%	26.6%	24.7%	28.1%
5	3	91.1%	86.2%	95.0%	24.4%	23.9%	24.9%
2	4	86.2%	85.9%	86.3%	27.9%	21.7%	31.6%
3	4	89.7%	86.4%	91.6%	24.9%	21.1%	27.2%
5	4	92.1%	87.4%	94.9%	23.1%	20.5%	24.6%
2	5	85.1%	83.8%	86.2%	29.9%	26.0%	33.0%
3	5	88.6%	85.0%	91.5%	26.6%	24.7%	28.1%
5	5	91.1%	86.2%	95.0%	24.4%	23.9%	24.9%

Turkey

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	33.3%	38.7%	25.8%	35.0%	41.3%	26.2%
3	0	24.6%	26.7%	21.8%	25.4%	28.3%	21.3%
5	0	15.7%	15.6%	16.0%	15.6%	15.6%	15.6%
2	1	32.5%	35.9%	28.4%	33.5%	39.3%	26.7%
3	1	27.9%	31.5%	23.6%	28.5%	34.1%	21.8%
5	1	17.8%	17.8%	17.8%	17.4%	18.5%	16.0%
2	2	30.4%	34.7%	26.2%	32.2%	38.2%	26.2%
3	2	26.7%	30.2%	23.1%	27.6%	33.8%	21.3%
5	2	19.8%	22.2%	17.3%	19.1%	22.7%	15.6%
2	3	30.1%	36.1%	25.3%	31.9%	38.9%	26.2%
3	3	25.9%	30.6%	22.2%	26.7%	33.3%	21.3%
5	3	22.2%	29.4%	16.4%	22.5%	31.1%	15.6%
2	4	28.3%	37.0%	23.1%	30.3%	40.0%	24.4%
3	4	24.7%	31.1%	20.9%	25.6%	34.1%	20.4%
5	4	21.1%	29.6%	16.0%	21.4%	32.6%	14.7%
2	5	30.1%	36.1%	25.3%	31.9%	38.9%	26.2%
3	5	25.9%	30.6%	22.2%	26.7%	33.3%	21.3%
5	5	22.2%	29.4%	16.4%	22.5%	31.1%	15.6%

Coefficients are estimated through the whole sample data

Whole Sample

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	31.7%	33.7%	29.0%	20.0%	22.9%	16.0%
3	0	27.6%	27.3%	28.0%	15.0%	16.8%	12.6%
5	0	21.3%	17.4%	26.9%	10.0%	9.7%	10.3%
2	1	31.1%	32.3%	29.7%	19.1%	20.6%	17.3%
3	1	30.1%	31.1%	28.8%	16.4%	18.4%	13.9%
5	1	23.3%	19.6%	27.7%	10.9%	10.4%	11.6%
2	2	30.3%	30.7%	29.9%	18.1%	18.0%	18.2%
3	2	29.3%	29.4%	29.2%	15.4%	16.0%	14.8%
5	2	25.5%	22.8%	28.2%	11.9%	11.4%	12.5%
2	3	29.8%	29.4%	30.0%	17.2%	15.7%	18.4%
3	3	28.8%	28.1%	29.4%	14.6%	13.9%	15.2%
5	3	28.1%	27.6%	28.5%	12.9%	12.8%	12.9%
2	4	29.9%	29.3%	30.3%	16.9%	13.9%	18.6%
3	4	28.8%	27.5%	29.6%	14.1%	11.7%	15.5%
5	4	28.1%	27.1%	28.8%	12.4%	10.9%	13.3%
2	5	29.8%	29.4%	30.0%	17.2%	15.7%	18.4%
3	5	28.8%	28.1%	29.4%	14.6%	13.9%	15.2%
5	5	28.1%	27.6%	28.5%	12.9%	12.8%	12.9%

Brazil

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	26.7%	37.1%	12.0%	43.3%	54.3%	28.0%
3	0	18.3%	28.6%	4.0%	33.3%	42.9%	20.0%
5	0	8.3%	14.3%	0.0%	23.3%	28.6%	16.0%
2	1	23.6%	33.3%	12.0%	40.0%	50.0%	28.0%
3	1	20.0%	33.3%	4.0%	36.4%	50.0%	20.0%
5	1	10.9%	20.0%	0.0%	25.5%	33.3%	16.0%
2	2	22.0%	32.0%	12.0%	38.0%	44.0%	32.0%
3	2	18.0%	32.0%	4.0%	34.0%	44.0%	24.0%
5	2	14.0%	28.0%	0.0%	28.0%	36.0%	20.0%
2	3	22.2%	30.0%	16.0%	40.0%	40.0%	40.0%
3	3	17.8%	30.0%	8.0%	35.6%	40.0%	32.0%
5	3	15.6%	30.0%	4.0%	33.3%	40.0%	28.0%
2	4	22.5%	26.7%	20.0%	40.0%	33.3%	44.0%
3	4	17.5%	26.7%	12.0%	35.0%	33.3%	36.0%
5	4	15.0%	26.7%	8.0%	32.5%	33.3%	32.0%

2	5	22.2%	30.0%	16.0%	40.0%	40.0%	40.0%
3	5	17.8%	30.0%	8.0%	35.6%	40.0%	32.0%
5	5	15.6%	30.0%	4.0%	33.3%	40.0%	28.0%

China

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	7.4%	8.2%	6.3%	7.1%	7.6%	6.4%
3	0	5.4%	5.5%	5.2%	4.8%	4.5%	5.3%
5	0	3.7%	2.9%	5.0%	3.7%	2.8%	5.0%
2	1	7.2%	7.9%	6.4%	7.0%	7.1%	7.0%
3	1	5.8%	6.2%	5.3%	5.6%	5.3%	5.9%
5	1	4.2%	3.4%	5.0%	3.9%	2.5%	5.6%
2	2	7.0%	7.9%	6.1%	7.0%	7.1%	6.9%
3	2	5.4%	5.8%	5.0%	5.4%	5.0%	5.8%
5	2	4.5%	4.3%	4.8%	4.2%	2.9%	5.5%
2	3	6.5%	7.7%	5.5%	6.4%	6.5%	6.4%
3	3	5.1%	5.9%	4.5%	5.0%	4.7%	5.3%
5	3	4.8%	5.5%	4.2%	4.7%	4.3%	5.0%
2	4	6.5%	7.7%	5.8%	5.9%	6.3%	5.6%
3	4	4.9%	5.3%	4.7%	4.5%	4.2%	4.7%
5	4	4.8%	5.3%	4.5%	4.4%	4.2%	4.5%
2	5	6.5%	7.7%	5.5%	6.4%	6.5%	6.4%
3	5	5.1%	5.9%	4.5%	5.0%	4.7%	5.3%
5	5	4.8%	5.5%	4.2%	4.7%	4.3%	5.0%

Egypt

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	13.7%	18.4%	7.1%	25.0%	29.6%	18.6%
3	0	10.1%	12.2%	7.1%	20.8%	22.4%	18.6%
5	0	6.0%	5.1%	7.1%	15.5%	13.3%	18.6%
2	1	13.0%	16.7%	8.6%	24.0%	28.6%	18.6%
3	1	11.0%	13.1%	8.6%	22.1%	25.0%	18.6%
5	1	6.5%	4.8%	8.6%	16.2%	14.3%	18.6%
2	2	12.9%	17.1%	8.6%	23.6%	28.6%	18.6%
3	2	10.7%	12.9%	8.6%	21.4%	24.3%	18.6%
5	2	7.1%	5.7%	8.6%	17.1%	15.7%	18.6%
2	3	13.5%	19.6%	8.6%	23.8%	30.4%	18.6%
3	3	11.1%	14.3%	8.6%	21.4%	25.0%	18.6%
5	3	7.9%	7.1%	8.6%	18.3%	17.9%	18.6%

2	4	13.4%	21.4%	8.6%	24.1%	28.6%	21.4%
3	4	11.6%	16.7%	8.6%	22.3%	23.8%	21.4%
5	4	8.0%	7.1%	8.6%	18.8%	14.3%	21.4%
2	5	13.5%	19.6%	8.6%	23.8%	30.4%	18.6%
3	5	11.1%	14.3%	8.6%	21.4%	25.0%	18.6%
5	5	7.9%	7.1%	8.6%	18.3%	17.9%	18.6%

South Africa

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	49.2%	61.0%	32.7%	25.0%	28.6%	20.0%
3	0	44.3%	51.3%	34.5%	20.5%	22.1%	18.2%
5	0	33.3%	32.5%	34.5%	17.4%	16.9%	18.2%
2	1	50.4%	62.9%	35.5%	25.6%	28.8%	21.8%
3	1	50.0%	62.1%	35.5%	22.7%	25.0%	20.0%
5	1	37.6%	39.4%	35.5%	18.6%	17.4%	20.0%
2	2	50.0%	64.5%	35.5%	24.5%	25.5%	23.6%
3	2	50.0%	64.5%	35.5%	22.7%	23.6%	21.8%
5	2	43.2%	50.9%	35.5%	20.0%	18.2%	21.8%
2	3	51.0%	62.5%	41.8%	23.7%	20.5%	26.4%
3	3	51.0%	62.5%	41.8%	22.7%	20.5%	24.5%
5	3	51.0%	62.5%	41.8%	22.7%	20.5%	24.5%
2	4	53.4%	62.1%	48.2%	24.4%	19.7%	27.3%
3	4	54.0%	63.6%	48.2%	22.7%	18.2%	25.5%
5	4	54.0%	63.6%	48.2%	22.7%	18.2%	25.5%
2	5	51.0%	62.5%	41.8%	23.7%	20.5%	26.4%
3	5	51.0%	62.5%	41.8%	22.7%	20.5%	24.5%
5	5	51.0%	62.5%	41.8%	22.7%	20.5%	24.5%

Mexico

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	31.7%	31.4%	32.0%	5.0%	8.6%	0.0%
3	0	28.3%	25.7%	32.0%	3.3%	5.7%	0.0%
5	0	23.3%	17.1%	32.0%	0.0%	0.0%	0.0%
2	1	29.1%	26.7%	32.0%	3.6%	6.7%	0.0%
3	1	29.1%	26.7%	32.0%	3.6%	6.7%	0.0%
5	1	23.6%	16.7%	32.0%	0.0%	0.0%	0.0%
2	2	30.0%	20.0%	40.0%	2.0%	4.0%	0.0%
3	2	30.0%	20.0%	40.0%	2.0%	4.0%	0.0%
5	2	26.0%	12.0%	40.0%	0.0%	0.0%	0.0%

2	3	26.7%	15.0%	36.0%	0.0%	0.0%	0.0%
3	3	26.7%	15.0%	36.0%	0.0%	0.0%	0.0%
5	3	26.7%	15.0%	36.0%	0.0%	0.0%	0.0%
2	4	25.0%	13.3%	32.0%	0.0%	0.0%	0.0%
3	4	25.0%	13.3%	32.0%	0.0%	0.0%	0.0%
5	4	25.0%	13.3%	32.0%	0.0%	0.0%	0.0%
2	5	26.7%	15.0%	36.0%	0.0%	0.0%	0.0%
3	5	26.7%	15.0%	36.0%	0.0%	0.0%	0.0%
5	5	26.7%	15.0%	36.0%	0.0%	0.0%	0.0%

Morocco

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	31.3%	35.7%	25.0%	14.6%	16.7%	11.7%
3	0	27.1%	29.8%	23.3%	11.8%	13.1%	10.0%
5	0	19.4%	19.0%	20.0%	6.9%	7.1%	6.7%
2	1	30.3%	31.9%	28.3%	12.9%	13.9%	11.7%
3	1	29.5%	31.9%	26.7%	12.1%	13.9%	10.0%
5	1	21.2%	19.4%	23.3%	6.8%	6.9%	6.7%
2	2	29.2%	28.3%	30.0%	11.7%	11.7%	11.7%
3	2	28.3%	28.3%	28.3%	10.8%	11.7%	10.0%
5	2	23.3%	21.7%	25.0%	7.5%	8.3%	6.7%
2	3	28.7%	25.0%	31.7%	10.2%	8.3%	11.7%
3	3	27.8%	25.0%	30.0%	9.3%	8.3%	10.0%
5	3	25.9%	25.0%	26.7%	7.4%	8.3%	6.7%
2	4	29.2%	22.2%	33.3%	9.4%	5.6%	11.7%
3	4	28.1%	22.2%	31.7%	8.3%	5.6%	10.0%
5	4	26.0%	22.2%	28.3%	6.3%	5.6%	6.7%
2	5	28.7%	25.0%	31.7%	10.2%	8.3%	11.7%
3	5	27.8%	25.0%	30.0%	9.3%	8.3%	10.0%
5	5	25.9%	25.0%	26.7%	7.4%	8.3%	6.7%

Philippines

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	18.1%	21.4%	13.3%	25.5%	27.8%	22.2%
3	0	12.5%	15.1%	8.9%	19.9%	21.4%	17.8%
5	0	5.1%	6.3%	3.3%	12.5%	12.7%	12.2%
2	1	16.2%	18.5%	13.3%	23.7%	25.0%	22.2%
3	1	13.6%	17.6%	8.9%	21.2%	24.1%	17.8%
5	1	5.6%	7.4%	3.3%	13.1%	13.9%	12.2%

2	2	14.4%	15.6%	13.3%	21.7%	20.0%	23.3%
3	2	11.7%	14.4%	8.9%	18.9%	18.9%	18.9%
5	2	6.1%	8.9%	3.3%	13.3%	13.3%	13.3%
2	3	11.7%	9.7%	13.3%	17.9%	11.1%	23.3%
3	3	9.3%	9.7%	8.9%	15.4%	11.1%	18.9%
5	3	6.2%	9.7%	3.3%	12.3%	11.1%	13.3%
2	4	10.4%	7.4%	12.2%	16.7%	7.4%	22.2%
3	4	9.0%	7.4%	10.0%	15.3%	7.4%	20.0%
5	4	5.6%	7.4%	4.4%	11.8%	7.4%	14.4%
2	5	11.7%	9.7%	13.3%	17.9%	11.1%	23.3%
3	5	9.3%	9.7%	8.9%	15.4%	11.1%	18.9%
5	5	6.2%	9.7%	3.3%	12.3%	11.1%	13.3%

Poland

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	27.0%	32.6%	19.2%	26.5%	32.6%	18.0%
3	0	22.2%	25.6%	17.5%	21.7%	26.0%	15.8%
5	0	15.5%	15.7%	15.2%	15.4%	16.7%	13.5%
2	1	26.1%	29.8%	21.7%	25.5%	28.2%	22.3%
3	1	24.5%	27.7%	20.6%	23.0%	25.6%	20.0%
5	1	16.9%	15.7%	18.3%	16.3%	15.0%	17.7%
2	2	24.8%	24.2%	25.4%	23.4%	21.1%	25.6%
3	2	22.8%	22.5%	23.1%	21.7%	19.4%	23.9%
5	2	17.9%	14.9%	20.8%	17.3%	13.0%	21.7%
2	3	22.8%	18.3%	26.5%	21.9%	14.1%	28.2%
3	3	21.4%	16.5%	25.4%	20.2%	12.3%	26.5%
5	3	19.6%	15.1%	23.1%	18.3%	10.9%	24.2%
2	4	21.3%	14.6%	25.4%	21.5%	10.3%	28.2%
3	4	20.6%	13.6%	24.8%	19.4%	8.5%	25.9%
5	4	18.7%	12.2%	22.5%	17.4%	7.0%	23.7%
2	5	22.8%	18.3%	26.5%	21.9%	14.1%	28.2%
3	5	21.4%	16.5%	25.4%	20.2%	12.3%	26.5%
5	5	19.6%	15.1%	23.1%	18.3%	10.9%	24.2%

South Korea

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	83.7%	81.8%	86.4%	19.6%	21.0%	17.7%
3	0	80.7%	73.2%	91.3%	13.3%	14.6%	11.5%
5	0	69.2%	51.8%	93.4%	7.7%	7.5%	8.0%

2	1	84.3%	82.4%	86.7%	18.4%	18.4%	18.4%
3	1	87.6%	84.0%	92.0%	14.5%	16.4%	12.2%
5	1	75.2%	59.3%	94.4%	8.5%	8.4%	8.7%
2	2	84.7%	83.5%	85.9%	17.2%	16.0%	18.3%
3	2	88.2%	84.7%	91.6%	13.6%	14.8%	12.3%
5	2	82.5%	70.2%	94.9%	9.3%	9.8%	8.8%
2	3	85.1%	83.8%	86.2%	16.1%	14.4%	17.4%
3	3	88.6%	85.0%	91.5%	12.4%	13.1%	11.9%
5	3	91.1%	86.2%	95.0%	10.1%	12.0%	8.6%
2	4	86.2%	85.9%	86.3%	15.3%	11.7%	17.4%
3	4	89.7%	86.4%	91.6%	11.3%	10.7%	11.6%
5	4	92.1%	87.4%	94.9%	9.0%	9.8%	8.6%
2	5	85.1%	83.8%	86.2%	16.1%	14.4%	17.4%
3	5	88.6%	85.0%	91.5%	12.4%	13.1%	11.9%
5	5	91.1%	86.2%	95.0%	10.1%	12.0%	8.6%

Turkey

		Altman			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	33.3%	38.7%	25.8%	35.6%	41.9%	26.7%
3	0	24.6%	26.7%	21.8%	25.6%	28.3%	21.8%
5	0	15.7%	15.6%	16.0%	15.7%	15.6%	16.0%
2	1	32.5%	35.9%	28.4%	34.1%	40.0%	27.1%
3	1	27.9%	31.5%	23.6%	29.1%	34.8%	22.2%
5	1	17.8%	17.8%	17.8%	17.4%	18.1%	16.4%
2	2	30.4%	34.7%	26.2%	33.1%	39.6%	26.7%
3	2	26.7%	30.2%	23.1%	28.4%	35.1%	21.8%
5	2	19.8%	22.2%	17.3%	19.6%	23.1%	16.0%
2	3	30.1%	36.1%	25.3%	32.6%	40.6%	26.2%
3	3	25.9%	30.6%	22.2%	27.4%	35.0%	21.3%
5	3	22.2%	29.4%	16.4%	23.2%	32.8%	15.6%
2	4	28.3%	37.0%	23.1%	30.8%	41.5%	24.4%
3	4	24.7%	31.1%	20.9%	26.1%	35.6%	20.4%
5	4	21.1%	29.6%	16.0%	21.9%	34.1%	14.7%
2	5	30.1%	36.1%	25.3%	32.6%	40.6%	26.2%
3	5	25.9%	30.6%	22.2%	27.4%	35.0%	21.3%
5	5	22.2%	29.4%	16.4%	23.2%	32.8%	15.6%

8.2.2. Ohlson's Model
Coefficients are estimated through the relevant country's data

Whole Sample

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	89.2%	86.7%	92.8%	89.4%	87.0%	92.8%
3	0	85.4%	77.7%	96.2%	85.4%	77.7%	96.1%
5	0	72.7%	54.2%	98.5%	72.6%	54.3%	98.3%
2	1	90.4%	88.5%	92.8%	90.3%	88.3%	92.6%
3	1	93.2%	90.6%	96.2%	92.9%	90.4%	96.0%
5	1	79.3%	63.3%	98.5%	79.1%	63.0%	98.3%
2	2	91.6%	90.4%	92.8%	91.3%	90.1%	92.6%
3	2	94.3%	92.5%	96.2%	94.0%	92.0%	96.0%
5	2	87.2%	75.9%	98.5%	86.9%	75.6%	98.3%
2	3	92.3%	91.7%	92.8%	92.0%	91.4%	92.5%
3	3	95.1%	93.8%	96.2%	94.8%	93.3%	95.9%
5	3	96.9%	94.9%	98.5%	96.5%	94.3%	98.3%
2	4	92.6%	92.5%	92.8%	92.4%	92.3%	92.5%
3	4	95.7%	94.9%	96.2%	95.4%	94.5%	95.9%
5	4	97.5%	95.8%	98.5%	97.1%	95.2%	98.2%
2	5	92.3%	91.7%	92.8%	92.0%	91.4%	92.5%
3	5	95.1%	93.8%	96.2%	94.8%	93.3%	95.9%
5	5	96.9%	94.9%	98.5%	96.5%	94.3%	98.3%

Brazil

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	80.0%	74.3%	88.0%	93.3%	100.0%	84.0%
3	0	80.0%	68.6%	96.0%	88.3%	85.7%	92.0%
5	0	73.3%	54.3%	100.0%	73.3%	57.1%	96.0%
2	1	83.6%	80.0%	88.0%	87.3%	90.0%	84.0%
3	1	87.3%	80.0%	96.0%	90.9%	90.0%	92.0%
5	1	78.2%	60.0%	100.0%	78.2%	63.3%	96.0%
2	2	86.0%	84.0%	88.0%	82.0%	84.0%	80.0%
3	2	90.0%	84.0%	96.0%	86.0%	84.0%	88.0%
5	2	84.0%	68.0%	100.0%	82.0%	72.0%	92.0%
2	3	86.7%	85.0%	88.0%	77.8%	80.0%	76.0%
3	3	91.1%	85.0%	96.0%	82.2%	80.0%	84.0%
5	3	93.3%	85.0%	100.0%	84.4%	80.0%	88.0%
2	4	87.5%	86.7%	88.0%	77.5%	73.3%	80.0%
3	4	92.5%	86.7%	96.0%	77.5%	73.3%	80.0%

5	4	95.0%	86.7%	100.0%	80.0%	73.3%	84.0%
2	5	86.7%	85.0%	88.0%	77.8%	80.0%	76.0%
3	5	91.1%	85.0%	96.0%	82.2%	80.0%	84.0%
5	5	93.3%	85.0%	100.0%	84.4%	80.0%	88.0%

China

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	97.4%	96.5%	98.7%	97.5%	96.7%	98.7%
3	0	90.8%	84.3%	99.7%	90.1%	83.6%	99.2%
5	0	74.8%	56.8%	100.0%	74.2%	56.2%	99.3%
2	1	97.6%	96.6%	98.7%	97.0%	96.3%	97.8%
3	1	99.0%	98.4%	99.7%	98.3%	97.8%	98.9%
5	1	81.6%	66.2%	100.0%	80.9%	65.8%	99.0%
2	2	97.6%	96.6%	98.7%	96.8%	96.3%	97.2%
3	2	99.2%	98.7%	99.7%	98.4%	98.4%	98.3%
5	2	89.7%	79.5%	100.0%	88.9%	79.2%	98.6%
2	3	97.9%	97.0%	98.7%	97.3%	97.0%	97.6%
3	3	99.4%	98.9%	99.7%	98.4%	98.5%	98.3%
5	3	99.7%	99.4%	100.0%	98.7%	98.9%	98.6%
2	4	97.9%	96.6%	98.7%	97.2%	96.4%	97.6%
3	4	99.6%	99.3%	99.7%	98.8%	99.0%	98.7%
5	4	99.8%	99.6%	100.0%	99.0%	99.0%	99.0%
2	5	97.9%	97.0%	98.7%	97.3%	97.0%	97.6%
3	5	99.4%	98.9%	99.7%	98.4%	98.5%	98.3%
5	5	99.7%	99.4%	100.0%	98.7%	98.9%	98.6%

Egypt

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	86.9%	82.7%	92.9%	98.8%	98.0%	100.0%
3	0	82.1%	74.5%	92.9%	91.1%	84.7%	100.0%
5	0	69.6%	53.1%	92.9%	72.0%	52.0%	100.0%
2	1	87.7%	83.3%	92.9%	94.8%	91.7%	98.6%
3	1	89.6%	86.9%	92.9%	96.8%	95.2%	98.6%
5	1	76.0%	61.9%	92.9%	78.6%	61.9%	98.6%
2	2	87.9%	82.9%	92.9%	90.7%	85.7%	95.7%
3	2	90.0%	87.1%	92.9%	92.9%	90.0%	95.7%
5	2	83.6%	74.3%	92.9%	85.7%	75.7%	95.7%
2	3	87.3%	80.4%	92.9%	89.7%	83.9%	94.3%
3	3	89.7%	85.7%	92.9%	90.5%	85.7%	94.3%

5	3	92.9%	92.9%	92.9%	93.7%	92.9%	94.3%
2	4	87.5%	78.6%	92.9%	91.1%	88.1%	92.9%
3	4	89.3%	83.3%	92.9%	91.1%	88.1%	92.9%
5	4	92.9%	92.9%	92.9%	92.9%	92.9%	92.9%
2	5	87.3%	80.4%	92.9%	89.7%	83.9%	94.3%
3	5	89.7%	85.7%	92.9%	90.5%	85.7%	94.3%
5	5	92.9%	92.9%	92.9%	93.7%	92.9%	94.3%

South Africa

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	94.3%	91.6%	98.2%	93.2%	90.3%	97.3%
3	0	89.0%	81.2%	100.0%	88.6%	81.2%	99.1%
5	0	73.5%	54.5%	100.0%	72.7%	53.9%	99.1%
2	1	94.2%	90.9%	98.2%	92.1%	87.9%	97.3%
3	1	97.1%	94.7%	100.0%	95.0%	91.7%	99.1%
5	1	80.2%	63.6%	100.0%	78.9%	62.1%	99.1%
2	2	94.5%	90.9%	98.2%	93.2%	89.1%	97.3%
3	2	97.3%	94.5%	100.0%	95.0%	90.9%	99.1%
5	2	88.2%	76.4%	100.0%	86.8%	74.5%	99.1%
2	3	96.0%	93.2%	98.2%	93.4%	88.6%	97.3%
3	3	98.0%	95.5%	100.0%	95.5%	90.9%	99.1%
5	3	98.0%	95.5%	100.0%	95.5%	90.9%	99.1%
2	4	96.6%	93.9%	98.2%	93.8%	89.4%	96.4%
3	4	98.3%	95.5%	100.0%	95.5%	90.9%	98.2%
5	4	98.3%	95.5%	100.0%	95.5%	90.9%	98.2%
2	5	96.0%	93.2%	98.2%	93.4%	88.6%	97.3%
3	5	98.0%	95.5%	100.0%	95.5%	90.9%	99.1%
5	5	98.0%	95.5%	100.0%	95.5%	90.9%	99.1%

Mexico

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.0%	91.4%	100.0%	100.0%	100.0%	100.0%
3	0	88.3%	80.0%	100.0%	91.7%	85.7%	100.0%
5	0	75.0%	57.1%	100.0%	75.0%	57.1%	100.0%
2	1	96.4%	93.3%	100.0%	98.2%	96.7%	100.0%
3	1	96.4%	93.3%	100.0%	98.2%	96.7%	100.0%
5	1	81.8%	66.7%	100.0%	80.0%	63.3%	100.0%
2	2	98.0%	96.0%	100.0%	96.0%	92.0%	100.0%
3	2	98.0%	96.0%	100.0%	96.0%	92.0%	100.0%

5	2	90.0%	80.0%	100.0%	86.0%	72.0%	100.0%
2	3	100.0%	100.0%	100.0%	93.3%	85.0%	100.0%
3	3	100.0%	100.0%	100.0%	93.3%	85.0%	100.0%
5	3	100.0%	100.0%	100.0%	93.3%	85.0%	100.0%
2	4	100.0%	100.0%	100.0%	92.5%	80.0%	100.0%
3	4	100.0%	100.0%	100.0%	92.5%	80.0%	100.0%
5	4	100.0%	100.0%	100.0%	92.5%	80.0%	100.0%
2	5	100.0%	100.0%	100.0%	93.3%	85.0%	100.0%
3	5	100.0%	100.0%	100.0%	93.3%	85.0%	100.0%
5	5	100.0%	100.0%	100.0%	93.3%	85.0%	100.0%

Morocco

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	90.3%	86.9%	95.0%	96.5%	96.4%	96.7%
3	0	84.7%	76.2%	96.7%	89.6%	83.3%	98.3%
5	0	72.9%	53.6%	100.0%	72.9%	57.1%	95.0%
2	1	91.7%	88.9%	95.0%	95.5%	94.4%	96.7%
3	1	92.4%	88.9%	96.7%	96.2%	94.4%	98.3%
5	1	79.5%	62.5%	100.0%	80.3%	65.3%	98.3%
2	2	93.3%	91.7%	95.0%	93.3%	93.3%	93.3%
3	2	94.2%	91.7%	96.7%	94.2%	93.3%	95.0%
5	2	87.5%	75.0%	100.0%	87.5%	76.7%	98.3%
2	3	94.4%	93.8%	95.0%	92.6%	93.8%	91.7%
3	3	95.4%	93.8%	96.7%	93.5%	93.8%	93.3%
5	3	97.2%	93.8%	100.0%	95.4%	93.8%	96.7%
2	4	94.8%	94.4%	95.0%	90.6%	91.7%	90.0%
3	4	95.8%	94.4%	96.7%	91.7%	91.7%	91.7%
5	4	97.9%	94.4%	100.0%	93.8%	91.7%	95.0%
2	5	94.4%	93.8%	95.0%	92.6%	93.8%	91.7%
3	5	95.4%	93.8%	96.7%	93.5%	93.8%	93.3%
5	5	97.2%	93.8%	100.0%	95.4%	93.8%	96.7%

Philippines

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	83.3%	80.2%	87.8%	92.1%	96.0%	86.7%
3	0	80.6%	72.2%	92.2%	85.6%	81.7%	91.1%
5	0	71.3%	52.4%	97.8%	72.2%	56.3%	94.4%
2	1	85.4%	83.3%	87.8%	88.9%	88.9%	88.9%
3	1	87.9%	84.3%	92.2%	90.4%	89.8%	91.1%

5	1	77.8%	61.1%	97.8%	75.3%	59.3%	94.4%
2	2	87.2%	86.7%	87.8%	85.6%	84.4%	86.7%
3	2	90.0%	87.8%	92.2%	88.3%	85.6%	91.1%
5	2	85.6%	73.3%	97.8%	80.6%	66.7%	94.4%
2	3	89.5%	91.7%	87.8%	80.9%	77.8%	83.3%
3	3	92.0%	91.7%	92.2%	83.3%	77.8%	87.8%
5	3	95.1%	91.7%	97.8%	86.4%	77.8%	93.3%
2	4	89.6%	92.6%	87.8%	77.8%	72.2%	81.1%
3	4	92.4%	92.6%	92.2%	79.2%	72.2%	83.3%
5	4	95.8%	92.6%	97.8%	82.6%	72.2%	88.9%
2	5	89.5%	91.7%	87.8%	80.9%	77.8%	83.3%
3	5	92.0%	91.7%	92.2%	83.3%	77.8%	87.8%
5	5	95.1%	91.7%	97.8%	86.4%	77.8%	93.3%

Poland

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	87.1%	81.7%	94.6%	91.5%	87.9%	96.6%
3	0	83.5%	73.8%	96.9%	85.7%	77.1%	97.7%
5	0	72.5%	53.5%	99.2%	71.8%	53.7%	97.2%
2	1	88.6%	83.6%	94.6%	90.8%	86.9%	95.5%
3	1	91.0%	86.2%	96.9%	92.2%	88.0%	97.2%
5	1	79.1%	62.4%	99.2%	77.8%	61.3%	97.7%
2	2	90.8%	87.0%	94.6%	89.7%	84.8%	94.6%
3	2	92.8%	88.7%	96.9%	91.4%	85.9%	96.9%
5	2	87.0%	74.9%	99.2%	84.1%	70.7%	97.5%
2	3	92.8%	90.5%	94.6%	89.7%	84.5%	93.8%
3	3	94.8%	92.3%	96.9%	91.4%	85.6%	96.1%
5	3	96.7%	93.7%	99.2%	92.6%	87.0%	97.2%
2	4	93.8%	92.5%	94.6%	89.1%	83.1%	92.7%
3	4	96.0%	94.4%	96.9%	90.5%	83.1%	94.9%
5	4	97.9%	95.8%	99.2%	91.7%	84.5%	96.1%
2	5	92.8%	90.5%	94.6%	89.7%	84.5%	93.8%
3	5	94.8%	92.3%	96.9%	91.4%	85.6%	96.1%
5	5	96.7%	93.7%	99.2%	92.6%	87.0%	97.2%

South Korea

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	86.0%	84.0%	88.8%	87.1%	85.2%	89.8%
3	0	83.7%	75.6%	95.0%	84.3%	76.4%	95.4%

5	0	71.8%	52.8%	98.5%	71.7%	52.9%	98.0%
2	1	87.4%	86.3%	88.8%	87.4%	85.8%	89.3%
3	1	91.3%	88.2%	95.0%	91.1%	87.6%	95.3%
5	1	78.4%	61.6%	98.5%	77.6%	60.7%	97.9%
2	2	88.6%	88.4%	88.8%	88.0%	87.2%	88.8%
3	2	92.3%	89.6%	95.0%	91.8%	88.5%	95.0%
5	2	86.2%	73.9%	98.5%	85.5%	73.0%	98.1%
2	3	89.3%	90.0%	88.8%	88.5%	88.7%	88.4%
3	3	93.3%	91.2%	95.0%	92.5%	90.0%	94.6%
5	3	95.8%	92.4%	98.5%	94.9%	91.1%	97.9%
2	4	90.3%	92.7%	88.8%	89.3%	92.1%	87.7%
3	4	94.5%	93.6%	95.0%	93.3%	92.3%	93.9%
5	4	97.0%	94.5%	98.5%	95.8%	93.2%	97.4%
2	5	89.3%	90.0%	88.8%	88.5%	88.7%	88.4%
3	5	93.3%	91.2%	95.0%	92.5%	90.0%	94.6%
5	5	95.8%	92.4%	98.5%	94.9%	91.1%	97.9%

Turkey

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	74.1%	68.6%	81.8%	81.3%	76.5%	88.0%
3	0	74.1%	65.1%	86.7%	76.5%	67.9%	88.4%
5	0	65.4%	46.0%	92.4%	64.4%	47.6%	88.0%
2	1	75.8%	70.7%	81.8%	80.6%	76.3%	85.8%
3	1	80.8%	75.9%	86.7%	82.0%	76.3%	88.9%
5	1	71.3%	53.7%	92.4%	70.5%	54.1%	90.2%
2	2	77.3%	72.9%	81.8%	77.8%	72.9%	82.7%
3	2	82.0%	77.3%	86.7%	82.4%	77.3%	87.6%
5	2	78.4%	64.4%	92.4%	77.1%	64.4%	89.8%
2	3	77.8%	72.8%	81.8%	77.0%	73.3%	80.0%
3	3	83.0%	78.3%	86.7%	79.8%	74.4%	84.0%
5	3	87.2%	80.6%	92.4%	82.5%	74.4%	88.9%
2	4	78.9%	74.1%	81.8%	76.1%	69.6%	80.0%
3	4	84.2%	80.0%	86.7%	78.1%	71.1%	82.2%
5	4	88.3%	81.5%	92.4%	81.1%	71.1%	87.1%
2	5	77.8%	72.8%	81.8%	77.0%	73.3%	80.0%
3	5	83.0%	78.3%	86.7%	79.8%	74.4%	84.0%
5	5	87.2%	80.6%	92.4%	82.5%	74.4%	88.9%

Coefficients are estimated through the whole sample data

Whole Sample

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	89.2%	86.7%	92.8%	89.4%	87.0%	92.8%
3	0	85.4%	77.7%	96.2%	85.4%	77.7%	96.1%
5	0	72.7%	54.2%	98.5%	72.6%	54.3%	98.3%
2	1	90.4%	88.5%	92.8%	90.3%	88.3%	92.6%
3	1	93.2%	90.6%	96.2%	92.9%	90.4%	96.0%
5	1	79.3%	63.3%	98.5%	79.1%	63.0%	98.3%
2	2	91.6%	90.4%	92.8%	91.3%	90.1%	92.6%
3	2	94.3%	92.5%	96.2%	94.0%	92.0%	96.0%
5	2	87.2%	75.9%	98.5%	86.9%	75.6%	98.3%
2	3	92.3%	91.7%	92.8%	92.0%	91.4%	92.5%
3	3	95.1%	93.8%	96.2%	94.8%	93.3%	95.9%
5	3	96.9%	94.9%	98.5%	96.5%	94.3%	98.3%
2	4	92.6%	92.5%	92.8%	92.4%	92.3%	92.5%
3	4	95.7%	94.9%	96.2%	95.4%	94.5%	95.9%
5	4	97.5%	95.8%	98.5%	97.1%	95.2%	98.2%
2	5	92.3%	91.7%	92.8%	92.0%	91.4%	92.5%
3	5	95.1%	93.8%	96.2%	94.8%	93.3%	95.9%
5	5	96.9%	94.9%	98.5%	96.5%	94.3%	98.3%

Brazil

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	80.0%	74.3%	88.0%	80.0%	74.3%	88.0%
3	0	80.0%	68.6%	96.0%	80.0%	68.6%	96.0%
5	0	73.3%	54.3%	100.0%	73.3%	54.3%	100.0%
2	1	83.6%	80.0%	88.0%	83.6%	80.0%	88.0%
3	1	87.3%	80.0%	96.0%	87.3%	80.0%	96.0%
5	1	78.2%	60.0%	100.0%	78.2%	60.0%	100.0%
2	2	86.0%	84.0%	88.0%	86.0%	84.0%	88.0%
3	2	90.0%	84.0%	96.0%	90.0%	84.0%	96.0%
5	2	84.0%	68.0%	100.0%	84.0%	68.0%	100.0%
2	3	86.7%	85.0%	88.0%	86.7%	85.0%	88.0%
3	3	91.1%	85.0%	96.0%	91.1%	85.0%	96.0%
5	3	93.3%	85.0%	100.0%	93.3%	85.0%	100.0%
2	4	87.5%	86.7%	88.0%	87.5%	86.7%	88.0%
3	4	92.5%	86.7%	96.0%	92.5%	86.7%	96.0%
5	4	95.0%	86.7%	100.0%	95.0%	86.7%	100.0%

2	5	86.7%	85.0%	88.0%	86.7%	85.0%	88.0%
3	5	91.1%	85.0%	96.0%	91.1%	85.0%	96.0%
5	5	93.3%	85.0%	100.0%	93.3%	85.0%	100.0%

China

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	97.4%	96.5%	98.7%	97.3%	96.5%	98.6%
3	0	90.8%	84.3%	99.7%	90.4%	84.0%	99.5%
5	0	74.8%	56.8%	100.0%	74.5%	56.5%	99.6%
2	1	97.6%	96.6%	98.7%	97.3%	96.6%	98.1%
3	1	99.0%	98.4%	99.7%	98.6%	98.1%	99.2%
5	1	81.6%	66.2%	100.0%	81.2%	66.0%	99.4%
2	2	97.6%	96.6%	98.7%	97.2%	96.5%	97.9%
3	2	99.2%	98.7%	99.7%	98.8%	98.6%	99.0%
5	2	89.7%	79.5%	100.0%	89.3%	79.3%	99.2%
2	3	97.9%	97.0%	98.7%	97.6%	97.2%	98.0%
3	3	99.4%	98.9%	99.7%	98.9%	98.7%	99.1%
5	3	99.7%	99.4%	100.0%	99.3%	99.2%	99.3%
2	4	97.9%	96.6%	98.7%	97.6%	96.6%	98.2%
3	4	99.6%	99.3%	99.7%	99.3%	99.3%	99.3%
5	4	99.8%	99.6%	100.0%	99.5%	99.3%	99.6%
2	5	97.9%	97.0%	98.7%	97.6%	97.2%	98.0%
3	5	99.4%	98.9%	99.7%	98.9%	98.7%	99.1%
5	5	99.7%	99.4%	100.0%	99.3%	99.2%	99.3%

Egypt

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	86.9%	82.7%	92.9%	89.3%	86.7%	92.9%
3	0	82.1%	74.5%	92.9%	84.5%	78.6%	92.9%
5	0	69.6%	53.1%	92.9%	71.4%	56.1%	92.9%
2	1	87.7%	83.3%	92.9%	90.3%	88.1%	92.9%
3	1	89.6%	86.9%	92.9%	92.2%	91.7%	92.9%
5	1	76.0%	61.9%	92.9%	78.6%	66.7%	92.9%
2	2	87.9%	82.9%	92.9%	90.7%	87.1%	94.3%
3	2	90.0%	87.1%	92.9%	92.9%	91.4%	94.3%
5	2	83.6%	74.3%	92.9%	86.4%	78.6%	94.3%
2	3	87.3%	80.4%	92.9%	90.5%	83.9%	95.7%
3	3	89.7%	85.7%	92.9%	92.9%	89.3%	95.7%
5	3	92.9%	92.9%	92.9%	96.0%	96.4%	95.7%

2	4	87.5%	78.6%	92.9%	91.1%	81.0%	97.1%
3	4	89.3%	83.3%	92.9%	92.9%	85.7%	97.1%
5	4	92.9%	92.9%	92.9%	96.4%	95.2%	97.1%
2	5	87.3%	80.4%	92.9%	90.5%	83.9%	95.7%
3	5	89.7%	85.7%	92.9%	92.9%	89.3%	95.7%
5	5	92.9%	92.9%	92.9%	96.0%	96.4%	95.7%

South Africa

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	94.3%	91.6%	98.2%	93.9%	90.9%	98.2%
3	0	89.0%	81.2%	100.0%	88.6%	80.5%	100.0%
5	0	73.5%	54.5%	100.0%	73.5%	54.5%	100.0%
2	1	94.2%	90.9%	98.2%	94.6%	91.7%	98.2%
3	1	97.1%	94.7%	100.0%	96.7%	93.9%	100.0%
5	1	80.2%	63.6%	100.0%	79.8%	62.9%	100.0%
2	2	94.5%	90.9%	98.2%	94.1%	90.0%	98.2%
3	2	97.3%	94.5%	100.0%	96.8%	93.6%	100.0%
5	2	88.2%	76.4%	100.0%	87.7%	75.5%	100.0%
2	3	96.0%	93.2%	98.2%	95.5%	92.0%	98.2%
3	3	98.0%	95.5%	100.0%	97.5%	94.3%	100.0%
5	3	98.0%	95.5%	100.0%	97.5%	94.3%	100.0%
2	4	96.6%	93.9%	98.2%	96.0%	92.4%	98.2%
3	4	98.3%	95.5%	100.0%	97.7%	93.9%	100.0%
5	4	98.3%	95.5%	100.0%	97.7%	93.9%	100.0%
2	5	96.0%	93.2%	98.2%	95.5%	92.0%	98.2%
3	5	98.0%	95.5%	100.0%	97.5%	94.3%	100.0%
5	5	98.0%	95.5%	100.0%	97.5%	94.3%	100.0%

Mexico

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.0%	91.4%	100.0%	95.0%	91.4%	100.0%
3	0	88.3%	80.0%	100.0%	88.3%	80.0%	100.0%
5	0	75.0%	57.1%	100.0%	75.0%	57.1%	100.0%
2	1	96.4%	93.3%	100.0%	96.4%	93.3%	100.0%
3	1	96.4%	93.3%	100.0%	96.4%	93.3%	100.0%
5	1	81.8%	66.7%	100.0%	81.8%	66.7%	100.0%
2	2	98.0%	96.0%	100.0%	98.0%	96.0%	100.0%
3	2	98.0%	96.0%	100.0%	98.0%	96.0%	100.0%
5	2	90.0%	80.0%	100.0%	90.0%	80.0%	100.0%

2	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
3	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
5	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
3	4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
5	4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
3	5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
5	5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Morocco

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	90.3%	86.9%	95.0%	90.3%	86.9%	95.0%
3	0	84.7%	76.2%	96.7%	84.7%	76.2%	96.7%
5	0	72.9%	53.6%	100.0%	72.9%	53.6%	100.0%
2	1	91.7%	88.9%	95.0%	91.7%	88.9%	95.0%
3	1	92.4%	88.9%	96.7%	92.4%	88.9%	96.7%
5	1	79.5%	62.5%	100.0%	79.5%	62.5%	100.0%
2	2	93.3%	91.7%	95.0%	93.3%	91.7%	95.0%
3	2	94.2%	91.7%	96.7%	94.2%	91.7%	96.7%
5	2	87.5%	75.0%	100.0%	87.5%	75.0%	100.0%
2	3	94.4%	93.8%	95.0%	94.4%	93.8%	95.0%
3	3	95.4%	93.8%	96.7%	95.4%	93.8%	96.7%
5	3	97.2%	93.8%	100.0%	97.2%	93.8%	100.0%
2	4	94.8%	94.4%	95.0%	94.8%	94.4%	95.0%
3	4	95.8%	94.4%	96.7%	95.8%	94.4%	96.7%
5	4	97.9%	94.4%	100.0%	97.9%	94.4%	100.0%
2	5	94.4%	93.8%	95.0%	94.4%	93.8%	95.0%
3	5	95.4%	93.8%	96.7%	95.4%	93.8%	96.7%
5	5	97.2%	93.8%	100.0%	97.2%	93.8%	100.0%

Philippines

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	83.3%	80.2%	87.8%	84.3%	81.7%	87.8%
3	0	80.6%	72.2%	92.2%	80.6%	72.2%	92.2%
5	0	71.3%	52.4%	97.8%	71.3%	52.4%	97.8%
2	1	85.4%	83.3%	87.8%	86.4%	85.2%	87.8%
3	1	87.9%	84.3%	92.2%	88.9%	86.1%	92.2%
5	1	77.8%	61.1%	97.8%	77.8%	61.1%	97.8%

2	2	87.2%	86.7%	87.8%	88.3%	88.9%	87.8%
3	2	90.0%	87.8%	92.2%	91.1%	90.0%	92.2%
5	2	85.6%	73.3%	97.8%	85.6%	73.3%	97.8%
2	3	89.5%	91.7%	87.8%	89.5%	91.7%	87.8%
3	3	92.0%	91.7%	92.2%	92.0%	91.7%	92.2%
5	3	95.1%	91.7%	97.8%	95.1%	91.7%	97.8%
2	4	89.6%	92.6%	87.8%	89.6%	92.6%	87.8%
3	4	92.4%	92.6%	92.2%	92.4%	92.6%	92.2%
5	4	95.8%	92.6%	97.8%	95.8%	92.6%	97.8%
2	5	89.5%	91.7%	87.8%	89.5%	91.7%	87.8%
3	5	92.0%	91.7%	92.2%	92.0%	91.7%	92.2%
5	5	95.1%	91.7%	97.8%	95.1%	91.7%	97.8%

Poland

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	87.1%	81.7%	94.6%	87.0%	81.5%	94.6%
3	0	83.5%	73.8%	96.9%	83.3%	73.6%	96.9%
5	0	72.5%	53.5%	99.2%	72.4%	53.3%	99.2%
2	1	88.6%	83.6%	94.6%	88.5%	83.3%	94.6%
3	1	91.0%	86.2%	96.9%	90.9%	85.9%	96.9%
5	1	79.1%	62.4%	99.2%	79.0%	62.2%	99.2%
2	2	90.8%	87.0%	94.6%	90.7%	86.8%	94.6%
3	2	92.8%	88.7%	96.9%	92.7%	88.5%	96.9%
5	2	87.0%	74.9%	99.2%	86.9%	74.6%	99.2%
2	3	92.8%	90.5%	94.6%	92.6%	90.1%	94.6%
3	3	94.8%	92.3%	96.9%	94.7%	91.9%	96.9%
5	3	96.7%	93.7%	99.2%	96.6%	93.3%	99.2%
2	4	93.8%	92.5%	94.6%	93.7%	92.5%	94.4%
3	4	96.0%	94.4%	96.9%	95.8%	94.4%	96.6%
5	4	97.9%	95.8%	99.2%	97.7%	95.8%	98.9%
2	5	92.8%	90.5%	94.6%	92.6%	90.1%	94.6%
3	5	94.8%	92.3%	96.9%	94.7%	91.9%	96.9%
5	5	96.7%	93.7%	99.2%	96.6%	93.3%	99.2%

South Korea

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	86.0%	84.0%	88.8%	86.4%	84.6%	89.0%
3	0	83.7%	75.6%	95.0%	83.9%	76.1%	94.8%
5	0	71.8%	52.8%	98.5%	72.0%	53.2%	98.3%

2	1	87.4%	86.3%	88.8%	86.9%	85.4%	88.7%
3	1	91.3%	88.2%	95.0%	90.8%	87.4%	94.9%
5	1	78.4%	61.6%	98.5%	77.9%	60.8%	98.4%
2	2	88.6%	88.4%	88.8%	88.0%	87.3%	88.7%
3	2	92.3%	89.6%	95.0%	91.8%	88.6%	94.9%
5	2	86.2%	73.9%	98.5%	85.7%	73.0%	98.4%
2	3	89.3%	90.0%	88.8%	88.8%	89.1%	88.5%
3	3	93.3%	91.2%	95.0%	92.8%	90.4%	94.7%
5	3	95.8%	92.4%	98.5%	95.2%	91.5%	98.2%
2	4	90.3%	92.7%	88.8%	89.8%	92.7%	88.0%
3	4	94.5%	93.6%	95.0%	93.9%	93.2%	94.2%
5	4	97.0%	94.5%	98.5%	96.4%	94.2%	97.7%
2	5	89.3%	90.0%	88.8%	88.8%	89.1%	88.5%
3	5	93.3%	91.2%	95.0%	92.8%	90.4%	94.7%
5	5	95.8%	92.4%	98.5%	95.2%	91.5%	98.2%

Turkey

		Ohlson			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	74.1%	68.6%	81.8%	74.6%	69.5%	81.8%
3	0	74.1%	65.1%	86.7%	73.7%	64.4%	86.7%
5	0	65.4%	46.0%	92.4%	65.2%	45.7%	92.4%
2	1	75.8%	70.7%	81.8%	75.2%	69.3%	82.2%
3	1	80.8%	75.9%	86.7%	80.2%	74.4%	87.1%
5	1	71.3%	53.7%	92.4%	71.1%	53.7%	92.0%
2	2	77.3%	72.9%	81.8%	76.7%	71.1%	82.2%
3	2	82.0%	77.3%	86.7%	81.3%	75.6%	87.1%
5	2	78.4%	64.4%	92.4%	78.0%	64.0%	92.0%
2	3	77.8%	72.8%	81.8%	77.0%	71.7%	81.3%
3	3	83.0%	78.3%	86.7%	81.7%	76.1%	86.2%
5	3	87.2%	80.6%	92.4%	85.9%	78.3%	92.0%
2	4	78.9%	74.1%	81.8%	77.5%	71.1%	81.3%
3	4	84.2%	80.0%	86.7%	82.8%	77.0%	86.2%
5	4	88.3%	81.5%	92.4%	86.9%	78.5%	92.0%
2	5	77.8%	72.8%	81.8%	77.0%	71.7%	81.3%
3	5	83.0%	78.3%	86.7%	81.7%	76.1%	86.2%
5	5	87.2%	80.6%	92.4%	85.9%	78.3%	92.0%

8.2.3. Shumway's Model
Coefficients are estimated through the relevant country's data

Whole Sample

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.3%	89.8%	93.3%	85.8%	83.3%	89.2%
3	0	84.5%	78.1%	93.6%	82.0%	74.5%	92.5%
5	0	70.1%	53.3%	93.6%	69.5%	51.3%	94.9%
2	1	91.1%	89.1%	93.5%	86.7%	85.8%	87.8%
3	1	91.9%	89.4%	94.9%	89.4%	88.0%	91.2%
5	1	76.4%	61.2%	94.8%	75.8%	61.1%	93.5%
2	2	89.1%	87.1%	91.1%	87.9%	88.0%	87.8%
3	2	91.7%	88.9%	94.5%	90.4%	89.8%	90.9%
5	2	83.6%	72.2%	95.1%	83.4%	73.5%	93.2%
2	3	88.9%	86.9%	90.5%	89.0%	89.6%	88.6%
3	3	90.6%	87.8%	92.9%	91.8%	91.6%	92.0%
5	3	91.7%	88.3%	94.4%	93.4%	92.5%	94.2%
2	4	88.7%	86.4%	90.0%	89.0%	91.1%	87.8%
3	4	90.4%	86.8%	92.6%	92.0%	93.5%	91.0%
5	4	91.8%	87.2%	94.6%	93.7%	94.5%	93.2%
2	5	88.9%	86.9%	90.5%	89.0%	89.6%	88.6%
3	5	90.6%	87.8%	92.9%	91.8%	91.6%	92.0%
5	5	91.7%	88.3%	94.4%	93.4%	92.5%	94.2%

Brazil

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	86.7%	91.4%	80.0%	66.7%	71.4%	60.0%
3	0	80.0%	80.0%	80.0%	56.7%	60.0%	52.0%
5	0	70.0%	60.0%	84.0%	46.7%	45.7%	48.0%
2	1	85.5%	90.0%	80.0%	61.8%	63.3%	60.0%
3	1	85.5%	90.0%	80.0%	61.8%	63.3%	60.0%
5	1	74.5%	66.7%	84.0%	52.7%	50.0%	56.0%
2	2	82.0%	92.0%	72.0%	50.0%	56.0%	44.0%
3	2	86.0%	92.0%	80.0%	54.0%	56.0%	52.0%
5	2	80.0%	76.0%	84.0%	52.0%	48.0%	56.0%
2	3	82.2%	90.0%	76.0%	51.1%	50.0%	52.0%
3	3	82.2%	90.0%	76.0%	46.7%	50.0%	44.0%
5	3	84.4%	90.0%	80.0%	48.9%	50.0%	48.0%
2	4	87.5%	86.7%	88.0%	57.5%	33.3%	72.0%
3	4	82.5%	86.7%	80.0%	52.5%	33.3%	64.0%

5	4	80.0%	86.7%	76.0%	50.0%	33.3%	60.0%
2	5	82.2%	90.0%	76.0%	51.1%	50.0%	52.0%
3	5	82.2%	90.0%	76.0%	46.7%	50.0%	44.0%
5	5	84.4%	90.0%	80.0%	48.9%	50.0%	48.0%

China

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	96.4%	96.3%	96.5%	49.2%	48.0%	51.0%
3	0	87.8%	81.8%	96.2%	46.5%	42.5%	52.1%
5	0	71.9%	54.6%	96.1%	39.4%	30.2%	52.4%
2	1	96.1%	95.4%	96.8%	49.8%	45.4%	55.2%
3	1	96.0%	95.5%	96.6%	51.3%	47.1%	56.3%
5	1	78.4%	63.5%	96.3%	43.4%	32.5%	56.6%
2	2	93.9%	93.5%	94.4%	50.2%	45.6%	54.8%
3	2	95.5%	95.6%	95.5%	51.4%	47.1%	55.7%
5	2	86.1%	76.4%	95.7%	46.6%	37.1%	56.0%
2	3	94.4%	94.4%	94.5%	49.0%	47.7%	50.0%
3	3	95.1%	96.0%	94.4%	49.9%	48.4%	51.1%
5	3	95.3%	96.4%	94.5%	50.2%	48.8%	51.3%
2	4	94.6%	94.5%	94.7%	53.3%	48.9%	56.0%
3	4	95.6%	95.8%	95.5%	53.6%	48.5%	56.7%
5	4	95.7%	95.8%	95.7%	53.8%	48.5%	57.0%
2	5	94.4%	94.4%	94.5%	49.0%	47.7%	50.0%
3	5	95.1%	96.0%	94.4%	49.9%	48.4%	51.1%
5	5	95.3%	96.4%	94.5%	50.2%	48.8%	51.3%

Egypt

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.2%	92.9%	98.6%	79.8%	73.5%	88.6%
3	0	89.3%	82.7%	98.6%	71.4%	59.2%	88.6%
5	0	73.8%	56.1%	98.6%	57.1%	34.7%	88.6%
2	1	95.5%	91.7%	100.0%	78.6%	71.4%	87.1%
3	1	97.4%	95.2%	100.0%	76.6%	67.9%	87.1%
5	1	81.2%	65.5%	100.0%	61.7%	40.5%	87.1%
2	2	92.9%	85.7%	100.0%	75.7%	72.9%	78.6%
3	2	95.0%	90.0%	100.0%	73.6%	68.6%	78.6%
5	2	88.6%	77.1%	100.0%	64.3%	50.0%	78.6%
2	3	93.7%	87.5%	98.6%	70.6%	71.4%	70.0%
3	3	94.4%	89.3%	98.6%	71.4%	73.2%	70.0%

5	3	97.6%	96.4%	98.6%	68.3%	66.1%	70.0%
2	4	95.5%	90.5%	98.6%	67.9%	76.2%	62.9%
3	4	95.5%	90.5%	98.6%	66.1%	71.4%	62.9%
5	4	97.3%	95.2%	98.6%	64.3%	66.7%	62.9%
2	5	93.7%	87.5%	98.6%	70.6%	71.4%	70.0%
3	5	94.4%	89.3%	98.6%	71.4%	73.2%	70.0%
5	5	97.6%	96.4%	98.6%	68.3%	66.1%	70.0%

South Africa

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.6%	90.9%	97.3%	43.9%	48.1%	38.2%
3	0	87.5%	79.2%	99.1%	42.4%	44.2%	40.0%
5	0	72.7%	53.9%	99.1%	33.0%	27.9%	40.0%
2	1	94.2%	91.7%	97.3%	43.8%	47.7%	39.1%
3	1	94.6%	90.9%	99.1%	46.7%	51.5%	40.9%
5	1	78.5%	61.4%	99.1%	36.8%	33.3%	40.9%
2	2	91.8%	86.4%	97.3%	45.5%	50.0%	40.9%
3	2	94.5%	90.0%	99.1%	47.3%	51.8%	42.7%
5	2	85.5%	71.8%	99.1%	42.7%	42.7%	42.7%
2	3	91.9%	85.2%	97.3%	48.5%	56.8%	41.8%
3	3	93.9%	87.5%	99.1%	46.5%	54.5%	40.0%
5	3	93.9%	87.5%	99.1%	46.5%	54.5%	40.0%
2	4	92.6%	84.8%	97.3%	51.1%	57.6%	47.3%
3	4	94.3%	86.4%	99.1%	50.6%	56.1%	47.3%
5	4	94.3%	86.4%	99.1%	50.6%	56.1%	47.3%
2	5	91.9%	85.2%	97.3%	48.5%	56.8%	41.8%
3	5	93.9%	87.5%	99.1%	46.5%	54.5%	40.0%
5	5	93.9%	87.5%	99.1%	46.5%	54.5%	40.0%

Mexico

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	98.3%	100.0%	96.0%	61.7%	65.7%	56.0%
3	0	90.0%	85.7%	96.0%	55.0%	54.3%	56.0%
5	0	73.3%	57.1%	96.0%	41.7%	31.4%	56.0%
2	1	96.4%	96.7%	96.0%	65.5%	73.3%	56.0%
3	1	96.4%	96.7%	96.0%	65.5%	73.3%	56.0%
5	1	78.2%	63.3%	96.0%	50.9%	46.7%	56.0%
2	2	94.0%	92.0%	96.0%	68.0%	72.0%	64.0%
3	2	94.0%	92.0%	96.0%	68.0%	72.0%	64.0%

5	2	84.0%	72.0%	96.0%	60.0%	56.0%	64.0%
2	3	91.1%	85.0%	96.0%	75.6%	85.0%	68.0%
3	3	91.1%	85.0%	96.0%	75.6%	85.0%	68.0%
5	3	91.1%	85.0%	96.0%	75.6%	85.0%	68.0%
2	4	90.0%	80.0%	96.0%	72.5%	100.0%	56.0%
3	4	90.0%	80.0%	96.0%	72.5%	100.0%	56.0%
5	4	90.0%	80.0%	96.0%	72.5%	100.0%	56.0%
2	5	91.1%	85.0%	96.0%	75.6%	85.0%	68.0%
3	5	91.1%	85.0%	96.0%	75.6%	85.0%	68.0%
5	5	91.1%	85.0%	96.0%	75.6%	85.0%	68.0%

Morocco

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.8%	94.0%	98.3%	69.4%	69.0%	70.0%
3	0	87.5%	81.0%	96.7%	64.6%	61.9%	68.3%
5	0	71.5%	56.0%	93.3%	53.5%	45.2%	65.0%
2	1	94.7%	93.1%	96.7%	72.0%	66.7%	78.3%
3	1	95.5%	93.1%	98.3%	71.2%	66.7%	76.7%
5	1	78.0%	63.9%	95.0%	60.6%	50.0%	73.3%
2	2	92.5%	91.7%	93.3%	70.0%	61.7%	78.3%
3	2	93.3%	91.7%	95.0%	70.8%	61.7%	80.0%
5	2	85.0%	75.0%	95.0%	65.0%	53.3%	76.7%
2	3	90.7%	91.7%	90.0%	68.5%	60.4%	75.0%
3	3	91.7%	91.7%	91.7%	67.6%	60.4%	73.3%
5	3	93.5%	91.7%	95.0%	67.6%	60.4%	73.3%
2	4	88.5%	88.9%	88.3%	67.7%	55.6%	75.0%
3	4	89.6%	88.9%	90.0%	68.8%	55.6%	76.7%
5	4	91.7%	88.9%	93.3%	68.8%	55.6%	76.7%
2	5	90.7%	91.7%	90.0%	68.5%	60.4%	75.0%
3	5	91.7%	91.7%	91.7%	67.6%	60.4%	73.3%
5	5	93.5%	91.7%	95.0%	67.6%	60.4%	73.3%

Philippines

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.5%	94.4%	92.2%	83.3%	80.2%	87.8%
3	0	85.2%	80.2%	92.2%	80.6%	72.2%	92.2%
5	0	70.8%	54.8%	93.3%	71.3%	52.4%	97.8%
2	1	89.9%	88.0%	92.2%	85.4%	83.3%	87.8%
3	1	90.4%	88.9%	92.2%	87.9%	84.3%	92.2%

5	1	74.2%	58.3%	93.3%	77.8%	61.1%	97.8%
2	2	87.2%	85.6%	88.9%	87.2%	86.7%	87.8%
3	2	90.0%	86.7%	93.3%	90.0%	87.8%	92.2%
5	2	80.0%	67.8%	92.2%	85.6%	73.3%	97.8%
2	3	82.1%	77.8%	85.6%	89.5%	91.7%	87.8%
3	3	84.6%	77.8%	90.0%	92.0%	91.7%	92.2%
5	3	86.4%	77.8%	93.3%	95.1%	91.7%	97.8%
2	4	79.9%	72.2%	84.4%	89.6%	92.6%	87.8%
3	4	81.3%	72.2%	86.7%	92.4%	92.6%	92.2%
5	4	84.7%	72.2%	92.2%	95.8%	92.6%	97.8%
2	5	82.1%	77.8%	85.6%	89.5%	91.7%	87.8%
3	5	84.6%	77.8%	90.0%	92.0%	91.7%	92.2%
5	5	86.4%	77.8%	93.3%	95.1%	91.7%	97.8%

Poland

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.0%	87.7%	95.5%	70.2%	63.8%	79.2%
3	0	84.7%	77.1%	95.5%	66.8%	56.3%	81.4%
5	0	70.5%	53.5%	94.4%	56.6%	37.2%	83.7%
2	1	91.3%	87.1%	96.3%	71.2%	69.7%	73.0%
3	1	91.2%	86.9%	96.3%	73.6%	72.3%	75.2%
5	1	76.4%	60.8%	95.2%	62.4%	49.8%	77.5%
2	2	89.7%	84.5%	94.9%	73.9%	77.7%	70.1%
3	2	91.4%	85.6%	97.2%	75.4%	79.4%	71.3%
5	2	82.8%	70.1%	95.5%	69.9%	66.2%	73.5%
2	3	89.0%	83.8%	93.2%	75.7%	84.9%	68.5%
3	3	90.8%	84.9%	95.5%	77.2%	86.6%	69.6%
5	3	91.1%	85.6%	95.5%	78.7%	88.0%	71.3%
2	4	87.5%	82.2%	90.7%	76.1%	88.7%	68.5%
3	4	88.9%	82.2%	93.0%	78.2%	90.6%	70.7%
5	4	90.1%	83.6%	94.1%	79.4%	92.0%	71.8%
2	5	89.0%	83.8%	93.2%	75.7%	84.9%	68.5%
3	5	90.8%	84.9%	95.5%	77.2%	86.6%	69.6%
5	5	91.1%	85.6%	95.5%	78.7%	88.0%	71.3%

South Korea

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	87.0%	86.3%	90.3%	73.8%	75.3%	73.7%
3	0	81.3%	75.8%	91.1%	66.8%	65.6%	70.2%

5	0	67.5%	52.0%	91.0%	55.5%	48.3%	67.1%
2	1	87.5%	86.4%	91.1%	73.2%	72.2%	76.3%
3	1	89.0%	87.0%	93.5%	71.2%	70.4%	73.9%
5	1	74.5%	60.2%	93.6%	58.6%	48.5%	72.2%
2	2	86.2%	85.8%	88.5%	70.1%	66.3%	75.4%
3	2	89.9%	87.1%	94.7%	71.6%	66.9%	78.1%
5	2	82.4%	71.2%	95.5%	65.6%	56.7%	76.1%
2	3	86.1%	85.7%	88.2%	68.2%	60.4%	75.8%
3	3	89.1%	86.4%	93.1%	68.7%	60.6%	76.6%
5	3	90.7%	87.0%	95.5%	68.1%	60.0%	76.0%
2	4	86.1%	87.2%	87.0%	69.1%	56.0%	78.3%
3	4	89.3%	87.0%	92.3%	71.0%	55.0%	81.8%
5	4	91.5%	87.6%	95.4%	72.5%	55.2%	84.2%
2	5	86.1%	85.7%	88.2%	68.2%	60.4%	75.8%
3	5	89.1%	86.4%	93.1%	68.7%	60.6%	76.6%
5	5	90.7%	87.0%	95.5%	68.1%	60.0%	76.0%

Turkey

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	79.1%	73.3%	87.1%	79.1%	81.0%	76.4%
3	0	74.4%	66.3%	85.8%	68.7%	66.7%	71.6%
5	0	62.2%	45.7%	85.3%	53.5%	43.5%	67.6%
2	1	80.6%	74.4%	88.0%	78.2%	81.1%	74.7%
3	1	80.8%	74.4%	88.4%	73.1%	75.9%	69.8%
5	1	68.9%	53.0%	88.0%	57.4%	51.1%	64.9%
2	2	77.1%	72.0%	82.2%	68.9%	72.4%	65.3%
3	2	81.8%	76.4%	87.1%	72.2%	74.2%	70.2%
5	2	75.8%	63.1%	88.4%	62.4%	60.4%	64.4%
2	3	76.5%	72.8%	79.6%	64.4%	70.0%	60.0%
3	3	79.8%	75.0%	83.6%	64.2%	68.9%	60.4%
5	3	82.0%	75.0%	87.6%	64.0%	67.8%	60.9%
2	4	75.6%	69.6%	79.1%	62.5%	65.9%	60.4%
3	4	78.1%	72.6%	81.3%	62.2%	64.4%	60.9%
5	4	81.7%	74.1%	86.2%	63.6%	64.4%	63.1%
2	5	76.5%	72.8%	79.6%	64.4%	70.0%	60.0%
3	5	79.8%	75.0%	83.6%	64.2%	68.9%	60.4%
5	5	82.0%	75.0%	87.6%	64.0%	67.8%	60.9%

Coefficients are estimated through the whole sample data

Whole Sample

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.3%	89.8%	93.3%	90.8%	88.7%	93.7%
3	0	84.5%	78.1%	93.6%	85.2%	77.8%	95.5%
5	0	70.1%	53.3%	93.6%	71.4%	53.6%	96.2%
2	1	91.1%	89.1%	93.5%	91.1%	89.2%	93.4%
3	1	91.9%	89.4%	94.9%	92.8%	90.2%	96.0%
5	1	76.4%	61.2%	94.8%	77.9%	62.2%	96.8%
2	2	89.1%	87.1%	91.1%	90.4%	88.7%	92.2%
3	2	91.7%	88.9%	94.5%	93.1%	90.6%	95.6%
5	2	83.6%	72.2%	95.1%	85.4%	73.9%	96.9%
2	3	88.9%	86.9%	90.5%	90.6%	89.1%	91.8%
3	3	90.6%	87.8%	92.9%	92.9%	90.5%	94.8%
5	3	91.7%	88.3%	94.4%	94.2%	91.1%	96.7%
2	4	88.7%	86.4%	90.0%	90.5%	89.0%	91.5%
3	4	90.4%	86.8%	92.6%	92.9%	90.1%	94.5%
5	4	91.8%	87.2%	94.6%	94.5%	90.7%	96.7%
2	5	88.9%	86.9%	90.5%	90.6%	89.1%	91.8%
3	5	90.6%	87.8%	92.9%	92.9%	90.5%	94.8%
5	5	91.7%	88.3%	94.4%	94.2%	91.1%	96.7%

Brazil

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	86.7%	91.4%	80.0%	81.7%	77.1%	88.0%
3	0	80.0%	80.0%	80.0%	76.7%	68.6%	88.0%
5	0	70.0%	60.0%	84.0%	70.0%	54.3%	92.0%
2	1	85.5%	90.0%	80.0%	80.0%	76.7%	84.0%
3	1	85.5%	90.0%	80.0%	83.6%	76.7%	92.0%
5	1	74.5%	66.7%	84.0%	76.4%	60.0%	96.0%
2	2	82.0%	92.0%	72.0%	82.0%	80.0%	84.0%
3	2	86.0%	92.0%	80.0%	86.0%	80.0%	92.0%
5	2	80.0%	76.0%	84.0%	82.0%	68.0%	96.0%
2	3	82.2%	90.0%	76.0%	82.2%	80.0%	84.0%
3	3	82.2%	90.0%	76.0%	86.7%	80.0%	92.0%
5	3	84.4%	90.0%	80.0%	88.9%	80.0%	96.0%
2	4	87.5%	86.7%	88.0%	87.5%	80.0%	92.0%
3	4	82.5%	86.7%	80.0%	87.5%	80.0%	92.0%
5	4	80.0%	86.7%	76.0%	90.0%	80.0%	96.0%

2	5	82.2%	90.0%	76.0%	82.2%	80.0%	84.0%
3	5	82.2%	90.0%	76.0%	86.7%	80.0%	92.0%
5	5	84.4%	90.0%	80.0%	88.9%	80.0%	96.0%

China

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	96.4%	96.3%	96.5%	97.0%	96.3%	97.8%
3	0	87.8%	81.8%	96.2%	89.1%	82.5%	98.2%
5	0	71.9%	54.6%	96.1%	73.2%	55.3%	98.3%
2	1	96.1%	95.4%	96.8%	96.8%	96.4%	97.4%
3	1	96.0%	95.5%	96.6%	97.4%	96.8%	98.2%
5	1	78.4%	63.5%	96.3%	79.8%	64.6%	98.1%
2	2	93.9%	93.5%	94.4%	95.6%	95.0%	96.2%
3	2	95.5%	95.6%	95.5%	97.2%	97.1%	97.3%
5	2	86.1%	76.4%	95.7%	87.6%	77.6%	97.6%
2	3	94.4%	94.4%	94.5%	96.0%	95.9%	96.1%
3	3	95.1%	96.0%	94.4%	97.0%	97.5%	96.6%
5	3	95.3%	96.4%	94.5%	97.2%	97.9%	96.7%
2	4	94.6%	94.5%	94.7%	96.3%	95.7%	96.6%
3	4	95.6%	95.8%	95.5%	97.5%	97.8%	97.4%
5	4	95.7%	95.8%	95.7%	97.7%	97.8%	97.6%
2	5	94.4%	94.4%	94.5%	96.0%	95.9%	96.1%
3	5	95.1%	96.0%	94.4%	97.0%	97.5%	96.6%
5	5	95.3%	96.4%	94.5%	97.2%	97.9%	96.7%

Egypt

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.2%	92.9%	98.6%	93.5%	90.8%	97.1%
3	0	89.3%	82.7%	98.6%	87.5%	80.6%	97.1%
5	0	73.8%	56.1%	98.6%	73.8%	57.1%	97.1%
2	1	95.5%	91.7%	100.0%	94.8%	91.7%	98.6%
3	1	97.4%	95.2%	100.0%	96.8%	95.2%	98.6%
5	1	81.2%	65.5%	100.0%	81.2%	66.7%	98.6%
2	2	92.9%	85.7%	100.0%	94.3%	88.6%	100.0%
3	2	95.0%	90.0%	100.0%	96.4%	92.9%	100.0%
5	2	88.6%	77.1%	100.0%	90.0%	80.0%	100.0%
2	3	93.7%	87.5%	98.6%	93.7%	85.7%	100.0%
3	3	94.4%	89.3%	98.6%	96.0%	91.1%	100.0%
5	3	97.6%	96.4%	98.6%	99.2%	98.2%	100.0%

2	4	95.5%	90.5%	98.6%	95.5%	88.1%	100.0%
3	4	95.5%	90.5%	98.6%	95.5%	88.1%	100.0%
5	4	97.3%	95.2%	98.6%	99.1%	97.6%	100.0%
2	5	93.7%	87.5%	98.6%	93.7%	85.7%	100.0%
3	5	94.4%	89.3%	98.6%	96.0%	91.1%	100.0%
5	5	97.6%	96.4%	98.6%	99.2%	98.2%	100.0%

South Africa

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.6%	90.9%	97.3%	94.7%	92.2%	98.2%
3	0	87.5%	79.2%	99.1%	88.3%	79.9%	100.0%
5	0	72.7%	53.9%	99.1%	73.1%	53.9%	100.0%
2	1	94.2%	91.7%	97.3%	93.8%	90.2%	98.2%
3	1	94.6%	90.9%	99.1%	95.9%	92.4%	100.0%
5	1	78.5%	61.4%	99.1%	78.9%	61.4%	100.0%
2	2	91.8%	86.4%	97.3%	92.3%	86.4%	98.2%
3	2	94.5%	90.0%	99.1%	95.0%	90.0%	100.0%
5	2	85.5%	71.8%	99.1%	86.4%	72.7%	100.0%
2	3	91.9%	85.2%	97.3%	93.4%	87.5%	98.2%
3	3	93.9%	87.5%	99.1%	95.5%	89.8%	100.0%
5	3	93.9%	87.5%	99.1%	95.5%	89.8%	100.0%
2	4	92.6%	84.8%	97.3%	93.8%	87.9%	97.3%
3	4	94.3%	86.4%	99.1%	95.5%	89.4%	99.1%
5	4	94.3%	86.4%	99.1%	95.5%	89.4%	99.1%
2	5	91.9%	85.2%	97.3%	93.4%	87.5%	98.2%
3	5	93.9%	87.5%	99.1%	95.5%	89.8%	100.0%
5	5	93.9%	87.5%	99.1%	95.5%	89.8%	100.0%

Mexico

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	98.3%	100.0%	96.0%	96.7%	94.3%	100.0%
3	0	90.0%	85.7%	96.0%	88.3%	80.0%	100.0%
5	0	73.3%	57.1%	96.0%	75.0%	57.1%	100.0%
2	1	96.4%	96.7%	96.0%	98.2%	96.7%	100.0%
3	1	96.4%	96.7%	96.0%	98.2%	96.7%	100.0%
5	1	78.2%	63.3%	96.0%	81.8%	66.7%	100.0%
2	2	94.0%	92.0%	96.0%	100.0%	100.0%	100.0%
3	2	94.0%	92.0%	96.0%	100.0%	100.0%	100.0%
5	2	84.0%	72.0%	96.0%	90.0%	80.0%	100.0%

2	3	91.1%	85.0%	96.0%	97.8%	95.0%	100.0%
3	3	91.1%	85.0%	96.0%	97.8%	95.0%	100.0%
5	3	91.1%	85.0%	96.0%	97.8%	95.0%	100.0%
2	4	90.0%	80.0%	96.0%	97.5%	93.3%	100.0%
3	4	90.0%	80.0%	96.0%	97.5%	93.3%	100.0%
5	4	90.0%	80.0%	96.0%	97.5%	93.3%	100.0%
2	5	91.1%	85.0%	96.0%	97.8%	95.0%	100.0%
3	5	91.1%	85.0%	96.0%	97.8%	95.0%	100.0%
5	5	91.1%	85.0%	96.0%	97.8%	95.0%	100.0%

Morocco

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.8%	94.0%	98.3%	94.4%	94.0%	95.0%
3	0	87.5%	81.0%	96.7%	87.5%	81.0%	96.7%
5	0	71.5%	56.0%	93.3%	72.9%	56.0%	96.7%
2	1	94.7%	93.1%	96.7%	93.9%	93.1%	95.0%
3	1	95.5%	93.1%	98.3%	94.7%	93.1%	96.7%
5	1	78.0%	63.9%	95.0%	78.8%	63.9%	96.7%
2	2	92.5%	91.7%	93.3%	91.7%	91.7%	91.7%
3	2	93.3%	91.7%	95.0%	92.5%	91.7%	93.3%
5	2	85.0%	75.0%	95.0%	85.8%	75.0%	96.7%
2	3	90.7%	91.7%	90.0%	90.7%	91.7%	90.0%
3	3	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%
5	3	93.5%	91.7%	95.0%	93.5%	91.7%	95.0%
2	4	88.5%	88.9%	88.3%	88.5%	88.9%	88.3%
3	4	89.6%	88.9%	90.0%	89.6%	88.9%	90.0%
5	4	91.7%	88.9%	93.3%	91.7%	88.9%	93.3%
2	5	90.7%	91.7%	90.0%	90.7%	91.7%	90.0%
3	5	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%
5	5	93.5%	91.7%	95.0%	93.5%	91.7%	95.0%

Philippines

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.5%	94.4%	92.2%	92.1%	90.5%	94.4%
3	0	85.2%	80.2%	92.2%	85.2%	78.6%	94.4%
5	0	70.8%	54.8%	93.3%	71.3%	54.0%	95.6%
2	1	89.9%	88.0%	92.2%	91.4%	90.7%	92.2%
3	1	90.4%	88.9%	92.2%	92.9%	91.7%	94.4%
5	1	74.2%	58.3%	93.3%	77.8%	63.0%	95.6%

2	2	87.2%	85.6%	88.9%	90.0%	88.9%	91.1%
3	2	90.0%	86.7%	93.3%	92.8%	90.0%	95.6%
5	2	80.0%	67.8%	92.2%	84.4%	72.2%	96.7%
2	3	82.1%	77.8%	85.6%	87.0%	84.7%	88.9%
3	3	84.6%	77.8%	90.0%	89.5%	84.7%	93.3%
5	3	86.4%	77.8%	93.3%	91.4%	84.7%	96.7%
2	4	79.9%	72.2%	84.4%	84.0%	79.6%	86.7%
3	4	81.3%	72.2%	86.7%	86.8%	79.6%	91.1%
5	4	84.7%	72.2%	92.2%	90.3%	79.6%	96.7%
2	5	82.1%	77.8%	85.6%	87.0%	84.7%	88.9%
3	5	84.6%	77.8%	90.0%	89.5%	84.7%	93.3%
5	5	86.4%	77.8%	93.3%	91.4%	84.7%	96.7%

Poland

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.0%	87.7%	95.5%	89.6%	85.3%	95.5%
3	0	84.7%	77.1%	95.5%	84.4%	75.3%	97.2%
5	0	70.5%	53.5%	94.4%	71.7%	53.1%	97.7%
2	1	91.3%	87.1%	96.3%	89.8%	85.2%	95.2%
3	1	91.2%	86.9%	96.3%	91.4%	86.9%	96.9%
5	1	76.4%	60.8%	95.2%	78.1%	61.5%	98.0%
2	2	89.7%	84.5%	94.9%	89.7%	84.8%	94.6%
3	2	91.4%	85.6%	97.2%	91.4%	85.9%	96.9%
5	2	82.8%	70.1%	95.5%	84.4%	71.3%	97.5%
2	3	89.0%	83.8%	93.2%	90.9%	86.3%	94.6%
3	3	90.8%	84.9%	95.5%	92.6%	87.3%	96.9%
5	3	91.1%	85.6%	95.5%	93.9%	88.7%	98.0%
2	4	87.5%	82.2%	90.7%	90.5%	85.9%	93.2%
3	4	88.9%	82.2%	93.0%	91.9%	85.9%	95.5%
5	4	90.1%	83.6%	94.1%	93.1%	87.3%	96.6%
2	5	89.0%	83.8%	93.2%	90.9%	86.3%	94.6%
3	5	90.8%	84.9%	95.5%	92.6%	87.3%	96.9%
5	5	91.1%	85.6%	95.5%	93.9%	88.7%	98.0%

South Korea

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	87.0%	86.3%	90.3%	86.9%	85.7%	91.0%
3	0	81.3%	75.8%	91.1%	82.4%	75.9%	93.8%
5	0	67.5%	52.0%	91.0%	69.1%	52.5%	94.2%

2	1	87.5%	86.4%	91.1%	87.5%	86.6%	90.9%
3	1	89.0%	87.0%	93.5%	90.0%	87.6%	95.1%
5	1	74.5%	60.2%	93.6%	76.2%	61.0%	96.3%
2	2	86.2%	85.8%	88.5%	87.1%	87.1%	89.1%
3	2	89.9%	87.1%	94.7%	90.8%	88.3%	95.4%
5	2	82.4%	71.2%	95.5%	84.0%	72.5%	97.4%
2	3	86.1%	85.7%	88.2%	87.3%	87.4%	89.0%
3	3	89.1%	86.4%	93.1%	90.8%	88.4%	94.6%
5	3	90.7%	87.0%	95.5%	92.7%	89.0%	97.5%
2	4	86.1%	87.2%	87.0%	87.5%	89.0%	88.2%
3	4	89.3%	87.0%	92.3%	91.2%	89.1%	94.1%
5	4	91.5%	87.6%	95.4%	93.6%	90.1%	97.4%
2	5	86.1%	85.7%	88.2%	87.3%	87.4%	89.0%
3	5	89.1%	86.4%	93.1%	90.8%	88.4%	94.6%
5	5	90.7%	87.0%	95.5%	92.7%	89.0%	97.5%

Turkey

		Shumway			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	79.1%	73.3%	87.1%	75.0%	68.6%	84.0%
3	0	74.4%	66.3%	85.8%	73.0%	62.9%	87.1%
5	0	62.2%	45.7%	85.3%	64.1%	44.8%	91.1%
2	1	80.6%	74.4%	88.0%	77.6%	71.5%	84.9%
3	1	80.8%	74.4%	88.4%	79.8%	72.2%	88.9%
5	1	68.9%	53.0%	88.0%	70.1%	52.6%	91.1%
2	2	77.1%	72.0%	82.2%	76.9%	70.7%	83.1%
3	2	81.8%	76.4%	87.1%	81.6%	75.1%	88.0%
5	2	75.8%	63.1%	88.4%	76.9%	62.7%	91.1%
2	3	76.5%	72.8%	79.6%	77.0%	72.2%	80.9%
3	3	79.8%	75.0%	83.6%	81.2%	75.6%	85.8%
5	3	82.0%	75.0%	87.6%	84.4%	75.6%	91.6%
2	4	75.6%	69.6%	79.1%	76.1%	69.6%	80.0%
3	4	78.1%	72.6%	81.3%	80.8%	74.1%	84.9%
5	4	81.7%	74.1%	86.2%	85.0%	75.6%	90.7%
2	5	76.5%	72.8%	79.6%	77.0%	72.2%	80.9%
3	5	79.8%	75.0%	83.6%	81.2%	75.6%	85.8%
5	5	82.0%	75.0%	87.6%	84.4%	75.6%	91.6%

8.2.4. Taffler's Model
Coefficients are estimated through the relevant country's data

Whole Sample

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	89.2%	88.7%	90.0%	89.0%	86.5%	92.6%
3	0	82.5%	76.7%	90.5%	85.2%	77.5%	96.0%
5	0	68.0%	51.9%	90.4%	72.5%	54.1%	98.4%
2	1	88.9%	87.8%	90.2%	90.2%	88.3%	92.6%
3	1	89.6%	88.3%	91.3%	93.0%	90.4%	96.1%
5	1	74.3%	60.0%	91.5%	79.1%	63.1%	98.4%
2	2	87.0%	86.0%	87.9%	91.4%	90.2%	92.6%
3	2	89.3%	87.6%	91.1%	94.1%	92.2%	96.0%
5	2	81.3%	70.8%	91.8%	87.0%	75.7%	98.4%
2	3	86.4%	85.4%	87.2%	92.1%	91.6%	92.6%
3	3	88.2%	86.4%	89.6%	95.0%	93.6%	96.0%
5	3	89.4%	86.9%	91.4%	96.7%	94.7%	98.3%
2	4	85.8%	84.3%	86.8%	92.5%	92.3%	92.6%
3	4	87.7%	85.2%	89.2%	95.5%	94.7%	96.0%
5	4	89.2%	85.6%	91.3%	97.3%	95.6%	98.3%
2	5	86.4%	85.4%	87.2%	92.1%	91.6%	92.6%
3	5	88.2%	86.4%	89.6%	95.0%	93.6%	96.0%
5	5	89.4%	86.9%	91.4%	96.7%	94.7%	98.3%

Brazil

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	81.7%	80.0%	84.0%	90.0%	91.4%	88.0%
3	0	75.0%	68.6%	84.0%	88.3%	82.9%	96.0%
5	0	65.0%	48.6%	88.0%	78.3%	62.9%	100.0%
2	1	80.0%	73.3%	88.0%	90.9%	93.3%	88.0%
3	1	80.0%	73.3%	88.0%	94.5%	93.3%	96.0%
5	1	72.7%	56.7%	92.0%	81.8%	66.7%	100.0%
2	2	76.0%	68.0%	84.0%	90.0%	96.0%	84.0%
3	2	80.0%	68.0%	92.0%	94.0%	96.0%	92.0%
5	2	78.0%	60.0%	96.0%	86.0%	76.0%	96.0%
2	3	75.6%	65.0%	84.0%	86.7%	95.0%	80.0%
3	3	80.0%	65.0%	92.0%	91.1%	95.0%	88.0%
5	3	82.2%	65.0%	96.0%	93.3%	95.0%	92.0%
2	4	80.0%	60.0%	92.0%	82.5%	93.3%	76.0%
3	4	80.0%	60.0%	92.0%	87.5%	93.3%	84.0%

5	4	82.5%	60.0%	96.0%	90.0%	93.3%	88.0%
2	5	75.6%	65.0%	84.0%	86.7%	95.0%	80.0%
3	5	80.0%	65.0%	92.0%	91.1%	95.0%	88.0%
5	5	82.2%	65.0%	96.0%	93.3%	95.0%	92.0%

China

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.2%	92.8%	89.0%	97.1%	96.4%	98.2%
3	0	82.5%	78.3%	88.4%	90.2%	83.8%	99.1%
5	0	66.8%	51.6%	88.2%	74.2%	56.4%	99.2%
2	1	91.0%	92.2%	89.6%	97.0%	96.5%	97.6%
3	1	90.8%	92.1%	89.2%	98.3%	98.0%	98.7%
5	1	73.4%	60.4%	88.9%	80.9%	65.8%	99.0%
2	2	89.7%	91.2%	88.2%	97.1%	96.4%	97.7%
3	2	90.6%	92.3%	89.0%	98.6%	98.3%	98.8%
5	2	81.0%	73.3%	88.7%	89.0%	78.9%	99.1%
2	3	89.9%	92.6%	87.6%	97.4%	97.1%	97.6%
3	3	90.4%	93.6%	87.9%	98.7%	98.6%	98.7%
5	3	90.6%	93.8%	88.0%	98.9%	98.8%	99.0%
2	4	90.0%	92.0%	88.8%	97.4%	96.4%	98.1%
3	4	91.0%	93.8%	89.2%	99.0%	99.0%	99.0%
5	4	91.1%	93.8%	89.5%	99.2%	99.0%	99.2%
2	5	89.9%	92.6%	87.6%	97.4%	97.1%	97.6%
3	5	90.4%	93.6%	87.9%	98.7%	98.6%	98.7%
5	5	90.6%	93.8%	88.0%	98.9%	98.8%	99.0%

Egypt

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	79.8%	75.5%	85.7%	88.1%	84.7%	92.9%
3	0	73.8%	65.3%	85.7%	83.3%	76.5%	92.9%
5	0	63.7%	48.0%	85.7%	70.8%	55.1%	92.9%
2	1	82.5%	78.6%	87.1%	89.0%	85.7%	92.9%
3	1	83.1%	79.8%	87.1%	90.9%	89.3%	92.9%
5	1	69.5%	54.8%	87.1%	77.3%	64.3%	92.9%
2	2	82.9%	78.6%	87.1%	89.3%	84.3%	94.3%
3	2	83.6%	80.0%	87.1%	91.4%	88.6%	94.3%
5	2	75.7%	64.3%	87.1%	85.0%	75.7%	94.3%
2	3	80.2%	73.2%	85.7%	88.9%	80.4%	95.7%
3	3	82.5%	78.6%	85.7%	91.3%	85.7%	95.7%

5	3	82.5%	78.6%	85.7%	94.4%	92.9%	95.7%
2	4	80.4%	73.8%	84.3%	89.3%	78.6%	95.7%
3	4	80.4%	73.8%	84.3%	91.1%	83.3%	95.7%
5	4	82.1%	78.6%	84.3%	94.6%	92.9%	95.7%
2	5	80.2%	73.2%	85.7%	88.9%	80.4%	95.7%
3	5	82.5%	78.6%	85.7%	91.3%	85.7%	95.7%
5	5	82.5%	78.6%	85.7%	94.4%	92.9%	95.7%

South Africa

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	92.8%	89.6%	97.3%	95.1%	92.9%	98.2%
3	0	86.7%	77.9%	99.1%	87.9%	79.2%	100.0%
5	0	72.3%	53.2%	99.1%	73.1%	53.9%	100.0%
2	1	94.2%	90.2%	99.1%	94.2%	90.9%	98.2%
3	1	93.8%	89.4%	99.1%	95.5%	91.7%	100.0%
5	1	78.1%	60.6%	99.1%	78.9%	61.4%	100.0%
2	2	91.4%	85.5%	97.3%	92.7%	87.3%	98.2%
3	2	94.1%	89.1%	99.1%	95.5%	90.9%	100.0%
5	2	85.0%	70.9%	99.1%	85.9%	71.8%	100.0%
2	3	91.4%	84.1%	97.3%	92.9%	86.4%	98.2%
3	3	93.4%	86.4%	99.1%	94.9%	88.6%	100.0%
5	3	93.4%	86.4%	99.1%	94.9%	88.6%	100.0%
2	4	91.5%	83.3%	96.4%	93.2%	86.4%	97.3%
3	4	93.2%	84.8%	98.2%	94.9%	87.9%	99.1%
5	4	93.2%	84.8%	98.2%	94.9%	87.9%	99.1%
2	5	91.4%	84.1%	97.3%	92.9%	86.4%	98.2%
3	5	93.4%	86.4%	99.1%	94.9%	88.6%	100.0%
5	5	93.4%	86.4%	99.1%	94.9%	88.6%	100.0%

Mexico

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.0%	94.3%	96.0%	95.0%	91.4%	100.0%
3	0	86.7%	80.0%	96.0%	88.3%	80.0%	100.0%
5	0	73.3%	57.1%	96.0%	75.0%	57.1%	100.0%
2	1	96.4%	96.7%	96.0%	96.4%	93.3%	100.0%
3	1	96.4%	96.7%	96.0%	96.4%	93.3%	100.0%
5	1	80.0%	66.7%	96.0%	81.8%	66.7%	100.0%
2	2	98.0%	100.0%	96.0%	98.0%	96.0%	100.0%
3	2	98.0%	100.0%	96.0%	98.0%	96.0%	100.0%

5	2	88.0%	80.0%	96.0%	90.0%	80.0%	100.0%
2	3	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
3	3	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
5	3	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
2	4	95.0%	93.3%	96.0%	100.0%	100.0%	100.0%
3	4	95.0%	93.3%	96.0%	100.0%	100.0%	100.0%
5	4	95.0%	93.3%	96.0%	100.0%	100.0%	100.0%
2	5	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
3	5	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
5	5	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%

Morocco

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	90.3%	88.1%	93.3%	97.2%	96.4%	98.3%
3	0	81.9%	75.0%	91.7%	88.9%	83.3%	96.7%
5	0	66.0%	50.0%	88.3%	72.2%	57.1%	93.3%
2	1	88.6%	87.5%	90.0%	96.2%	94.4%	98.3%
3	1	89.4%	87.5%	91.7%	97.0%	94.4%	100.0%
5	1	72.0%	58.3%	88.3%	79.5%	65.3%	96.7%
2	2	85.8%	86.7%	85.0%	94.2%	93.3%	95.0%
3	2	86.7%	86.7%	86.7%	95.0%	93.3%	96.7%
5	2	78.3%	70.0%	86.7%	86.7%	76.7%	96.7%
2	3	83.3%	87.5%	80.0%	92.6%	93.8%	91.7%
3	3	84.3%	87.5%	81.7%	93.5%	93.8%	93.3%
5	3	86.1%	87.5%	85.0%	95.4%	93.8%	96.7%
2	4	81.3%	88.9%	76.7%	90.6%	91.7%	90.0%
3	4	82.3%	88.9%	78.3%	91.7%	91.7%	91.7%
5	4	84.4%	88.9%	81.7%	93.8%	91.7%	95.0%
2	5	83.3%	87.5%	80.0%	92.6%	93.8%	91.7%
3	5	84.3%	87.5%	81.7%	93.5%	93.8%	93.3%
5	5	86.1%	87.5%	85.0%	95.4%	93.8%	96.7%

Philippines

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.9%	92.1%	84.4%	82.9%	80.2%	86.7%
3	0	80.6%	77.8%	84.4%	80.1%	72.2%	91.1%
5	0	65.7%	51.6%	85.6%	70.8%	52.4%	96.7%
2	1	86.4%	86.1%	86.7%	85.4%	83.3%	87.8%
3	1	85.9%	87.0%	84.4%	87.9%	84.3%	92.2%

5	1	69.7%	56.5%	85.6%	77.8%	61.1%	97.8%
2	2	83.3%	84.4%	82.2%	87.2%	86.7%	87.8%
3	2	86.1%	85.6%	86.7%	90.0%	87.8%	92.2%
5	2	75.0%	66.7%	83.3%	85.6%	73.3%	97.8%
2	3	80.9%	79.2%	82.2%	89.5%	91.7%	87.8%
3	3	80.9%	79.2%	82.2%	92.0%	91.7%	92.2%
5	3	81.5%	79.2%	83.3%	95.1%	91.7%	97.8%
2	4	77.8%	74.1%	80.0%	89.6%	92.6%	87.8%
3	4	79.2%	74.1%	82.2%	92.4%	92.6%	92.2%
5	4	81.3%	74.1%	85.6%	95.8%	92.6%	97.8%
2	5	80.9%	79.2%	82.2%	89.5%	91.7%	87.8%
3	5	80.9%	79.2%	82.2%	92.0%	91.7%	92.2%
5	5	81.5%	79.2%	83.3%	95.1%	91.7%	97.8%

Poland

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.5%	85.1%	93.2%	87.4%	82.3%	94.6%
3	0	83.1%	75.1%	94.4%	83.5%	73.8%	96.9%
5	0	70.1%	52.3%	94.9%	71.8%	53.1%	98.0%
2	1	88.9%	83.6%	95.2%	88.7%	83.1%	95.5%
3	1	89.2%	84.3%	95.2%	91.2%	85.7%	97.7%
5	1	75.9%	58.5%	96.9%	78.5%	61.5%	98.9%
2	2	87.0%	81.7%	92.4%	90.0%	85.6%	94.4%
3	2	89.0%	83.4%	94.6%	92.0%	87.3%	96.6%
5	2	82.0%	68.2%	95.8%	85.8%	73.2%	98.3%
2	3	86.4%	81.3%	90.4%	91.5%	88.4%	94.1%
3	3	88.1%	82.4%	92.7%	93.3%	89.4%	96.3%
5	3	89.4%	83.1%	94.4%	95.1%	90.8%	98.6%
2	4	84.9%	79.8%	87.9%	91.9%	89.2%	93.5%
3	4	86.3%	79.8%	90.1%	93.7%	90.1%	95.8%
5	4	87.9%	81.2%	91.8%	95.2%	91.5%	97.5%
2	5	86.4%	81.3%	90.4%	91.5%	88.4%	94.1%
3	5	88.1%	82.4%	92.7%	93.3%	89.4%	96.3%
5	5	89.4%	83.1%	94.4%	95.1%	90.8%	98.6%

South Korea

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.5%	87.8%	89.5%	87.6%	86.5%	89.0%
3	0	81.8%	76.4%	89.4%	84.9%	77.5%	95.3%

5	0	67.0%	51.7%	88.6%	72.2%	53.5%	98.3%
2	1	87.9%	86.4%	89.6%	88.1%	87.5%	88.9%
3	1	89.2%	87.3%	91.5%	92.0%	89.5%	95.1%
5	1	73.8%	59.2%	91.2%	78.3%	61.6%	98.4%
2	2	84.9%	83.2%	86.7%	88.5%	88.4%	88.7%
3	2	88.4%	84.4%	92.4%	92.3%	89.6%	94.9%
5	2	81.1%	68.5%	93.7%	85.8%	73.2%	98.4%
2	3	83.7%	80.2%	86.6%	88.5%	88.6%	88.5%
3	3	86.6%	81.2%	91.0%	92.4%	89.5%	94.7%
5	3	88.4%	82.1%	93.6%	94.9%	90.7%	98.2%
2	4	82.0%	77.8%	84.5%	88.2%	89.3%	87.6%
3	4	85.2%	78.3%	89.4%	92.4%	90.2%	93.8%
5	4	87.6%	79.3%	92.7%	95.0%	91.1%	97.3%
2	5	83.7%	80.2%	86.6%	88.5%	88.6%	88.5%
3	5	86.6%	81.2%	91.0%	92.4%	89.5%	94.7%
5	5	88.4%	82.1%	93.6%	94.9%	90.7%	98.2%

Turkey

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	80.4%	76.8%	85.3%	71.7%	66.0%	79.6%
3	0	75.0%	67.3%	85.8%	72.0%	63.2%	84.4%
5	0	62.8%	46.7%	85.3%	63.7%	44.8%	90.2%
2	1	80.6%	78.1%	83.6%	73.3%	68.1%	79.6%
3	1	80.8%	78.1%	84.0%	78.4%	73.3%	84.4%
5	1	68.7%	55.6%	84.4%	69.5%	52.2%	90.2%
2	2	76.7%	75.6%	77.8%	74.9%	70.2%	79.6%
3	2	80.4%	79.1%	81.8%	79.6%	74.7%	84.4%
5	2	74.4%	65.8%	83.1%	76.4%	62.7%	90.2%
2	3	75.8%	76.1%	75.6%	75.6%	70.0%	80.0%
3	3	78.0%	77.2%	78.7%	80.7%	75.6%	84.9%
5	3	81.2%	78.3%	83.6%	84.9%	77.8%	90.7%
2	4	76.1%	75.6%	76.4%	76.4%	71.1%	79.6%
3	4	78.1%	77.0%	78.7%	81.7%	77.0%	84.4%
5	4	81.1%	77.0%	83.6%	85.8%	78.5%	90.2%
2	5	75.8%	76.1%	75.6%	75.6%	70.0%	80.0%
3	5	78.0%	77.2%	78.7%	80.7%	75.6%	84.9%
5	5	81.2%	78.3%	83.6%	84.9%	77.8%	90.7%

Coefficients are estimated through the whole sample data

Whole Sample

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	89.2%	88.7%	90.0%	89.0%	86.5%	92.6%
3	0	82.5%	76.7%	90.5%	85.2%	77.5%	96.0%
5	0	68.0%	51.9%	90.4%	72.5%	54.1%	98.4%
2	1	88.9%	87.8%	90.2%	90.2%	88.3%	92.6%
3	1	89.6%	88.3%	91.3%	93.0%	90.4%	96.1%
5	1	74.3%	60.0%	91.5%	79.1%	63.1%	98.4%
2	2	87.0%	86.0%	87.9%	91.4%	90.2%	92.6%
3	2	89.3%	87.6%	91.1%	94.1%	92.2%	96.0%
5	2	81.3%	70.8%	91.8%	87.0%	75.7%	98.4%
2	3	86.4%	85.4%	87.2%	92.1%	91.6%	92.6%
3	3	88.2%	86.4%	89.6%	95.0%	93.6%	96.0%
5	3	89.4%	86.9%	91.4%	96.7%	94.7%	98.3%
2	4	85.8%	84.3%	86.8%	92.5%	92.3%	92.6%
3	4	87.7%	85.2%	89.2%	95.5%	94.7%	96.0%
5	4	89.2%	85.6%	91.3%	97.3%	95.6%	98.3%
2	5	86.4%	85.4%	87.2%	92.1%	91.6%	92.6%
3	5	88.2%	86.4%	89.6%	95.0%	93.6%	96.0%
5	5	89.4%	86.9%	91.4%	96.7%	94.7%	98.3%

Brazil

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	81.7%	80.0%	84.0%	80.0%	74.3%	88.0%
3	0	75.0%	68.6%	84.0%	80.0%	68.6%	96.0%
5	0	65.0%	48.6%	88.0%	73.3%	54.3%	100.0%
2	1	80.0%	73.3%	88.0%	83.6%	80.0%	88.0%
3	1	80.0%	73.3%	88.0%	87.3%	80.0%	96.0%
5	1	72.7%	56.7%	92.0%	78.2%	60.0%	100.0%
2	2	76.0%	68.0%	84.0%	86.0%	84.0%	88.0%
3	2	80.0%	68.0%	92.0%	90.0%	84.0%	96.0%
5	2	78.0%	60.0%	96.0%	84.0%	68.0%	100.0%
2	3	75.6%	65.0%	84.0%	86.7%	85.0%	88.0%
3	3	80.0%	65.0%	92.0%	91.1%	85.0%	96.0%
5	3	82.2%	65.0%	96.0%	93.3%	85.0%	100.0%
2	4	80.0%	60.0%	92.0%	87.5%	86.7%	88.0%
3	4	80.0%	60.0%	92.0%	92.5%	86.7%	96.0%
5	4	82.5%	60.0%	96.0%	95.0%	86.7%	100.0%

2	5	75.6%	65.0%	84.0%	86.7%	85.0%	88.0%
3	5	80.0%	65.0%	92.0%	91.1%	85.0%	96.0%
5	5	82.2%	65.0%	96.0%	93.3%	85.0%	100.0%

China

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.2%	92.8%	89.0%	97.3%	96.4%	98.7%
3	0	82.5%	78.3%	88.4%	90.8%	84.3%	99.7%
5	0	66.8%	51.6%	88.2%	74.8%	56.8%	100.0%
2	1	91.0%	92.2%	89.6%	97.5%	96.6%	98.7%
3	1	90.8%	92.1%	89.2%	99.0%	98.3%	99.7%
5	1	73.4%	60.4%	88.9%	81.6%	66.2%	100.0%
2	2	89.7%	91.2%	88.2%	97.6%	96.6%	98.7%
3	2	90.6%	92.3%	89.0%	99.2%	98.7%	99.7%
5	2	81.0%	73.3%	88.7%	89.7%	79.5%	100.0%
2	3	89.9%	92.6%	87.6%	97.9%	96.8%	98.7%
3	3	90.4%	93.6%	87.9%	99.3%	98.8%	99.7%
5	3	90.6%	93.8%	88.0%	99.7%	99.3%	100.0%
2	4	90.0%	92.0%	88.8%	97.8%	96.5%	98.7%
3	4	91.0%	93.8%	89.2%	99.5%	99.2%	99.7%
5	4	91.1%	93.8%	89.5%	99.8%	99.4%	100.0%
2	5	89.9%	92.6%	87.6%	97.9%	96.8%	98.7%
3	5	90.4%	93.6%	87.9%	99.3%	98.8%	99.7%
5	5	90.6%	93.8%	88.0%	99.7%	99.3%	100.0%

Egypt

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	79.8%	75.5%	85.7%	86.9%	82.7%	92.9%
3	0	73.8%	65.3%	85.7%	82.1%	74.5%	92.9%
5	0	63.7%	48.0%	85.7%	69.6%	53.1%	92.9%
2	1	82.5%	78.6%	87.1%	87.7%	83.3%	92.9%
3	1	83.1%	79.8%	87.1%	89.6%	86.9%	92.9%
5	1	69.5%	54.8%	87.1%	76.0%	61.9%	92.9%
2	2	82.9%	78.6%	87.1%	87.9%	82.9%	92.9%
3	2	83.6%	80.0%	87.1%	90.0%	87.1%	92.9%
5	2	75.7%	64.3%	87.1%	83.6%	74.3%	92.9%
2	3	80.2%	73.2%	85.7%	87.3%	80.4%	92.9%
3	3	82.5%	78.6%	85.7%	89.7%	85.7%	92.9%
5	3	82.5%	78.6%	85.7%	92.9%	92.9%	92.9%

2	4	80.4%	73.8%	84.3%	87.5%	78.6%	92.9%
3	4	80.4%	73.8%	84.3%	89.3%	83.3%	92.9%
5	4	82.1%	78.6%	84.3%	92.9%	92.9%	92.9%
2	5	80.2%	73.2%	85.7%	87.3%	80.4%	92.9%
3	5	82.5%	78.6%	85.7%	89.7%	85.7%	92.9%
5	5	82.5%	78.6%	85.7%	92.9%	92.9%	92.9%

South Africa

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	92.8%	89.6%	97.3%	94.3%	91.6%	98.2%
3	0	86.7%	77.9%	99.1%	89.0%	81.2%	100.0%
5	0	72.3%	53.2%	99.1%	73.5%	54.5%	100.0%
2	1	94.2%	90.2%	99.1%	94.2%	90.9%	98.2%
3	1	93.8%	89.4%	99.1%	97.1%	94.7%	100.0%
5	1	78.1%	60.6%	99.1%	80.2%	63.6%	100.0%
2	2	91.4%	85.5%	97.3%	94.5%	90.9%	98.2%
3	2	94.1%	89.1%	99.1%	97.3%	94.5%	100.0%
5	2	85.0%	70.9%	99.1%	88.2%	76.4%	100.0%
2	3	91.4%	84.1%	97.3%	96.0%	93.2%	98.2%
3	3	93.4%	86.4%	99.1%	98.0%	95.5%	100.0%
5	3	93.4%	86.4%	99.1%	98.0%	95.5%	100.0%
2	4	91.5%	83.3%	96.4%	96.6%	93.9%	98.2%
3	4	93.2%	84.8%	98.2%	98.3%	95.5%	100.0%
5	4	93.2%	84.8%	98.2%	98.3%	95.5%	100.0%
2	5	91.4%	84.1%	97.3%	96.0%	93.2%	98.2%
3	5	93.4%	86.4%	99.1%	98.0%	95.5%	100.0%
5	5	93.4%	86.4%	99.1%	98.0%	95.5%	100.0%

Mexico

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.0%	94.3%	96.0%	95.0%	91.4%	100.0%
3	0	86.7%	80.0%	96.0%	88.3%	80.0%	100.0%
5	0	73.3%	57.1%	96.0%	75.0%	57.1%	100.0%
2	1	96.4%	96.7%	96.0%	96.4%	93.3%	100.0%
3	1	96.4%	96.7%	96.0%	96.4%	93.3%	100.0%
5	1	80.0%	66.7%	96.0%	81.8%	66.7%	100.0%
2	2	98.0%	100.0%	96.0%	98.0%	96.0%	100.0%
3	2	98.0%	100.0%	96.0%	98.0%	96.0%	100.0%
5	2	88.0%	80.0%	96.0%	90.0%	80.0%	100.0%

2	3	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
3	3	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
5	3	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
2	4	95.0%	93.3%	96.0%	100.0%	100.0%	100.0%
3	4	95.0%	93.3%	96.0%	100.0%	100.0%	100.0%
5	4	95.0%	93.3%	96.0%	100.0%	100.0%	100.0%
2	5	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
3	5	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%
5	5	95.6%	95.0%	96.0%	100.0%	100.0%	100.0%

Morocco

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	90.3%	88.1%	93.3%	90.3%	86.9%	95.0%
3	0	81.9%	75.0%	91.7%	84.7%	76.2%	96.7%
5	0	66.0%	50.0%	88.3%	72.9%	53.6%	100.0%
2	1	88.6%	87.5%	90.0%	91.7%	88.9%	95.0%
3	1	89.4%	87.5%	91.7%	92.4%	88.9%	96.7%
5	1	72.0%	58.3%	88.3%	79.5%	62.5%	100.0%
2	2	85.8%	86.7%	85.0%	93.3%	91.7%	95.0%
3	2	86.7%	86.7%	86.7%	94.2%	91.7%	96.7%
5	2	78.3%	70.0%	86.7%	87.5%	75.0%	100.0%
2	3	83.3%	87.5%	80.0%	94.4%	93.8%	95.0%
3	3	84.3%	87.5%	81.7%	95.4%	93.8%	96.7%
5	3	86.1%	87.5%	85.0%	97.2%	93.8%	100.0%
2	4	81.3%	88.9%	76.7%	94.8%	94.4%	95.0%
3	4	82.3%	88.9%	78.3%	95.8%	94.4%	96.7%
5	4	84.4%	88.9%	81.7%	97.9%	94.4%	100.0%
2	5	83.3%	87.5%	80.0%	94.4%	93.8%	95.0%
3	5	84.3%	87.5%	81.7%	95.4%	93.8%	96.7%
5	5	86.1%	87.5%	85.0%	97.2%	93.8%	100.0%

Philippines

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.9%	92.1%	84.4%	82.4%	79.4%	86.7%
3	0	80.6%	77.8%	84.4%	79.6%	71.4%	91.1%
5	0	65.7%	51.6%	85.6%	70.4%	51.6%	96.7%
2	1	86.4%	86.1%	86.7%	84.8%	82.4%	87.8%
3	1	85.9%	87.0%	84.4%	87.4%	83.3%	92.2%
5	1	69.7%	56.5%	85.6%	77.3%	60.2%	97.8%

2	2	83.3%	84.4%	82.2%	86.7%	85.6%	87.8%
3	2	86.1%	85.6%	86.7%	89.4%	86.7%	92.2%
5	2	75.0%	66.7%	83.3%	85.0%	72.2%	97.8%
2	3	80.9%	79.2%	82.2%	88.9%	91.7%	86.7%
3	3	80.9%	79.2%	82.2%	91.4%	91.7%	91.1%
5	3	81.5%	79.2%	83.3%	94.4%	91.7%	96.7%
2	4	77.8%	74.1%	80.0%	90.3%	92.6%	88.9%
3	4	79.2%	74.1%	82.2%	91.7%	92.6%	91.1%
5	4	81.3%	74.1%	85.6%	95.1%	92.6%	96.7%
2	5	80.9%	79.2%	82.2%	88.9%	91.7%	86.7%
3	5	80.9%	79.2%	82.2%	91.4%	91.7%	91.1%
5	5	81.5%	79.2%	83.3%	94.4%	91.7%	96.7%

Poland

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.5%	85.1%	93.2%	87.1%	81.7%	94.6%
3	0	83.1%	75.1%	94.4%	83.5%	73.8%	96.9%
5	0	70.1%	52.3%	94.9%	72.5%	53.5%	99.2%
2	1	88.9%	83.6%	95.2%	88.6%	83.6%	94.6%
3	1	89.2%	84.3%	95.2%	91.0%	86.2%	96.9%
5	1	75.9%	58.5%	96.9%	79.1%	62.4%	99.2%
2	2	87.0%	81.7%	92.4%	90.8%	87.0%	94.6%
3	2	89.0%	83.4%	94.6%	92.8%	88.7%	96.9%
5	2	82.0%	68.2%	95.8%	87.0%	74.9%	99.2%
2	3	86.4%	81.3%	90.4%	92.8%	90.5%	94.6%
3	3	88.1%	82.4%	92.7%	94.8%	92.3%	96.9%
5	3	89.4%	83.1%	94.4%	96.7%	93.7%	99.2%
2	4	84.9%	79.8%	87.9%	93.8%	92.5%	94.6%
3	4	86.3%	79.8%	90.1%	96.0%	94.4%	96.9%
5	4	87.9%	81.2%	91.8%	97.9%	95.8%	99.2%
2	5	86.4%	81.3%	90.4%	92.8%	90.5%	94.6%
3	5	88.1%	82.4%	92.7%	94.8%	92.3%	96.9%
5	5	89.4%	83.1%	94.4%	96.7%	93.7%	99.2%

South Korea

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.5%	87.8%	89.5%	86.0%	83.9%	88.8%
3	0	81.8%	76.4%	89.4%	83.7%	75.5%	95.0%
5	0	67.0%	51.7%	88.6%	71.8%	52.7%	98.5%

2	1	87.9%	86.4%	89.6%	87.4%	86.2%	88.8%
3	1	89.2%	87.3%	91.5%	91.3%	88.1%	95.0%
5	1	73.8%	59.2%	91.2%	78.3%	61.5%	98.5%
2	2	84.9%	83.2%	86.7%	88.5%	88.4%	88.7%
3	2	88.4%	84.4%	92.4%	92.3%	89.6%	94.9%
5	2	81.1%	68.5%	93.7%	86.2%	73.9%	98.4%
2	3	83.7%	80.2%	86.6%	89.3%	90.0%	88.7%
3	3	86.6%	81.2%	91.0%	93.3%	91.2%	94.9%
5	3	88.4%	82.1%	93.6%	95.7%	92.4%	98.4%
2	4	82.0%	77.8%	84.5%	90.2%	92.7%	88.7%
3	4	85.2%	78.3%	89.4%	94.4%	93.6%	94.9%
5	4	87.6%	79.3%	92.7%	97.0%	94.5%	98.4%
2	5	83.7%	80.2%	86.6%	89.3%	90.0%	88.7%
3	5	86.6%	81.2%	91.0%	93.3%	91.2%	94.9%
5	5	88.4%	82.1%	93.6%	95.7%	92.4%	98.4%

Turkey

		Taffler			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	80.4%	76.8%	85.3%	71.9%	66.0%	80.0%
3	0	75.0%	67.3%	85.8%	72.2%	63.2%	84.9%
5	0	62.8%	46.7%	85.3%	63.9%	44.8%	90.7%
2	1	80.6%	78.1%	83.6%	73.5%	68.1%	80.0%
3	1	80.8%	78.1%	84.0%	78.6%	73.3%	84.9%
5	1	68.7%	55.6%	84.4%	69.7%	52.2%	90.7%
2	2	76.7%	75.6%	77.8%	75.1%	70.2%	80.0%
3	2	80.4%	79.1%	81.8%	79.8%	74.7%	84.9%
5	2	74.4%	65.8%	83.1%	76.7%	62.7%	90.7%
2	3	75.8%	76.1%	75.6%	75.6%	70.0%	80.0%
3	3	78.0%	77.2%	78.7%	80.7%	75.6%	84.9%
5	3	81.2%	78.3%	83.6%	84.9%	77.8%	90.7%
2	4	76.1%	75.6%	76.4%	76.7%	71.1%	80.0%
3	4	78.1%	77.0%	78.7%	81.9%	77.0%	84.9%
5	4	81.1%	77.0%	83.6%	86.1%	78.5%	90.7%
2	5	75.8%	76.1%	75.6%	75.6%	70.0%	80.0%
3	5	78.0%	77.2%	78.7%	80.7%	75.6%	84.9%
5	5	81.2%	78.3%	83.6%	84.9%	77.8%	90.7%

8.2.5. Zmijewski's Model
Coefficients are estimated through the relevant country's data

Whole Sample

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.0%	91.1%	90.7%	90.3%	88.1%	93.2%
3	0	81.3%	76.9%	87.6%	85.4%	77.9%	95.9%
5	0	65.5%	51.2%	85.5%	72.1%	54.0%	97.4%
2	1	90.4%	88.5%	92.5%	90.7%	88.5%	93.2%
3	1	88.0%	86.6%	89.6%	92.9%	90.2%	96.2%
5	1	71.4%	58.0%	87.5%	78.4%	62.5%	97.5%
2	2	84.9%	82.5%	87.4%	90.9%	89.3%	92.5%
3	2	87.3%	84.0%	90.7%	93.6%	91.2%	95.9%
5	2	78.1%	67.6%	88.6%	86.1%	74.7%	97.6%
2	3	83.6%	80.5%	86.0%	91.4%	90.1%	92.4%
3	3	84.4%	80.9%	87.3%	93.8%	91.7%	95.6%
5	3	84.8%	80.9%	87.8%	95.3%	92.5%	97.6%
2	4	82.8%	78.9%	85.1%	91.4%	90.5%	91.9%
3	4	83.5%	78.5%	86.5%	94.0%	92.0%	95.2%
5	4	84.5%	78.7%	88.0%	95.6%	92.6%	97.4%
2	5	83.6%	80.5%	86.0%	91.4%	90.1%	92.4%
3	5	84.4%	80.9%	87.3%	93.8%	91.7%	95.6%
5	5	84.8%	80.9%	87.8%	95.3%	92.5%	97.6%

Brazil

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.3%	97.1%	88.0%	90.0%	91.4%	88.0%
3	0	81.7%	82.9%	80.0%	85.0%	82.9%	88.0%
5	0	63.3%	54.3%	76.0%	75.0%	62.9%	92.0%
2	1	87.3%	90.0%	84.0%	89.1%	93.3%	84.0%
3	1	87.3%	90.0%	84.0%	92.7%	93.3%	92.0%
5	1	70.9%	63.3%	80.0%	80.0%	66.7%	96.0%
2	2	78.0%	84.0%	72.0%	88.0%	96.0%	80.0%
3	2	82.0%	84.0%	80.0%	92.0%	96.0%	88.0%
5	2	78.0%	72.0%	84.0%	84.0%	76.0%	92.0%
2	3	77.8%	80.0%	76.0%	84.4%	95.0%	76.0%
3	3	77.8%	80.0%	76.0%	88.9%	95.0%	84.0%
5	3	80.0%	80.0%	80.0%	91.1%	95.0%	88.0%
2	4	82.5%	73.3%	88.0%	85.0%	93.3%	80.0%
3	4	77.5%	73.3%	80.0%	85.0%	93.3%	80.0%

5	4	75.0%	73.3%	76.0%	87.5%	93.3%	84.0%
2	5	77.8%	80.0%	76.0%	84.4%	95.0%	76.0%
3	5	77.8%	80.0%	76.0%	88.9%	95.0%	84.0%
5	5	80.0%	80.0%	80.0%	91.1%	95.0%	88.0%

China

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.8%	94.7%	92.7%	97.4%	96.6%	98.6%
3	0	84.6%	79.5%	91.6%	90.5%	84.1%	99.5%
5	0	68.6%	52.3%	91.3%	74.5%	56.7%	99.6%
2	1	94.1%	94.0%	94.3%	97.2%	96.4%	98.2%
3	1	92.7%	92.2%	93.2%	98.7%	98.1%	99.3%
5	1	75.3%	60.6%	92.9%	81.3%	66.0%	99.6%
2	2	90.8%	90.2%	91.5%	97.3%	96.5%	98.1%
3	2	92.3%	91.9%	92.6%	98.9%	98.6%	99.2%
5	2	82.6%	72.9%	92.4%	89.4%	79.3%	99.4%
2	3	91.2%	91.5%	90.9%	97.7%	97.2%	98.1%
3	3	91.3%	92.4%	90.3%	99.0%	98.7%	99.2%
5	3	91.3%	92.6%	90.3%	99.3%	99.2%	99.4%
2	4	91.0%	90.8%	91.1%	97.7%	96.6%	98.4%
3	4	91.4%	92.0%	91.0%	99.4%	99.3%	99.5%
5	4	91.3%	92.0%	90.9%	99.6%	99.3%	99.7%
2	5	91.2%	91.5%	90.9%	97.7%	97.2%	98.1%
3	5	91.3%	92.4%	90.3%	99.0%	98.7%	99.2%
5	5	91.3%	92.6%	90.3%	99.3%	99.2%	99.4%

Egypt

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.2%	92.9%	98.6%	94.6%	92.9%	97.1%
3	0	86.3%	77.6%	98.6%	88.7%	82.7%	97.1%
5	0	68.5%	46.9%	98.6%	73.2%	56.1%	97.1%
2	1	95.5%	92.9%	98.6%	94.8%	91.7%	98.6%
3	1	93.5%	89.3%	98.6%	96.8%	95.2%	98.6%
5	1	74.7%	54.8%	98.6%	80.5%	65.5%	98.6%
2	2	90.0%	85.7%	94.3%	92.9%	85.7%	100.0%
3	2	92.1%	90.0%	94.3%	95.0%	90.0%	100.0%
5	2	80.7%	67.1%	94.3%	88.6%	77.1%	100.0%
2	3	87.3%	83.9%	90.0%	93.7%	87.5%	98.6%
3	3	88.1%	85.7%	90.0%	94.4%	89.3%	98.6%

5	3	88.1%	85.7%	90.0%	97.6%	96.4%	98.6%
2	4	86.6%	88.1%	85.7%	95.5%	90.5%	98.6%
3	4	84.8%	83.3%	85.7%	95.5%	90.5%	98.6%
5	4	86.6%	88.1%	85.7%	97.3%	95.2%	98.6%
2	5	87.3%	83.9%	90.0%	93.7%	87.5%	98.6%
3	5	88.1%	85.7%	90.0%	94.4%	89.3%	98.6%
5	5	88.1%	85.7%	90.0%	97.6%	96.4%	98.6%

South Africa

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	94.7%	94.2%	95.5%	93.9%	90.9%	98.2%
3	0	86.7%	80.5%	95.5%	88.6%	80.5%	100.0%
5	0	72.0%	55.2%	95.5%	73.5%	54.5%	100.0%
2	1	95.0%	94.7%	95.5%	94.6%	91.7%	98.2%
3	1	93.0%	90.9%	95.5%	96.7%	93.9%	100.0%
5	1	77.3%	62.1%	95.5%	79.8%	62.9%	100.0%
2	2	90.5%	87.3%	93.6%	94.1%	90.0%	98.2%
3	2	92.3%	89.1%	95.5%	96.8%	93.6%	100.0%
5	2	83.6%	71.8%	95.5%	87.7%	75.5%	100.0%
2	3	88.9%	84.1%	92.7%	95.5%	92.0%	98.2%
3	3	90.9%	86.4%	94.5%	97.5%	94.3%	100.0%
5	3	90.9%	86.4%	94.5%	97.5%	94.3%	100.0%
2	4	88.1%	83.3%	90.9%	96.0%	92.4%	98.2%
3	4	89.8%	84.8%	92.7%	97.7%	93.9%	100.0%
5	4	89.8%	84.8%	92.7%	97.7%	93.9%	100.0%
2	5	88.9%	84.1%	92.7%	95.5%	92.0%	98.2%
3	5	90.9%	86.4%	94.5%	97.5%	94.3%	100.0%
5	5	90.9%	86.4%	94.5%	97.5%	94.3%	100.0%

Mexico

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	96.7%	97.1%	96.0%	95.0%	94.3%	96.0%
3	0	88.3%	82.9%	96.0%	86.7%	80.0%	96.0%
5	0	71.7%	54.3%	96.0%	73.3%	57.1%	96.0%
2	1	94.5%	96.7%	92.0%	96.4%	96.7%	96.0%
3	1	94.5%	96.7%	92.0%	96.4%	96.7%	96.0%
5	1	76.4%	63.3%	92.0%	80.0%	66.7%	96.0%
2	2	92.0%	92.0%	92.0%	98.0%	100.0%	96.0%
3	2	92.0%	92.0%	92.0%	98.0%	100.0%	96.0%

5	2	82.0%	72.0%	92.0%	88.0%	80.0%	96.0%
2	3	88.9%	85.0%	92.0%	95.6%	95.0%	96.0%
3	3	88.9%	85.0%	92.0%	95.6%	95.0%	96.0%
5	3	88.9%	85.0%	92.0%	95.6%	95.0%	96.0%
2	4	87.5%	80.0%	92.0%	95.0%	93.3%	96.0%
3	4	87.5%	80.0%	92.0%	95.0%	93.3%	96.0%
5	4	87.5%	80.0%	92.0%	95.0%	93.3%	96.0%
2	5	88.9%	85.0%	92.0%	95.6%	95.0%	96.0%
3	5	88.9%	85.0%	92.0%	95.6%	95.0%	96.0%
5	5	88.9%	85.0%	92.0%	95.6%	95.0%	96.0%

Morrocoo

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.1%	94.0%	96.7%	95.8%	95.2%	96.7%
3	0	86.8%	81.0%	95.0%	88.9%	82.1%	98.3%
5	0	70.8%	56.0%	91.7%	74.3%	57.1%	98.3%
2	1	95.5%	93.1%	98.3%	94.7%	93.1%	96.7%
3	1	94.7%	93.1%	96.7%	95.5%	93.1%	98.3%
5	1	77.3%	63.9%	93.3%	79.5%	63.9%	98.3%
2	2	93.3%	91.7%	95.0%	92.5%	91.7%	93.3%
3	2	94.2%	91.7%	96.7%	93.3%	91.7%	95.0%
5	2	84.2%	75.0%	93.3%	86.7%	75.0%	98.3%
2	3	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%
3	3	92.6%	91.7%	93.3%	92.6%	91.7%	93.3%
5	3	92.6%	91.7%	93.3%	94.4%	91.7%	96.7%
2	4	88.5%	88.9%	88.3%	89.6%	88.9%	90.0%
3	4	89.6%	88.9%	90.0%	90.6%	88.9%	91.7%
5	4	91.7%	88.9%	93.3%	92.7%	88.9%	95.0%
2	5	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%
3	5	92.6%	91.7%	93.3%	92.6%	91.7%	93.3%
5	5	92.6%	91.7%	93.3%	94.4%	91.7%	96.7%

Philippines

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.7%	94.4%	87.8%	91.2%	91.3%	91.1%
3	0	81.0%	79.4%	83.3%	85.2%	79.4%	93.3%
5	0	64.8%	55.6%	77.8%	72.7%	55.6%	96.7%
2	1	89.9%	88.0%	92.2%	87.4%	87.0%	87.8%
3	1	87.4%	87.0%	87.8%	89.9%	88.0%	92.2%

5	1	69.2%	58.3%	82.2%	76.3%	60.2%	95.6%
2	2	82.2%	78.9%	85.6%	86.7%	88.9%	84.4%
3	2	85.0%	80.0%	90.0%	89.4%	90.0%	88.9%
5	2	73.3%	62.2%	84.4%	83.3%	72.2%	94.4%
2	3	77.2%	70.8%	82.2%	84.0%	84.7%	83.3%
3	3	79.6%	70.8%	86.7%	86.4%	84.7%	87.8%
5	3	80.2%	70.8%	87.8%	89.5%	84.7%	93.3%
2	4	73.6%	63.0%	80.0%	81.9%	81.5%	82.2%
3	4	75.0%	63.0%	82.2%	83.3%	81.5%	84.4%
5	4	78.5%	63.0%	87.8%	86.8%	81.5%	90.0%
2	5	77.2%	70.8%	82.2%	84.0%	84.7%	83.3%
3	5	79.6%	70.8%	86.7%	86.4%	84.7%	87.8%
5	5	80.2%	70.8%	87.8%	89.5%	84.7%	93.3%

Poland

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	92.1%	91.5%	93.0%	89.6%	85.3%	95.5%
3	0	83.3%	78.1%	90.7%	84.5%	75.5%	97.2%
5	0	67.4%	52.3%	88.5%	71.8%	53.3%	97.7%
2	1	91.3%	88.7%	94.4%	89.8%	85.4%	94.9%
3	1	88.9%	86.2%	92.1%	91.4%	87.1%	96.6%
5	1	72.3%	57.7%	89.9%	78.2%	61.5%	98.3%
2	2	85.4%	80.6%	90.1%	89.4%	84.5%	94.4%
3	2	87.0%	81.7%	92.4%	91.1%	85.6%	96.6%
5	2	77.3%	64.5%	90.1%	84.5%	71.3%	97.7%
2	3	81.7%	73.6%	88.2%	90.6%	85.9%	94.4%
3	3	83.4%	74.6%	90.4%	92.3%	87.0%	96.6%
5	3	83.4%	75.4%	89.9%	93.6%	88.4%	97.7%
2	4	78.5%	70.4%	83.4%	90.5%	85.4%	93.5%
3	4	79.9%	70.4%	85.6%	91.9%	85.4%	95.8%
5	4	81.2%	71.8%	86.8%	93.1%	86.9%	96.9%
2	5	81.7%	73.6%	88.2%	90.6%	85.9%	94.4%
3	5	83.4%	74.6%	90.4%	92.3%	87.0%	96.6%
5	5	83.4%	75.4%	89.9%	93.6%	88.4%	97.7%

South Korea

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	87.1%	87.1%	87.0%	87.6%	85.6%	90.3%
3	0	77.1%	74.2%	81.2%	83.8%	76.4%	94.2%

5	0	62.2%	50.8%	78.2%	70.9%	52.9%	96.2%
2	1	87.1%	84.2%	90.5%	87.9%	85.9%	90.3%
3	1	84.2%	82.8%	85.9%	90.7%	87.1%	94.9%
5	1	68.9%	57.2%	83.1%	77.0%	60.3%	97.1%
2	2	82.1%	80.0%	84.3%	87.9%	86.9%	88.8%
3	2	85.5%	81.0%	90.1%	91.6%	88.1%	95.0%
5	2	76.8%	66.4%	87.2%	84.9%	72.1%	97.6%
2	3	81.2%	78.0%	83.8%	88.3%	88.1%	88.4%
3	3	83.1%	78.4%	86.9%	92.0%	89.1%	94.4%
5	3	83.9%	78.7%	88.1%	94.0%	89.7%	97.4%
2	4	80.8%	78.3%	82.3%	88.9%	91.0%	87.7%
3	4	82.9%	77.8%	86.0%	92.6%	91.1%	93.4%
5	4	84.6%	78.3%	88.4%	95.1%	92.1%	96.9%
2	5	81.2%	78.0%	83.8%	88.3%	88.1%	88.4%
3	5	83.1%	78.4%	86.9%	92.0%	89.1%	94.4%
5	5	83.9%	78.7%	88.1%	94.0%	89.7%	97.4%

Turkey

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.5%	88.3%	88.9%	78.0%	72.1%	86.2%
3	0	77.0%	72.1%	84.0%	74.3%	65.4%	86.7%
5	0	60.6%	47.3%	79.1%	63.3%	45.7%	88.0%
2	1	85.9%	85.9%	85.8%	80.0%	74.4%	86.7%
3	1	81.2%	80.7%	81.8%	80.6%	74.4%	88.0%
5	1	64.8%	54.8%	76.9%	69.7%	53.3%	89.3%
2	2	81.2%	80.7%	81.8%	80.6%	74.4%	88.0%
3	2	79.8%	79.6%	80.0%	82.4%	77.3%	87.6%
5	2	69.6%	64.0%	75.1%	76.7%	64.4%	88.9%
2	3	72.3%	74.4%	70.7%	77.0%	72.8%	80.4%
3	3	73.1%	74.4%	72.0%	80.7%	76.1%	84.4%
5	3	73.3%	73.3%	73.3%	83.0%	76.1%	88.4%
2	4	69.4%	71.1%	68.4%	75.8%	69.6%	79.6%
3	4	69.7%	69.6%	69.8%	78.9%	74.1%	81.8%
5	4	72.2%	69.6%	73.8%	83.1%	75.6%	87.6%
2	5	72.3%	74.4%	70.7%	77.0%	72.8%	80.4%
3	5	73.1%	74.4%	72.0%	80.7%	76.1%	84.4%
5	5	73.3%	73.3%	73.3%	83.0%	76.1%	88.4%

Coefficients are estimated through the whole sample data

Whole Sample

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.0%	91.1%	90.7%	90.3%	88.1%	93.2%
3	0	81.3%	76.9%	87.6%	85.4%	77.9%	95.9%
5	0	65.5%	51.2%	85.5%	72.1%	54.0%	97.4%
2	1	90.4%	88.5%	92.5%	90.7%	88.5%	93.2%
3	1	88.0%	86.6%	89.6%	92.9%	90.2%	96.2%
5	1	71.4%	58.0%	87.5%	78.4%	62.5%	97.5%
2	2	84.9%	82.5%	87.4%	90.9%	89.3%	92.5%
3	2	87.3%	84.0%	90.7%	93.6%	91.2%	95.9%
5	2	78.1%	67.6%	88.6%	86.1%	74.7%	97.6%
2	3	83.6%	80.5%	86.0%	91.4%	90.1%	92.4%
3	3	84.4%	80.9%	87.3%	93.8%	91.7%	95.6%
5	3	84.8%	80.9%	87.8%	95.3%	92.5%	97.6%
2	4	82.8%	78.9%	85.1%	91.4%	90.5%	91.9%
3	4	83.5%	78.5%	86.5%	94.0%	92.0%	95.2%
5	4	84.5%	78.7%	88.0%	95.6%	92.6%	97.4%
2	5	83.6%	80.5%	86.0%	91.4%	90.1%	92.4%
3	5	84.4%	80.9%	87.3%	93.8%	91.7%	95.6%
5	5	84.8%	80.9%	87.8%	95.3%	92.5%	97.6%

Brazil

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.3%	97.1%	88.0%	80.0%	77.1%	84.0%
3	0	81.7%	82.9%	80.0%	78.3%	68.6%	92.0%
5	0	63.3%	54.3%	76.0%	71.7%	54.3%	96.0%
2	1	87.3%	90.0%	84.0%	80.0%	76.7%	84.0%
3	1	87.3%	90.0%	84.0%	83.6%	76.7%	92.0%
5	1	70.9%	63.3%	80.0%	76.4%	60.0%	96.0%
2	2	78.0%	84.0%	72.0%	82.0%	80.0%	84.0%
3	2	82.0%	84.0%	80.0%	86.0%	80.0%	92.0%
5	2	78.0%	72.0%	84.0%	82.0%	68.0%	96.0%
2	3	77.8%	80.0%	76.0%	82.2%	80.0%	84.0%
3	3	77.8%	80.0%	76.0%	86.7%	80.0%	92.0%
5	3	80.0%	80.0%	80.0%	88.9%	80.0%	96.0%
2	4	82.5%	73.3%	88.0%	87.5%	80.0%	92.0%
3	4	77.5%	73.3%	80.0%	87.5%	80.0%	92.0%
5	4	75.0%	73.3%	76.0%	90.0%	80.0%	96.0%

2	5	77.8%	80.0%	76.0%	82.2%	80.0%	84.0%
3	5	77.8%	80.0%	76.0%	86.7%	80.0%	92.0%
5	5	80.0%	80.0%	80.0%	88.9%	80.0%	96.0%

China

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	93.8%	94.7%	92.7%	97.3%	96.6%	98.3%
3	0	84.6%	79.5%	91.6%	89.8%	83.4%	98.9%
5	0	68.6%	52.3%	91.3%	73.9%	56.1%	99.0%
2	1	94.1%	94.0%	94.3%	96.8%	96.2%	97.6%
3	1	92.7%	92.2%	93.2%	98.1%	97.5%	98.7%
5	1	75.3%	60.6%	92.9%	80.6%	65.7%	98.6%
2	2	90.8%	90.2%	91.5%	96.5%	96.1%	97.0%
3	2	92.3%	91.9%	92.6%	98.1%	98.2%	98.1%
5	2	82.6%	72.9%	92.4%	88.6%	78.9%	98.3%
2	3	91.2%	91.5%	90.9%	97.1%	96.7%	97.4%
3	3	91.3%	92.4%	90.3%	98.1%	98.3%	98.0%
5	3	91.3%	92.6%	90.3%	98.5%	98.7%	98.2%
2	4	91.0%	90.8%	91.1%	96.9%	96.1%	97.4%
3	4	91.4%	92.0%	91.0%	98.6%	98.7%	98.5%
5	4	91.3%	92.0%	90.9%	98.7%	98.7%	98.7%
2	5	91.2%	91.5%	90.9%	97.1%	96.7%	97.4%
3	5	91.3%	92.4%	90.3%	98.1%	98.3%	98.0%
5	5	91.3%	92.6%	90.3%	98.5%	98.7%	98.2%

Egypt

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.2%	92.9%	98.6%	92.9%	89.8%	97.1%
3	0	86.3%	77.6%	98.6%	87.5%	80.6%	97.1%
5	0	68.5%	46.9%	98.6%	73.8%	57.1%	97.1%
2	1	95.5%	92.9%	98.6%	94.2%	90.5%	98.6%
3	1	93.5%	89.3%	98.6%	96.1%	94.0%	98.6%
5	1	74.7%	54.8%	98.6%	81.2%	66.7%	98.6%
2	2	90.0%	85.7%	94.3%	95.0%	90.0%	100.0%
3	2	92.1%	90.0%	94.3%	97.1%	94.3%	100.0%
5	2	80.7%	67.1%	94.3%	90.0%	80.0%	100.0%
2	3	87.3%	83.9%	90.0%	94.4%	87.5%	100.0%
3	3	88.1%	85.7%	90.0%	96.8%	92.9%	100.0%
5	3	88.1%	85.7%	90.0%	100.0%	100.0%	100.0%

2	4	86.6%	88.1%	85.7%	94.6%	85.7%	100.0%
3	4	84.8%	83.3%	85.7%	96.4%	90.5%	100.0%
5	4	86.6%	88.1%	85.7%	100.0%	100.0%	100.0%
2	5	87.3%	83.9%	90.0%	94.4%	87.5%	100.0%
3	5	88.1%	85.7%	90.0%	96.8%	92.9%	100.0%
5	5	88.1%	85.7%	90.0%	100.0%	100.0%	100.0%

South Africa

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	94.7%	94.2%	95.5%	93.9%	90.9%	98.2%
3	0	86.7%	80.5%	95.5%	89.0%	81.2%	100.0%
5	0	72.0%	55.2%	95.5%	73.5%	54.5%	100.0%
2	1	95.0%	94.7%	95.5%	93.8%	90.2%	98.2%
3	1	93.0%	90.9%	95.5%	95.9%	92.4%	100.0%
5	1	77.3%	62.1%	95.5%	79.3%	62.1%	100.0%
2	2	90.5%	87.3%	93.6%	93.2%	88.2%	98.2%
3	2	92.3%	89.1%	95.5%	95.9%	91.8%	100.0%
5	2	83.6%	71.8%	95.5%	87.3%	74.5%	100.0%
2	3	88.9%	84.1%	92.7%	94.4%	89.8%	98.2%
3	3	90.9%	86.4%	94.5%	96.5%	92.0%	100.0%
5	3	90.9%	86.4%	94.5%	96.5%	92.0%	100.0%
2	4	88.1%	83.3%	90.9%	94.9%	89.4%	98.2%
3	4	89.8%	84.8%	92.7%	96.6%	90.9%	100.0%
5	4	89.8%	84.8%	92.7%	96.6%	90.9%	100.0%
2	5	88.9%	84.1%	92.7%	94.4%	89.8%	98.2%
3	5	90.9%	86.4%	94.5%	96.5%	92.0%	100.0%
5	5	90.9%	86.4%	94.5%	96.5%	92.0%	100.0%

Mexico

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	96.7%	97.1%	96.0%	96.7%	94.3%	100.0%
3	0	88.3%	82.9%	96.0%	88.3%	80.0%	100.0%
5	0	71.7%	54.3%	96.0%	75.0%	57.1%	100.0%
2	1	94.5%	96.7%	92.0%	98.2%	96.7%	100.0%
3	1	94.5%	96.7%	92.0%	98.2%	96.7%	100.0%
5	1	76.4%	63.3%	92.0%	81.8%	66.7%	100.0%
2	2	92.0%	92.0%	92.0%	100.0%	100.0%	100.0%
3	2	92.0%	92.0%	92.0%	100.0%	100.0%	100.0%
5	2	82.0%	72.0%	92.0%	90.0%	80.0%	100.0%

2	3	88.9%	85.0%	92.0%	97.8%	95.0%	100.0%
3	3	88.9%	85.0%	92.0%	97.8%	95.0%	100.0%
5	3	88.9%	85.0%	92.0%	97.8%	95.0%	100.0%
2	4	87.5%	80.0%	92.0%	97.5%	93.3%	100.0%
3	4	87.5%	80.0%	92.0%	97.5%	93.3%	100.0%
5	4	87.5%	80.0%	92.0%	97.5%	93.3%	100.0%
2	5	88.9%	85.0%	92.0%	97.8%	95.0%	100.0%
3	5	88.9%	85.0%	92.0%	97.8%	95.0%	100.0%
5	5	88.9%	85.0%	92.0%	97.8%	95.0%	100.0%

Morocco

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	95.1%	94.0%	96.7%	94.4%	94.0%	95.0%
3	0	86.8%	81.0%	95.0%	87.5%	81.0%	96.7%
5	0	70.8%	56.0%	91.7%	72.9%	56.0%	96.7%
2	1	95.5%	93.1%	98.3%	93.9%	93.1%	95.0%
3	1	94.7%	93.1%	96.7%	94.7%	93.1%	96.7%
5	1	77.3%	63.9%	93.3%	78.8%	63.9%	96.7%
2	2	93.3%	91.7%	95.0%	91.7%	91.7%	91.7%
3	2	94.2%	91.7%	96.7%	92.5%	91.7%	93.3%
5	2	84.2%	75.0%	93.3%	85.8%	75.0%	96.7%
2	3	91.7%	91.7%	91.7%	90.7%	91.7%	90.0%
3	3	92.6%	91.7%	93.3%	91.7%	91.7%	91.7%
5	3	92.6%	91.7%	93.3%	93.5%	91.7%	95.0%
2	4	88.5%	88.9%	88.3%	88.5%	88.9%	88.3%
3	4	89.6%	88.9%	90.0%	89.6%	88.9%	90.0%
5	4	91.7%	88.9%	93.3%	91.7%	88.9%	93.3%
2	5	91.7%	91.7%	91.7%	90.7%	91.7%	90.0%
3	5	92.6%	91.7%	93.3%	91.7%	91.7%	91.7%
5	5	92.6%	91.7%	93.3%	93.5%	91.7%	95.0%

Philippines

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	91.7%	94.4%	87.8%	88.4%	88.1%	88.9%
3	0	81.0%	79.4%	83.3%	83.3%	76.2%	93.3%
5	0	64.8%	55.6%	77.8%	71.3%	53.2%	96.7%
2	1	89.9%	88.0%	92.2%	87.9%	87.0%	88.9%
3	1	87.4%	87.0%	87.8%	90.4%	88.0%	93.3%
5	1	69.2%	58.3%	82.2%	76.8%	60.2%	96.7%

2	2	82.2%	78.9%	85.6%	88.9%	88.9%	88.9%
3	2	85.0%	80.0%	90.0%	91.7%	90.0%	93.3%
5	2	73.3%	62.2%	84.4%	85.6%	72.2%	98.9%
2	3	77.2%	70.8%	82.2%	87.7%	86.1%	88.9%
3	3	79.6%	70.8%	86.7%	90.1%	86.1%	93.3%
5	3	80.2%	70.8%	87.8%	93.2%	86.1%	98.9%
2	4	73.6%	63.0%	80.0%	85.4%	83.3%	86.7%
3	4	75.0%	63.0%	82.2%	88.2%	83.3%	91.1%
5	4	78.5%	63.0%	87.8%	91.7%	83.3%	96.7%
2	5	77.2%	70.8%	82.2%	87.7%	86.1%	88.9%
3	5	79.6%	70.8%	86.7%	90.1%	86.1%	93.3%
5	5	80.2%	70.8%	87.8%	93.2%	86.1%	98.9%

Poland

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	92.1%	91.5%	93.0%	88.1%	82.9%	95.5%
3	0	83.3%	78.1%	90.7%	83.8%	74.2%	97.2%
5	0	67.4%	52.3%	88.5%	71.9%	53.1%	98.3%
2	1	91.3%	88.7%	94.4%	88.9%	83.3%	95.5%
3	1	88.9%	86.2%	92.1%	91.0%	85.4%	97.7%
5	1	72.3%	57.7%	89.9%	78.6%	61.7%	98.9%
2	2	85.4%	80.6%	90.1%	90.1%	85.4%	94.9%
3	2	87.0%	81.7%	92.4%	91.8%	86.5%	97.2%
5	2	77.3%	64.5%	90.1%	85.8%	73.2%	98.3%
2	3	81.7%	73.6%	88.2%	92.0%	88.0%	95.2%
3	3	83.4%	74.6%	90.4%	93.7%	89.1%	97.5%
5	3	83.4%	75.4%	89.9%	95.0%	90.5%	98.6%
2	4	78.5%	70.4%	83.4%	93.1%	90.6%	94.6%
3	4	79.9%	70.4%	85.6%	94.5%	90.6%	96.9%
5	4	81.2%	71.8%	86.8%	95.8%	92.0%	98.0%
2	5	81.7%	73.6%	88.2%	92.0%	88.0%	95.2%
3	5	83.4%	74.6%	90.4%	93.7%	89.1%	97.5%
5	5	83.4%	75.4%	89.9%	95.0%	90.5%	98.6%

South Korea

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	87.1%	87.1%	87.0%	87.3%	85.5%	89.9%
3	0	77.1%	74.2%	81.2%	83.7%	76.2%	94.1%
5	0	62.2%	50.8%	78.2%	71.0%	52.9%	96.3%

2	1	87.1%	84.2%	90.5%	87.8%	85.7%	90.3%
3	1	84.2%	82.8%	85.9%	90.5%	86.9%	94.9%
5	1	68.9%	57.2%	83.1%	77.1%	60.5%	97.1%
2	2	82.1%	80.0%	84.3%	87.7%	86.8%	88.6%
3	2	85.5%	81.0%	90.1%	91.4%	88.0%	94.8%
5	2	76.8%	66.4%	87.2%	84.8%	72.2%	97.4%
2	3	81.2%	78.0%	83.8%	88.2%	88.1%	88.2%
3	3	83.1%	78.4%	86.9%	92.0%	89.1%	94.2%
5	3	83.9%	78.7%	88.1%	93.9%	89.7%	97.3%
2	4	80.8%	78.3%	82.3%	88.8%	90.6%	87.8%
3	4	82.9%	77.8%	86.0%	92.5%	90.8%	93.6%
5	4	84.6%	78.3%	88.4%	95.1%	91.7%	97.1%
2	5	81.2%	78.0%	83.8%	88.2%	88.1%	88.2%
3	5	83.1%	78.4%	86.9%	92.0%	89.1%	94.2%
5	5	83.9%	78.7%	88.1%	93.9%	89.7%	97.3%

Turkey

		Zmijewski			Re-estimated		
FD-Year	**Lag-Year**	**Full**	**Pre Crisis**	**Post Crisis**	**Full**	**Pre Crisis**	**Post Crisis**
2	0	88.5%	88.3%	88.9%	74.8%	69.5%	82.2%
3	0	77.0%	72.1%	84.0%	73.3%	63.5%	87.1%
5	0	60.6%	47.3%	79.1%	64.6%	45.1%	92.0%
2	1	85.9%	85.9%	85.8%	76.2%	70.7%	82.7%
3	1	81.2%	80.7%	81.8%	80.0%	73.7%	87.6%
5	1	64.8%	54.8%	76.9%	70.3%	52.6%	91.6%
2	2	75.1%	75.1%	75.1%	76.4%	70.7%	82.2%
3	2	79.8%	79.6%	80.0%	81.1%	75.1%	87.1%
5	2	69.6%	64.0%	75.1%	77.6%	63.1%	92.0%
2	3	72.3%	74.4%	70.7%	77.0%	72.2%	80.9%
3	3	73.1%	74.4%	72.0%	81.2%	75.6%	85.8%
5	3	73.3%	73.3%	73.3%	85.4%	77.8%	91.6%
2	4	69.4%	71.1%	68.4%	76.9%	71.1%	80.4%
3	4	69.7%	69.6%	69.8%	81.7%	75.6%	85.3%
5	4	72.2%	69.6%	73.8%	85.8%	77.0%	91.1%
2	5	72.3%	74.4%	70.7%	77.0%	72.2%	80.9%
3	5	73.1%	74.4%	72.0%	81.2%	75.6%	85.8%
5	5	73.3%	73.3%	73.3%	85.4%	77.8%	91.6%

8.3. Re-estimated Coefficients of Each Variable of Each Model

Altman	All	Brazil	China	Egypt	S. Africa	Mexico	Morocco	Philippines	Poland	South Korea	Taiwan	Thailand	Turkey
WC / TA	0,640	2,982	0,877	0,519	1,546	1,647	-0,398	1,887	1,238	0,818	1,492	0,480	1,419
RE / TA	0,563	4,914	-0,029	1,420	1,650	7,259	7,709	-0,075	1,571	2,169	2,184	0,781	0,312
EBIT / TA	10,342	2,832	14,133	5,221	8,852	15,239	3,889	10,840	7,605	9,733	7,101	4,560	8,050
SALES / TA	-0,058	0,358	0,114	0,576	0,158	-1,360	-0,185	-1,003	-0,053	0,181	-0,028	0,351	-0,022
MVE / TL	0,000	-0,019	-0,003	-0,009	0,000	0,000	-0,001	-0,005	0,011	0,000	-0,005	0,007	0,003

Taffler	All	Brazil	China	Egypt	S. Africa	Mexico	Morocco	Philippines	Poland	South Korea	Taiwan	Thailand	Turkey
PBT / ACL	-0,100	2,290	1,609	2,425	2,020	0,524	8,818	-0,012	1,950	0,996	0,220	0,692	-0,089
CA / TL	0,026	0,165	0,204	0,120	0,425	-0,133	-0,210	0,036	-0,349	0,002	0,749	0,163	0,009
CL / TA	2,385	3,170	-1,181	-0,647	3,350	14,337	1,622	2,954	-0,304	-0,680	1,219	-0,791	2,587
CA-INV-CL / SALES-NIBT+DEPR	-0,001	0,024	0,002	0,010	0,004	-0,052	0,017	-0,001	0,008	-0,001	0,001	0,012	-0,032
C	-0,947	-1,435	-0,034	-0,289	-2,353	-2,536	-1,578	-1,118	0,188	0,177	-1,542	-0,034	-0,877

Zmijewski	All	Brazil	China	Egypt	S. Africa	Mexico	Morocco	Philippines	Poland	South Korea	Taiwan	Thailand	Turkey
CA / TL	0,003	-4,251	-0,247	-0,602	-0,861	0,031	-0,981	-0,001	-0,337	0,003	-0,410	-0,564	0,001
ROA / TA	-0,093	-0,135	-0,073	-0,320	-0,049	-0,272	-0,083	-0,158	-0,135	-0,106	-0,097	-0,051	-0,126
TL / TA	-0,200	-3,632	0,035	-1,750	0,063	1,103	-0,831	1,351	-0,619	-1,149	-1,234	0,468	-0,059
C	-1,089	3,011	-1,756	0,630	-0,809	-2,738	0,085	-2,284	-0,418	-0,471	0,040	-0,838	-0,600

Ohlson	All	Brazil	China	Egypt	S. Africa	Mexico	Morocco	Philippines	Poland	South Korea	Taiwan	Thailand	Turkey
SIZE	-0,009	-1,326	0,602	13,401	1,329	3,039	0,274	0,322	1,129	-0,089	-0,952	0,545	-0,207
TL / TA	-0,316	-4,087	-0,151	-12,114	5,854	0,398	-4,388	-0,031	-2,124	-1,034	-2,739	-0,306	-0,451
WC / TA	-0,423	12,255	-0,100	19,523	22,025	-0,072	53,236	-1,357	-2,285	-1,152	-4,592	-3,982	-2,129
CA / CL	0,004	-10,723	-0,248	-2,914	-8,881	-6,516	-39,725	-0,034	-0,292	0,003	-0,241	-0,135	0,002

CHIN	0,078	0,256	0,126	1,275	1,114	-0,009	-2,016	0,136	1,151	0,184	0,429	0,506	1,086
ROA / TA	-0,020	-0,248	-0,178	-1,794	-0,305	-12,696	-0,243	-0,267	-0,324	-0,052	-0,218	-0,188	-0,297
OCT / TL	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
OENEG	0,636	0,636	0,232	0,232	-11,893	0,000	0,232	0,684	-0,007	0,971	0,971	1,341	-1,062
C	-0,537	7,315	-1,322	42,696	5,370	-2,065	43,672	-1,473	3,887	-0,466	-2,138	-0,266	-1,336

Shumway	**All**	**Brazil**	**China**	**Egypt**	**S. Africa**	**Mexico**	**Morocco**	**Philippines**	**Poland**	**South Korea**	**Taiwan**	**Thailand**	**Turkey**
SIZE	0,087	-11,460	2,811	-2,103	2,169	342,926	-3,128	-0,058	0,343	-0,523	-1,287	-1,444	-1,439
RETURN	-0,295	0,034	0,123	0,765	-0,548	-140,154	-3,385	-0,658	0,050	-0,534	-0,404	-0,673	0,022
ROA / TA	-0,203	-0,782	-0,186	-0,858	-0,138	-40,954	-0,157	-0,267	-0,280	-0,210	-0,222	-0,093	-0,253
Sigma	2,706	-252,666	-14,069	6,962	-10,553	9631,198	-62,190	2,663	-0,149	-9,763	16,956	2,403	-6,994
TL / TA	-0,638	-1,683	0,303	-6,760	3,064	439,355	-2,282	3,269	0,003	-2,048	-0,123	1,483	0,260
C	-2,059	58,614	-10,719	8,434	-11,459	-2626,583	12,741	-4,669	-2,684	1,568	1,461	1,559	2,814

8.4. Significance Levels of Re-estimated Coefficients of Each Variable of Each Model

Zmijewski	All	Prob.	Brazil	Prob.	China	Prob.	Egypt	Prob.	S. Africa	Prob.	Mexico	Prob.	Morocco	Prob.
CA / TL	0,003	0,041	-4,251	0,045	-0,247	0,052	-0,602	0,380	-0,861	0,034	0,031	0,957	-0,981	0,206
ROA / TA	-0,093	0,000	-0,135	0,000	-0,073	0,000	-0,320	0,000	-0,049	0,000	-0,272	0,040	-0,083	0,000
TL / TA	-0,200	0,787	-3,632	0,066	0,035	0,826	-1,750	0,155	0,063	0,902	1,103	0,855	-0,831	0,535
C	-1,089	0,000	3,011	0,107	-1,756	0,000	0,630	0,606	-0,809	0,146	-2,738	0,546	0,085	0,948

Ohlson	All	Prob.	Brazil	Prob.	China	Prob.	Egypt	Prob.	S. Africa	Prob.	Mexico	Prob.	Morocco	Prob.
SIZE	-0,009	0,523	-1,326	0,795	0,602	0,008	13,401	0,132	1,329	0,234	3,039	0,082	0,274	0,889
TL / TA	-0,316	0,000	-4,087	0,035	-0,151	0,788	-12,114	0,012	5,854	0,037	0,398	0,013	-4,388	0,263
WC / TA	-0,423	0,000	12,255	0,523	-0,100	0,917	19,523	0,051	22,025	0,026	-0,072	0,079	53,236	0,130
CA / CL	0,004	0,000	-10,723	0,580	-0,248	0,409	-2,914	0,356	-8,881	0,021	-6,516	0,487	-39,725	0,358
CHIN	0,078	0,015	0,256	0,285	0,126	0,622	1,275	0,679	1,114	0,094	-0,009	0,493	-2,016	0,313
ROA / TA	-0,020	0,000	-0,248	0,827	-0,178	0,000	-1,794	0,274	-0,305	0,000	-12,696	0,633	-0,243	0,223
OCT / TL	0,000	0,000	0,000	0,068	0,000	0,373	0,000	0,022	0,000	0,297	0,000	0,033	0,000	0,090
OENEG	0,636	0,000	0,636	0,455	0,232	0,822	0,232	0,266	-11,893	0,034	0,000	0,398	0,232	0,174
C	-0,537	0,000	7,315	0,077	-1,322	0,070	42,696	0,097	5,370	0,281	-2,065	0,066	43,672	0,291

Shumway	All	Prob.	Brazil	Prob.	China	Prob.	Egypt	Prob.	S. Africa	Prob.	Mexico	Prob.	Morocco	Prob.
SIZE	0,087	0,128	-11,460	0,131	2,811	0,000	-2,103	0,071	2,169	0,008	342,926	-6,516	-3,128	0,290
RETURN	-0,295	0,000	0,034	0,976	0,123	0,694	0,765	0,356	-0,548	0,433	-140,154	0,000	-3,385	0,049
ROA / TA	-0,203	0,000	-0,782	0,124	-0,186	0,000	-0,858	0,001	-0,138	0,003	-40,954	-4,388	-0,157	0,000
Sigma	2,706	0,035	-252,666	0,177	-14,069	0,379	6,962	0,719	-10,553	0,632	9631,198	-2,065	-62,190	0,262
TL / TA	-0,638	0,000	-1,683	0,704	0,303	0,275	-6,760	0,043	3,064	0,079	439,355	0,301	-2,282	0,443
C	-2,059	0,000	58,614	0,143	-10,719	0,000	8,434	0,096	-11,459	0,001	-2626,583	0,013	12,741	0,330

Zmijewski	Philippines	Prob.	Poland	Prob.	South Korea	Prob.	Taiwan	Prob.	Thailand	Prob.	Turkey	Prob.
CA / TL	-0,001	0,993	-0,337	0,001	0,003	0,192	-0,410	0,000	-0,564	0,000	0,001	0,718
ROA / TA	-0,158	0,000	-0,135	0,000	-0,106	0,000	-0,097	0,000	-0,051	0,000	-0,126	0,000
TL / TA	1,351	0,087	-0,619	0,073	-1,149	0,000	-1,234	0,000	0,468	0,019	-0,059	0,799
C	-2,284	0,000	-0,418	0,101	-0,471	0,000	0,040	0,844	-0,838	0,000	-0,600	0,000

Ohlson	Philippines	Prob.	Poland	Prob.	South Korea	Prob.	Taiwan	Prob.	Thailand	Prob.	Turkey	Prob.
SIZE	0,322	0,595	1,129	0,003	-0,089	0,388	-0,952	0,000	0,545	0,095	-0,207	0,238
TL / TA	-0,031	0,985	-2,124	0,010	-1,034	0,000	-2,739	0,000	-0,306	0,629	-0,451	0,397
WC / TA	-1,357	0,411	-2,285	0,047	-1,152	0,000	-4,592	0,000	-3,982	0,000	-2,129	0,002
CA / CL	-0,034	0,949	-0,292	0,301	0,003	0,009	-0,241	0,000	-0,135	0,504	0,002	0,688
CHIN	0,136	0,801	1,151	0,000	0,184	0,093	0,429	0,136	0,506	0,080	1,086	0,000
ROA / TA	-0,267	0,000	-0,324	0,000	-0,052	0,000	-0,218	0,003	-0,188	0,000	-0,297	0,000
OCT / TL	0,000	0,228	0,000	0,073	0,000	0,000	0,000	0,000	0,000	0,040	0,000	0,692
OENEG	0,684	0,881	-0,007	0,996	0,971	0,073	0,971	0,249	1,341	0,167	-1,062	0,231
C	-1,473	0,347	3,887	0,013	-0,466	0,037	-2,138	0,004	-0,266	0,758	-1,336	0,104

Shumway	Philippines	Prob.	Poland	Prob.	South Korea	Prob.	Taiwan	Prob.	Thailand	Prob.	Turkey	Prob.
SIZE	-0,058	0,958	0,343	0,493	-0,523	0,074	-1,287	0,021	-1,444	0,009	-1,439	0,004
RETURN	-0,658	0,345	0,050	0,865	-0,534	0,002	-0,404	0,024	-0,673	0,028	0,022	0,938
ROA / TA	-0,267	0,000	-0,280	0,000	-0,210	0,000	-0,222	0,000	-0,093	0,000	-0,253	0,000
Sigma	2,663	0,318	-0,149	0,975	-9,763	0,087	16,956	0,000	2,403	0,668	-6,994	0,600
TL / TA	3,269	0,069	0,003	0,996	-2,048	0,000	-0,123	0,790	1,483	0,000	0,260	0,522
C	-4,669	0,246	-2,684	0,043	1,568	0,136	1,461	0,366	1,559	0,365	2,814	0,049

8.5. Analysis of Contribution of Re-estimation for the Coefficients of Each Financial Distress Model

8.5.1. Altman's Model

		Country Estimated vs. Original			Full Estimated vs. Original			Country Estimated vs. Full Estimated		
	FD-Y	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis
Whole Sample	2	-12,4%	-13,0%	-12,0%	-12,4%	-13,0%	-12,0%	0,0%	0,0%	0,0%
	3	-13,9%	-13,5%	-14,5%	-13,9%	-13,5%	-14,5%	0,0%	0,0%	0,0%
	5	-13,9%	-12,3%	-15,9%	-13,9%	-12,3%	-15,9%	0,0%	0,0%	0,0%
Brazil	2	16,5%	12,6%	19,3%	17,0%	12,1%	20,7%	-0,5%	0,5%	-1,3%
	3	17,1%	12,1%	20,7%	16,7%	11,6%	20,7%	0,3%	0,5%	0,0%
	5	16,4%	10,9%	20,7%	16,1%	10,4%	20,7%	0,3%	0,5%	0,0%
China	2	7,2%	7,3%	7,0%	-0,2%	-1,0%	0,5%	7,4%	8,3%	6,6%
	3	7,2%	7,3%	7,1%	-0,2%	-1,0%	0,5%	7,4%	8,3%	6,6%
	5	6,6%	6,1%	7,1%	-0,2%	-1,0%	0,5%	6,7%	7,1%	6,6%
Egypt	2	11,0%	8,1%	13,6%	10,7%	10,5%	10,7%	0,3%	-2,4%	2,9%
	3	10,9%	7,9%	13,6%	10,6%	10,4%	10,7%	0,3%	-2,4%	2,9%
	5	10,4%	7,0%	13,6%	10,1%	9,4%	10,7%	0,3%	-2,4%	2,9%
South Africa	2	-5,6%	-17,7%	6,2%	-26,3%	-38,7%	-15,0%	20,7%	21,0%	21,2%
	3	-6,7%	-17,7%	4,1%	-27,7%	-39,5%	-17,1%	21,0%	21,7%	21,2%
	5	-5,1%	-14,9%	4,1%	-24,3%	-33,3%	-17,1%	19,2%	18,4%	21,2%
Mexico	2	-3,1%	-1,0%	-4,0%	-26,4%	-17,0%	-34,7%	23,3%	16,0%	30,7%
	3	-2,8%	-0,6%	-4,0%	-26,1%	-16,6%	-34,7%	23,3%	16,0%	30,7%
	5	-2,8%	-0,4%	-4,0%	-25,2%	-14,9%	-34,7%	22,5%	14,5%	30,7%
Morocco	2	-13,2%	-9,8%	-15,3%	-18,1%	-17,3%	-18,3%	4,9%	7,5%	3,1%
	3	-13,0%	-9,4%	-15,3%	-17,8%	-16,9%	-18,3%	4,9%	7,5%	3,1%
	5	-12,4%	-8,4%	-15,3%	-16,6%	-14,6%	-18,3%	4,2%	6,2%	3,1%

Philippines	2	0,7%	-0,6%	2,0%	6,8%	3,3%	9,6%	-6,1%	-4,0%	-7,6%
	3	0,5%	-0,6%	1,7%	6,8%	3,3%	9,6%	-6,3%	-4,0%	-8,0%
	5	0,5%	-0,6%	1,7%	6,8%	3,3%	9,6%	-6,3%	-4,0%	-8,0%
Poland	2	0,9%	-3,3%	4,7%	-0,7%	-2,9%	1,0%	1,6%	-0,4%	3,8%
	3	0,5%	-3,4%	4,1%	-1,1%	-3,1%	0,3%	1,6%	-0,4%	3,8%
	5	0,8%	-2,9%	4,1%	-0,8%	-2,5%	0,3%	1,6%	-0,3%	3,8%
South Korea	2	-53,9%	-55,4%	-53,2%	-67,8%	-67,5%	-68,5%	13,9%	12,2%	15,3%
	3	-60,2%	-57,2%	-63,8%	-74,3%	-69,3%	-79,7%	14,1%	12,1%	15,9%
	5	-60,9%	-52,7%	-70,1%	-74,4%	-63,6%	-86,1%	13,5%	10,8%	16,0%
Turkey	2	1,6%	3,0%	0,3%	2,3%	4,2%	0,5%	-0,7%	-1,3%	-0,2%
	3	0,8%	2,7%	-1,0%	1,4%	3,9%	-0,8%	-0,6%	-1,1%	-0,2%
	5	-0,1%	1,2%	-1,2%	0,4%	2,1%	-1,0%	-0,4%	-0,8%	-0,2%

8.5.2. Ohlson's Model

		Country Estimated vs. Original			Full Estimated vs. Original			Country Estimated vs. Full Estimated		
	FD-Y	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis
Whole Sample	2	-0,2%	-0,2%	-0,2%	-0,2%	-0,2%	-0,2%	0,0%	0,0%	0,0%
	3	-0,3%	-0,4%	-0,2%	-0,3%	-0,4%	-0,2%	0,0%	0,0%	0,0%
	5	-0,3%	-0,4%	-0,2%	-0,3%	-0,4%	-0,2%	0,0%	0,0%	0,0%
Brazil	2	-2,5%	2,1%	-8,0%	0,0%	0,0%	0,0%	-2,5%	2,1%	-8,0%
	3	-4,1%	0,6%	-9,3%	0,0%	0,0%	0,0%	-4,1%	0,6%	-9,3%
	5	-5,8%	-2,2%	-9,3%	0,0%	0,0%	0,0%	-5,8%	-2,2%	-9,3%
China	2	-0,5%	-0,1%	-0,9%	-0,3%	0,0%	-0,5%	-0,3%	-0,2%	-0,4%
	3	-0,8%	-0,5%	-1,1%	-0,4%	-0,2%	-0,6%	-0,4%	-0,3%	-0,5%
	5	-0,8%	-0,5%	-1,2%	-0,4%	-0,2%	-0,6%	-0,4%	-0,2%	-0,6%
Egypt	2	5,0%	7,2%	3,1%	3,0%	3,8%	1,9%	2,1%	3,4%	1,2%
	3	3,7%	4,4%	3,1%	3,0%	3,8%	1,9%	0,8%	0,6%	1,2%
	5	1,5%	0,1%	3,1%	2,9%	3,6%	1,9%	-1,4%	-3,5%	1,2%
South Africa	2	-2,1%	-3,3%	-1,1%	-0,3%	-0,8%	0,0%	-1,7%	-2,5%	-1,1%
	3	-2,1%	-3,4%	-1,1%	-0,5%	-1,0%	0,0%	-1,6%	-2,4%	-1,1%
	5	-1,9%	-2,9%	-1,1%	-0,4%	-0,9%	0,0%	-1,5%	-2,0%	-1,1%
Mexico	2	-2,7%	-7,0%	0,0%	0,0%	0,0%	0,0%	-2,7%	-7,0%	0,0%
	3	-2,9%	-7,5%	0,0%	0,0%	0,0%	0,0%	-2,9%	-7,5%	0,0%
	5	-4,4%	-10,2%	0,0%	0,0%	0,0%	0,0%	-4,4%	-10,2%	0,0%
Morocco	2	0,4%	2,3%	-1,7%	0,0%	0,0%	0,0%	0,4%	2,3%	-1,7%
	3	0,1%	1,9%	-1,7%	0,0%	0,0%	0,0%	0,1%	1,9%	-1,7%
	5	-1,2%	0,9%	-3,3%	0,0%	0,0%	0,0%	-1,2%	0,9%	-3,3%
	2	-3,1%	-4,8%	-2,8%	0,5%	0,9%	0,0%	-3,6%	-5,8%	-2,8%

Philippines	3	-4,1%	-5,9%	-3,5%	0,4%	0,7%	0,0%	-4,4%	-6,6%	-3,5%
	5	-6,2%	-8,8%	-4,6%	0,0%	0,0%	0,0%	-6,2%	-8,8%	-4,6%
Poland	2	-0,9%	-2,3%	-0,1%	-0,1%	-0,2%	0,0%	-0,8%	-2,1%	-0,1%
	3	-1,7%	-3,7%	-0,4%	-0,1%	-0,2%	0,0%	-1,6%	-3,5%	-0,4%
	5	-3,2%	-5,0%	-2,0%	-0,1%	-0,2%	0,0%	-3,1%	-4,7%	-2,0%
South Korea	2	-0,3%	-0,6%	-0,1%	-0,4%	-0,5%	-0,2%	0,0%	-0,1%	0,2%
	3	-0,5%	-0,8%	-0,2%	-0,4%	-0,6%	-0,3%	-0,1%	-0,2%	0,1%
	5	-0,8%	-0,9%	-0,7%	-0,4%	-0,6%	-0,3%	-0,3%	-0,4%	-0,4%
Turkey	2	1,4%	1,7%	1,0%	-0,6%	-1,2%	-0,1%	2,0%	2,9%	1,0%
	3	-1,4%	-2,2%	-0,8%	-0,9%	-1,9%	-0,1%	-0,5%	-0,4%	-0,7%
	5	-3,3%	-3,4%	-3,6%	-0,8%	-1,4%	-0,4%	-2,5%	-2,1%	-3,3%

8.5.3. Shumway's Model

		Country Estimated vs. Original			Full Estimated vs. Original			Country Estimated vs. Full Estimated		
	FD-Y	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis
Whole Sample	2	-1,7%	0,2%	-3,2%	1,0%	1,3%	0,9%	-2,8%	-1,1%	-4,1%
	3	-0,4%	1,7%	-2,0%	1,7%	1,8%	1,7%	-2,1%	-0,1%	-3,6%
	5	0,6%	2,5%	-0,6%	2,0%	2,1%	2,2%	-1,4%	0,4%	-2,8%
Brazil	2	-28,0%	-36,0%	-22,0%	-1,7%	-11,0%	7,3%	-26,2%	-25,0%	-29,3%
	3	-30,0%	-36,0%	-26,0%	1,5%	-10,6%	12,7%	-31,5%	-25,4%	-38,7%
	5	-29,0%	-32,0%	-28,7%	3,8%	-7,8%	14,0%	-32,8%	-24,2%	-42,7%
China	2	-44,9%	-47,6%	-42,4%	1,3%	1,1%	1,5%	-46,2%	-48,6%	-43,9%
	3	-43,7%	-46,5%	-41,6%	1,7%	1,4%	2,0%	-45,4%	-47,9%	-43,6%
	5	-39,9%	-39,5%	-41,4%	1,7%	1,3%	2,0%	-41,5%	-40,8%	-43,4%
Egypt	2	-20,5%	-16,5%	-22,9%	-0,2%	-0,9%	0,2%	-20,4%	-15,6%	-23,1%
	3	-22,6%	-20,6%	-22,9%	0,4%	0,3%	0,2%	-23,0%	-20,9%	-23,1%
	5	-25,4%	-27,1%	-22,9%	1,1%	1,8%	0,2%	-26,4%	-29,0%	-23,1%
South Africa	2	-45,8%	-34,5%	-55,8%	0,9%	1,2%	0,8%	-46,7%	-35,8%	-56,5%
	3	-46,5%	-34,8%	-57,3%	1,1%	1,6%	0,8%	-47,6%	-36,4%	-58,0%
	5	-43,8%	-29,9%	-57,3%	1,0%	1,4%	0,8%	-44,8%	-31,3%	-58,0%
Mexico	2	-23,7%	-9,6%	-34,7%	4,5%	5,9%	4,0%	-28,2%	-15,5%	-38,7%
	3	-23,4%	-9,1%	-34,7%	4,5%	5,9%	4,0%	-27,9%	-15,1%	-38,7%
	5	-21,9%	-6,4%	-34,7%	5,4%	7,4%	4,0%	-27,3%	-13,8%	-38,7%
Morocco	2	-22,8%	-29,5%	-17,5%	-0,5%	0,0%	-1,1%	-22,3%	-29,5%	-16,4%
	3	-23,1%	-28,5%	-19,2%	-0,3%	0,0%	-0,6%	-22,8%	-28,5%	-18,6%
	5	-21,7%	-23,7%	-21,4%	0,5%	0,0%	1,1%	-22,2%	-23,7%	-22,5%
	2	1,6%	5,1%	-0,4%	2,8%	3,9%	2,2%	-1,2%	1,2%	-2,6%

Philippines	3	3,1%	6,1%	1,5%	3,5%	4,3%	3,0%	-0,3%	1,8%	-1,5%
	5	6,3%	9,0%	4,8%	4,0%	4,9%	3,3%	2,3%	4,1%	1,5%
Poland	2	-15,8%	-6,6%	-22,7%	0,6%	0,8%	0,7%	-16,4%	-7,3%	-23,4%
	3	-14,9%	-4,9%	-22,5%	1,1%	1,2%	1,2%	-16,0%	-6,1%	-23,8%
	5	-12,7%	-3,0%	-20,2%	2,2%	1,9%	2,6%	-14,9%	-4,9%	-22,8%
South Korea	2	-16,1%	-21,1%	-13,0%	0,8%	1,0%	0,7%	-16,9%	-22,1%	-13,7%
	3	-18,3%	-21,8%	-16,8%	1,4%	1,3%	1,6%	-19,7%	-23,1%	-18,4%
	5	-18,1%	-19,4%	-19,2%	1,8%	1,5%	2,3%	-19,9%	-20,9%	-21,4%
Turkey	2	-8,0%	0,9%	-16,4%	-1,0%	-1,7%	-0,3%	-7,0%	2,6%	-16,1%
	3	-11,7%	-3,5%	-19,4%	0,5%	-0,7%	1,8%	-12,2%	-2,7%	-21,2%
	5	-14,6%	-5,1%	-23,6%	2,1%	0,1%	4,0%	-16,7%	-5,3%	-27,6%

8.5.4. Taffler's Model

		Country Estimated vs. Original			Full Estimated vs. Original			Country Estimated vs. Full Estimated		
	FD-Y	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis
Whole Sample	2	4,0%	3,8%	4,4%	4,0%	3,8%	4,4%	0,0%	0,0%	0,0%
	3	5,4%	5,2%	5,8%	5,4%	5,2%	5,8%	0,0%	0,0%	0,0%
	5	6,3%	6,0%	7,1%	6,3%	6,0%	7,1%	0,0%	0,0%	0,0%
Brazil	2	9,7%	25,5%	-3,3%	6,9%	13,9%	2,0%	2,7%	11,5%	-5,3%
	3	11,9%	25,9%	0,7%	9,5%	14,9%	6,0%	2,4%	11,0%	-5,3%
	5	10,0%	22,3%	0,7%	9,1%	14,0%	6,0%	0,9%	8,3%	-5,3%
China	2	7,0%	4,4%	9,3%	7,4%	4,4%	10,2%	-0,4%	0,0%	-0,8%
	3	7,9%	5,4%	10,3%	8,6%	5,7%	11,1%	-0,6%	-0,3%	-0,9%
	5	7,9%	5,2%	10,5%	8,6%	5,6%	11,5%	-0,7%	-0,4%	-0,9%
Egypt	2	7,9%	6,8%	8,6%	6,5%	5,9%	6,9%	1,5%	1,0%	1,7%
	3	8,9%	8,9%	8,6%	7,4%	7,9%	6,9%	1,5%	1,0%	1,7%
	5	10,1%	11,8%	8,6%	8,6%	10,9%	6,9%	1,5%	1,0%	1,7%
South Africa	2	1,4%	2,2%	0,6%	3,2%	6,2%	0,8%	-1,8%	-3,9%	-0,2%
	3	1,5%	2,2%	0,9%	3,8%	7,1%	1,1%	-2,3%	-5,0%	-0,2%
	5	1,2%	1,6%	0,9%	3,4%	6,4%	1,1%	-2,2%	-4,8%	-0,2%
Mexico	2	2,3%	1,1%	4,0%	2,3%	1,1%	4,0%	0,0%	0,0%	0,0%
	3	2,6%	1,6%	4,0%	2,6%	1,6%	4,0%	0,0%	0,0%	0,0%
	5	3,2%	2,8%	4,0%	3,2%	2,8%	4,0%	0,0%	0,0%	0,0%
Morocco	2	8,5%	6,2%	10,0%	7,7%	3,9%	10,8%	0,7%	2,3%	-0,8%
	3	8,5%	6,2%	10,0%	8,2%	4,3%	11,4%	0,3%	1,9%	-1,4%
	5	8,3%	6,0%	10,0%	9,9%	5,1%	14,2%	-1,6%	0,9%	-4,2%
	2	4,3%	5,2%	4,6%	4,0%	4,7%	4,4%	0,3%	0,5%	0,2%

Philippines	3	6,8%	6,2%	8,3%	6,2%	5,8%	7,8%	0,6%	0,5%	0,6%
	5	10,9%	9,3%	13,1%	10,3%	8,8%	12,6%	0,6%	0,5%	0,6%
Poland	2	3,2%	4,0%	2,8%	4,0%	5,5%	3,1%	-0,8%	-1,5%	-0,3%
	3	3,8%	4,8%	3,3%	4,8%	6,7%	3,6%	-1,0%	-2,0%	-0,3%
	5	4,5%	5,8%	3,6%	5,9%	7,9%	4,5%	-1,4%	-2,1%	-0,8%
South Korea	2	3,1%	5,5%	1,3%	3,3%	5,9%	1,5%	-0,2%	-0,4%	-0,2%
	3	4,8%	6,2%	4,0%	5,0%	6,8%	4,2%	-0,3%	-0,6%	-0,2%
	5	5,8%	6,3%	5,9%	6,4%	7,4%	6,3%	-0,6%	-1,1%	-0,3%
Turkey	2	-3,0%	-7,1%	0,7%	-2,8%	-7,1%	1,0%	-0,1%	0,0%	-0,3%
	3	0,5%	-2,8%	3,3%	0,6%	-2,8%	3,6%	-0,1%	0,0%	-0,3%
	5	2,6%	-1,3%	6,4%	2,8%	-1,3%	6,7%	-0,1%	0,0%	-0,3%

8.5.5. Zmijewski's Model

		Country Estimated vs. Original			Full Estimated vs. Original			Country Estimated vs. Full Estimated		
	FD-Y	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis	Full	Pre Crisis	Post Crisis
Whole Sample	2	5,0%	5,8%	4,6%	5,0%	5,8%	4,6%	0,0%	0,0%	0,0%
	3	7,4%	7,8%	7,5%	7,4%	7,8%	7,5%	0,0%	0,0%	0,0%
	5	9,0%	8,6%	10,0%	9,0%	8,6%	10,0%	0,0%	0,0%	0,0%
Brazil	2	4,1%	9,9%	0,0%	-0,5%	-5,1%	4,7%	4,5%	15,0%	-4,7%
	3	8,1%	10,9%	6,7%	4,1%	-4,2%	12,7%	4,0%	15,0%	-6,0%
	5	10,2%	11,0%	10,7%	8,4%	-0,1%	16,7%	1,8%	11,1%	-6,0%
China	2	5,5%	4,6%	6,3%	4,9%	4,3%	5,6%	0,5%	0,3%	0,7%
	3	7,0%	6,2%	7,8%	6,2%	5,6%	6,8%	0,8%	0,5%	1,0%
	5	7,2%	6,1%	8,2%	6,4%	5,6%	7,2%	0,8%	0,5%	1,0%
Egypt	2	3,9%	1,4%	5,7%	3,9%	0,6%	6,4%	-0,1%	0,8%	-0,7%
	3	5,3%	4,2%	5,7%	6,3%	5,6%	6,4%	-1,0%	-1,4%	-0,7%
	5	8,0%	9,7%	5,7%	9,7%	12,6%	6,4%	-1,7%	-2,8%	-0,7%
South Africa	2	3,9%	3,6%	4,7%	3,1%	1,8%	4,7%	0,8%	1,8%	0,0%
	3	5,2%	5,4%	5,3%	4,5%	3,7%	5,3%	0,8%	1,7%	0,0%
	5	4,9%	4,8%	5,3%	4,2%	3,3%	5,3%	0,7%	1,5%	0,0%
Mexico	2	4,5%	6,4%	3,3%	6,6%	6,4%	7,3%	-2,1%	0,0%	-4,0%
	3	4,5%	6,4%	3,3%	6,6%	6,4%	7,3%	-2,1%	0,0%	-4,0%
	5	5,4%	7,9%	3,3%	7,4%	7,9%	7,3%	-2,1%	0,0%	-4,0%
Morocco	2	0,0%	0,2%	-0,3%	-1,0%	0,0%	-1,9%	1,0%	0,2%	1,7%
	3	0,5%	0,2%	0,8%	-0,5%	0,0%	-0,8%	1,0%	0,2%	1,7%
	5	2,2%	0,2%	4,2%	1,2%	0,0%	2,5%	1,0%	0,2%	1,7%
	2	3,9%	8,7%	0,4%	5,7%	8,9%	3,5%	-1,8%	-0,2%	-3,1%

Philippines	3	5,5%	9,5%	3,0%	7,7%	9,8%	6,9%	-2,2%	-0,2%	-3,9%
	5	8,6%	9,7%	9,3%	10,9%	10,1%	13,1%	-2,3%	-0,4%	-3,9%
Poland	2	5,0%	5,7%	5,0%	5,6%	6,6%	5,6%	-0,6%	-1,0%	-0,7%
	3	6,3%	7,0%	6,3%	7,1%	8,2%	7,0%	-0,8%	-1,2%	-0,8%
	5	8,3%	8,8%	8,5%	9,5%	10,7%	9,3%	-1,2%	-1,9%	-0,8%
South Korea	2	4,9%	6,7%	3,7%	4,8%	6,5%	3,6%	0,1%	0,1%	0,1%
	3	7,8%	8,1%	8,2%	7,7%	7,9%	8,2%	0,1%	0,1%	0,1%
	5	9,2%	7,8%	11,6%	9,2%	7,7%	11,5%	0,0%	0,0%	0,0%
Turkey	2	-0,2%	-6,5%	5,9%	-1,9%	-8,1%	3,9%	1,7%	1,6%	2,0%
	3	4,0%	-1,2%	8,9%	4,1%	-2,0%	9,9%	-0,2%	0,7%	-1,0%
	5	7,5%	1,5%	13,2%	9,2%	1,8%	16,4%	-1,8%	-0,4%	-3,2%

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