ANALYSIS OF SYSTEMATIC RISK AROUND FIRM-SPECIFIC NEWS IN AN EMERGING MARKET USING HIGH-FREQUENCY DATA

Shabir Ahmad ABDUL SALEEM

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This is to certify that the dissertation entitled "Analysis of Systematic Risk Around Firm-specific News in an Emerging Market Using High-frequency Data" submitted by Shabir Ahmad ABDUL SALEEM was successfully defended on 29.01.2019 before examination committee appointed by the Graduate School of Social Science of Eskişehir Osmangazi University in accordance with the principles of Post-Graduate Education Board and accepted as a Doctoral Dissertation in Business Administration by the examination jury.

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SHABIR AHMAD ABDUL SALEEM

ABSTRACT

ANALYSIS OF SYSTEMATIC RISK AROUND FIRM-SPECIFIC NEWS IN AN EMERGING MARKET USING HIGH-FREQUENCY DATA

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Doctor of Philosophy-2019

Major in Business Administration

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This dissertation aims to investigate the variation in daily systematic risk (beta) of individual stocks around firm-specific news in an emerging market. Using intraday prices of every stock traded on Borsa Istanbul over the period 2005-2013, we find that there is a statistically significant spike in systematic risk of individual stocks on earnings announcements days. Betas of individual stocks increase from 0.09 five days before the event date to 0.155 on event date and then returns to their average level in 11 to 15 days after the announcements. Our findings are different from the ones in the developed markets where systematic risk increases exactly on the earnings announcements days and returns to their average level in 2 to 5 days later. We additionally divide our earnings announcements into the news with good and bad earnings signs and our findings indicate that betas increase greater around earnings news with good earnings sign than around news with bad earnings sign. We further performed a panel regression on individual stocks with different characteristics around different types of earnings news in various economic circumstances. Our findings are consistent with a framework of the patterns of time-variation in systematic risk around firm-specific news.

Keywords: Time-Variation in Systematic Risk, Realized Beta, Firm-specific News

ÖZET

FİRMAYA ÖZGÜ HABERLERİN SİSTEMATİK RİSK ÜZERİNDEKİ ETKİSİ: YÜKSEK FREKANSLI VERİ İLE GELİŞMEKTE OLAN BİR PİYASA ANALİZİ

ABDUL SALEEM, Shabir Ahmad

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İşletme Anabilim Dalı

Danışman: Abdullah YALAMAN

Bu tezde, gelişmekte olan bir piyasada sistematik riskin firmaya özgü haberlere tepki verip vermediği analiz edilmektedir. Bu kapsamda tezde Borsa İstanbul'da 2005-2013 döneminde işlem gören her bir pay senedinin gün içi 15dk lık fiyat verileri kullanılmıştır. Ampirik bulgular sistematik riskin firmaya özgü haberlere istatistiksel olarak anlamlı bir tepki verdiğini göstermektedir. Sistematik risk karlılık duyuruları açıklanmadan önce 0.09 düzeyindeyken karlılık duyuruları açıklandığında 0.155 seviyelerine yükselmektedir ve 11-15 gün içinde tekrar ortalama seviyesine geri dönmektedir. Bu bulgular gelişmiş ülke bulgularından farklılık göstermektedir. Gelişmiş ülkelerde sistematik risk karlılık haberlerine haberin açıklandığı gün yüksek bir tepki vermektedir ve daha sonra 2 ile 5 gün arasında ortalama seviyesine geri dönmektedir. Bu tezde ayrıca ampirik bulguların tutarlılığının sınanması için firmaya özgü haberler iyi haber-kötü haber olarak ikiye ayrılmıştır ve sistematik riskin firmaya özgü haberlere tepkisinin farklı karakteristik özelliklere göre değişim gösterip göstermediği panel regresyon analizi ile incelenmiştir.

Anahtar Kelimeler: Zaman Göre Değişken Sistematik Risk, Beta Katsayısı, Firmaya Özgü Haberler

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ABBREVIATIONS

Beta	: Systematic Risk
BIST	: Borsa Istanbul
BV	: Bipower Variation
CAPM	: Capital Asset Pricing Model
EU	: European Union
HF	: High-Frequency
Obs	: Observation
QV	**:** Quadratic Variation
RCOV	: Realized Covariance
RV	: Realized Variation
S&P 500	: Standards and Poor 500 Index
SMEs	: Small and Medium Sized Enterprises
U.S.	: United States

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PREFACE

This dissertation investigates whether the firm-specific news has any impact on the market risk of stock in the emerging market. In other words, using intraday prices, we test whether the daily systematic risk of individual stocks changes around earnings announcements. Moreover, we test if quarterly earnings announcements of a firm provide any information or constitute any signal for other stocks and securities that are operating in the same sector and whose earnings announcements have not yet been announced to the market. Detecting the reaction of betas around earnings announcements help us to understand whether investors use data from announcement giving firm to draw out information on the total economy. If betas react differently on earnings announcements day, this means that the covariance between the returns of announcement giving stock and other stocks in the market goes up and thus leads to a surge in the beta of earnings announcing stocks.

We next test whether the behavior of beta around earnings announcements varies with regards to the characteristics of firms. Understanding the betas of large and small firms around earnings announcements helps us to detect whether traders become more informed when the data comes from the stocks that are watched closely by investors and analysts, and the stocks whose performance are taken to show intelligence on the aspects of other stocks in the same sector.

Many stocks experienced a significant change in their systematic market risk during turmoil periods. In September-October 2008, the time when the Lehman Brothers collapsed and AIG rescued, significant changes in the systematic risk of stocks were witnessed. Therefore, we test if the behavior of the betas of individual stocks around earnings announcements in the period of turmoil is similar to the behavior of the betas of individual stocks in the normal economic circumstances. Furthermore, we analyze how the betas of individual stocks behave around earnings announcements with respect to the dividend payment.

In this study, we use intraday prices of every stock traded on Borsa Istanbul (597,265,185 tick prices) and their three-month earnings announcements (9,273) over the period 2005-2013, a total number of 2,268 days. The methodology we

follow in this study allows us to obtain accurate estimates of everyday betas for every stock and thus will enable us to do a disaggregate study for betas at 15- minute intervals.

This dissertation is different from the widespread literature in the following aspects. First of all, the international literature focuses on investigating the impact of news announcements on return or volatility of the stock market while this study investigates the impact of firm-specific news announcements on the beta of individual stocks (systematic risk) rather than on the return or volatility. Secondly, most of the studies in the literature focus on the cross-sectional behavior of beta (Ball and Kothari, 1991; Vijh, 1994), and assume that beta is constant over time as in the traditional Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1964). But our study investigates the behavior of time-varying beta of every individual stock and estimates their values on a day-to-day basis. It can be said that we are the first to analyze the dynamic structure of risk in emerging markets using high-frequency data. Thirdly, this study as a whole focuses on the impact of firm-specific news on the behavior of the beta of every stock traded on a Borsa rather than every constituent of a market index or exchange rate. Lastly, in this study, we address the areas in the market risk that have not been under the focus of previous researches yet, i.e., the impact of the global financial crisis on market risk.

This study fills the gaps in the literature of trading strategies, capital asset pricing theory, price discovery, and hedging in emerging markets. By using new high-frequency methodological tools that haven't been previously used in emerging markets, this study provides a theoretical contribution to the concept of dynamic beta that was previously believed to be constant over time as in CAPM.

We believe that this study will benefit the institutional investors, portfolio managers, intermediary institutions, investment firms, stock investors, managers of every firm trading on emerging markets, policy makers, and academicians from the perspective of how the changes in systematic risk are perceived by investors.

CHAPTER ONE

INTRODUCTION

Following the recent advances in econometric theories as in Andersen et al. (2003a), we investigate whether the firm-specific news announcements affect the market risk of stock in an emerging market using intraday prices for the period 2005-2013. In other words, we test whether the daily systematic risk of individual stocks varies around firm-specific news announcements through understanding if the traders use data from an announcement giving firm to obtain information on the total economy. If this happens, it leads to an increase in the covariance of the returns of the announcing stock with other stocks, and thus the market beta of announcing stock experiences surge.

In this study, we use three-month earnings announcements as ideal representatives for firm-specific news. We have a total number of 9,273 quarterly earnings announcements for every stock (513 distinct firms) traded on Borsa Istanbul over the period 2005-2013. We find that individual stocks betas increase by a statistically significant amount. On average, beta increases by 0.155 (with a t-statistics of -17.26) on the announcement days. Our finding is consistent with the results from the developed markets but the betas drop by 0.11 on the 11^{th} day after the earnings announcements before returning to their average level about 15 days later after the announcement. This behavior of beta is different from the ones in the developed markets where betas revert to their normal level in 2-5 days after the earnings announcements.

To examine the response of betas to earnings announcements with different information contents, we divided earnings announcements into news with good and bad earnings signs. Interestingly, betas only increase significantly around news with good earnings sign on the announcements days. On average, betas increase by 0.14 (with a t-statistics of 13.24) around good earnings news on the announcements days. Our finding is also consistent with results from developed markets. But, the betas drop by 0.08 on the 11^{th} day after the earnings announcements (with a t-statistics of 7.76) before reverting to their normal level about 16 days after the announcement

where in developed markets, betas drop immidiately after the earnings announcements day.

Next, we test whether the behavior of betas around earnings announcements varies relate to characteristics of firms. Our findings show that the spike in the betas of small-cap stocks is slightly greater than the large-cap stocks (0.17 vs. 0.177). However, in comparison to the value of the beta of the market portfolio (0.155), the spike in the betas of both small-cap and large-cap stocks are slightly stronger. This indicates that the connectedness of stocks to market-wide fundamentals has no impact on the behavior of the betas around earnings announcements in an emerging market. Notably, our finding contradicts with findings of Patton and Verardo (2012) from developed markets where only the betas of large-cap stocks experience spike around earnings announcements.

Furthermore, the spikes in realized betas on earnings announcements days are larger for the companies of IT, Commerce, Textile and Leather, Weaving and Clothing, and Real Estate (0.22, 0.23, 0.23, 0.27) whose fundamentals are further correlated with total market fundamentals than the betas of companies of Stone and Land related and Forest, Paper and Printings (0.03 and 0.05) whose fundamentals are less correlated with total market fundamentals. Oil and Coal derivative related companies. Banking sector have the smallest beta values but they are statistically not significant (0.02 and 0.03). Meanwhile, Mining firms have the highest beta values but they are statistically not significant either. From our findings, we can derive that traders become more informed and well aware when the data comes from the stocks that are watched closely by investors and analysts, and the stocks whose performance are taken to show information on the aspects of other stocks in the sector.

We next study the behavior of individual stocks' betas around earnings announcements in turmoil periods. We divide our sample period into the pre-global financial crisis, during the global financial crisis, post-global financial crisis periods. Interestingly, we find that the increase in betas on the earnings announcements days in the period of post-global financial crisis is greater than the increase in betas during the global financial crisis or in pre-global financial crisis period (0.159 vs. 0.0143 and 0 respectively). This may be due to the fact that global-financial crisis has no

immediate impact on emerging markets during its early stages as in developed markets (Dimitriou et al., 2013).

We also analyze the behavior of individual stocks betas around earnings announcements by dividend payment. We find that the increase in betas of non-dividends stocks on earnings announcements days is greater than the increase in realized betas of dividend stocks (0.168 vs. 0.097). This is due to the fact that firms which do not pay dividends, their net profits earned are added up to the stocks' value while firms which pay dividends, their stocks' value doesn't change much. Therefore, we may not see so much change in realized betas of dividend stocks.

We additionally analyze the reaction of beta for individual stocks with different characteristics around different earning news in different economic circumstances.

We also perform robustness test and the results show that realized variation and trading volume do not have any significant impact on the increase in the beta around earnings announcements.

Our study is relevant to some empirical papers that study the changes in the covariance of stocks returns around firm-related events. For example, Ball and Kothari (1991) study cross-sectional average beta around earnings announcements for a duration of eight years. They find that there is an increase of 6.7% in beta over a 3-day window.

Our methodology for this study allows us to obtain accurate estimates of everyday betas for every stock and thus will enable us to do a disaggregate study for betas at 15- minute intervals. Vijh (1994) investigates the changes in the covariance of returns across stocks added to S&P 500 index whereas Denis and Kadlec (1994) investigate the variation in the covariance of returns across stocks due to equity offerings and share repurchases. Unlike above-mentioned researches, in this study, we aim to capture the daily changes in beta for every individual stock traded on an emerging market. Patton and Verardo (2012) estimate realized betas around earnings announcements based on intraday data for S&P 500 over the period 1996-2006. The authors report a significant increase in the betas of individual stocks on earnings announcements days. The betas then return to their normal levels 2-5 days after the

earnings announcement. Moreover, the authors report that the increase in the betas of individual stocks is larger for earnings announcements with bigger positive and bigger earnings surprises.

Our research is also related to the literature of information spillovers. Wang (2003) study the return comovement across markets with respect to changes in macroeconomic situations. Barberis et al. (2005) suggest that the comovements in stock prices are due to common news on fundamentals and information asymmetry. Our research appends to this literature by connecting the return comovement to earnings announcement through presenting numerous disaggregated results on comovement.

Lastly, this study relevant to early researches on price discovery using high-frequency data (Andersen et al. (2003a, 2007) and Faust et al. (2007) but our analysis differs from these researches as we focus on the impact of firm-specific news on individual stocks betas rather than the impact of macroeconomic announcements on prices and volatility or aggregate indices or exchange rates.

This dissertation aims to analyze the changes in the beta of every stock traded on an emerging market around the release of firm-specific news using high-frequency data. To achieve our goal, we set out the following objectives:

1. To capture the reaction of individual stocks betas when quarterly earnings announcements are released to the market.
2. To explain how investors interpret quarterly earnings announcements when the earnings announcements are "Good" and/or "Bad".
3. To analyze the changes in the betas of individual stocks around earnings announcements by firms characteristics.
4. To identify the impact of the global financial crisis on the behavior of individual stocks betas around quarterly earnings announcements.
5. To analyze the changes in the betas of individual stocks around earnings announcements by dividend payment.
6. To identify the heterogeneity in changes in betas of individual stocks across different sectors.

This dissertation is important in that it is the first to test whether the beta of every stock traded on an emerging market reacts to company-specific news. There isn't any study in the literature that analyzes the dynamic behavior of beta around firm-specific news in an emerging market. Moreover, this dissertation provides evidence against the CAPM assumption which says that the beta of assets remains constant over time.

The findings of this study provide useful thought to all finance practitioners and finance theorists in how systematic risk of stocks behave around earnings announcements and how investors perceive systematic risk during earnings announcements days.

Most of the studies in the literature using high-frequency are from developed markets, so we believe that our findings from this study will have a valuable contribution to the literature of high-frequency econometrics in emerging markets. Besides, this study fills the gaps in the literature of trading strategies, capital asset pricing theory, price discovery, and hedging in emerging markets.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, we discuss the closely related studies to our dissertation. In the coming paragraphs, we discuss the literature on volatility, capital asset pricing theory, systematic risk, firm-specific news, jump in stock prices, the advantage of using high-frequency data, and finally we discuss the contribution of our study.

2.1 Volatility Modeling

Volatility plays a significant role in determining the riskiness of assets. Having well awareness of volatility is vital for decision making, portfolio allocation, assets pricing, monetary policymaking and risk management (Poon and Granger, 2003). The ability to estimate volatility from the available information is the key to precisely pricing securities and derivatives, and hedging risks. According to the 2003 Nobel laureate, Engle and Patton (2001, p. 238): "A risk manager must know today the likelihood that his portfolio will decline in the future. An option trader will want to know the volatility that can be expected over the future life of the contract. To hedge this contract, he will also want to know how volatile is this forecast volatility is. A portfolio manager may want to sell a stock or a portfolio before it becomes too volatile. A market maker may want to set the bid-ask spread wider when the future is believed to be more volatile."

A common technique to estimate volatility is standard deviation, but due to the complexity and sophistication of markets, volatility cannot be precisely estimated with standard deviation any more. Researchers brought new changes to the concept of estimating volatility. Researchers brought new changes to the concept of estimating volatility. In the last 50 years, many developments have been taken place on volatility estimation and a lot of sophisticated models have been proposed by the researchers. Of these recent well-known volatility estimation method is ARCH and

ARCH-class models, but some of these models have very weak forecasting performance despite good fitting abilities (Andersen and Bollerslev 1998a, b).

Due to easy accessibility to high-frequency data, a lot of researchers started to employ intraday data in estimating stochastic volatility and they found that volatility is more precisely predictable with 1- and 5-returns than with daily returns (Liu et al. 2015). The latest progress in high-frequency econometrics made it feasible to model volatility better than ever before. The so-called realized volatility models enable us to estimate volatility straightforwardly rather than depending on parameter estimation. Now, it is possible to model volatility as an observable variable by adding up the squared intraday returns. Recent advances in high-frequency literature make it possible to divide volatility into its base components as continuities and discontinuities. Andersen et al. (2003a) are the first to introduce Realized Volatility (RV). Barndorff-Nielsen and Shephard (2002) document that under no microstructure noise and discontinuities, realized volatility is an efficient and unbiased estimator of integrated variance. Soon later, the authors developed realized bipower variation (BV). BV is a consistent estimate of integrated volatility (Liu and Maheu, 2005).

2.2 Capital Asset Pricing Model (CAPM)

It is well-known among finance practitioners and finance theorists that investors expect a maximum return for accepting a minimum risk. But how do investors assess the risk of an investment and what risk premium they demand or what risk premium should investors demand for their investments is still quite unclear. Throughout the literature, several of capital asset pricing models have been recommended for assessing risk premium. The Sharpe-Lintner-Black Capital Asset Pricing Model (CAPM) is one of the most popular models used to determine the required rate of return for investments. CAPM is the central model of financial economics for more than half century after its introduction.

One of the key insights of CAPM is that only beta should be priced. CAPM measures systematic risk through beta that is the ratio of covariance between stock returns and market returns to the variance of market returns. One of the criticisms

CAPM is facing is that CAPM assumes market risk is constant over time. A significant number of researches over the past 40 years reveals that they have doubts that beta is constant over time. Huang and Litzenberger (1988) state: "It is unlikely that risk premiums and betas on individual assets are stationary over time". CAPM is not capable of explaining the cross-sectional variation in average returns of portfolios that contain small-cap stocks and earn higher returns than those predicted by CAPM. Moreover, it is not particularly reasonable that beta stays constant throughout the time while the relative risk of a firm's cash flow varies over the business cycle. Additionally, in financial crisis periods, for example, the financial leverage of firms in a relatively poor profile may increase boldly relative to other companies, driving individual stocks betas to increase.

By considering the above-mentioned reasoning in favor of time-varying beta, financial economists such as Hansen and Richard (1987), Ferson and Harvey (1991), and Wang (2003) come up with idea of regressing CAPM with time-varying beta and thus the authors introduced conditional versions of CAPM that allow stock betas to vary on monthly bases and over the business cycle.

2.3 Systematic Risk (Beta)

Every stock or portfolio faces two types of risks: firm related risk and market-related risk. Firm-related risk can be avoided by constructing a well-diversified portfolio. But market risk, which is also called non-diversifiable risk, is defined as the possibility that an investor experiences losses due to factors that affect the overall financial markets performance, is somehow impossible to be completely avoided, except through hedging. Investors are exposed to market risk even when they hold a well-diversified portfolio of stocks. Based on the CAPM theory, traders are only rewarded for taking the market risk. For extremely well-diversified portfolios, the firm related risk goes to zero (Elton et al., 2003). Market risk is measured through beta and the value of beta shows the sensitivity of a stock to general market movements. If beta of a stock is positive, a stock goes in the same direction of the market and if negative, a stock goes in the reverse direction of the market. Moreover, the value of beta gives some idea on the relative volatility of a stock. Sharpe (1999)

states: “Stocks with beta greater than one are more volatile than the market and are known as aggressive stocks. In contrast, stocks with beta less than one are less volatile than the market index and are known as defensive stocks”.

There are many ways to measure a market risk of stocks but the most widely used method is the regression of market portfolio returns over a stock’s returns or by dividing the covariance between the market portfolio's returns and a stock returns over the variance of the market portfolio returns. Measuring the betas of stocks with appropriate data frequency is a critical issue for portfolio management and hedging strategies. CAPM model assumes that beta is constant through time. Later Sharpe comes up with conditional versions of CAPM that allows for changes in betas at monthly or quarterly frequencies (Lawellen and Nagel, 2006; Ferson and Havey, 1991). By following them, other researchers such as Wang (2003) and Galagedera (2007), started to investigate the time-varying dynamic beta. They introduced alternative models to CAPM that measure time-varying beta. Some studies show that the variation in beta is short-lived and it is difficult to be detected by applying lower frequency models (Patton and Varardo, 2012).

Due to the unavailability of high-frequency data and meanwhile difficulties of high-frequency econometrics, there is still a lack of empirical studies on the measurement of time-varying beta at higher frequencies i.e., 5-minute intervals. Understanding the variation in individual stocks betas at higher frequencies is a critical tool for portfolio management and risks hedging. Moreover, it is critical to comprehend the impact of the information stream on the covariance of stocks returns. Alexeev, Dungey, and Yao (2017) decompose beta into continuous beta and discontinuous beta using high-frequency data. The authors report that smaller stocks lean to have more jumps or discontinuous risk than larger stocks. And in financial crisis periods, stocks with high leverage are more vulnerable to continuous risk.

2.4 Firm-Specific News

Every noteworthy information newly released to the market is called news. The news is what drives the movements in stock prices. News that contains new sensitive information creates volatility in the market, especially when the news is

unexpected. Ross (1989) believe that the bounces in assets returns are directly linked to the information released to the market. The news that affects the stock prices can be divided into usual news and unusual news. The usual news brings changes in the stock price while unusual news generates large jumps. A possible source of unusual news can be a major macroeconomic event or a firm-specific event i.e., earnings announcements. Macroeconomic news, as well as firm-specific news, plays important role in revising investors' expectation about a stock's future performance. It provides insight into a country's or a region's economic and political conditions whereas firm-specific news provides insights about firms' current status and future direction. There are two types of firm-specific news, scheduled news such as earnings announcements and non-scheduled news such as merger and acquisition news. But quarterly earnings announcements are the news that investors regularly pay close attention to them while analyzing and building their expectation about a particular stock. Earnings announcements that contain surprises create volatility in stock returns. A number of empirical studies document volatility in stocks' returns around earnings announcements (see Pellicer and Rees, 1999; Cotter, 1997; Vieru, 2002). A study by Lee and Mykland (2008) also reports a relationship between jumps in stock prices and earnings announcements. Moreover, a recent two separate studies by Zhou and Zhu (2012) and Saleem and Yalaman (2017) document the existence of the post-earnings announcement drift anomaly in the U.S. stock market and Turkish stock market, respectively.

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Quarterly earnings announcements contain time, date, consensus, and the actual released figure for each news. If the actual released news is different from the consensus forecast, here, the investors start rebuilding their expectations and their actions are reflected in stock prices. According to Lahaye et al. (2011), the deviation from consensus forecast or news surprises create jumps in stock prices. In markets where there is no consensus forecast for quarterly earnings, researchers use good and bad news concept to determine if the earnings news is Good or Bad. A number of empirical papers such as Chambers and Penman (1984) and Landsman and Maydew (2002) report that stock prices react positively to the news with good earnings sign and negatively to the news with bad earnings sign for U.S. firms. Saleem and Yalaman (2017) witness discrete jumps in stock returns around both good and bad earnings announcements in emerging markets. The authors report that the average abnormal returns are negative for bad earnings news and positive for good earnings news.

2.5 Jumps In Stock Prices

Merton (1976) is the first to associate the jumps in stock prices to an unexpected flow of new information to the market. Jumps in assets prices are directly linked to the information flowed to the market (Ross, 1989). When the contents of

news are not forecastable, news surprises create individual and simultaneous jumps in assets prices (Dungey and Hvozdyk, 2012), specifically, when there are discontinuities in information flow (Rangel, 2011). An unexpected flow of new information to the market also creates jumps in prices series (Andersen et al., 2007a) and jumps occur shortly after the information arrivals (Lee and Mykland, 2008 and Harju and Hussain, 2011). There are two kinds of news that concern assets prices, usual news, and unusual news. The first type slowly brings changes in the stock prices while unusual news generates large jumps. A possible source of unusual news can be key macroeconomic happenings or a company-related event such as earnings announcements and cash flows anticipations. News that is rich in information brings more jumps to the stock prices (Andersen, 1996). In other words, macroeconomic news that contains more information brings more jumps to assets' prices than the macroeconomic news that contains less information. According to Bollerslev et al. (2008), jumps are noticed to have occurred three times more at the individual stocks level than at the market index and there is a strong tendency that stocks and market index jumps together around 10 am Eastern time when most of the scheduled macroeconomic news is out in the market.

Finance researchers use different models to capture news surprises reflected in jumps. According to Barndorff-Nielsen and Shephard (2004), the price process of an asset is described by a semi-martingale process where the logarithmic price process is composed of Brownian motion and jumps. The logarithmic asset prices follow the jump-diffusion model which is the differentials of drift, spot volatility, and jumps. Jumps are measured as the difference between realized volatility and bi-power variation. Not all jumps are considered statistically significant jumps unless if they pass jumps tests. With the accessibility to high-frequency data and the growing literature in econometrics in the last decade, several nonparametric jump detection models were developed for testing the presence of jumps in the price process. The most common jumps detection test statistics in literature are of Barndorff-Nielsen and Shephard (2006), Huang and Tauchen (2005), Ait-Sahalia and Jacod (2007), Andersen et al. (2007a), and Lee and Mykland (2008). However, there is no conclusive evidence about the superiority of any of the above-mentioned tests. But there are numerous studies in the literature that use Barndorff-Nielsen and Shephard

(2004) jump test statistics to identify jumps in assets prices and to investigate jumps linkage to news announcements. Chatrath et al. (2014) use Barndorff-Nielsen and Shephard (2004) jump detection test to capture intraday jumps in assets prices and identify their linkage with U.S. macroeconomic news announcements. Their findings reveal that jumps are a good proxy for news arrival and U.S. announcements are responsible for nine – fifteen percent of currency jumps. Saleem and Yalaman (2017) also use Barndorff-Nielsen and Shephard (2004) jump test statistics to identify the daily jumps around quarterly earnings announcements in emerging market stocks prices using 15-minute intervals. Their findings show that there are significant jumps on earnings announcement days. Therefore, in this dissertation, we also utilize Barndorff-Nielsen and Shephard (2004) nonparametric jump detection test statistics to separate discrete jumps from continuous volatility. Barndorff-Nielsen and Shephard (2004) nonparametric jump detection test allows us to identify intraday jumps and examine whether the variation in realized betas is driven by jumps in stock returns. Past researches show that non-synchronous trading leads to a downward bias in realized covariance (Hayashi; Yoshida, 2005 and Barndorff-Nielsen et al., 2009) and thus we may observe an increase in realized beta.

2.6 The Advantage Of Using High-Frequency Data

High-frequency data in comparison to low-frequency data are more close to actual data generated by financial markets. Indeed, high-frequency data is transmitted directly from financial markets in form of tick-by-tick prices. According to Reuter database, on average, more than 275,000 prices are transmitted per day for foreign exchange spot rates and more than 100,000 transactions per day for NASDAQ. But the prices transmitted by financial markets are irregularly spaced in time and therefore, it is difficult to handle them unless if they are regulated according to spaced time i.e., 1-second, 30-seconds, 1-minute, 5-minute, etc. Most of the studies in finance published prior to the year 2000 use low-frequency data regularly spaced due to being too costly and time-consuming to collect, store and retrieve them. Nowadays with the development of internet and online brokerage and electronically trading, accessibility to high-frequency data is becoming easy and less

costly. Most online brokers and other database websites do provide tick-by-tick data freely to interested individuals.

The advantages of utilizing high-frequency data are that this type of data facilitates and improves the estimation of liquidity risks, time-varying correlation, and price volatility. Robert Engle, the 2003 Nobel laureate was the first to discuss the importance of high-frequency data in measuring volatility and his paper, and Engle (2000) is regarded as the beginning point for a rapidly increasing in high-frequency financial econometrics. According to Liu, (2009), other researchers who use high-frequency data certify that the realized volatility is measured more accurately with intraday returns than with day to day returns. Besides, Andersen et al. (2001) report that there is valuable information in high-frequency intraday data that improves the forecasting performance of volatility models. Numerous researchers have used their efforts to develop more advanced volatility models that compile with high-frequency data (Barndorff-Nielsen and Shephard, 2002). Many of them emphasize that the realized volatility models must be free of error measurement as the sampling frequency of returns goes to infinity. Practically, the use of high-frequency data is valuable for forecasting, because it brings reductions in the uncertainty of parameters (see Hansen and Lunde, 2011).

High-frequency data also helps in measuring the impact of new information on stocks returns. The reaction of assets prices to news is short-lived and is hard to be identified on daily or other lower frequency bases (Han, 2008 and Lahaye et al., 2011). Assets adjust their prices to new information within the first few minutes following the information release (Bollerslev and Song, 2000). Therefore, it is important to use intraday data in place of day to day data in studying the responses of individual stocks betas to firm-specific news. Andersen et al. (2001b) propose, using a five-minute return horizon is as efficient as the tick-by-tick return for liquid securities to reduce the corruption of market microstructure noise.

2.7 The Contributions Throughout The Literature

There are not many studies in the literature that investigate the changes in the betas of individual stocks around firm-specific information flow, however, a handful

number of researchers study the covariance structure of returns around earnings announcements. Ball and Kothari (1991) study the cross-sectional average beta around earnings news for the period of eight years. The authors find that there is an increase of 6.7% in beta over a window of 3 days.

Likewise, Vijh (1994) and Barberis et al. (2005) investigate the changes in the covariance of returns across stocks recently included to S&P 500 index. Vijh (1994) reports a surge of 0.08 in beta during the period 1975-1989 whereas Barberis et al. (2005) report a surge of 0.15 in beta during the period of 1976-2000.

The studies on systematic risk in the literature are divided into two categories: researches that focus on time-varying betas and researches that focus on the changes in betas. Researchers such as Ferson, Kandel, and Stambaugh (1987), Harvey (1989), Jagannathan and Wang (1996), and Harvey and Siddique (1999), use weekly/daily data trying to study stocks returns and prove that CAPM beta is not constant through the time.

Ferson et al. (1987) use weekly data of ten regular stocks portfolios for years 1963-1982 to test the returns more than the Treasury bill rate. The authors developed a test of asset-pricing models that allow market beta to change over time. They find that the expected premium is time-varying, and the single-risk premium model is not rejected. Likewise, Harvey (1989) uses monthly data to propose a method to test a CAPM model that permits using of time-varying expected returns and time-varying conditional covariances. His findings show that conditional covariances change throughout the period.

Ferson and Harvey (1991) use monthly data to analyze the predictability and sensitivity of beta of the regular stocks-bond portfolio to economic variables in a multi-beta CAPM model. Their findings suggest that a rational CAPM model can explain most of the predictability. The premium related to market risk is crucial for capturing the variation of a stock portfolio.

Jagannathan and Wang (1996) believe that the static beta of CAPM cannot clarify the cross-sectional variation in average returns on stocks, therefore, they introduce a new CAPM model conditional to the sense that market risk premium changes throughout the period. The authors find that in comparison to the static

CAPM, around 30 percent of the cross-sectional variation in average returns of the CRSP index can be interpreted by the conditional CAPM.

The researches in the second category that focuses on the changes in beta using high-frequency data are Bollerslev and Zhang (2003), Barndorff-Nielsen, and Shephard (2004), and Todorov and Bollerslev (2010). Vijh (1994) is one of the earliest studies that examines the common price pressures on stock betas during 1985-1989. The author finds that S&P 500 stocks betas have increased and non-S&P 500 stocks betas have decreased over the event windows. In other words, the daily and weekly beta of stocks included to S&P 500 index experiences a significant increase (0.211) after their inclusion. Some of the increase in the beta is said to be due to a reduction in non-synchroneity of S&P 500 stocks prices and the abnormal volatility caused by trading strategies.

Bollerslev and Zhang (2003) use 7-year period data of U.S. equity trying to show that modeling beta in factor pricing models can be more precise and accurate with high-frequency stock prices. The authors report that an easy-to-apply forecast for high-frequency factor-based loadings in the three-factor Fama–French model increases the accuracy of factor representations. In comparing to traditionally employed conventional monthly rolling regression-based estimates, pricing assets through factor pricing model is more precisely predictable.

Barndorff-Nielsen and Shephard (2004) are the earliest researchers to develop an approach through which we can separate quadratic variation into its continuous and discontinuous components using high-frequency data. Moreover, the authors provide measurements for estimating the realized variation and realized bipower variation that are robust to infrequent jumps. Jumps are measured as subtraction of bi-power variation from realized volatility.

In contrast to the above-mentioned studies, Andersen, Bollerslev, Diebold, and Wu (2006a) study the constancy of beta of one-factor CAPM model. They investigate whether stocks betas assessed by their correlations with the market are not varying during the period. The authors use a 7-year intraday data of 15-minute interval returns of the Dow Jones 30 and find that the market variance increases, and the covariances of single stocks with the market surges. Since the market variance

moves together with the covariances of single stocks with the market, the market risk may not change a lot.

Bollerslev, Law, and Tauchen (2008) investigate the cojumps among stocks and market index. In other words, the authors test the association between jumps in individual stocks intra-daily returns and jumps in aggregate market index constructed from the same stocks. They find that the number of significant jumps in individual stocks intra-daily returns is different from the number of jumps in the aggregate market index. Jumps are noticed to have occurred three times more at the individual stocks level. Moreover, their findings show that there is a strong tendency that stocks and market index jump together around 10 am Eastern time when most of the scheduled macroeconomic news is announced to the market.

Todorov and Bollerslev (2010) introduce a new approach to estimate the sensitivity toward continuous and discontinuous beta through factor model using high-frequency data of 40 stocks. They find that the estimated monthly continuous and discontinuous beta with reverence to market portfolio differs significantly for some stocks in their study sample.

Barberis, Shleifer, and Wurgler (2005) use daily data to study the variation in the betas of stocks that were recently included to S&P 500 index. The authors estimate the beta of stock for the period before and after their inclusion to S&P 500 index. Their study is built on Vijh (1994) who studies the stocks inclusion to S&P 500 during the years 1975-1989. They report that stocks included to the S&P 500 index undergo a significant surge in their betas after their addition to the index. The daily beta goes up by around 0.15 to 0.20 upon their inclusion to S&P 500 index.

In another study by Ball and Kothari (1991), the behavior of risk, return and abnormal return is analyzed around quarterly earnings announcements in a context that systematic risk varies over time. The authors report that cross-sectional average beta increases by 0.07 over a window of three days surrounding earnings announcements.

Patton and Verardo (2012) estimate realized betas of single stocks around earnings announcements based on intraday data for S&P 500 over the period 1996-2006. The authors report a significant increase in the betas of individual stocks on

earnings announcements days. The betas significantly increase by 12% on earnings announcements date and then returns to their normal level 2-5 days after the announcement. In addition, the authors report that the increase in the beta of individual stocks is larger for earnings announcements with bigger positive earnings surprises. Besides, the increase in individual stocks betas is larger for stocks whose fundamentals are closely linked with the overall market fundamentals.

In the literature, there are a handful of other studies that use high-frequency data and are somehow related to our research study and we would like to mention them here. For example, Lee and Mykland (2008) study the association between jumps in individual stocks returns and firm-specific new in the U.S. equity markets. The authors introduce a new nonparametric test to capture jumps in asset prices at intraday level. Their findings show that jumps in individual stocks returns are connected with earnings announcements and the jumps in S&P 500 index is linked with overall news announcements.

Bollerslev, Li, and Todorov (2016) use high-frequency data for 985 stocks added to S&P 500 index over the years of 1993-2010. The authors study how market diffusive and jump risks are estimated in the cross-section of expected stock return. They note that the increase in returns of stocks with discontinuous betas is greater than the returns of stocks with low discontinuous betas. Moreover, the authors report that the jumps in the market seem to reflect the actual news surprises.

Saleem and Yalaman (2017) use high-frequency data to study the relationship between jumps in returns and earnings announcements for each constituent of BIST 30 index. The authors also investigate the potentiality of post-earnings drift anomaly in Borsa Istanbul. Their findings show that there is a link between jumps in individual stocks returns and their pre-schedule earnings announcements. Moreover, their findings also assure the validation of post-earnings drift anomaly in emerging markets.

Alexeev, Dungey, and Yao (2017) decompose time-varying systematic risk of each constituent of S&P 500 index into continuous beta and discontinuous beta using five-minute interval prices for the period 2003-2011. They document that small-cap stocks incline to have greater discontinuous risk than large-cap stocks. During global financial distress, stocks with high leverage are more open to continuous risk.

This study is different from the literature in the following aspects:

Firstly, this study is the first to analyze the dynamic structure of risk in an emerging market using high-frequency data. Secondly, this study analyzes the beta of every stock traded on a Borsa while the previous studies only focus on every constituent of a market index, i.e., S&P 500. Thirdly, this study addresses the areas in market risk that have not been under the focus of previous researches yet, i.e., the impact of the global financial crisis on the beta of stocks. So, we believe that this study fills the gaps in the literature of trading strategies, capital asset pricing theory, price discovery, and hedging, specifically in emerging markets.

CHAPTER THREE

METHODOLOGY

This dissertation aims to use high-frequency data to investigate the variation in day to day betas of every individual stock traded on Borsa Istanbul around earnings announcement. We use the high-frequency econometrics of risk estimation introduced by Andersen et al. (2003) and Barndorff-Nielsen and Shephard (2004) to obtain firm-level estimates of daily beta based on intraday data. Their econometrics models enable us to analyze the variations in betas around company-related information flow. In other words, it gives us the chance to examine the dynamic characteristics of betas around earnings announcements. Moreover, the methodology that we follow in this study enables us to reveal a huge range of cross-sectional diversity in the behavior of betas.

In this chapter, we introduce a learning model that connects the company-related new stream to overall market comovement. In other words, we illustrate whether traders use information from an announcing firm to modify their views on the profitability of other non-announcing firms.

3.1 Data

The sample data used in our study includes intraday prices for every stock traded on Borsa Istanbul during the period of January 2005 and December 2013. The data is obtained from Borsa Istanbul in the format of real tick prices (597,265,185 tick prices). Tick prices are then converted to every 15-minute prices (29 obs. per trading day, plus the overnight return, a total number of 33,741,036 obs.). We follow Hansen and Lunde (2006) procedure in the data cleaning process, i.e., deleting the observations related to lunch break, weekends, public holidays, and the days when Borsa Istanbul does not trade full day. The daily routine session at Istanbul stock exchange market opens at 9:15 and closes at 17:40. The lunch break is one and half hour, from 12:30 to 14:00. In order to avoid the microstructure noises biases that rise from 1-minute price intervals, we choose a 15-minute sampling frequency for our intra-daily returns. Because at 1-minute or higher frequencies, microstructure noise

affects our results due to the presence of some kind of bias which at the end leads to imprecisely estimation of variance and realized beta. One example of such biases is the non-synchronous trading effect that leads to downward bias in the covariance of individual stock returns and market returns. This type of bias also known as the *"Epps effect"* is due to which the covariance of individual stock returns and market returns goes down to zero Patton and Verardo (2012). The easiest way to evade this type of bias is to use returns sampled at a lower frequency such as 15-minutes or 30-minutes. But, this solution doesn't come without a price, we may lose a number of observations that may include important information. Todorov and Bollerslev (2010) have found a way to get rid of this issue, so we follow their approach in this study. We also follow Bollerslev et al. (2008) approach to computing our market portfolio return.

Our quarterly earnings announcements are consisting of 9,273 firm-announcements obtained from Public Disclosure Platform database website "*www.kap.org.tr*". We use earnings announcement dates for which a timestamp is available, to be able to identify the announcements days more precisely. On average, we have 19 announcements per firm. Quarterly earnings that are announced on weekends are re-labeled as next following trading day's date to reflect the reality that stocks response to such news on the next trading day only. In other words, the event date "*day 0*" in our event window is the day in which traders show a reaction to the earnings announcements on Borsa Istanbul.

3.2 Estimation Of Changes In Beta Around News Releases

We follow Andersen et al. (2003) and Barndorff-Nielsen and Shephard (2004) econometrics to obtain firm-level estimates of day to day betas using high-frequency data. Their methods enable us to investigate the variations in beta that happens around firm-specific information flow. In other words, it gives us the chance to examine the dynamic behavior of individual stocks betas, which was previously assumed to be static over time.

a) Theoretical Structure: Stochastic Return Model

The continuous-time stochastic model of Merton (1971), which expresses the logarithmic price of stocks is used in the pricing of stocks movements.

$$dp(t) = \mu(t)dt + \sigma(t)dw(t) \quad (1)$$

where $\mu(t)$ is the drift, $\sigma(t)$ is the spot volatility, and w(t) is the Brownian motion. According to past empirical researches, a stock price is consisting of continuous and discontinuous components. Merton (1976) revised the continuous-stochastic price model by adding a discontinuous (jump) component and proposed the following model.

$$dp(t) = \mu(t)dt + \sigma(t)dw(t) + K(t)dq(t) \quad (2)$$

where $K(t)$ is the size of jumps with the mean $\mu(t)$ and standard deviations $\sigma(t)$. In this equation, it is assumed that jumps size $K(t)$ is iid and independent of other two random elements $W(t)$ and $q(t)$.

b) Static Beta Calculation: Capital Asset Pricing Model (CAPM)

Beta, which shows sensitivity of stocks to general market movements was first seen in the CAPM model of Sharpe (1963) and Lintner (1965). In accord with CAPM model, the required rate of return for an asset is calculated as follows:

$$r_i = r_f + \beta_i(r_m - r_f) \quad (3)$$

where r_i is the required rate of return of i^{th} stocks, r_f is the risk-free rate, β_i is the betas of i^{th} stocks, r_m is the market rate of return. The static beta coefficient β_i of a particular stock is computed as the ratio of covariance between stock return and market return to the variance of the market return.

$$\beta_i = \frac{\mathrm{cov}(r_m, r_i)}{\mathrm{var}(r_m)} \quad (4)$$

c) Dynamic Beta Calculation: Realized Beta

Andersen et al. (2003) with Barndorff-Nielsen and Shephard (2002) have developed high-frequency based empirical measurements to estimate volatility. Volatility is defined as realized volatility expressed in the sum of the squares of day-to-day returns. The realized beta is measured as realized covariance between the market and stocks divided over the market's realized volatility (Andersen et al., 2006). Through following their approach, the intraday return is calculated as followings:

$$r_{jt} = \log p\left(\mathrm{t} - 1 + \frac{\mathrm{j}}{\mathrm{J}}\right) - \log p\left(\mathrm{t} - 1 + \frac{\mathrm{j} - 1}{\mathrm{J}}\right) - \quad (5)$$

In the above equation, *J* is an intraday interval price and *M* sampling frequency is the number of the sample at time t. j=1,2,3,…,J. Borsa Istanbul normally operates from 9.15 to 17.40. therefore, for a 15-minute interval, we will have 29 observations per day. The overnight return of an asset for the period *T* and *T+1* is the difference between the logarithmic opening price at t+1 and the logarithmic closing price at *t*.

$$r_t^{ON} = \log\ p°(\mathrm{t} + 1) - \log\ p°(\mathrm{t}) \quad (6)$$

RV is measured as a total sum of intraday squared returns.

$$RV_{mt} = \sum_{j=1}^{J} r_{mjt}^2 \quad (7)$$

And when we include the overnight return of an asset to realized variance, we get the following equation:

$$RV_{mt} = \sum_{j=1}^{J} r_{mjt}^2 + (r_t^{ON})^2 \quad (8)$$

The realized covariance ($RCOV_{imt}$) between a stock's returns of and market portfolio returns is measured as follows:

$$RCOV_{mt} = \sum_{j=1}^{J} r_{ijt}\, r_{mjt} \tag{9}$$

$$\hat{\beta}_{it} = \frac{RCOV_{imt}}{RV_{mt}} \tag{10}$$

For this study, we need to estimate a total number of 1,163,484 daily realize betas for 513 stocks (2268 beta/stock), otherwise, with CAPM theory assumptions, we would have estimated 513 betas only.

3.3 Market Microstructure Noise and Optimal Sampling Frequency

Several studies in the literature focus on the development of optimal frequency models that minimizes the presence and effect of market microstructure noise on high-frequency data (Ait-Sahalia et al., 2005). However, many of these models based on intraday data encounter with the deviation problems as the sampling frequency increases (Oomen, 2002; Bai et al., 2004). The reason behind this deviation is the discontinuity of prices and the impact of the market microstructure such as asynchronous transactions. While decreasing the data frequency leads to loss of information, the increase of the data frequency causes problems related to the market microstructure affecting its variance. By following the existing recommendations in the literature, in this study, we plan to use 15-minute frequency in order to reduce the effects of market microstructure noise.

3.4 Panel Estimation Method

In order to detect whether the betas of individual stocks react to earnings announcements, we follow the existing literature by using panel estimation model as in (Petersen, 2009; Patton and Verrardo, 2012). In this study, we perform panel regression for an event window of 81 days (announcement day ± 40 days) instead of the 21-day event window as follows.

$$R\beta_{it} = \delta_{-40} I_{i,t-40} + \cdots + \delta_0 I_{i,t} + \cdots + \delta_{40} I_{i,t+40} + \hat{\beta}_{i_1} D_{1t} + \hat{\beta}_{2t} D_{2t} + \cdots + \hat{\beta}_{i,41} D_{41,t} + \varepsilon_{it} \quad (11)$$

where $R\beta_{it}$ are our daily realized beta for stock *i* on day *t*, and $I_{i,t}$ are our dummy variables. $I_{i,t}$ = 1 if day *t* is an earnings announcement day for stock *i* or $I_{i,t}$= 0 otherwise. In order to capture the changes and the differences in beta across stocks over our sample period, we add firm-year fixed effects to our regression model. The daily betas are regressed on dummy variables for every 81 days surrounding event days. Event "day 0" represents the date of the quarterly earnings announcement. t-statistics are estimated from standard errors which are robust to heteroscedasticity and to arbitrary intraday correlation.

In Chapter 3, we present the robustness checks for our findings. We perform robustness tests by adding control variables to our main regression. We use the same level of high-frequency data to compute our realized beta estimates. We let our stocks returns to be clustered on any time interval and to be robust to heteroskedasticity and arbitrary within-cluster correlation. We use 15-minute interval prices of 513 different stocks for the sample period of 9 years, from 2005-2013.

We can capture the variation in realized beta during earnings announcements by analyzing the coefficients of indicator variables, $\delta_j, j = -40. -39, \ldots, 40$. The average beta beyond our specified window is detected by the firm-year fixed effects and the δ_j parameters capture the divergence of beta from its normal level on every announcement date. The estimated t-statistic for every δ_j coefficients can be used to determine if a change in beta is statistically significant or not.

3.5 Analysis Of The Behavior Of Beta Around Earnings Announcements

Earnings announcements that contain surprises create volatility in stock returns. Quarterly earnings announcements contain the time, date, consensus, and actual released figure for each news. If the actual released news is different from consensus forecast, here, investors start rebuilding their expectations and their

actions are reflected in stock prices. According to Dungey and Hvozdyk, (2012), the deviation from consensus forecast or news surprises create jumps in stock prices. A study by Lee and Mykland (2008) also reports a relationship between jumps in stock prices and earnings announcements. Additionally, two recent studies by Zhou and Zhu (2012) and Saleem and Yalaman (2017) document the existence of the post-earnings announcement drift anomaly in the U.S. stock market and Istanbul stock market.

Vijh (1994) reports a surge of 0.08 on average in beta during the period 1975-1989 while Barberis et al. (2005) report a surge of 0.15 in beta during the period of 1976-2000. Ball and Kothari (1991) find that beta increases on average 0.067 over a 3-day window around earnings announcements for the period 1980-1988. Patton and Verardo (2012) estimate individual stocks betas around earnings announcements based on intraday prices for S&P 500 over the period 1996-2006. The authors report that individual stocks betas significantly increase by 12% on quarterly earnings announcements and revert to their average level 2-5 days after the earnings announcement.

In this study, in order to detect whether the betas of individual stocks react to earnings announcements, we follow Petersen (2009) and Patton and Verrardo (2012) by using panel estimation model. We perform panel regression for an event window of 81-day event window (announcement day ± 40 days) instead of the 21-day event window used by Patton and Verrardo (2012). According to our pilot study, it is not an easy task to capture the reaction of beta to earnings announcements due to the noise surrounding the earnings announcements.

3.5.1 Detecting The Duration Takes Beta To Revert To Its Normal Level After Showing Reaction to Earnings Announcement

In order to capture a clear picture of the reaction of beta to earnings announcements in an emerging market, it is best to use an event-window with a length of 81 days, 40 days before the earnings announcement 40 days after the earnings announcement. In our pilot study, we had used 41 days and 21 days event-

window to capture the reaction of beta to earnings announcements but graphically, we couldn't capture any precise picture.

A total number of 81 dummy variables is designed for a window of 81 days (40 days before the earnings announcement date and 40 days after the earnings announcement date) to be used in our previously mentioned panel regression model. i.e., $I_{i,t-40}.I_{i,t-39},...,I_{i,t},Ii_{,t+1},...,I_{i,t+40}$. These dummies are expected to capture the changes in betas around the earnings announcements. With the help of the dummy variables, we will be able to detect the duration that takes beta to revert to its average level after the earnings announcements.

3.5.2 Determination Of The Sign Of Earnings News

Like in developed markets, there are no expert estimates for quarterly earnings of companies in emerging markets that can be obtained readily. In markets where there is no consensus forecast for quarterly earnings, researchers use good and bad earnings news concept to determine if a earnings news is "good" or "bad". Several empirical studies state that U.S. stocks react positively to good earnings sign and negatively to the bad news (Griffin, 1976; Landsman and Maydew, 2002). Saleem and Yalaman (2017) witness discrete jumps in stock price around earnings news with both good and bad earnings sign in an emerging market. Moreover, the authors report that the abnormal returns are negative for earnings news with a bad earnings sign and positive for earnings news with a good earning sign.

In a study by Patton and Verardo (2012) on the behavior of betas of each constituent of S&P 500 around earnings announcements, they report that betas increase greater with larger positive and negative earnings surprises around earnings announcements. Therefore, in this study, we aim to analyze the changes in the behavior of betas with respect to signs of earnings announcements in an emerging market and compare our results with the studies from developed markets. We follow Iqbal and Farooqi (2011) methodology to divide earnings news into good earnings news and bad earnings news. The "*News with good earnings sign*" is defined as actual earnings> 10% of median earnings and the "*News with bad earnings sign*" is

defined as actual earnings < 10% of median earnings. The median of earnings is calculated from previous quarterly earnings of individual firms.

Good Earnings News = Actual Earning > 10% of Median Earning

Bad Earnings News = Actual Earning <10% of Median Earning

Stable News = Actual Gain ± 10% of Median Earning

3.5.3 Analysis Of The Behavior Of Beta: By Turmoil Periods

It is well known among economists that the financial crisis affects financial markets and thus leaves an impact on investors and their decision makings. According to a recent study by Alexeeva, Dungey, and Yaoa (2017), a lot of stocks faced great changes in their market risk during the period September-October 2008, the period when the Lehman Brothers collapsed and AIG got rescued. Therefore, in this study, we are going to test the behavior of beta changes around earnings announcements with respect to market conditions. We divide our sample data into three periods, pre-global financial crisis, during the global financial crisis and post-global financial crisis. Determination of the dates of the global financial crisis is a serious problem in studies related to the global financial crisis (Kaminsky and Schuler, 1999). However, following recent studies in the literature, we defined the periods (3 Jan 2005 - 16 Jul 2007) as pre-global financial crisis, (1 Aug 2007 - 30 Sept 2008) as global financial crisis period and 1 Oct 2008 - 31 Dec 2013 as post-global financial crisis (see Dungey, 2009; Yalama, 2012; Dungey and Yalama, 2012; Tasdemir and Yalama, 2014).

3.5.4 Analysis Of The Behavior Of Beta: By Firm Characteristics

It is generally accepted among financial theorists and practitioners that large-cap stocks have a heavier weight in the market portfolio than the small-cap stocks and meanwhile, large-cap stock fundamentals are further correlated with overall market fundamentals than small-cap stocks (Patton and Verardo, 2012). Small-cap stocks are considered to be riskier than large-cap stocks. Therefore, in this study, we additionally investigate the changes in the betas of stocks around earnings

announcements by the size of firms. To define large-cap stocks and small-cap stocks, We consider every constituent of BIST 30 index as large-cap stocks and every constituent of BIST KOBI SANAYI (SMEs) index as small-cap-stocks.

3.5.5 Analysis Of The Behavior Of Beta: By Dividend Payment

The value of stocks of firms that don't pay their earnings as dividends to their stockholders appreciates while the value of stocks of firms that distribute their earnings as dividends to their stockholders may not change so much. As a result, we suspect that the behavior of betas of dividend stocks and the behavior of betas of non-dividend stocks could be the same around earnings announcement. Therefore, we further investigate the behavior of systematic risk around earnings announcements. To define dividend stock and non-dividend stock, we consider each constituent of BIST Dividend Stock index as dividend stocks and the remaining rest of the stocks trading on Borsa Istanbul as non-dividend stocks.

3.5.6 Analysis Of The Behavior Of Beta: By Different Types Of Sectors

Some previous studies show that the changes in betas across individual stocks may differ from one sector stock to another one, therefore, in this study, we aim to identify if there is any heterogeneity in changes in beta across individual stocks from different sectors. We relate each stock to its related sector based on BIST sectoral indices. Thus, we include 28 different sectors. The sectors are: wholesales trades, insurance firms, electricity, retail trades, transportation, mining, real estate trusts, textile & leather, securities, tourism, weaving, clothing and leather firms,wholesale and retail trades, oil and coal derivatives, services, holds and investment firms, financial institutions, banks and private finance corporations, metal main, vehicle, production firms, manufacturing firms, electrical machines firms, food, beverage and tobacco firms, forest, paper and printing, construction and public works, IT, restaurants and hotels, and stone and land related trades.

3.6 Robustness Checks

Past researches show that non-synchronous trading leads to a downward bias in realized covariance (Hayashi and Yoshida 2005) and thus we may observe an increase in realized beta due to this issue. Moreover, the variation in realized beta could also be driven by jumps in stock returns (Patton and Verardo, 2012) therefore, we need to check for these biases in our panel regression model by performing robustness checks. Robustness checks are used to test how certain"*core*" regression coefficient estimates change when the regression specification is modified by adding or removing regressors. In this study, we apply robustness checks for the presence of non-synchronous trading affects and jumps in stock returns.

3.6.1 Non-Synchronous Trading Effects

On earnings announcements day, trades are realized in high volumes and therefore, we may observe an increase in realized beta due to the attenuation of non-synchronous trading effects. Non-synchronous trading leads to a downward bias in realized covariance on announcement days (Barndorff-Nielsen et al., 2011). However, this effect can be controlled by adding trading volume in our panel regression model to robust our findings as follow:

$$R\beta_{it} = \delta_{-40} I_{i,t-40} + \cdots + \delta_0 I_{i,t} + \cdots + \delta_{40} I_{i,t+40} + \hat{\beta}_{i_1} D_{1t} + \hat{\beta}_{2t} D_{2t} + \cdots + \hat{\beta}_{i,41} D_{41,t} + \gamma X_t + \varepsilon_{it} \quad (12)$$

3.6.2 Presence Of Jumps In Stock Returns

According to Saleem and Yalaman (2016), earnings announcements cause jumps in stock prices. Therefore, the variation in betas could be driven by jumps in stock returns (Patton and Verrardo, 2012). When there are jumps in stock returns, our normal estimated beta is considered as continuous beta. If there are jumps in stock returns, we first detect the discontinuous beta and the continuous beta separately, and then we analyze the reaction in every one of these betas. We follow Todorov and

Bollerslev (2010) in identifying jumps in stocks returns and thus estimating continuous and jump betas as follows:

Jump is a component of movements in the asset price process in which price movements are divided into continuous Brownian motion and discrete Jumps (Aït-sahalis and Jacod 2010). The logarithmic asset prices *p(t)* follow the jump-diffusion model which is defined by the below stochastic differential equation form:

$$dp_t = \mu_t dt + \sigma(t) dw_t + K_t dq_t \qquad (13)$$

where p_t refers to the continuous-time log-price process, $\mu_t$stands for the drift, w_t is the Brownian motion independent of the drift and σ_t refers to the spot volatility which is càdlàg, q_t is the counting process independent of w_t and K_t is the logarithmic size of the jump size. dq_t = 1 if there is a jump at time t, otherwise dq_t= 0.

The implied discrete-time returns are estimated with the following formula:

$$r_t = p_t - p_{t-1}, \qquad t = 1, 2, \ldots \qquad (14)$$

The continuously compounded *M* intra-daily returns for day *t* are estimated with the below formula:

$$r_{t,j} = p_{t,j} - p_{t,j-1}, \qquad t = 1,2, \ldots, T, \qquad (15)$$

where $p_{t,j}$ is the jth intraday log-price for day *t* and *T* is the number of days.

Following Barndorff-Nielsen and Shephard (2004), we measure our realized volatility (RV), bi-power variation, jump statistics and Tri-Power Quartricity with the following formulas:

Realized variance is used to estimate the quadratic variation (QV) when the sampling interval goes to zero:

$$RV_t = \sum_{j=1}^{M} r_{t,j,}^2 \xrightarrow[M\to\infty]{P} \int_{t-1}^{t} \sigma_s^2 ds + \sum_{s=qt-1}^{q_t} K_s^2, \qquad t = 1,2, \ldots, T. \qquad (16)$$

The following bi-power variation model is used to measure the volatility and jumps part separately.

$$BV_t \equiv \mu_1^{-2} \sum_{j=2}^{M} |r_{t,j}||r_{t,j-1}|, \qquad t = 1,2,\dots,T. \tag{17}$$

where $\mu_1 is\ E(|Z|^a),\ Z \sim N(0.1),\ a > 0.\ \mu_1 = \sqrt{2/\pi} \simeq 0.79788$

When the sampling frequency runs to infinity, BV_t converges to the integrated variance as follows:

$$BV_t \xrightarrow[M\to\infty]{P} \int_{t-1}^{t} \sigma_s^2 ds \qquad t = 1,2,\dots,T. \tag{18}$$

We obtain our jump component as the product of the difference between RV_t and BV_t as following:

$$RV_t - BV_t \xrightarrow[M\to\infty]{P} \sum_{s=qt-1}^{q_t} K_s^2, \qquad t = 1,2,\dots,T. \tag{19}$$

In this study, we use the ratio jump test of Barndorff-Nielsen and Shephard (2006)) with a sampling frequency of 15-minutes intervals, and critical value of (3.09). The jumps test statistic under the null hypothesis of no jump is as following:

$$J_t = \frac{\frac{RV_t - BV_t}{RV_t}}{\sqrt{\left[\left(\frac{\pi}{2}\right)^2 + \pi - 5\right]\frac{1}{M}\max\left(1, \frac{TP}{BV_t^2}\right)}} \xrightarrow{d} N(0.1), \tag{20}$$

where$\frac{RV_t - BV_t}{RV_t}$ is the jump ratio as defined by Huang and Tauchen (2005).

To test for significance of jumps, we use Tri-Power Quartricity (TP_t) as following:

$$TP_t \equiv M\mu_{\frac{4}{3}}^{-3} \left(\frac{M}{M-2}\right) \sum_{j=3}^{M} |r_{i,j}|^{4/3} |r_{i,j-1}|^{4/3} |r_{i,j-2}|^{4/3}, \qquad t = 1,\dots,T, \tag{21}$$

where $\mu_{4/3} = 2^{2/3}\Gamma\,(7/6)\,/\Gamma(1/2) \approx 0.8309.$

The RV_t of the jump components is measured by the following:

$$J_t = I(z_{TQ,r,m,t} > \Phi_\alpha . (RV_t - BV_{i,t}) \quad (22)$$

where $I(\cdot) = 1$ if its argument is true, or 0 otherwise, and Φ_α show the critical value from the standard normal distribution in the upper α quantile.

CHAPTER FOUR

EMPIRICAL RESULTS

In this study, we aim to analyze the behavior of market risk of stocks around earnings announcements using intraday prices for the period 2005-2013. We test whether the daily betas of individual stocks change around company-related news through understanding if traders use data from announcing stocks to draw out information on the aggregate economy. If this happens, it means that the covariance between the returns on announcement giving stock and other stocks in the market goes up and thus leads to a surge in the beta of earnings announcing stocks.

We use data of 513 stocks traded on Borsa Istanbul and their quarterly earnings announcements for a period of 9 years. We find that individual stocks betas increase by a statistically significant amount on earnings announcements days. According to our findings in Table 1, on average, betas increase by 0.155 (with a t-statistics of -17.26) on earnings announcements days which is consistent with results from developed markets, but the betas drop by 0.11 (with a t-statistics of -12.31) on the 11^{th} day after the earnings announcements before reverting to their normal level about 16 days after the earnings announcement. In developed markets, the betas drop immediately after the earnings announcement day before they return to their normal level about 2 to 5 days later.

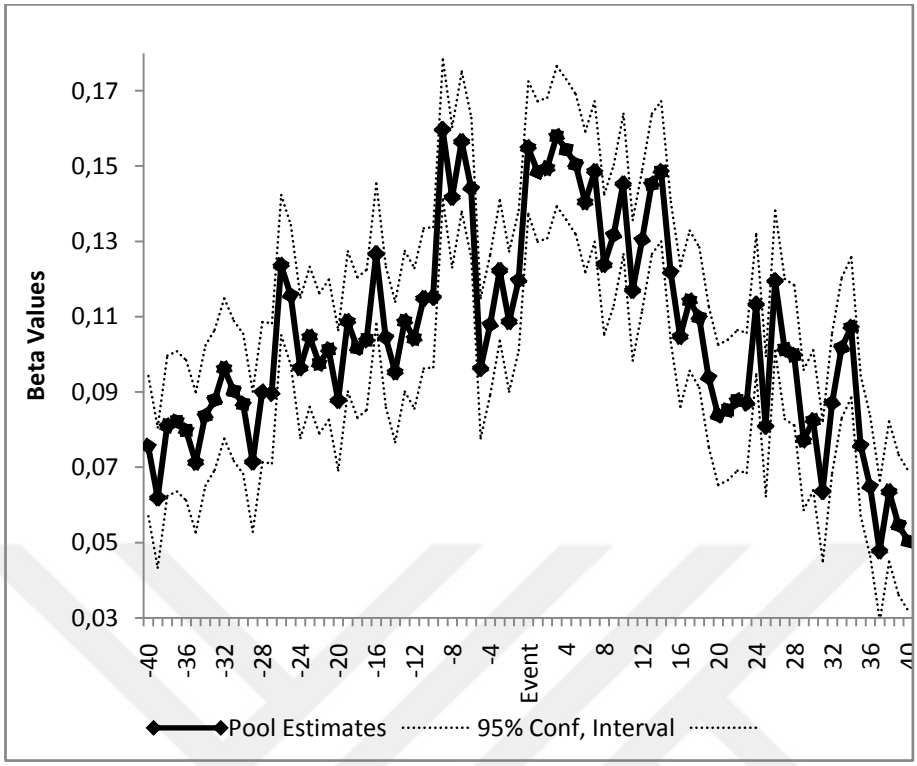
The estimated betas for 81 days surrounding quarterly earnings announcements are submitted in Table 1. The betas are calculated as the difference with reference to the average non-announcement betas. The betas are the outputs of our panel regression. The daily betas are regressed on dummy variables for every 81 days surrounding event days. Event "*day 0*" represents the date of the quarterly earnings announcement. t-statistics are estimated from standard errors which are robust to heteroscedasticity and to arbitrary intraday correlation.

Our results of the average changes in betas surrounding firm-specific news can be compared with the changes in betas of stocks newly included in S&P 500. For example, Vijh (1994) reports a surge of 0.08 in beta during the period of 1975-1989. Barberis et al. (2005) report a surge of 0.15 in beta during the period of 1976-2000.

Ball and Kothari (1991) who study the cross-sectional average change in beta around earnings announcements for the period of eight years find that there is an increase of 6.7% in beta over an event window of 3 days. But, these findings veil significant cross-sectional differences in the reaction of betas around earnings announcement that can only be revealed with the employment of high-frequency data. That is why we focus on estimating daily realized beta at higher-frequency i.e., 15-minute returns rather than daily returns.

Figure 1 illustrates the estimated changes in betas on 81 days surrounding earnings announcements as presented in Table 1. Beta estimates are shown in solid line with a square dot and 95% confidence intervals are labeled as dotted lines. As can be seen in this figure, there is a spike in beta on earnings announcements days and the values of betas start increasing 9 days before the event date. On earnings announcements days, the betas increase to 0.155 and then drop to 0.11 on the 11^{th} day after the announcements before reverting to their normal level about 16 days after the earnings announcement. This behavior of betas around earnings announcements in an emerging market is consistent with the behavior of betas in developed markets, except that in developed markets, the individual stocks betas drop immediately after the earnings announcements and it takes betas about 2 to 5 days to return to their normal level after the earnings announcement.

Figure 1. Changes In Beta Around Earnings Announcements



4.1 The Sign Of Earnings News

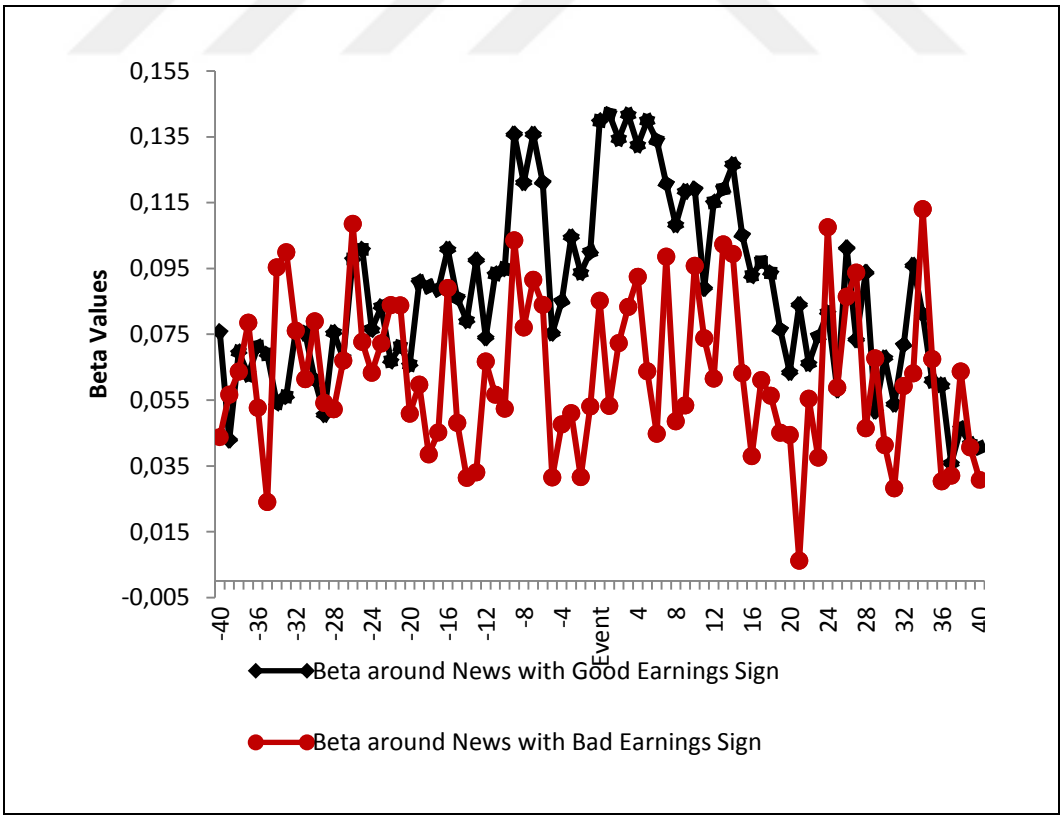
Our cross-sectional analysis begins with the studying of changes in betas around firm-specific news by investigating the connection between the spikes in betas and the sign of earnings news. The output of our panel regression shows that the betas estimates around news with good earnings sign surge greater than the news with bad earnings sign. Table 2 reports the estimated betas for 81 days surrounding earnings news with good and bad earning signs, computed as the difference with the relevance to the average non-announcement beta. Earning with good earnings sign is defined as actual earning > 10% of median earnings and earnings news with bad earnings sign is defined as actual earning< 10% of median earnings. The median of earnings is calculated from previous quarterly earnings of individual firms.

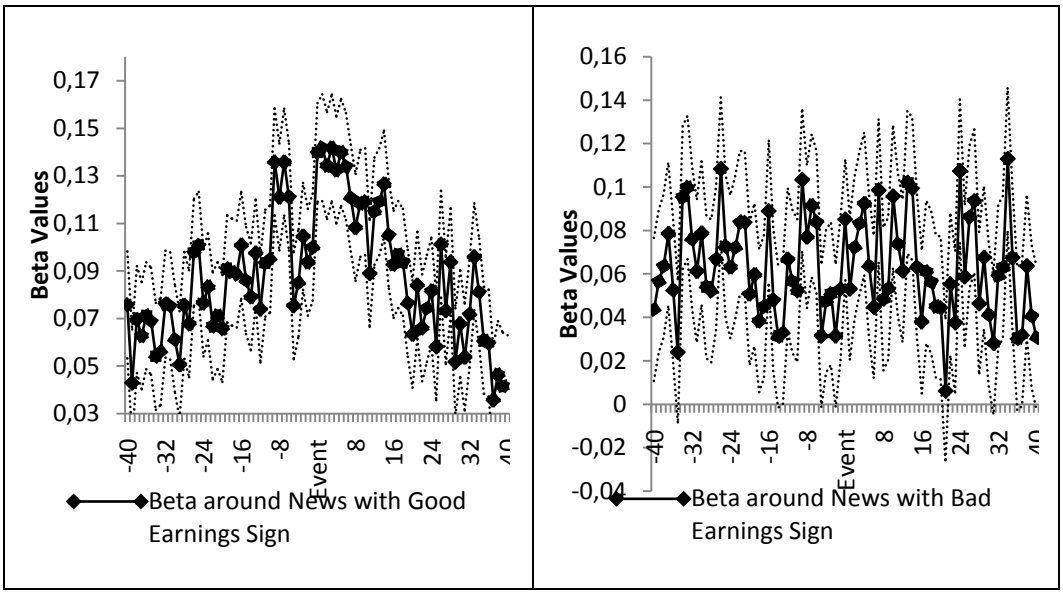
Figure 2 and Table 2 show the estimated changes in betas for stocks around earnings news with good and bad earnings sign. Our findings show that the spike in beta is bigger with the attendance of news having a good earnings sign. The deviations of beta from its non-event level are, on average, 0.08 for news with bad

earnings sign and 0.14 for news with good earnings sign (with t-statistics of 5.99 and 13.24 respectively). These results indicate that investors are learning from the updated information and adjust their outlooks about non-announcing stocks. On the other hand, news with bad earnings sign causes a modest change in the level of covariation of stocks returns in the market portfolio.

Figure 2 presents the estimated changes in betas on 81 days surrounding earnings announcements as presented in Table 2. Beta estimates are shown in solid line with a square dot and 95% confidence intervals are labeled as dotted lines. As can be seen in figure 2, there is a big spike in daily betas with good earnings sign on earnings announcements days. On earnings announcements days, betas increase by 0.14 for earnings news with good earnings sign and 0.08 for earnings news with bad earnings sign. The increase in the betas with good earnings sign is statistically significant. Our results are consistent with the results from the developed markets where betas experience a big spike around larger positive and negative surprises.

Figure 2. Changes In Beta Around Earnings Announcements: By Signs Of Earnings News





4.2 Analysis Of The Behavior Of Betas: By Firm Characteristics

Next, we analyze the behavior of the betas of stocks whose fundamentals have different degrees of connectedness with market-wide fundamentals. If traders actually use earnings announcements to adjust their outlooks about the prospects of other non-announcing stocks, and thus about the whole economy, then firms with a robust connection to overall market fundamentals provide traders with a bigger opportunity to learn. We divide our sample data into large-cap and small firm-cap stocks and we believe that large-cap stocks have a greater degree of connectedness with market-wide fundamentals than small-cap stocks. Our panel regression output indicates that on earnings announcements days, the spike in the betas of small-cap stocks is slightly greater than large-cap stocks. As with large-cap stocks, their betas increase by 0.17 on the event date and continue increasing to 0.18 in two days after the event before reverting to their long average level. The betas of small-cap stocks increase to 0.22 in three days before the event day and then decline to 0.11 within two days before the announcement. On the earnings announcements days, the betas of small-cap stocks increase by 0.177 and then revert to their normal level about five days later. However, in comparison to the value of beta of the market portfolio, betas of both types of stocks exhibit spikes on earnings announcements days. This indicates that the connectedness of stocks to market-wide fundamentals has no

impact on the behavior of betas around earnings announcements in an emerging market.

The estimated betas for 81 days surrounding quarterly earnings announcements are illustrated in Table 3. The betas are calculated as the difference with reference to the average non-announcement betas. Betas are estimated for stocks grouped as large-cap and small-cap stocks. The large-cap firms' stocks are defined as each constituent of BIST 30 index while small-cap firms' stocks are defined as each constituent of BIST KOBI SANAYI (SMEs) index.

Figure 3 shows the estimated changes in betas for large-cap and small-cap stocks surrounding earnings announcements as presented in Table 3. Beta estimates are shown in solid line with a square dot and 95% confidence intervals are labeled as dotted lines. As can be seen in figure 3, the spike in the betas of small-cap stocks is slightly greater than the spike in the betas of large-cap stocks. However, in comparison to the value of the beta of the market portfolio (0.155), the spike in the betas of both small-cap and large-cap stocks are slightly stronger. This show that the connectedness of stocks to market-wide fundamentals has no impact on the behavior of the betas around earnings announcements in an emerging market. Notably, our finding contradicts with findings of Patton and Verardo (2012) from developed markets where only the betas of large-cap stocks experience spike around earnings announcements.

Figure 3. Changes In Beta Around Earnings Announcements: By Characteristics Of Firms

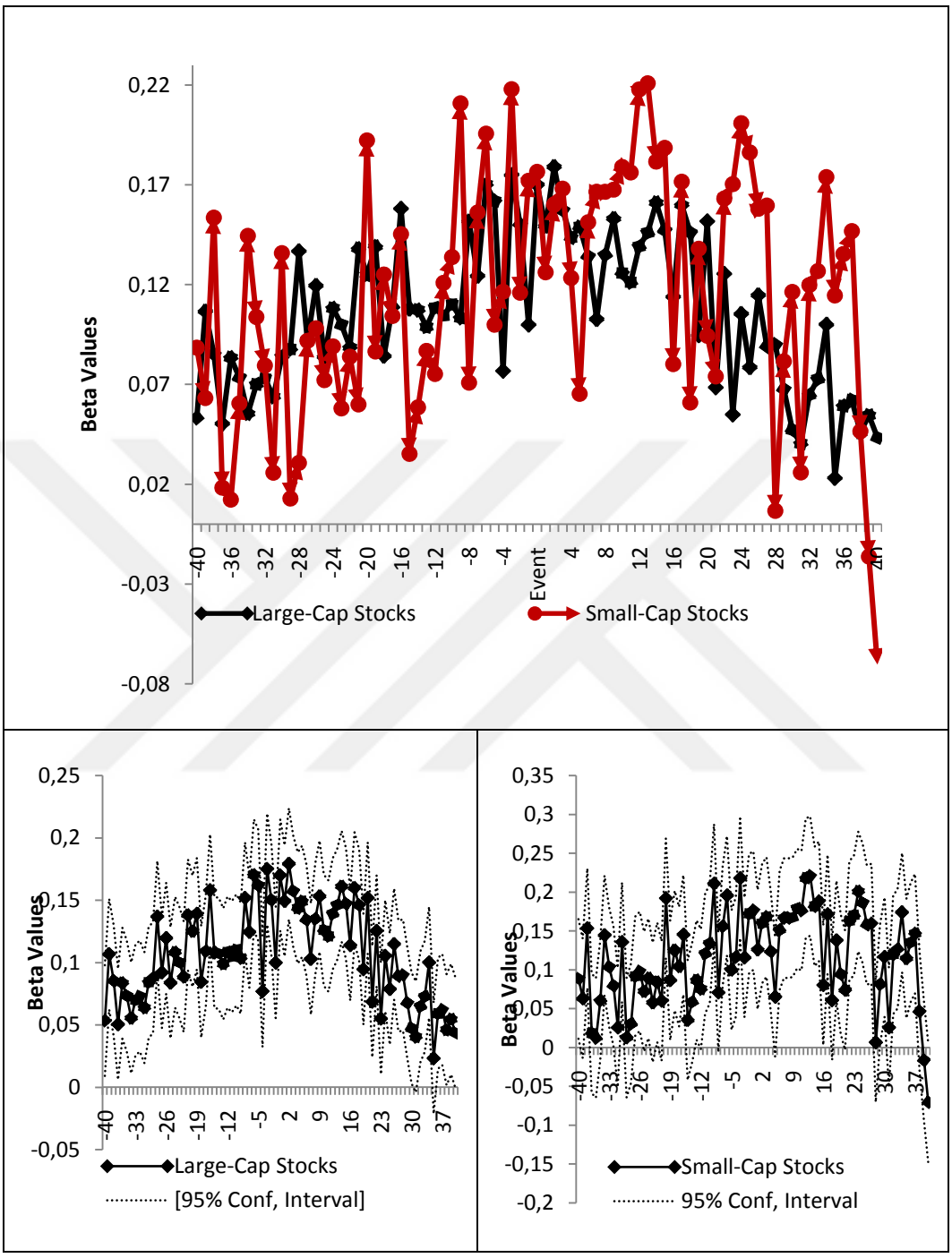
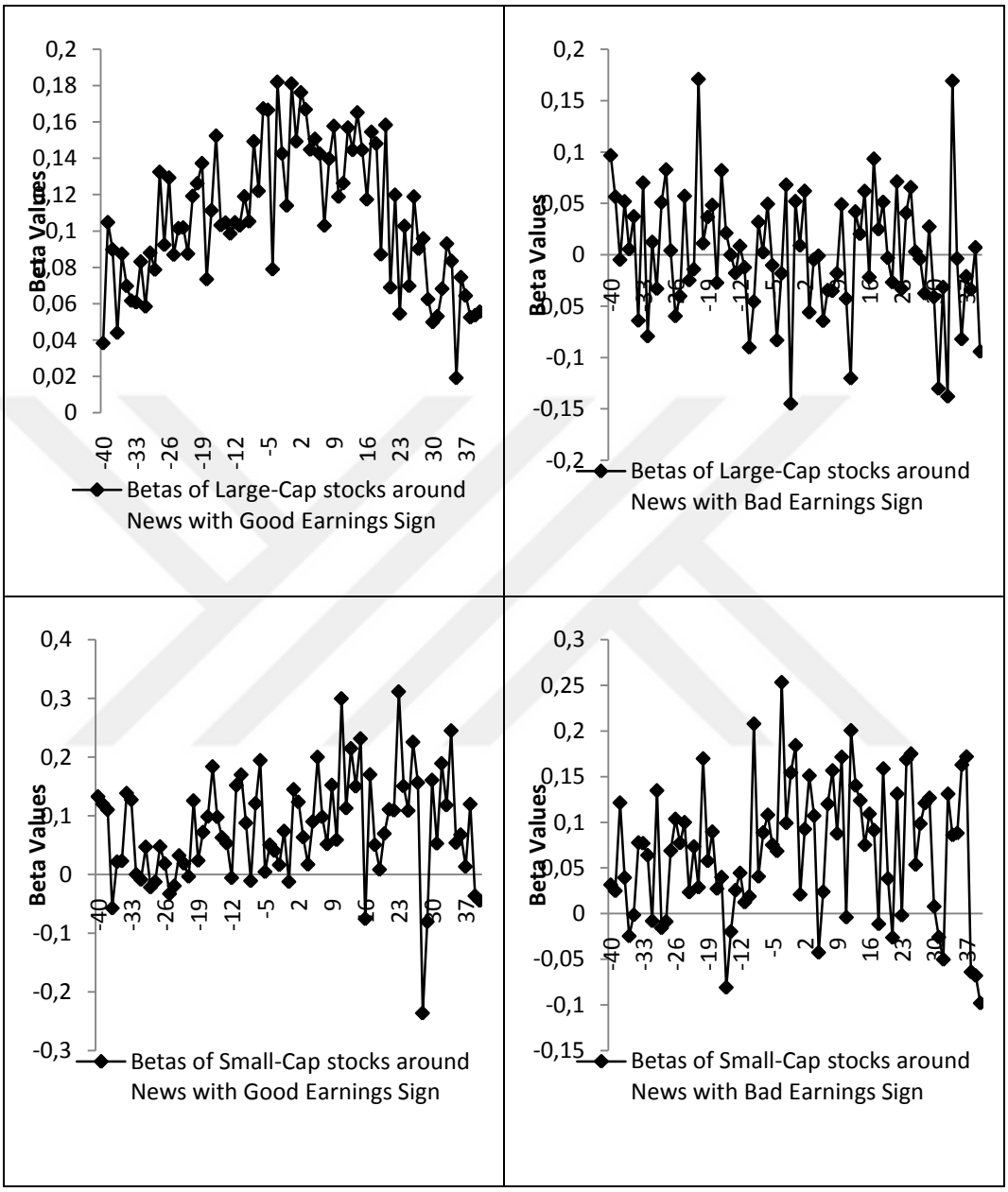


Figure 4 and Table 4 present the estimated changes in betas for large-cap and small-cap stocks around different signs of earnings news. Our findings show that the changes in betas are more solid in the attendance of news with good earnings sign for large-cap stocks. On the other hand, the changes in betas are more solid in the

presence of news with bad earnings sign. The deviations of beta from its non-event level are, on average, 0.1812 for large-cap stocks with good earnings sign and 0.1842 for small-cap stocks with bad earnings sign with bad earnings news. The increase in the betas of large-cap stocks around news with good earnings sign is statistically significant. Likewise, the increase in the beta small-cap stocks around news with bad earnings sign is statistically significant. There is no significant increase in the betas of large-cap stocks around news with bad earnings sign. Similarly, there is no noticeable increase in betas of small-cap stocks around news with good earnings sign. The deviations of beta from its non-event level are, on average, 0.1221 for large-cap stocks with bad earnings sign and 0.0521 for small-cap stocks with good earnings sign.

Figure 4 shows the changes in betas around event days for large-cap and small-cap stocks around different signs of earnings news as in Table 4. As can be seen in figure 4, there is a big spike in the betas of large stocks around news with good earnings sign. Likewise, there is a big spike in the betas of small stocks around news with bad earnings sign. On earnings announcement days, betas increase by 0.1812 for large-cap stocks with good earnings sign and 0.1842 for small-cap stocks with bad earnings sign. From these results, it can be inferred that investors are learning from the newly released positive information regarding large-cap stocks and negative information regarding small-cap stocks as they adjust their prospects about non-announcing stocks from the same category. Moreover, it can also be concluded that the connectedness of stocks to market-wide fundamentals has no impact on the behavior of the betas of large-cap stocks with bad earnings sign in an emerging market.

Figure 4. Changes In Betas Of Large-cap And Small-cap Stocks: By Signs Of Earnings News



4.3 The Behavior Of Betas In Turmoil Periods

We also examine the behavior of betas of individual stocks around earnings announcements in the period of the pre-global financial crisis, during the global financial crisis, and in the post-global financial crisis period. We divide our sample period into financial crisis and pre- and post-financial crisis periods. Interestingly, we

find that the spike in beta on earnings announcements days in the period of post-global financial crisis is greater than the spike in realized betas in the pre-global financial crisis and during the global financial crisis[1] (0.159 vs. 0.0526 and 0, respectively). The increase in the betas of individual stocks during the global financial crisis period is statistically not significant. This indicates that the betas of individual stocks do not experience any spike prior to or during the financial crisis around earnings announcements.

The estimated betas for 81 days surrounding quarterly earnings announcements are submitted in Table 5. The betas are calculated as the difference with reference to the average non-announcement betas. Betas are estimated for the pre-global financial crisis, the global financial crisis, and the post-global financial crisis periods.

Figure 5 illustrates the estimated changes in betas on 81 days surrounding earnings announcements as presented in Table 5. Beta estimates are shown in solid line with a square dot and 95% confidence intervals are labeled as dotted lines. As can be seen in figure 5, in comparison to the periods of pre-global financial crisis and global financial crisis, there is a statistically significant spike in betas on earnings announcements days in the period of the post-global financial crisis. This may indicate that the systematic risk of stocks significantly increases in non-financial crisis periods around earnings announcements.

[1]According to a study by Dimitriouet al. (2013), there is no contagion effect for most of emerging markets during the early stages of global financial crisis. The linkages appears after the collapse of Lehman Brothers.

Figure 5. Changes In Beta Around Earnings Announcements: By Turmoil Periods

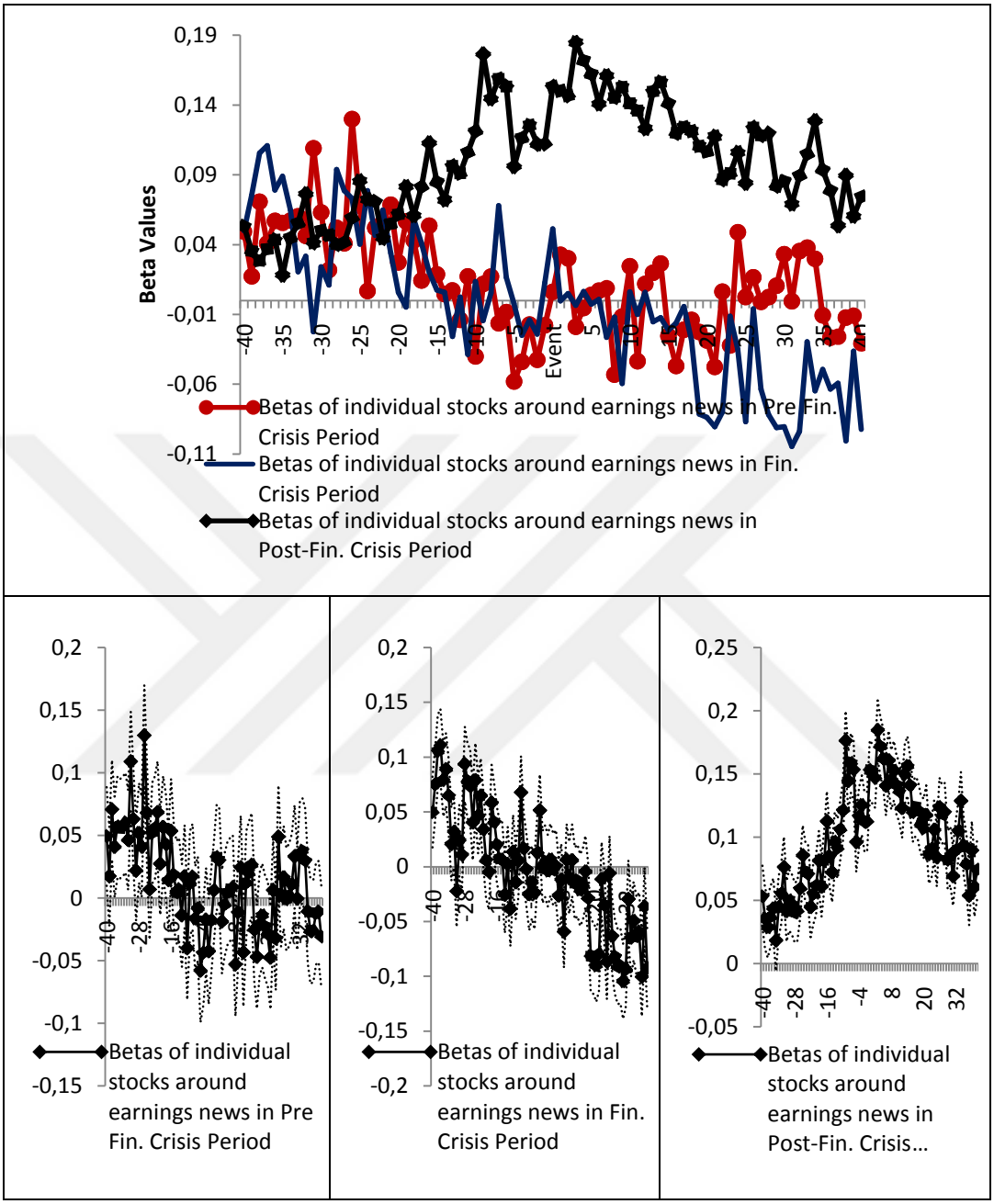


Figure 6 and Table 6 submit the estimated changes in betas for individual stocks during turmoil periods around different signs of earnings news. Our findings indicate that there is some increase in betas around earnings announcements in the attendance of news with good earnings sign. The deviation of beta from its non-event level is, on average, 0.067 for news with good earnings sign in the period of post-

financial crisis and 0.064 for news with good earnings sign during the financial crisis. But the increase in the betas for news with good earnings sign in the period of pre-financial crisis is statistically not significant. On the other hand, there is no significant change in the betas of individual stocks around news with bad earnings sign during different turmoil periods. The deviation of beta from its non-event level is, on average 0.057 for news with bad earnings sign in the period of post-financial crisis and 0.035 for news with good earnings sign during the financial crisis.

Figure 6 reports the estimated changes in betas on 81 days surrounding earnings announcements as presented in Table 6. Beta estimates are shown in solid line with a square dot and 95% confidence intervals are labeled as dotted lines. As can be seen in figure 6, there is a large spike in the betas of individual stocks with good earnings news in the period of both the financial crisis and post-financial crisis. On earnings announcements day, betas increase by 0.067 for good earnings news in the period of post-financial crisis and 0.064 for good earnings news during the financial crisis. This behavior of beta may indicate that individual stocks betas react stronger to good earnings news in any economic conditions.

Figure 6. Changes In Betas Of Individual Stocks Around Earnings Announcements In Turmoil Periods: By Signs Of Earnings News

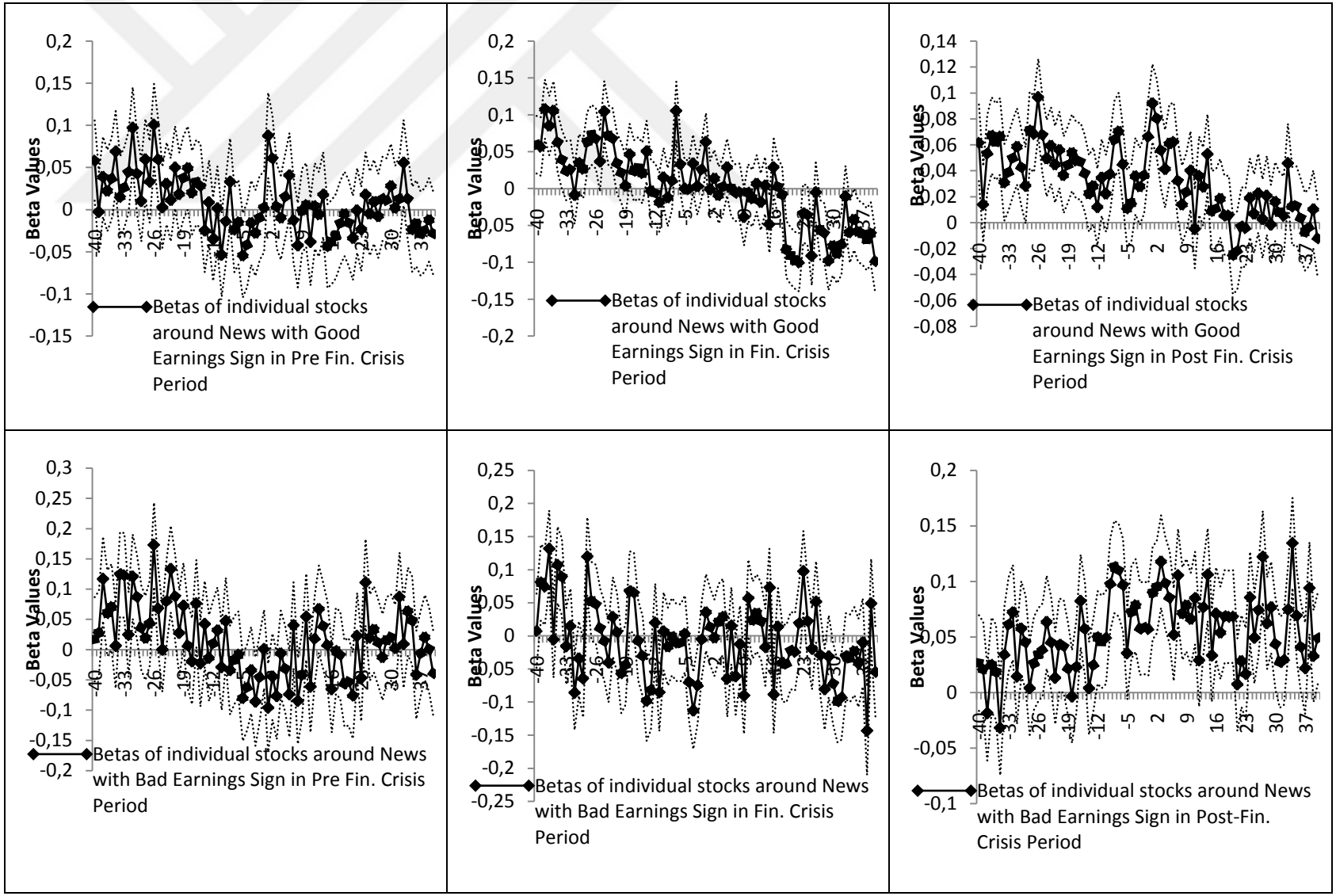


Figure 7 and Table 7 submit the estimated changes in betas for large-cap and small-cap stocks around earnings news in turmoil periods. Our findings show that the changes in betas are stronger for large-cap stocks in the period of financial crisis only. But the changes in the betas of small-cap stocks are stronger in the post-financial crisis only. The increase in betas is statistically significant. The deviation of the betas of large-cap stocks from their non-event level during the financial crisis are, on average, 0.164 on event date and then revert to 0.07 in three days later. Moreover, the deviation of the betas of large-cap stocks from their non-event level in the period of post-financial crisis are, on average, 0.07 on event date and then immediately revert to 0.05 on the following day. The deviation of the betas of small-cap stocks from their non-event level on the post-financial crisis are, on average, 0.15 on the event date and then increase to 0.185 in three days after the announcement before reverting to their normal level about twenty days later. in contrast, there is neither a significant increase in the betas of large-cap stocks nor in the betas of small-cap stocks in the periods of pre-financial crisis or during the financial crisis.

Figure 7 shows the changes in beta around event days for large-cap and small-cap stocks in turmoil periods as in Table 7. As can be seen in Figure 7, on earnings announcement day, betas of large-cap stocks increase to 0.164 on event date and then revert to 0.07 in three days later. Moreover, there is a big spike in the betas of both large-cap stocks and small-cap stocks in the post-financial crisis period. Likewise, the betas of small-cap stocks increase to 0.15 on the event date and then increase to 0.18 in three days after the announcement before reverting to their normal level in twenty days later.

Figure 7. Changes In Betas Of Large-cap And Small-cap Stocks Around Earnings Announcements In Turmoil Periods

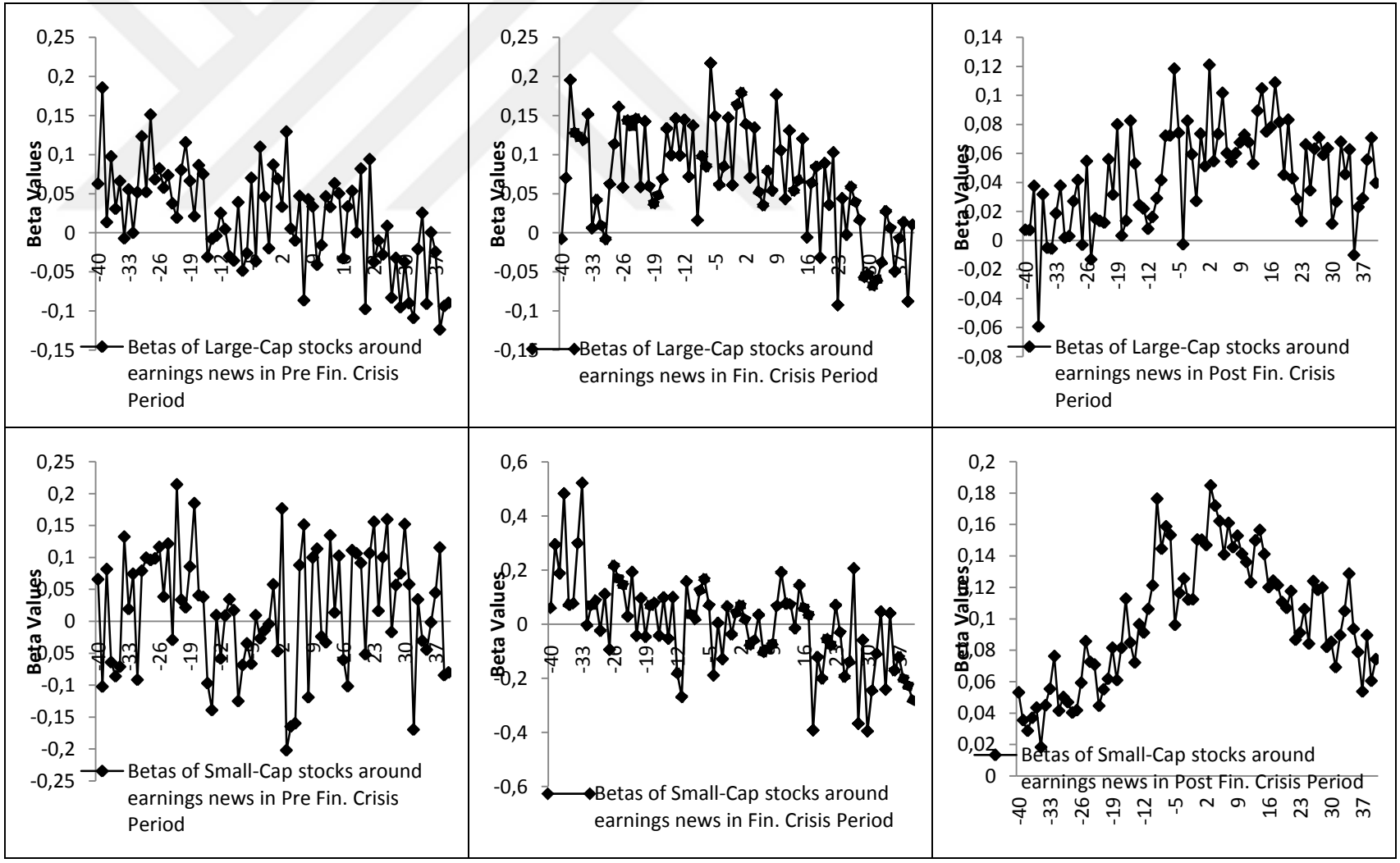


Figure 8 and Table 8 reports the estimated changes in betas for large-cap and small-cap stocks around news with good earnings sign in turmoil periods. Our findings show that the changes in betas are stronger for large-cap stocks with good earnings sign in all different economic circumstances. In the pre-financial crisis period, betas of large-cap stocks raise to 0.12 on event date and then revert to 0.025 in two days later. Likewise, during financial crisis, betas of large-cap stocks increase to 0.14 on event date and then increase to 0.18 on the following before revert to 0.01 in six day after the earnings announcement. But in the period of post-financial crisis, betas of large-cap stocks increase to 0.12 six days prior to the event date and then revert to -0.005 before increasing to 0.12 in two days after the announcement. On the other hand, the betas of small-cap increase around news with good earnings sign in the period of post-financial crisis only.

Figure 8 and Table 8 reports the estimated changes in betas for large-cap and small-cap stocks around news with good earnings sign in turmoil periods. Our findings show that the changes in betas are stronger for large-cap stocks with good earnings sign in all different economic circumstances. In the pre-financial crisis period, betas of large-cap stocks raise to 0.12 on event date and then revert to 0.025 in two days later. Likewise, during the financial crisis, betas of large-cap stocks increase to 0.14 on event date and then increase to 0.18 on the following day before revert to 0.01 in six days after the earnings announcement. But in the period of post-financial crisis, betas of large-cap stocks increase to 0.12 six days prior to the event date and then revert to -0.005 before increasing to 0.12 in two days after the announcement. On the other hand, the betas of small-cap increase around news with good earnings sign in the period of post-financial crisis only.

Figure 8. Changes In Betas Of Large-cap And Small-cap Stocks Around News With Good Earnings Sign In Turmoil Periods

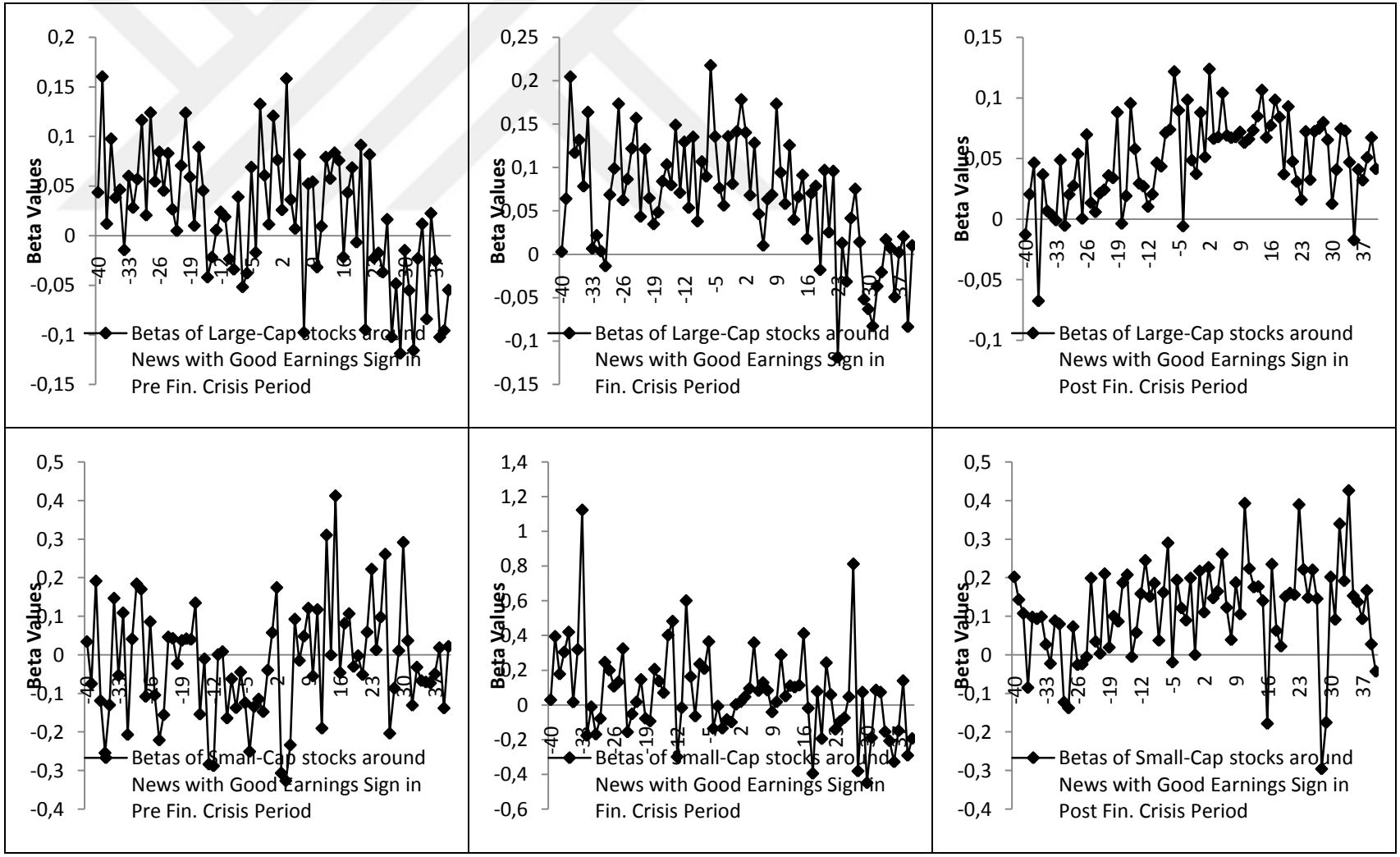
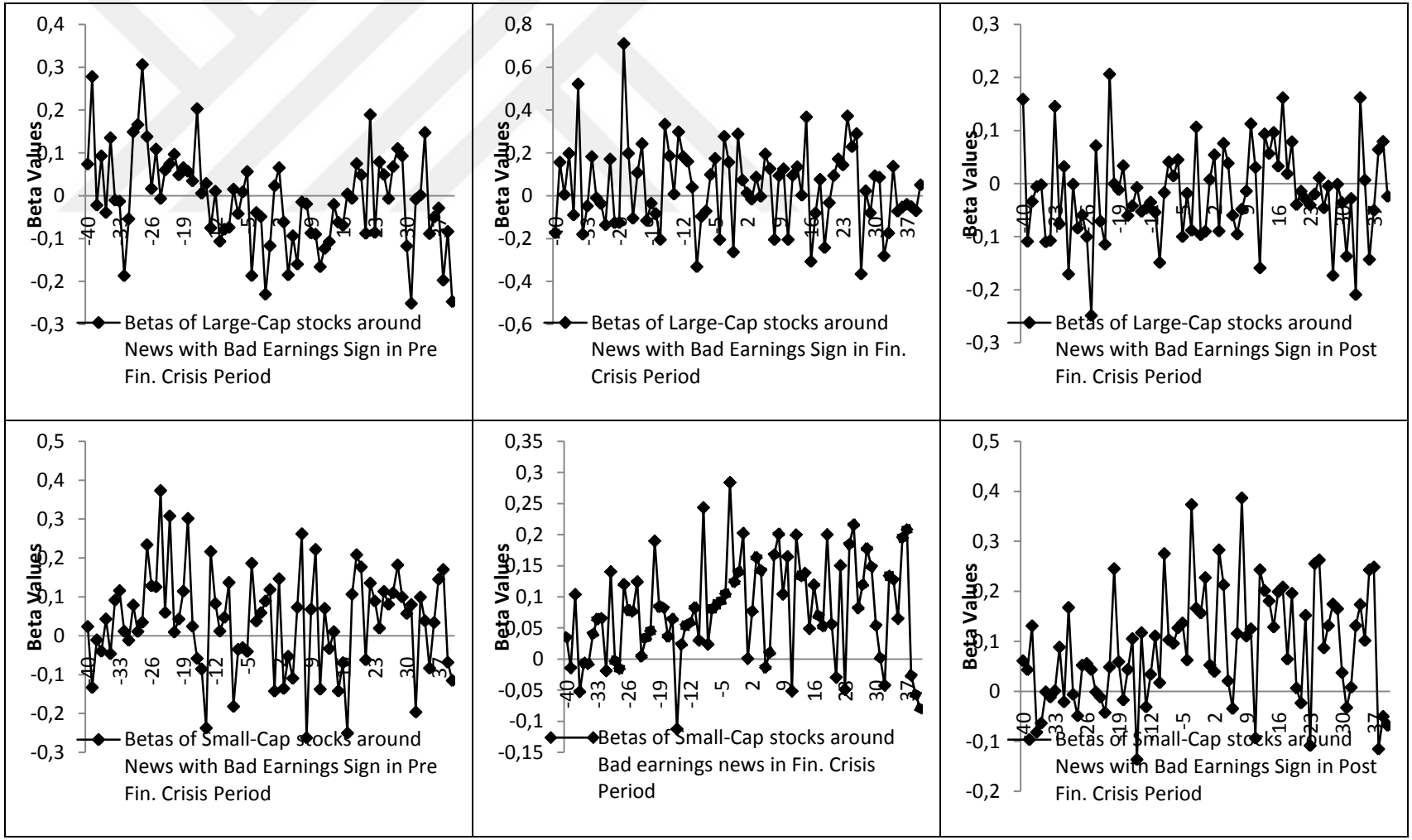


Figure 9 and Table 9 shows the estimated changes in the betas for large-cap and small-cap stocks around news with bad earnings sign in turmoil periods. Our findings show that the changes in betas are stronger for small-cap stocks with bad earnings sign in the period of financial crisis and post-financial crisis. The deviation of the betas of small-cap stocks from their non-event level is, on average, 0.37 three days before the event date and then revert to 0.05 in the day after the announcement. During the financial crisis, betas of small-cap stocks increase to 0.28 three days before the event date and then revert to 0 in the day after the announcement. On the other hand, there is no significant increase in the beta of large-cap stocks with bad earnings sign neither in turmoil periods nor in normal economic conditions.

Figure 9 illustrates the changes in the betas for large-cap and small-cap stocks around news with bad earnings sign in turmoil periods as in Table 9. It can be seen in figure 9 that there is a big spike in the betas of small-cap stocks with bad earnings sign in the post-financial crisis period. Around earnings announcements days, beta increases to 0.37 three days before the event date and then revert to 0.05 level about one day after the earnings announcement.

Figure 9. Changes In Betas Of Large-cap And Small-cap Stocks Around News with Bad Earnings Sign In Turmoil Periods



4.4 The Effect Of Dividend Payment On The Behavior Of Beta

We investigate the behavior of systematic risk around earnings announcements with respect to the dividend payment. Interestingly, we find that the betas of both types of stocks are increasing on earnings announcements days but the spike in the betas of non-dividend stocks are greater than the spike in the betas of dividend stocks (0.165 vs. 0.095) on earnings announcements day.

The estimated betas for 81 days surrounding quarterly earnings announcements are submitted in Table 10. The betas are calculated as the difference with reference to the average non-announcement betas. Beta is estimated for stocks grouped into dividend stocks and non-dividend stocks. Dividend stocks and non-dividend stocks are defined based on BIST Dividend index. While Dividend stocks are defined as each constituent of BIST Dividend index, non-dividend stocks are the remaining rest of the stocks trading on Borsa Istanbul and not listed on BIST Dividend index.

Figure 10 and Table 10 display the estimated changes in betas on 81 days surrounding earnings announcements. Beta estimates are shown in solid line with a square dot and 95% confidence intervals are labeled as dotted lines. As can be seen in figure 10. there are significant spikes in the betas of both dividend stocks and non-dividend stocks on the earnings announcements days but the spike in the betas of non-dividend stocks is greater than the spike in the betas of dividend stock (0.095 vs. 0.168). However, if we compare the two graphs, we can say that the betas of non-dividend stocks behave more responsive to earnings announcement than the betas of dividend stocks.

The reason behind the increase in the betas of non-dividend stocks on announcement day might be due to the greater appreciation in the value of non-dividend stocks as a result of retained earnings and thus a greater increase in covariances of the returns of the announcing stock with other stocks. This leads to a higher increase in the betas of the non-dividend announcing stocks.

Figure 10. Changes In Beta Around Earnings Announcements: By Dividend Payments

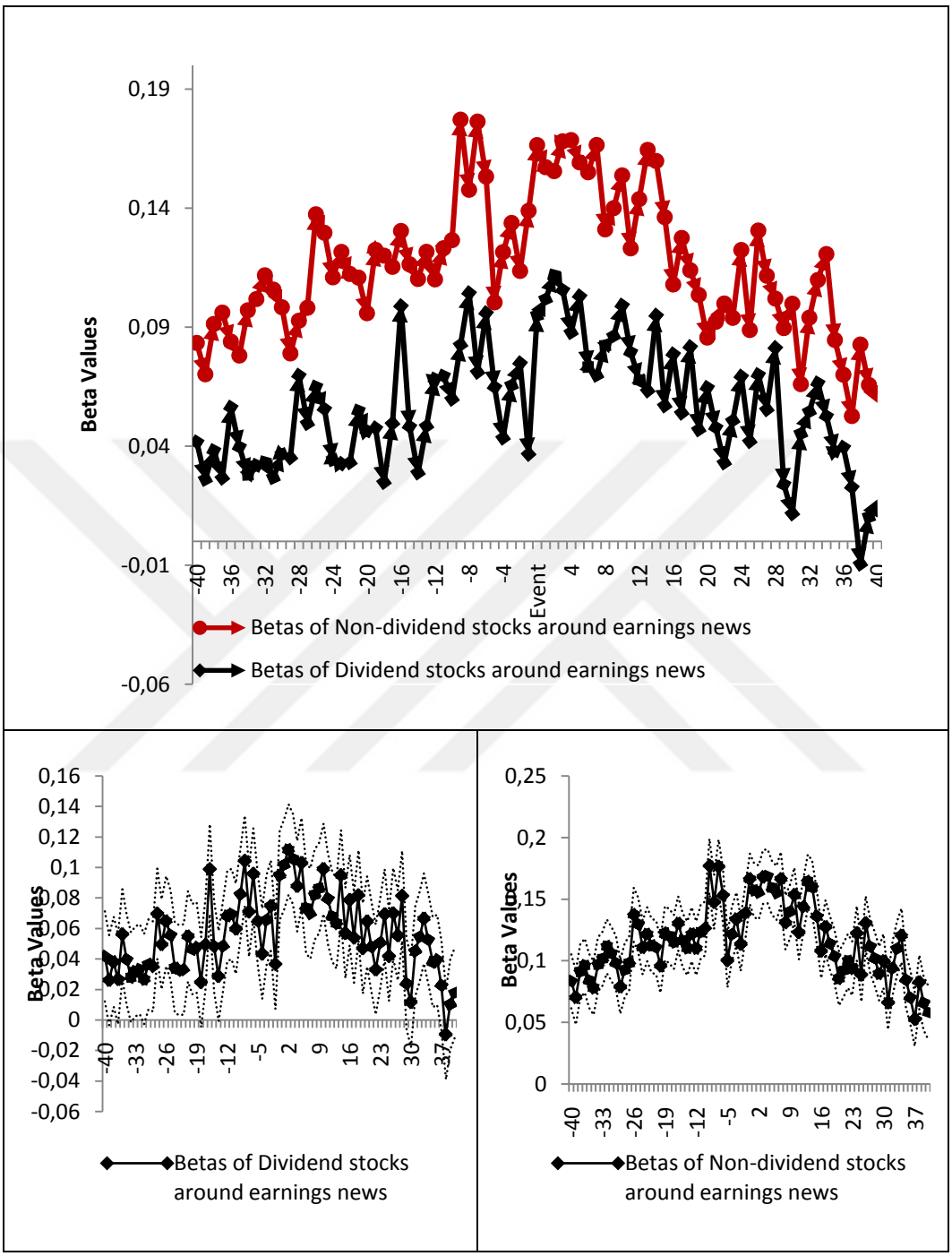


Figure 11 and Table 11 exhibit the estimated changes in betas of dividend stocks around different signs of earnings news. Our findings show that the changes in betas are stronger for dividend stocks with good earnings sign. The spike in betas of dividend stocks around news with bad earnings sign is not statistically significant.

The deviation of the betas of dividend stocks with good earnings sign from their non-event level is, on average, 0.11 on the event date and then increase to 0.124 in three days after the earnings announcements before reverting to 0.06 levels in seven days later after the earnings announcement. These statistics may indicate that betas of individual dividend stocks increase greater around news with good earnings sign only.

Figure 11 shows the changes in the betas of dividend stocks around different signs of earnings news as in Table 11. As can be seen in Figure 11, there is a big spike in the betas of dividend stocks with good earnings sign. The betas of dividend stocks experience a spike and stay up for three more days and then return to their normal level about seven days later after the earnings announcement.

Figure 11. Changes In Betas Of Dividend Stocks Around Different Signs Of Earnings News

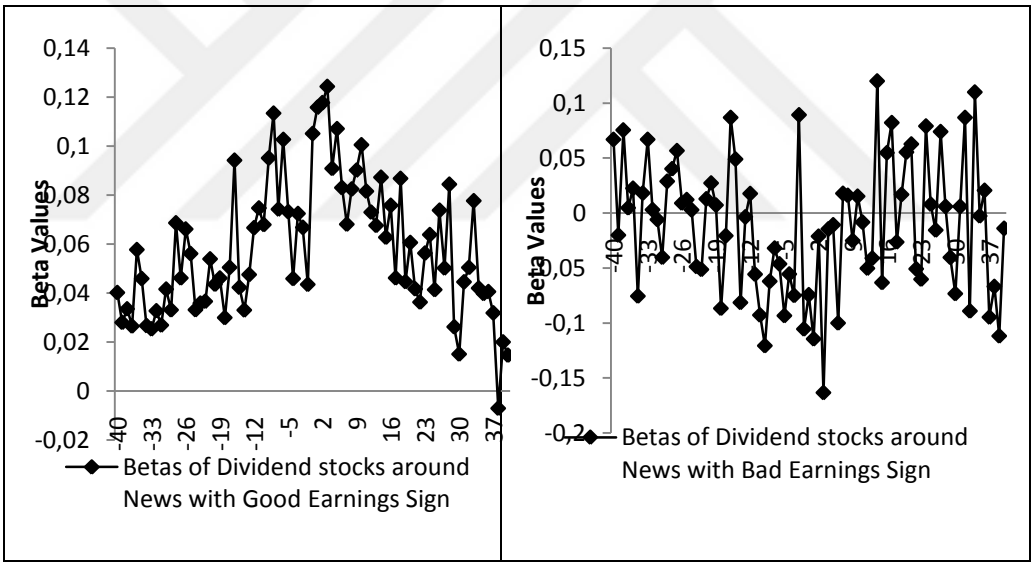


Figure 12 and Table 12 report the estimated changes in betas for dividend stocks around earnings news in normal economic circumstances and in turmoil periods. Our findings show that the changes in the betas of dividend stocks around earnings announcement increase only in the period of post-financial crisis. The deviation of the betas of dividend stocks from their non-event level is, on average, 0.11 on the event date and increase to 0.14 in five days after the earnings announcements before reverting to 0.06 level in seventeen days later. On the other

hand, statistically, no significant increase has been detected in the betas of dividend stocks in the period of pre-financial crisis or during the financial crisis.

Figure 12 exhibits the changes in betas around event dates for dividend stocks in normal economic circumstances and in turmoil periods as in Table 12. As can be seen in Figure 12, there is a huge spike in the betas of dividend stocks in the period of post-financial crisis only. The betas of dividend experience spike on earnings announcements and stay higher until five days after the announcement before reverting to their normal level about seventeen days later. It can be concluded that the betas of dividend stocks show reactions to the earnings news in the period of post-financial crisis only.

Figure 12. Changes In Betas Of Dividend Stocks Around Earnings Announcements In Turmoil Periods

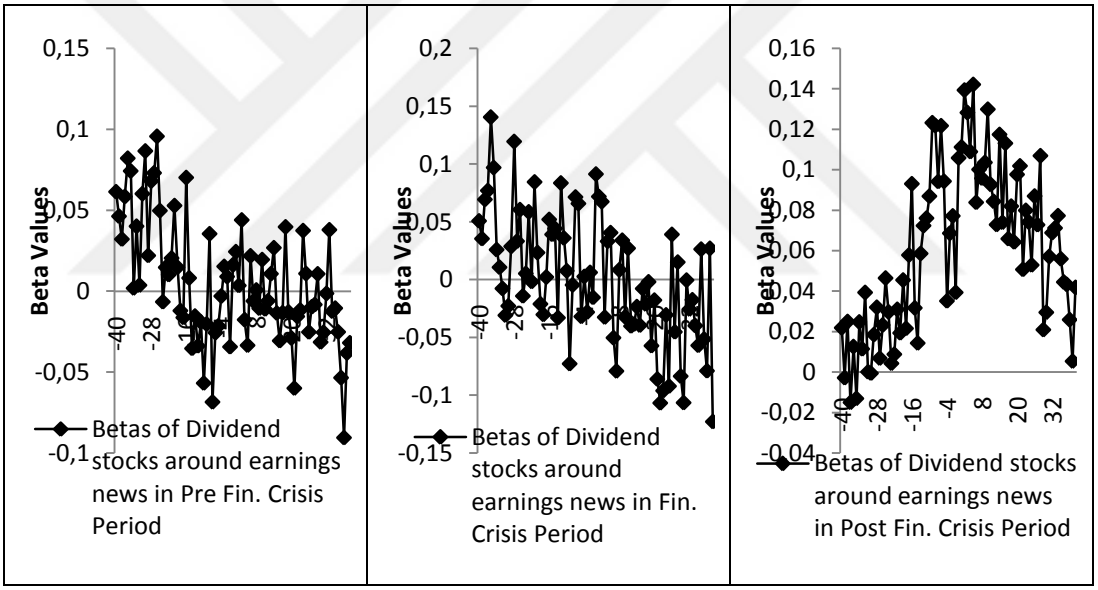


Figure 13 and Table 13 presents the estimated changes in betas for dividend stocks around different signs of earnings news in normal economic circumstances and in turmoil periods. Our findings show that the changes in the betas of dividend stocks increase around good earnings sign in the period of post-financial crisis only. The deviation of the betas of dividend stocks from their non-event level is, on average, 0.11 on the event date and increase to 0.15 in two days after the earnings announcements before reverting to 0.06 level in seventeen days later. On the other hand, statistically, no significant increase has been detected in the betas of dividend

with good earnings sign or bad earnings sign in neither in the period of pre-financial crisis nor during the financial crisis.

Figure 13 illustrates the changes in the betas of dividend stocks around different signs of earnings news in normal economic circumstances and in turmoil periods. As can be seen in figure 13, there is a huge spike in the betas of dividend stocks around earnings announcements in the period of post-financial crisis only. The betas of dividend stocks experience spike on earnings announcements days and stay higher for two days after the announcement before reverting to their normal level about seventeen days later. It can be concluded that the betas of dividend stocks show reactions to good earnings news only in the period of post-financial crisis.

Figure 13. Changes In Betas Of Dividend Stocks Around Earnings Announcements In Turmoil Periods: By Signs Of Earnings News

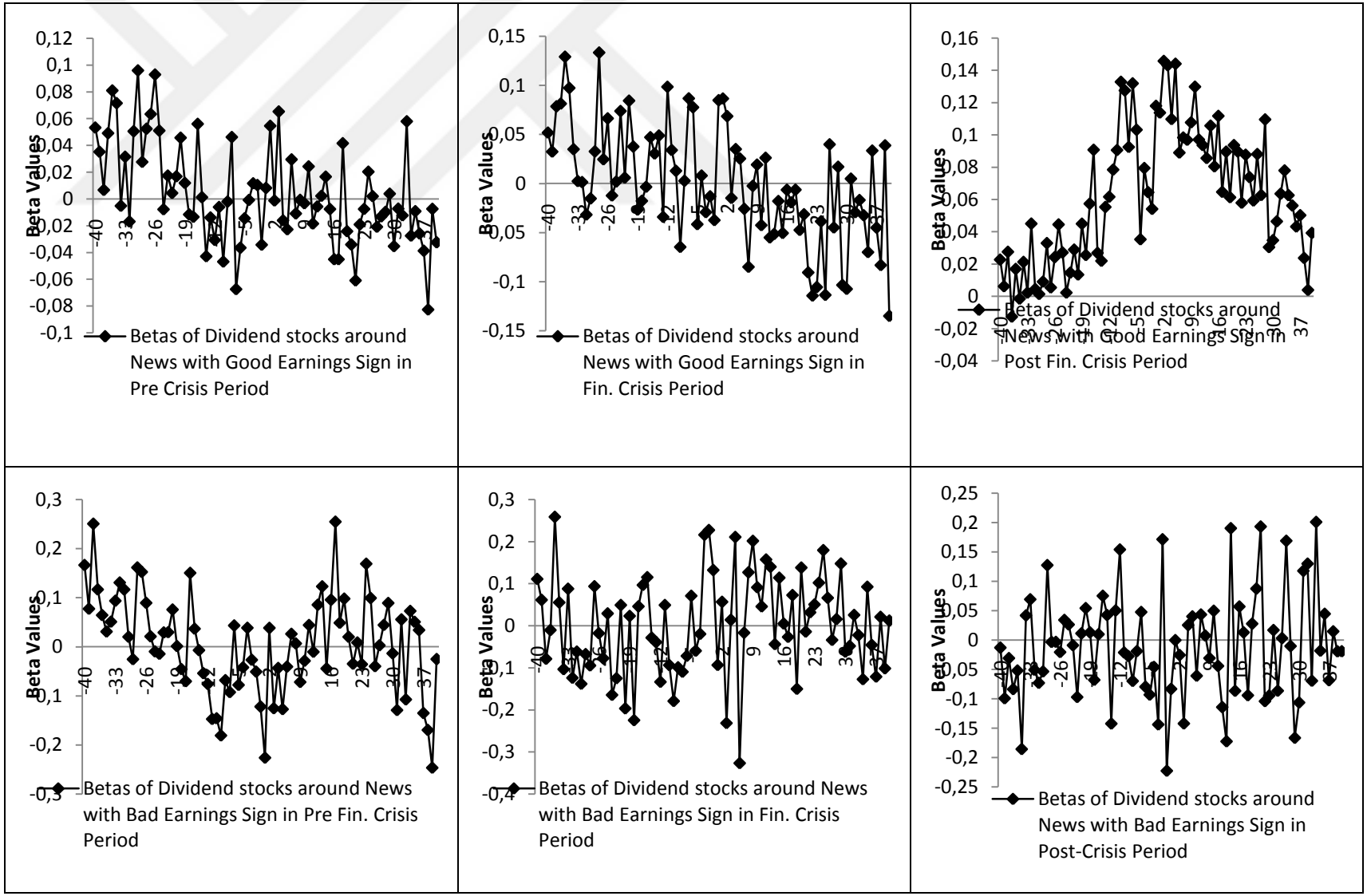


Figure 14 and Table 14 show the estimated changes in betas for large-cap dividend stocks around different signs of earnings news in turmoil periods. Our panel regression output shows that the betas of large-cap dividend stocks with good earnings sign statistically increase in all different financial circumstances. The deviation of the betas of large-cap dividend stocks with good earnings sign in the period of post-financial crisis from their non-event level is, on average, 0.11 on the event date and stay higher at 0.13 levels for two days after the earnings announcements before reverting to their normal level. Likewise, the deviation of the betas of large-cap dividend stocks with good earnings sign in the period of pre-financial crisis from their non-event level is, on average, 0.16 on the event date and stay higher at 0.18 levels for three days after the earnings announcements before suddenly dropping to zero levels. The deviation of the betas of large-cap dividend stocks with good earnings sign during-financial crisis from their non-event level is, on average, 0.30 six days before the earnings announcement and then drop to 0.03 in three days before the event date and then raise to 0.18 in two days before the earnings announcement.

But the betas of large-cap dividend stocks with bad earnings sign only increase in the post-financial crisis period. The deviation of the betas of large-cap dividend stocks with bad earnings sign in the period of post-financial crisis from their non-event level is, on average, 0.6 two days before the event date and then suddenly drop to -0.15 on the day following the earnings announcement. On the other hand, there is statistically no significant increase in the betas of large-cap dividend stocks around news with bad earnings sign in the period of pre-financial crisis or during the financial crisis.

Figure 14 displays the changes in betas around event days for large-cap dividend stocks with different signs of earnings news in turmoil periods as in Table 14. As can be seen in Figure 14, there is a large spike in the betas of large-cap dividend stocks with good earnings sign in all financial circumstances. In turmoil periods, the betas of large-cap dividend stocks experience a spike around news with good earnings sign. But, the betas of large-cap dividend stocks with bad earnings sign increase in the period of post-financial crisis only.

Figure 14. Changes In Betas Of Large-cap Dividend Stocks Around Different Signs Of Earnings News In Turmoil Periods

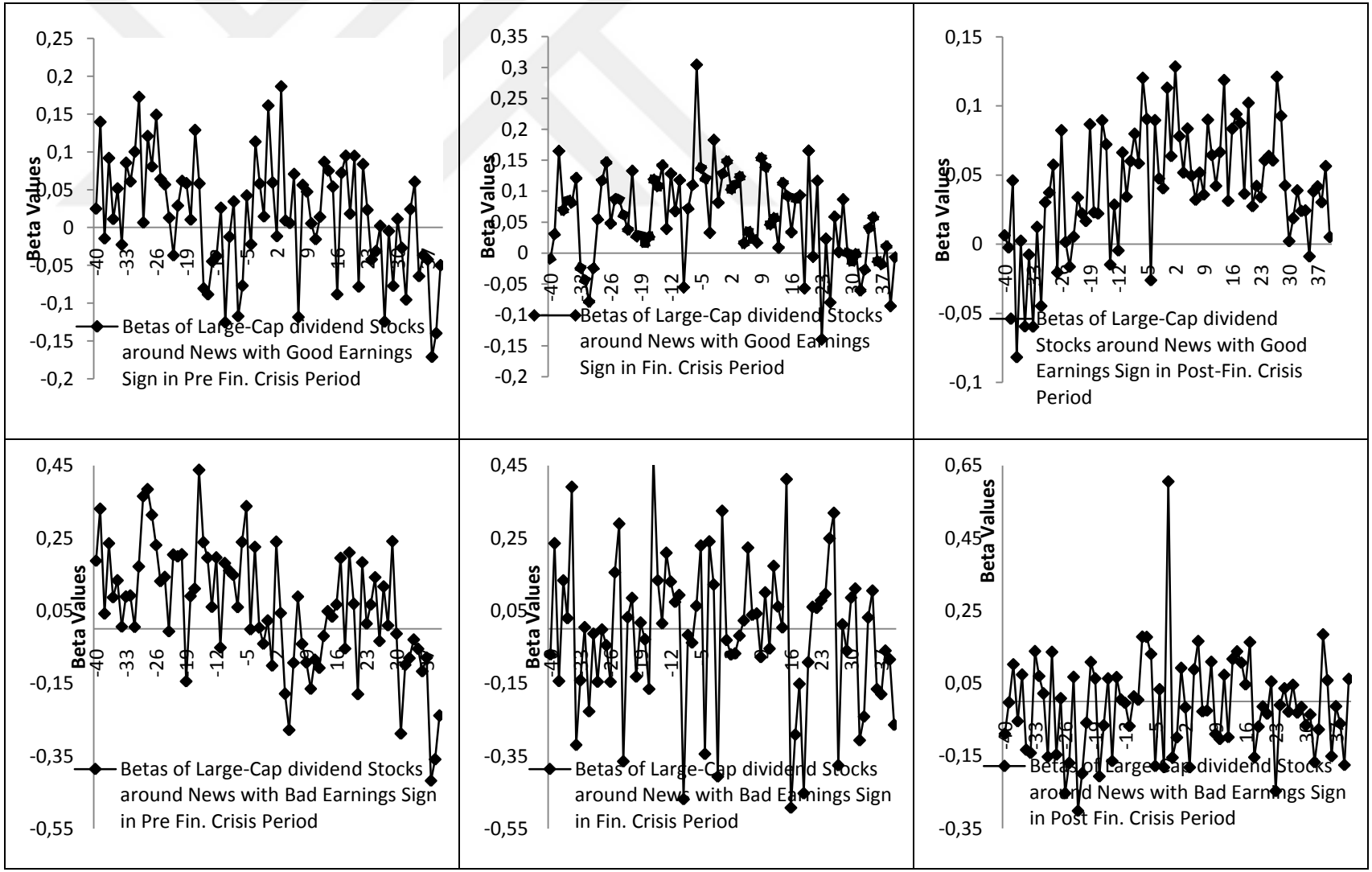


Figure 15 and Table 15 submit the estimated changes in betas for non-dividend stocks around different signs of earnings news. Our findings show that there is a spike in the betas of non-dividend stocks with good earnings sign. The deviation of the betas of non-dividend stocks with good earnings sign from their non-event level is, on average, 0.15 on the event date and then revert to their normal level about 20 days later. It can be inferred that the betas of individual non-dividend stocks increase greater around news good earnings sign only.

Figure 15 illustrates the changes in betas around event days for non-dividend stocks with different signs of earnings news as in Table 15. As can be seen in Figure 15, there is a large spike in the betas of non-dividend stocks around news with good earnings sign. The betas of non-dividend stocks with good earnings sign experience spike on the event date and then revert to their normal level around 20 days later.

Figure 15. Changes In Betas Of Non-dividend Stocks Around Different Signs Of Earnings News

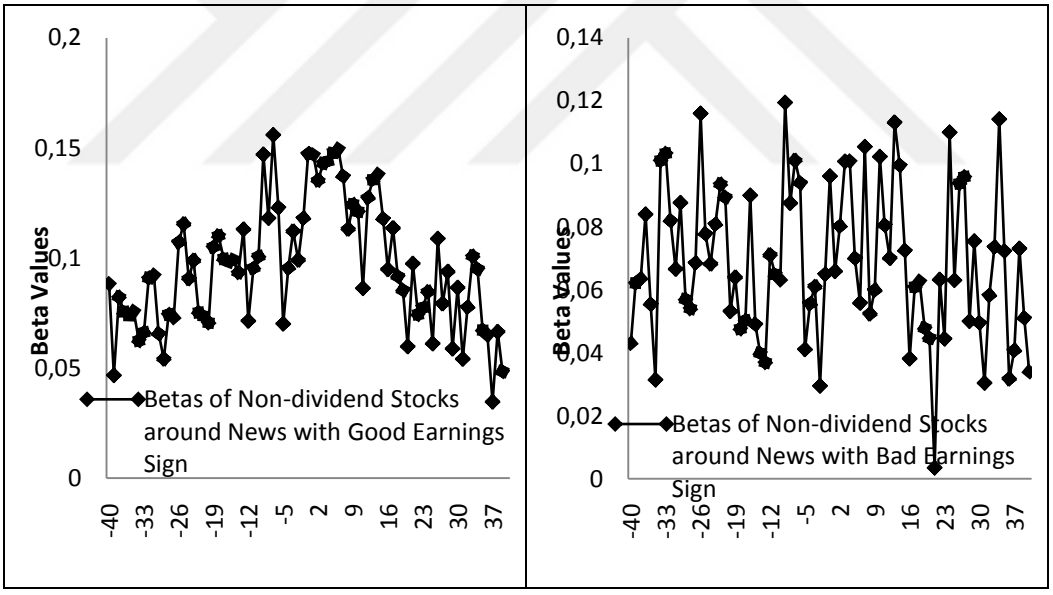


Figure 16 and Table 16 report the estimated changes in betas of non-dividend stocks around earnings news in normal economic circumstances and in turmoil periods. Our findings show that the changes in the betas of non-dividend stocks around earnings announcements increase only in the period of post-financial crisis. The deviation of the betas of non-dividend stocks from their non-event level is, on average, 0.16 on the event date and then increase to 0.18 in following four days before reverting to their normal level in about 20-23 days later. On the other hand, no

significant increase has been captured in the betas of non-dividend around earnings news in the period prior to or during the financial crisis.

Figure 16 shows that there is a big spike in the betas of non-dividend stocks in the period of post-financial crisis only. Moreover, the betas of non-dividend experience a spike on earnings announcements days and stay higher until five days after the announcement before reverting to their normal level about 20 days later. It can be inferred that the betas of non-dividend stock show reaction to earnings announcements in the period of post-financial crisis only.

Figure 16. Changes In Betas Of Non-dividend Stocks Around Earnings News In Turmoil Periods

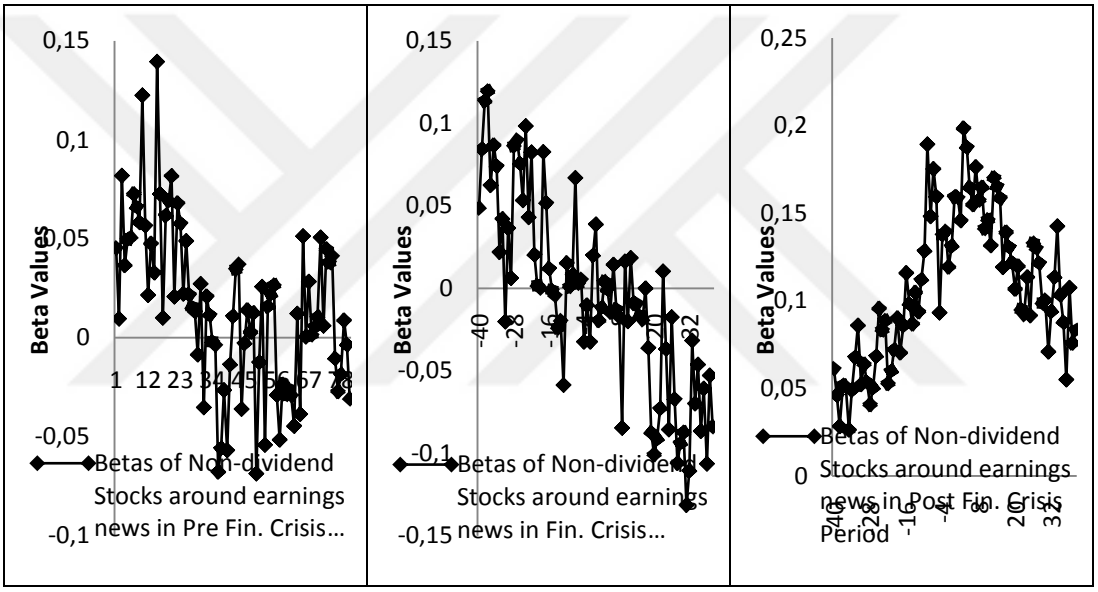


Figure 17 and Table 17 present the estimated changes in betas of non-dividend stocks around different signs of earnings news in normal economic circumstances and in turmoil periods. Our panel regression output shows that the betas of non-dividend stocks with good earnings sign statistically increase in normal financial circumstances only. We couldn't capture any significant changes in the betas during the financial crisis. Likewise, the betas of dividend stocks around news bad earnings sign also increase in the normal financial crisis.

The deviation of the betas of non-dividend stocks with good earnings sign in the period of post-financial crisis from their non-event level is, on average, 0.155 on the event date and stay higher at 0.18 level for three days after the earnings

announcements before reverting to their normal level in four days later. Likewise, the deviation of the betas of non-dividend stocks with good earnings sign in the period of pre-financial crisis from their non-event level is, on average, 0.1 on the day following the event date and then drop to zero levels in four days later. The deviation of the betas of non-dividend stocks with bad earnings sign in the period of post-financial crisis from their non-event level is, on average, 0.13 on third days after the event date and then suddenly drop to their normal level in six days later. On the other hand, statistically, no significant increase has been detected in the betas of non-dividend stocks around news with bad earnings sign in the pre-financial crisis period or during the financial crisis period.

Figure 17 exhibits the changes in the betas around event days for non-dividend stocks with different signs of earnings news in turmoil periods. As can be seen in Figure 17, there is a large spike in the betas of non-dividend stocks with good earnings sign in the period of pre-financial crisis and post-financial crisis. But, the betas of non-dividend stocks with bad earnings sign increase in the period of post-financial crisis only.

Figure 17. Changes In Betas Of Non-dividend Stocks Around Different Signs Of Earnings News In Turmoil Periods

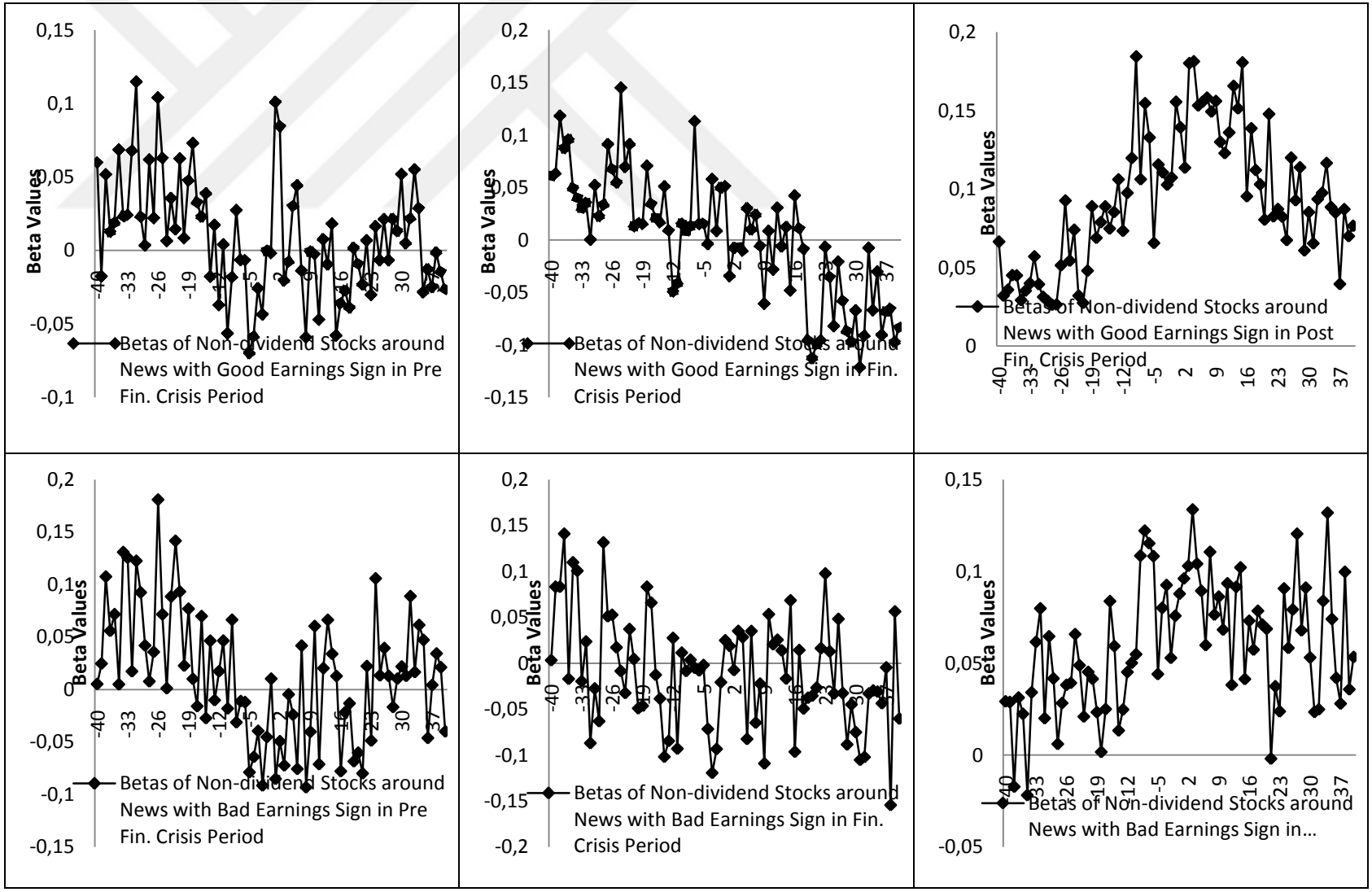


Figure 18 and Table 18 submit the estimated changes in betas of large-cap non-dividend stocks around earnings announcements in normal economic conditions and in turmoil periods. Our panel regression output shows that the changes in betas are stronger for large-cap non-dividend stocks around earnings news in the post-financial crisis. The deviation of the betas of large-cap non-dividend stocks from their non-event level is 0.1 on the event date and then revert to their normal level about three days later. Meanwhile, we couldn't capture any significant increase in the betas of large-cap non-dividend stocks in the period of pre-financial crisis or during-financial crisis around earnings announcements.

As can be seen in Figure 18, there is a large spike in the betas of large-cap non-dividend stocks on event date in the post-financial crisis period. The betas of large-cap non-dividend stocks experience spike on earnings announcements days and then revert to under zero levels in 3 days.

Figure 18. Changes In Betas Of Large-cap Non-dividend Stocks Around Earnings News In Turmoil Periods

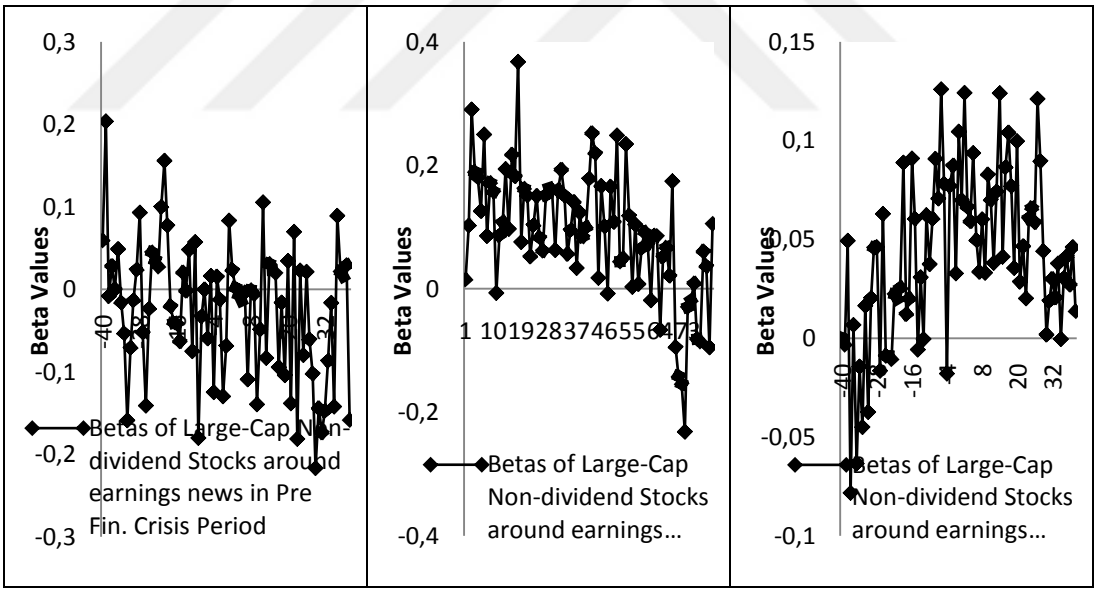
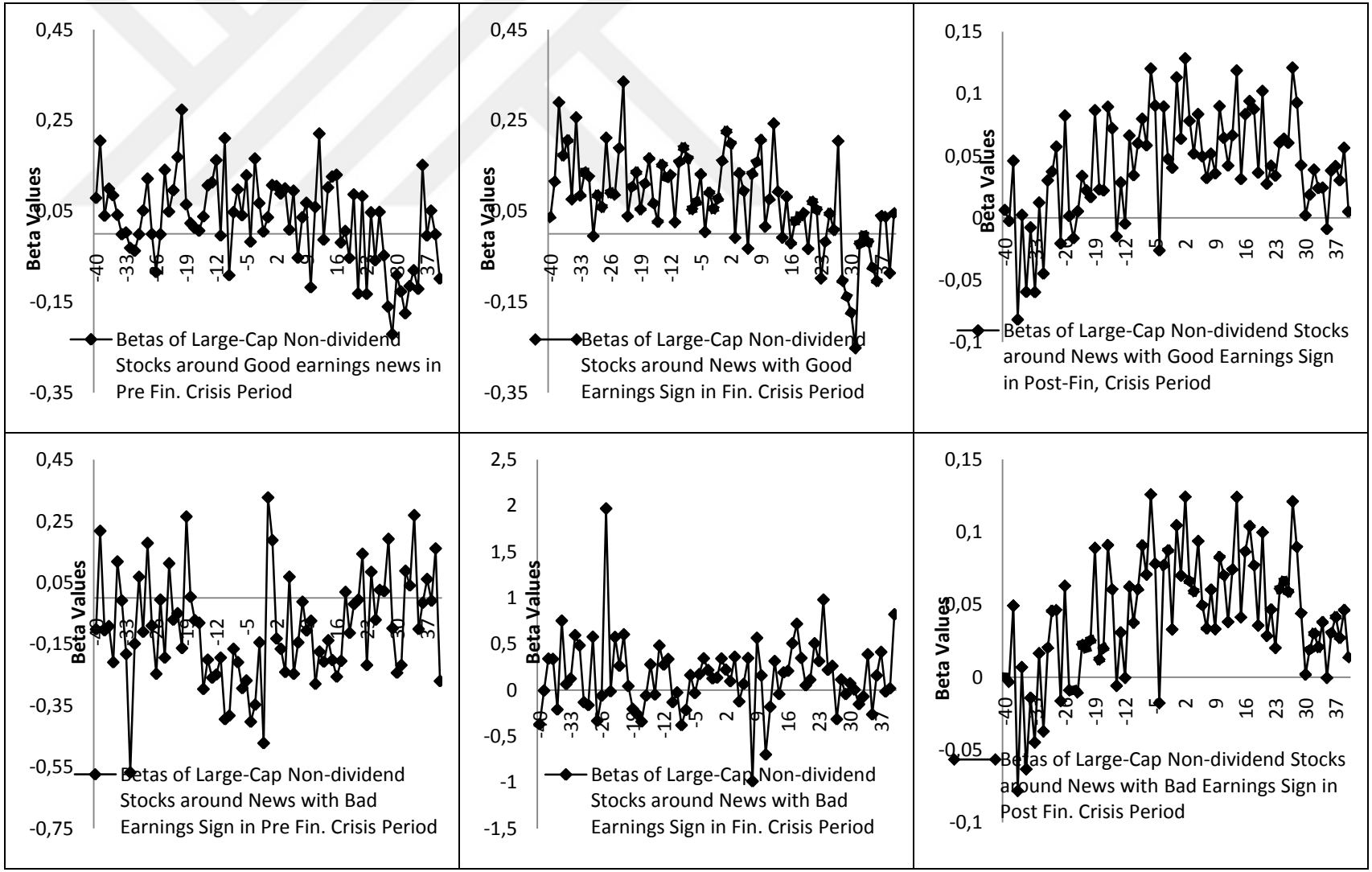


Figure 19 and Table 19 report the estimated changes in betas for large-cap non-dividend stocks around news with different signs in turmoil periods. Our panel regression output shows that the changes in betas are stronger for large-cap non-dividend stocks with both good earnings sign and bad earnings sign during the financial crisis period and after the financial crisis. The deviation of the betas of large-cap non-dividend stocks with good earnings news during the financial crisis

from their non-event level is 0.16 on the event date and increase higher to 0.22 one day after the earnings announcements before reverting to their normal level about three days later. The deviation of the betas of large-cap non-dividend stocks with good earnings news in the post-financial crisis from their non-event level is 0.11 on the event date and increase higher to 0.13 in two days after the earnings announcements before returning to their normal level around four to seven days later. The deviation of the betas of large-cap non-dividend stocks with bad earnings sign in the post-financial crisis from their non-event level is 0.1 on the event date and increase higher to 0.12 for two days after the earnings announcements before returning to their normal level about four to seven days later. Likewise, the deviation of the betas of large-cap non-dividend stocks with bad earnings sign in the period of pre-financial crisis from their non-event level is 0.32 on the event date and then drop to -0.13 level in 2 days after the earnings announcement.

Figure 19 shows the changes in the betas of large-cap non-dividend stocks with different signs of earnings news in turmoil periods as in Table 19. As can be seen in figure 19, there is a statistically large spike in the betas of large-cap non-dividend stocks around both new with good earnings sign and bad earnings sign in normal economic conditions. We cannot validate such behavior of the betas of non-dividend large-cap stock around earnings announcement in turmoil periods.

Figure 19. Changes In Betas Of Large-cap Non-dividend Stocks Around Different Signs Of Earnings News In Turmoil Periods



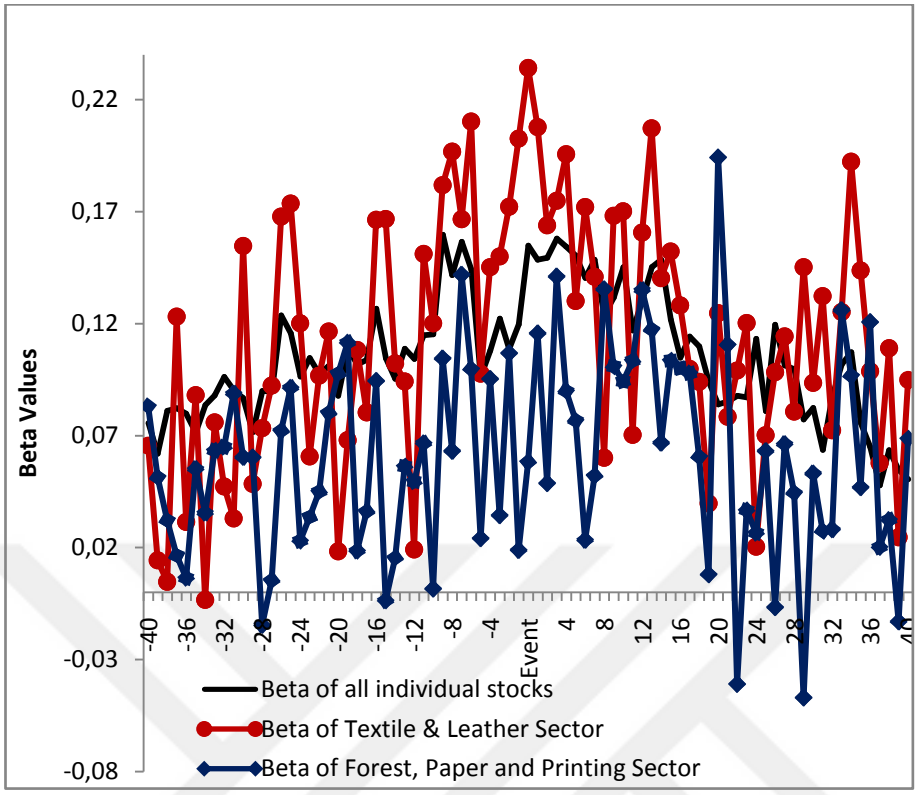
4.5 Analysis Of The Behavior Of Beta: By Different Types Of Sector

Previous studies report that the changes in beta across individual stocks differ from one stock to another based on different types of sectors (Patton and Verardo, 2012). Therefore, we aim to identify if there is any heterogeneity in changes in beta across individual stocks from different sectors. After performing panel regressions on each of sectors, we find that there is heterogeneity in changes in realized beta across individual stocks from different sectors. We document a noticeable difference between the reaction of betas of Textile and Leather sector and the behavior of betas of the Forest and Paper sector (0.234 vs. 0.085). The betas of Forest and Paper sector do not change significantly around earnings announcements. This finding indicates that the systematic risk of stocks actually differs from one stock to another one based on their sector relevancy.

Furthermore, we analyze the spike in individual stocks beta with respect to stocks' connectivity to aggregate market fundamentals. We notice that the spike in realized beta on earnings announcements days is huge for firms of IT, Commerce, Textile and Leather, Weaving and Clothing, and Real estate (0.22, 0.23, 0.23, and 0.27) whose fundamentals are further correlated with overall market fundamentals. On the opposite, there is no spike in the betas of Stone and Land and Forest, Paper and Printings related firms (0.03 and 0.05) whose fundamentals are less correlated with aggregate fundamentals. Oil and Coal derivative related firms and Banking sector have the smallest beta values but, they are not significant (0.02 and 0.03). Meanwhile, Mining firms have the highest beta values but, they are also statistically not significant. Therefore, we don't consider the betas of those firms here. It can be concluded that traders become more informed when the data comes from the stocks that are watched closely by investors and analysts, and the stocks whose performance is considered to show information on the aspects of other stocks in the sector.

Figure 20 illustrates the changes in betas around event days for different sector stocks as in Table 20. As can be seen in Figure 20, there is a noticeable difference between the reaction of the betas of Textile and Leather sector and the behavior of the betas of Forest and Paper sector (0.234 vs. 0.085) around earnings announcements. The betas of stocks of Forest and Paper sectors do not change significantly around earnings announcements. This shows that the systematic risk of stocks differs from one sector stock to another.

Figure 20. Changes In Beta Around Earnings Announcements: By Types Of Sectors



Our analysis uncovers the important economic connection between the reaction of betas around earnings announcements and the nature of the news environment in which information stream proceeds. The changes in betas are highest when the news announcement carries positive information (good earnings sign) and when the news announcement offers traders with a bigger possibility of learning about other stocks in the market. In other words, stocks fundamentals are further correlated with overall market fundamentals.

Later, in the coming section, we explain that other factors such as liquidity and volatility can possibly drive the surge in betas around firm-specific news.

4.6 Robustness Tests

In order to make certain that the changes in betas that we presented in Chapter 4 are not biased, we conduct a number of robustness tests. Previous researches show that non-synchronous trading leads the covariance between individual stocks return and market portfolio return to zero (Epps, 1979) and thus, we

may observe an increase in realized beta. Moreover, some studies report that the variation in realized betas maybe driven by jumps in stock returns (Patton and Verardo, 2012), therefore, we need to check for these biases in our panel regression model by performing robustness checks. Robustness checks are used to test how certain "*core*" regression coefficient estimates behave when the regression specification is modified by adding or removing regressors. We adjust our regression specification by including controls for trading volume and realized variation. We furthermore consider the impact of the presence of possible jumps in stocks returns on our realized beta estimates. We confirm that the results of this study are robust to the clustering of firm-specific news on announcements dates.

4.6.1 Adding Control Variables

We test for the robustness of the findings of this study by including control variables in our panel regression model. We add realized firm variation and trading volume as control variables into our regression specification.

According to some previous empirical studies, a firm's realized variation can affect the covariance between individual stocks returns and a market portfolios return (Forbes and Rigobon, 2002). Moreover, other variables, such as the infrequent high trading volume on the earnings announcement day also know as non-synchronous trading can cause a downward bias in realized covariance (Scholes and Williams, 1977). Therefore, it is significant to consider the possibility that a rise in realized beta on earnings announcement days is because of a fall in the bias associated with non-synchronous trading. We handle these issues by adding stocks trading volume to our panel regression specification. Figure 21 and Table 21 clearly show that the changes in beta estimates are to some extend alike to our regression outputs (day 0 change = 0.147), confirming our further reliance on our results.

4.6.2 Presence of Jumps in Stock Returns

According to Saleem and Yalaman (2017), earnings announcements cause jumps in stock prices in emerging markets. Therefore, a possibility that the variation in realized betas could be driven by jumps in stock prices exists (Patton and Verrardo, 2012). We employ Todorov and Bollerslev (2010) approach to detect

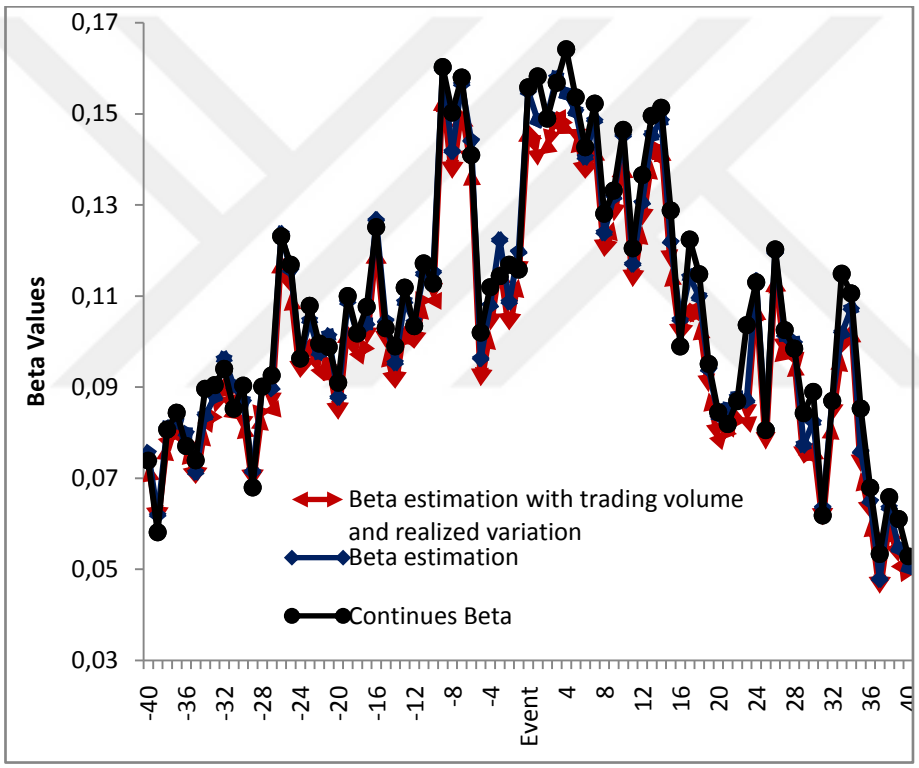
possible jumps in stocks prices and thus to test for the potential impact of jumps on our main findings. Todorov and Bollerslev (2010) break down stocks returns into a continuous component and jumps through which they estimate the continuous and discontinuous beta. By following their approach in this study, we first of all test for the attendance of jumps in daily stock returns using the "ratio" jump test of Barndorff-Nielsen and Shephard (2006) with the sampling frequency of 15-minutes intervals and critical value of 3.09. When there is no jump in stock returns, our normal estimated beta is considered as continuous betas. If there are jumps in stock returns, we detect jump beta and continuous beta independently, and then we analyze the reaction in every one of these betas. In this study, however, there are too few jumps days that intersect with earnings announcement days (on average 1/firm), therefore, we don't go forward to estimate the reactions in "jump beta". On the other hand, there are enough observations to analyze the reactions in continuous beta. The test results for jumps in stock returns show that on 5.06% (58,953 jumps / 1,163,484 days) of days we detected significant jumps. After we drop these day observations from our analysis, we estimate the reaction of continuous beta around earnings announcements. The output results are submitted in the last column of Table 21. The beta estimates that we obtained after dropping jump days are so similar to our baseline beta estimates. Table 21 shows that there is a spike in beta on the announcements days estimated at 0.155 with a t-statistic of 16.36. Thus, it can be concluded that the findings of this study are not driven by the attendance of jumps in the stocks' returns. The estimated betas for 81 days surrounding quarterly earnings announcements are submitted in Table 21. The betas are calculated as the difference with reference to the average non-announcement betas.

In the baseline specification, the betas are calculated as the difference with reference to the average non-announcement betas. The betas are the outputs of our panel regression. The daily betas are regressed on dummy variables for every 81 days surrounding event days. Event "*day 0*" represents the date of the quarterly earnings announcement. As in Table 21, in our initial regression (15-min Beta), the dependent variable is daily betas. In our second regression (2 Controls), we add controls variables such as realized firm variation and trading volume into our regression specification. In our third regression (jumps), we check for the robustness of changes in daily betas to the presence of jumps in stocks returns. The t-statistics

are estimated from standard errors which are robust to heteroscedasticity and to arbitrary intraday correlation.

Figure 21 shows the changes in estimates of normal beta, continuous beta, and betas when trading volumes and realized variation are added to our regression model around event dates as in Table 21. Figure 21 illustrates that the estimates of beta don't differ much from our base specification indicating that on event day, the changes in realized beta are (0.147 and 0.15581) vs. 0.1549), confirming our further reliance in our results.

Figure 21. Beta Estimation With/Without Trading Volume, Realized Variation, And Jumps



CONCLUSIONS

This dissertation investigates whether the firm-specific news announcements affect the market risk of stock in an emerging market using intraday prices for the period 2005-2013. In other words, we test whether the daily systematic risk of individual stocks varies around firm-specific news announcements through understanding if investors use information from announcing firm to extract information on the aggregate economy. If this happens, it drives up the covariance of the returns of the announcing stock with other stocks, leading to an increase in the market beta of the announcing stocks.

We use intraday prices of every stock traded on Borsa Istanbul (597,265,185 tick prices and of 33,741,036 15-minute interval prices) and their earnings announcements (9,273) for the period 2005-2013. Our findings show that individual stocks betas increase statistically significant amount on the earnings announcements days. On average, beta increases by 0.155 (with a t-statistics of -17.26) on the announcement days. Some parts of our findings are consistent with studies from developed markets where individual stocks betas also increase on the earnings announcements days. But the betas fall by 0.11 on the 11^{th} day after the earnings announcements (with a t-statistics of -12.31) before returning to their normal level about 15 days later. This behavior of beta is different from developed markets where betas revert to their normal level in just 2-5 days after the earnings announcements.

The variations that we document are short-lived and thus not easy to be detected using lower frequency approaches followed most researchers in earlier studies. Therefore, we use the high-frequency econometric theory of Andersen et al. (2003) that enables us to reveal a huge range of cross-sectional diversity in the reactions of realized betas.

To detect the means that connect company-related information stream to market-broad comovement in stock returns, we further test whether investors actually use earnings announcements to adjust their outlooks about the profitability of the other non-announcing stocks and thus about the whole economy.

We report that in the attendance of periodic earnings announcement and cross-sectional correlation in earnings innovations, news with good (bad) earnings sign for an announcement company is translated as partial good (bad) news for non-

announcement companies and, more generally, for the whole market. This information learning process by trader lifts the covariance between the return of announcing firm and the returns of the other non-announcing firms in the market, causing a raise in its beta. The surge in beta is largest for stocks with good earnings sign (0.14 vs. 0.08) indicating that traders are learning from firm-specific information flow to the market and thus adjusting their outlooks about non-announcing stocks and about the entire economy. On the other hand, news with bad earnings sign create an insignificant change in the level of covariation across stocks returns.

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We also examine the behavior of betas of individual stocks around earnings announcements in turmoil periods. We divide our sample period into a pre-global financial crisis, during the global financial crisis, and a post-global financial crisis. Interestingly, we see that the spike in realized beta on earnings announcements days in the period of post-global financial crisis is greater than the spike in realized beta in the pre-global financial crisis or global financial crisis (0.16 vs. (0.05 and 01). This indicates that the betas of individuals stocks increase around earnings announcements days in normal economic circumstances only.

We also analyze the behavior of betas of individual stocks surrounding earnings announcements with respect to dividend payments. Surprisingly, we find that the spike in realized betas of non-dividends stocks on earnings announcements days is greater than the spike in realized betas of dividend stocks (0.162 vs. 0.097).

With dividend stocks, the value of stocks of firms that do not pay their earnings as dividends to their stockholders appreciates while the value of stocks of those firms that distribute their earnings as dividends to their stockholders may not change very much. Therefore, the betas of non-dividend stocks on the announcement days may go up higher due to the greater appreciation in the value of non-dividend stocks and thus a greater increase in covariance between the returns of non-dividend announcing stock and other stocks. This leads to a higher rise in the betas of non-dividend announcing stocks.

In this study, we also aim to identify if there is any heterogeneity in changes in betas across individual stocks from different sectors. We find that there is indeed heterogeneity in changes in realized betas across individual stocks from different sectors. We document a noticeable difference between the reaction of realized betas of stocks of Textile and Leather sector and the reaction of the betas of stocks of the Forest and Paper sector (0.234 vs. 0.085). This confirms that the systematic risk of stocks differs from one sector to another.

In term of sector-wise correlation with aggregate market-wide fundamentals, we find that the betas of firms whose fundamentals are further correlated with aggregate fundamentals are greater than the firms whose fundamentals are less correlated with total market fundamentals. The spike in realized beta on earnings announcements days is greater for firms of IT, Commerce, Textile and Leather, Weaving and Clothing, and Real estate (0.22, 0.23, 0.23, and 0.27) whose fundamentals are further correlated with total market fundamentals than the betas of firms of Stone and Land and Forest, Paper and Printings (0.03 and 0.05) whose fundamentals are less correlated with total market fundamentals. It can be concluded that traders become more informed when the data comes from the stocks that are watched closely by investors and analysts, and the stocks whose performance is taken to show information on the aspects of other stocks in the sector.

In order to capture a precise picture of the reaction of beta to earnings announcements as in developed markets, we further perform panel regression on individual stocks with different characteristics around different earnings signs in different economic circumstances. We find that the betas of individual dividend stocks precisely hike around news with both good earnings sign and bad earnings

sign. The betas of large-cap dividend stocks increase explicitly around news with good earnings sign regardless of the economic or financial conditions of a market.

The results of this study are robust to using an alternative estimation of beta that targets possible market microstructure biases. They are also robust to controlling for changes in firm variation, trading volume and for jumps in prices around earnings announcements. Our robustness tests confirm that the results in this research are free of any non-synchronous trading effect and they are neither driven by the firm variation nor by the presence of jumps in stock prices.

The patterns of time-variation in realized betas that we reveal in this dissertation are important for portfolio management that practices risk hedging on the day to day bases. In this study, we present a simple application to explain the significance of our discoveries for the neutralization of a portfolio's exposure to a market index. More broadly, the investigation in this research validates that earnings announcements have a considerable impact on the covariance structure of stock returns, thus adding to our knowledge of learning by traders, return comovement, and time-varying systematic risk.

For further studies, we recommend testing the behavior of individual stock betas around earnings announcements by considering different types of crisis periods. Additionally, to understand how investors could use these empirical findings, it is recommended to construct portfolios to test the profitability of these strategies.

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Appendix A: Tables to illustrate the changes in beta around earnings announcements on 81-day window

Table 1. Changes In Beta Around Earnings Announcements

Event	Beta	t-value	Event	Beta	t-value	Event	Beta	t-value	Event	Beta	t-value
-40	0.075635	7.97	**-20**	0.087809	9.24	**0**	0.1549255	17.26	**20**	0.0838973	8.82
-39	0.0619358	6.52	**-19**	0.1087378	11.44	**1**	0.1485561	15.63	**21**	0.0852125	8.96
-38	0.0810404	8.53	**-18**	0.1018032	10.70	**2**	0.1494907	15.72	**22**	0.087772	9.23
-37	0.0821811	8.65	**-17**	0.1038863	10.92	**3**	0.1579421	16.61	**23**	0.087132	9.17
-36	0.0798207	8.40	**-16**	0.1267155	13.32	**4**	0.1544184	16.24	**24**	0.1133132	11.92
-35	0.0713235	7.51	**-15**	0.1045369	10.99	**5**	0.1504803	15.83	**25**	0.0809466	8.52
-34	0.0836942	8.81	**-14**	0.0953497	10.02	**6**	0.1404739	14.78	**26**	0.1195232	12.58
-33	0.0879213	9.26	**-13**	0.1087785	11.44	**7**	0.1485641	15.63	**27**	0.1014152	10.67
-32	0.0962254	10.13	**-12**	0.1042548	10.96	**8**	0.1238856	13.03	**28**	0.0997476	10.50
-31	0.0903028	9.51	**-11**	0.1148588	12.08	**9**	0.1317361	13.86	**29**	0.0772955	8.14
-30	0.086848	9.14	**-10**	0.1152173	12.12	**10**	0.1452493	15.28	**30**	0.082427	8.68
-29	0.071474	7.52	**-9**	0.1597171	16.80	**11**	0.1170226	12.31	**31**	0.0636338	6.70
-28	0.089964	9.47	**-8**	0.1417592	14.91	**12**	0.1304813	13.72	**32**	0.0871145	9.17
-27	0.0897196	9.44	**-7**	0.1565194	16.46	**13**	0.1452639	15.27	**33**	0.1017864	10.72
-26	0.1236781	13.02	**-6**	0.1441768	15.17	**14**	0.1485888	15.62	**34**	0.1071926	11.28
-25	0.115728	12.18	**-5**	0.0962906	10.13	**15**	0.1218792	12.81	**35**	0.0758386	7.98
-24	0.0964439	10.15	**-4**	0.1079522	11.36	**16**	0.1047644	11.01	**36**	0.0649552	6.84
-23	0.1046617	11.01	**-3**	0.122298	12.86	**17**	0.1142498	12.01	**37**	0.0478358	5.04
-22	0.09758	10.26	**-2**	0.1087119	11.43	**18**	0.1098049	11.55	**38**	0.0635682	6.69
-21	0.101272	10.65	**-1**	0.1197163	12.59	**19**	0.0938965	9.87	**39**	0.0546764	5.76
									40	0.0504367	5.31

Table 2. Changes In Beta Around Earnings Announcements: By Signs Of Earnings News

Event day	Good earnings sign	t-value	Bad earnings sign	t-value	Event day	Good earnings sign	t-value	Bad earnings sign	t-value
-40	0.0757238	6.6	0.043731	2.6	**0**	0.1398005	13.24	0.085158	5.99
-39	0.0429178	3.74	0.056629	3.37	**+1**	0.141823	12.37	0.053228	3.17
-38	0.0695657	6.06	0.063645	3.79	**+2**	0.1343295	11.71	0.072299	4.31
-37	0.062737	5.47	0.078493	4.67	**+3**	0.1416444	12.35	0.083294	4.96
-36	0.0712064	6.21	0.05264	3.13	**+4**	0.1324063	11.55	0.092423	5.51
-35	0.0688825	6.00	0.024021	1.43	**+5**	0.1398575	12.2	0.06374	3.8
-34	0.0541101	4.72	0.095309	5.67	**+6**	0.1338907	11.68	0.044765	2.67
-33	0.0560978	4.89	0.099901	5.95	**+7**	0.1207313	10.53	0.098547	5.87
-32	0.076065	6.63	0.076053	4.53	**+8**	0.1082419	9.44	0.048537	2.89
-31	0.0752587	6.56	0.061347	3.65	**+9**	0.1183639	10.32	0.053377	3.18
-30	0.0611753	5.33	0.078911	4.7	**+10**	0.1190451	10.38	0.095769	5.7
-29	0.0506109	4.41	0.054118	3.22	**+11**	0.0889701	7.76	0.073769	4.39
-28	0.0754753	6.58	0.052199	3.11	**+12**	0.1150978	10.03	0.061517	3.66
-27	0.0677431	5.9	0.066977	3.99	**+13**	0.1190991	10.38	0.102282	6.09
-26	0.0978574	8.53	0.108516	6.46	**+14**	0.126496	11.02	0.099388	5.92
-25	0.100754	8.78	0.072668	4.33	**+15**	0.1050881	9.16	0.063155	3.76
-24	0.0764902	6.67	0.063293	3.77	**+16**	0.0927663	8.08	0.037963	2.26
-23	0.0833083	7.26	0.072185	4.3	**+17**	0.0969055	8.44	0.061051	3.63
-22	0.0668697	5.83	0.083826	4.99	**+18**	0.093606	8.16	0.056309	3.35
-21	0.0711873	6.2	0.083751	4.99	**+19**	0.0764566	6.66	0.045068	2.68
-20	0.0657834	5.73	0.05086	3.03	**+20**	0.0634102	5.53	0.044392	2.64
-19	0.0908644	7.92	0.059674	3.55	**+21**	0.0839307	7.31	0.006199	0.37
-18	0.0895029	7.8	0.038493	2.29	**+22**	0.0660541	5.76	0.055393	3.3
-17	0.0886257	7.72	0.045151	2.69	**+23**	0.0742881	6.47	0.037511	2.23
-16	0.1007861	8.78	0.089021	5.3	**+24**	0.0815286	7.1	0.107494	6.4
-15	0.0859921	7.49	0.048064	2.86	**+25**	0.058148	5.07	0.058806	3.5
-14	0.0791155	6.89	0.031362	1.87	**+26**	0.1011503	8.82	0.086388	5.14
-13	0.0974721	8.5	0.033031	1.97	**+27**	0.073354	6.39	0.093711	5.58
-12	0.0739748	6.45	0.066706	3.97	**+28**	0.0937118	8.17	0.046435	2.76
-11	0.0932834	8.13	0.056622	3.37	**+29**	0.0517079	4.51	0.06765	4.03
-10	0.0949533	8.28	0.052381	3.12	**+30**	0.0677688	5.91	0.041296	2.46
-9	0.1357381	11.84	0.103515	6.17	**+31**	0.0537761	4.69	0.028188	1.68
-8	0.1210667	10.56	0.077043	4.59	**+32**	0.0717832	6.26	0.059266	3.53

-7	0.1356981	11.83	0.091521	5.45	**+33**	0.0958854	8.36	0.063106	3.76
-6	0.1211158	10.56	0.083907	5	**+34**	0.0810903	7.07	0.112991	6.72
-5	0.075356	6.57	0.031497	1.88	**+35**	0.0608045	5.3	0.067449	4.01
-4	0.0849954	7.41	0.047603	2.84	**+36**	0.0595494	5.19	0.03031	1.8
-3	0.1045108	9.11	0.051009	3.04	**+37**	0.0357548	3.12	0.032035	1.91
-2	0.0936827	8.17	0.031597	1.88	**+38**	0.0463364	4.04	0.063679	3.79
-1	0.0999351	8.71	0.053046	3.16	**+39**	0.0415869	3.63	0.040619	2.42
					+40	0.040503	3.53	0.030738	1.83

Table 3. Changes In Beta Around Earnings Announcements: By Characteristics Of Firms

Event day	**Large-Cap**	**t-value**	**Small-Cap**	**t-value**	**Event day**	**Large-Cap**	**t-value**	**Small-Cap**	**t-value**
-40	0.0533377	2.36	0.088476	2.26	**0**	0.1700559	7.48	0.176565	4.53
-39	0.1066588	4.71	0.06323	1.61	**+1**	0.1493546	6.57	0.126229	3.22
-38	0.0852641	3.76	0.153625	3.92	**+2**	0.1791045	7.88	0.160054	4.08
-37	0.0504049	2.22	0.018309	0.47	**+3**	0.1573094	6.92	0.168135	4.29
-36	0.0834232	3.68	0.012332	0.31	**+4**	0.1436139	6.32	0.123406	3.15
-35	0.0735251	3.24	0.060556	1.54	**+5**	0.1489485	6.55	0.06534	1.67
-34	0.0555252	2.45	0.144487	3.68	**+6**	0.1343039	5.91	0.15131	3.86
-33	0.0700572	3.09	0.103829	2.65	**+7**	0.1027393	4.52	0.166587	4.25
-32	0.0730502	3.22	0.079509	2.03	**+8**	0.1349854	5.94	0.166579	4.25
-31	0.0638262	2.81	0.025832	0.66	**+9**	0.1530947	6.74	0.167644	4.28
-30	0.0841727	3.71	0.135833	3.47	**+10**	0.1258384	5.54	0.178985	4.57
-29	0.0877625	3.87	0.012885	0.33	**+11**	0.1212731	5.34	0.176257	4.49
-28	0.1368219	6.03	0.030744	0.78	**+12**	0.1391714	6.13	0.217859	5.55
-27	0.0920161	4.06	0.091888	2.35	**+13**	0.1461187	6.43	0.220924	5.63
-26	0.1195215	5.27	0.09817	2.51	**+14**	0.1610773	7.09	0.181687	4.63
-25	0.0837271	3.69	0.072199	1.84	**+15**	0.147269	6.48	0.188582	4.81
-24	0.1081952	4.77	0.089109	2.27	**+16**	0.1139669	5.02	0.080234	2.04
-23	0.1000229	4.41	0.058039	1.48	**+17**	0.159933	7.04	0.171623	4.37
-22	0.0886559	3.91	0.08397	2.14	**+18**	0.1461658	6.44	0.06098	1.55
-21	0.1380102	6.08	0.06002	1.53	**+19**	0.0946654	4.17	0.138026	3.52
-20	0.1250711	5.51	0.192308	4.9	**+20**	0.1518028	6.69	0.094431	2.41
-19	0.1390656	6.12	0.086547	2.21	**+21**	0.0685454	3.02	0.074061	1.89
-18	0.0843464	3.71	0.125108	3.19	**+22**	0.1254824	5.53	0.16317	4.16
-17	0.1090528	4.8	0.104347	2.66	**+23**	0.0549568	2.42	0.170414	4.35

-16	0.1581235	6.96	0.145364	3.7	**+24**	0.1054226	4.65	0.200944	5.13
-15	0.107941	4.75	0.035267	0.9	**+25**	0.0786154	3.46	0.186307	4.75
-14	0.1073136	4.72	0.058584	1.49	**+26**	0.114764	5.06	0.158055	4.03
-13	0.0989276	4.35	0.086856	2.21	**+27**	0.0891803	3.93	0.159668	4.08
-12	0.1083422	4.77	0.075285	1.92	**+28**	0.089906	3.96	0.006716	0.17
-11	0.1046105	4.6	0.120944	3.08	**+29**	0.067717	2.99	0.081606	2.08
-10	0.1100918	4.84	0.133848	3.41	**+30**	0.0473224	2.09	0.116399	2.97
-9	0.1034738	4.55	0.21091	5.38	**+31**	0.0403904	1.78	0.02595	0.66
-8	0.1517949	6.68	0.070933	1.81	**+32**	0.0648263	2.86	0.119826	3.07
-7	0.1244009	5.47	0.156186	3.98	**+33**	0.0728174	3.21	0.126826	3.25
-6	0.1702391	7.49	0.195698	4.99	**+34**	0.1000597	4.41	0.173924	4.44
-5	0.1619948	7.13	0.099964	2.55	**+35**	0.0231427	1.02	0.114626	2.93
-4	0.076819	3.38	0.11652	2.97	**+36**	0.059207	2.61	0.135383	3.46
-3	0.1750332	7.7	0.217976	5.56	**+37**	0.0621746	2.75	0.146869	3.75
-2	0.1502847	6.61	0.116003	2.96	**+38**	0.0461126	2.04	0.046585	1.19
-1	0.0999577	4.4	0.172108	4.39	**+39**	0.0545602	2.41	-0.0162	-0.41
					+40	0.0434725	1.92	-0.07029	-1.79

Table 4. Changes In Betas Of Large-cap And Small-cap Stocks: By Sign Of Earnings News

Event day	The betas of Large-Cap stocks around news with Good earnings sign	t-value	The betas of Small-Cap stocks around news with Good earnings sign	t-value	The betas of Large-Cap stocks around news with Bad earnings sign	t-value	The betas of Small-Cap stocks around news with Bad earnings sign	t-value
-40	.0383685	1.60	.1329321	2.20	.0967495	1.46	.0314155	0.61
-39	.1048977	4.36	.1200611	1.99	.0565584	0.85	.0247654	0.48
-38	.0899316	3.74	.1104785	1.83	-.0047832	-0.07	.121382	2.37
-37	.0440927	1.83	-.0572041	-0.95	.0519674	0.78	.0393322	0.77
-36	.0875458	3.64	.0217402	0.36	.0054425	0.08	-.024756	-0.48
-35	.069831	2.90	.0231311	0.38	.0373943	0.56	-.0016301	-0.03
-34	.06174	2.56	.1387325	2.29	-.0640349	-0.97	.0776373	1.51
-33	.0608272	2.53	.1273826	2.11	.0701447	1.06	.0768538	1.50
-32	.083251	3.46	.0002699	0.00	-.0792618	-1.20	.0638386	1.24
-31	.0585485	2.43	-.0086468	-0.14	.0124402	0.19	-.0082067	-0.16
-30	.0881096	3.66	.0471279	0.78	-.0330063	-0.50	.1347481	2.63
-29	.0788339	3.27	-.0215615	-0.36	.051046	0.77	-.0157976	-0.31
-28	.1326319	5.51	-.0123903	-0.21	.0829716	1.25	-.0088439	-0.17
-27	.0925102	3.84	.0477083	0.79	.0041764	0.06	.068763	1.34
-26	.1294712	5.37	.0186558	0.31	-.0597008	-0.90	.1035414	2.02
-25	.0870518	3.61	-.0326858	-0.54	-.0401916	-0.61	.0771573	1.50
-24	.1015757	4.22	-.0192447	-0.32	.0572081	0.86	.099895	1.95
-23	.1019412	4.23	.0324618	0.54	-.024754	-0.37	.0232983	0.45
-22	.0876073	3.64	.0188725	0.31	-.0140875	-0.21	.0733373	1.43
-21	.1193448	4.95	-.0033439	-0.06	.1710208	2.58	.0287468	0.56
-20	.1262963	5.24	.1259563	2.09	.0111394	0.17	.1697505	3.31
-19	.137402	5.70	.023907	0.40	.0367415	0.56	.0575726	1.12
-18	.0735791	3.05	.0722115	1.20	.0484165	0.73	.0895442	1.75
-17	.1114197	4.62	.0986425	1.64	-.0272284	-0.41	.0272038	0.53
-16	.152522	6.33	.1840209	3.05	.0822018	1.24	.0397842	0.78
-15	.1033191	4.29	.0979534	1.62	.0212329	0.32	-.0810298	-1.58
-14	.1047	4.34	.0631151	1.05	-.0000412	-0.00	-.0198335	-0.39
-13	.0986747	4.09	.0533183	0.88	-.017761	-0.27	.0254886	0.50
-12	.10485	4.35	-.0056415	-0.09	.0085498	0.13	.0443662	0.87
-11	.1030948	4.28	.1520949	2.53	-.0122269	-0.18	.0122744	0.24
-10	.1191218	4.94	.1702044	2.84	-.0901084	-1.36	.0187916	0.37
-9	.1053955	4.37	.0880346	1.47	-.0454965	-0.69	.2078715	4.06
-8	.1494186	6.20	-.0106821	-0.18	.0319097	0.48	.0405304	0.79
-7	.1221391	5.07	.1213469	2.02	.0023638	0.04	.0886673	1.73
-6	.1674971	6.95	.1945836	3.25	.0495396	0.75	.1080058	2.11
-5	.1667204	6.91	.0046369	0.08	-.0101818	-0.15	.0751533	1.47
-4	.0790736	3.28	.050664	0.84	-.0831909	-1.26	.0683764	1.33
-3	.1821952	7.56	.0404486	0.67	-.0180499	-0.27	.253349	4.95
-2	.1427332	5.92	.0164727	0.27	.0682043	1.03	.0991017	1.93
-1	.1140871	4.73	.0741228	1.24	-.1449112	-2.19	.1542892	3.01
0	.1812345	7.52	.0122165	-0.21	-.0521085	-0.79	.1842505	3.64
+1	.1494298	6.20	.1451911	2.42	.0091022	0.14	.02075	0.41
+2	.1763862	7.32	.1236813	2.06	.0621482	0.94	.0924864	1.81
+3	.1670345	6.93	.063565	1.06	-.0559878	-0.85	.1510516	2.95
+4	.1449315	6.01	.017304	0.29	-.0046308	-0.07	.1071057	2.09
+5	.1507763	6.25	.090242	1.50	-.0009399	-0.01	-.0426938	-0.83

+6	.1426989	5.92	.2003172	3.34	-.0643549	-0.97	.0238567	0.47
+7	.1030896	4.28	.0981399	1.64	-.0345097	-0.52	.1200437	2.34
+8	.139841	5.80	.0517787	0.86	-.0351825	-0.53	.1566858	3.06
+9	.1578876	6.55	.1525212	2.54	-.0181083	-0.27	.087549	1.71
+10	.1189741	4.94	.0591792	0.99	.0490064	0.74	.1714748	3.35
+11	.1264367	5.25	.2999735	4.98	-.0426307	-0.64	-.0041684	-0.08
+12	.1569962	6.51	.1131589	1.88	-.1201474	-1.82	.2005791	3.91
+13	.1446873	6.00	.2150105	3.57	.0420739	0.64	.1401649	2.73
+14	.1653269	6.86	.1502937	2.49	.0203526	0.31	.1237858	2.41
+15	.1447191	6.00	.2317328	3.84	.0620258	0.94	.0750788	1.46
+16	.1174743	4.87	-.07544	-1.25	-.0217702	-0.33	.1091741	2.13
+17	.1546594	6.42	.1704773	2.83	.0934519	1.41	.091262	1.78
+18	.1482192	6.15	.0506324	0.84	.0248656	0.38	-.0114982	-0.22
+19	.0872364	3.62	.0085554	0.14	.0514355	0.78	.1587165	3.09
+20	.1585125	6.58	.0697691	1.16	-.0030219	-0.05	.0382557	0.75
+21	.0690749	2.87	.1110083	1.84	-.0266994	-0.40	-.0263243	-0.51
+22	.1199946	4.98	.1093896	1.81	.0712972	1.08	.1310967	2.56
+23	.0546098	2.27	.3117585	5.17	-.0331352	-0.50	-.0020044	-0.04
+24	.1028523	4.27	.1508079	2.50	.0407116	0.61	.1687941	3.29
+25	.06989	2.90	.1088465	1.80	.06572	0.99	.1750941	3.41
+26	.1190452	4.94	.2258237	3.74	.0030912	0.05	.053469	1.04
+27	.0902659	3.75	.1566679	2.60	-.0038886	-0.06	.0983669	1.92
+28	.0959805	3.98	-.2361067	-3.91	-.0375426	-0.57	.1208044	2.36
+29	.0625357	2.60	-.0803425	-1.33	.0273333	0.41	.1266802	2.47
+30	.0499754	2.07	.1610403	2.67	-.0410601	-0.62	.007705	0.15
+31	.0531801	2.21	.0529564	0.88	-.1302608	-1.97	-.0259431	-0.51
+32	.0683568	2.84	.1894741	3.16	-.0314474	-0.47	-.0504161	-0.98
+33	.0931459	3.87	.1183594	1.97	-.1378816	-2.08	.1310389	2.56
+34	.0836315	3.47	.2453061	4.08	.1693012	2.56	.0859292	1.68
+35	.0192472	0.80	.0541101	0.90	-.0036061	-0.05	.0880486	1.72
+36	.0746551	3.10	.0679281	1.13	-.0820633	-1.24	.1629193	3.18
+37	.0644954	2.68	.0136434	0.23	-.0209277	-0.32	.1718338	3.34
+38	.0526205	2.19	.1200493	2.01	-.0337454	-0.51	-.0640505	-1.24
+39	.0536555	2.23	-.0362957	-0.61	.0072213	0.11	-.0681547	-1.32
+40	.0556302	2.31	-.0444689	-0.74	-.0941575	-1.42	-.0982112	-1.91

Table 5. Changes In Beta Around Earnings Announcements: By Turmoil Periods

Event day	Pre-Global Financial Crisis	t-value	Global Financial Crisis	t-value	Post-Global Financial Crisis	t-value	Event day	Pre-Global Financial Crisis	t-value	Global Financial Crisis	t-value	Post-Global Financial Crisis	t-value
-40	0,049267	2.46	.0498824	3.03	.053114	4.29	**0**	0,006175	0.47	.0513255	3.06	.1531213	12.75
-39	0,01733	0.87	.0752909	4.49	.035417	2.88	**+1**	0,032734	1.54	-.0002368	-0.01	.1501398	12.50
-38	0,070699	3.51	.1055055	6.26	.0286882	2.33	**+2**	0,030181	1.44	.0050729	0.30	.1467472	12.22
-37	0,040846	2	.1109219	6.56	.036865	3.00	**+3**	-0,01877	-0.88	-.0034665	-0.21	.1846848	15.38
-36	0,057009	2.79	.0791062	4.67	.0433996	3.53	**+4**	-0,00537	-0.25	.0065441	0.39	.1717927	14.31
-35	0,055533	2.74	.0888707	5.24	.018282	1.49	**+5**	0,003995	0.2	-.0026275	-0.16	.1620415	13.50
-34	0,057217	2.82	.0647916	3.81	.0448118	3.65	**+6**	0,007046	0.34	.0008436	0.05	.1407758	11.72
-33	0,060275	2.98	.0206463	1.21	.0553476	4.51	**+7**	0,008792	0.43	-.0264426	-1.58	.1608293	13.40
-32	0,046276	2.29	.0317941	1.91	.0762617	6.21	**+8**	-0,05303	-2.51	-.0118741	-0.71	.1453717	12.11
-31	0,108961	5.39	-.0223625	-1.35	.0414047	3.37	**+9**	-0,01149	-0.54	-.059334	-3.56	.1526909	12.72
-30	0,063029	3.12	.0241586	1.46	.0501142	4.08	**+10**	0,024529	1.17	.00628	0.38	.1411858	11.76
-29	0,021856	1.08	.0110448	0.64	.0468481	3.86	**+11**	-0,04345	-1.97	-.0099416	-0.60	.1359705	11.32
-28	0,051989	2.57	.0937695	5.42	.04023	3.32	**+12**	0,011923	0.56	.0057956	0.35	.1230648	10.24
-27	0,040945	2.01	.0786444	4.53	.0417292	3.45	**+13**	0,019826	0.94	-.0151294	-0.91	.1497316	12.46
-26	0,129868	6.39	.0731469	4.20	.0592154	4.90	**+14**	0,02648	1.26	-.0123388	-0.74	.1563518	13.01
-25	0,068026	3.35	.0403128	2.31	.0856022	7.09	**+15**	-0,02531	-1.2	-.0212815	-1.28	.1410545	11.74
-24	0,006801	0.34	.0786838	4.51	.0724839	6.01	**+16**	-0,04686	-2.22	-.0162994	-0.98	.1198125	9.97
-23	0,052071	2.54	.0466483	2.68	.0707629	5.86	**+17**	-0,02094	-0.99	-.0043507	-0.26	.1240927	10.33
-22	0,056273	2.7	.0647467	3.71	.0445719	3.69	**+18**	-0,01388	-0.65	-.0286497	-1.72	.1212518	10.09
-21	0,068585	3.32	.034048	1.95	.0549241	4.55	**+19**	-0,02254	-1.07	-.0812899	-4.88	.1104503	9.20
-20	0,027301	1.32	.0058274	0.33	.0616811	5.11	**+20**	-0,02863	-1.33	-.0835619	-5.02	.1067282	8.89
-19	0,056655	2.73	-.0046229	-0.26	.0814772	6.77	**+21**	-0,04752	-2.25	-.0903129	-5.41	.1174319	9.78
-18	0,042961	2.06	.0584287	3.31	.0608528	5.06	**+22**	0,006324	0.31	-.0797652	-4.67	.0865491	7.26
-17	0,014324	0.69	.0408071	2.31	.0813701	6.77	**+23**	-0,03214	-1.53	-.0113072	-0.66	.0910139	7.65
-16	0,053541	2.53	.0200746	1.14	.1126796	9.37	**+24**	0,048846	2.33	-.0348187	-2.02	.1059343	8.92
-15	0,018673	0.9	.0074507	0.42	.0847953	7.05	**+25**	0,002503	0.12	-.0866974	-5.00	.0840576	7.09
-14	0,004568	0.22	.0059295	0.34	.0720568	5.99	**+26**	0,016604	0.8	-.0059044	-0.34	.1238352	10.45
-13	0,007195	0.35	-.0256634	-1.45	.0963425	8.01	**+27**	-0,00095	-0.04	-.0634545	-3.64	.1182059	9.98
-12	-0,01382	-0.65	.0024627	0.14	.0910793	7.57	**+28**	0,002444	0.12	-.081776	-4.70	.1197334	10.11
-11	0,017247	0.83	-.0384826	-2.23	.1061158	8.83	**+29**	0,010572	0.51	-.0910194	-5.23	.0820163	6.93
-10	-0,04002	-1.9	.0136816	0.80	.1211645	10.09	**+30**	0,033121	1.58	-.090295	-5.19	.085221	7.20
-9	0,011851	0.57	-.0143199	-0.84	.1762873	14.68	**+31**	-0,00052	-0.02	-.1045143	-6.00	.0691133	5.84

-8	0,017107	0.8	.005474	0.32	.1444686	12.03	**+32**	0,035358	1.66	-.0936712	-5.25	.0894549	7.60
-7	-0,01629	-0.76	.0678648	4.02	.1586544	13.21	**+33**	0,037836	1.78	-.0294394	-1.64	.1048516	8.94
-6	-0,00832	-0.39	.016523	0.98	.1531903	12.76	**+34**	0,029853	1.4	-.064665	-3.58	.1285724	10.97
-5	-0,05796	-2.75	-.0022326	-0.13	.0960046	8.00	**+35**	-0,01061	-0.5	-.0493519	-2.72	.0934665	7.98
-4	-0,04389	-2.08	-.0249899	-1.48	.1163143	9.69	**+36**	-0,02656	-1.24	-.063325	-3.49	.0786977	6.72
-3	-0,01721	-0.81	-.0138833	-0.83	.1254115	10.44	**+37**	-0,02591	-1.24	-.0592065	-3.25	.0536594	4.53
-2	-0,04241	-1.96	-.0239589	-1.43	.1120402	9.33	**+38**	-0,01221	-0.59	-.1004736	-5.51	.0894473	7.54
-1	-0,01773	-0.83	.0127496	0.76	.1122409	9.35	**+39**	-0,01083	-0.52	-.0363183	-1.99	.0604592	5.09
							+40	-0,03069	-1.48	-.0922716	-5.03	.0742115	6.25

Table 6. Changes In Betas Of Individual Stocks Around Earnings Announcements In Turmoil Periods: By Sign Of Earnings News

Event day	**The betas of individual stocks around news with Good earnings signin Pre-Fin. Crisis Period**	**t-value**	**The betas of individual stocks around news with Good earnings sign in during Fin. Crisis Period**	**t-value**	**The betas of individual stocks around news with Good earnings sign in Post-Fin. Crisis Period**	**t-value**	**The betas of individual stocks around news with Bad earnings signin Pre-Fin. Crisis Period**	**t-value**	**The betas of individual stocks around news with Bad earnings sign during Fin. Crisis Period**	**t-value**	**The betas of individual stocks around news with Bad earnings sign in Post-Fin. Crisis Period**	**t-value**
-40	.058338	2.41	.0595913	2.99	.061571	4.09	0.017124	0.48	.0076161	0.27	.0265595	1.21
-39	-.0025707	-0.11	.0570639	2.82	.0141539	0.94	0.027576	0.78	.0806621	2.75	.021077	0.97
-38	.0389938	1.61	.1078784	5.30	.0535564	3.56	0.116848	3.28	.0741527	2.53	-.0184584	-0.85
-37	.0225956	0.92	.0854317	4.19	.0672828	4.47	0.060179	1.67	.1316	4.47	.0249449	1.15
-36	.0368123	1.49	.1057697	5.18	.0622904	4.14	0.070251	1.93	-.0054735	-0.19	.0184778	0.85
-35	.0690567	2.83	.0629453	3.08	.0664818	4.41	0.006265	0.18	.1069646	3.64	-.0316854	-1.46
-34	.015157	0.62	.0394385	1.92	.0311059	2.07	0.124171	3.48	.088997	3.02	.0339902	1.56
-33	.0265078	1.09	.024249	1.18	.038977	2.59	0.122568	3.43	-.0159147	-0.54	.0613217	2.82
-32	.0448205	1.84	.0260625	1.30	.0499101	3.31	0.02448	0.69	.0148367	0.52	.0720981	3.32
-31	.0973461	3.99	-.0085257	-0.43	.0586985	3.90	0.120623	3.39	-.0859001	-3.00	.0144526	0.66
-30	.0428943	1.76	.0350129	1.76	.0427529	2.84	0.086801	2.44	-.03449	-1.20	.0575023	2.64
-29	.0103006	0.42	.0269301	1.31	.0286068	1.90	0.036024	1.01	-.0645547	-2.15	.0452652	2.11

-28	.0597031	2.44	.0635134	3.07	.0712375	4.73	0.019039	0.54	.1196933	3.96	.003861	0.18
-27	.0331546	1.35	.0729201	3.50	.0683762	4.54	0.04333	1.21	.0522692	1.73	.0263587	1.23
-26	.1009602	4.12	.068013	3.26	.096706	6.42	0.173084	4.86	.0475456	1.56	.0340726	1.60
-25	.0598398	2.44	.0370039	1.77	.0679235	4.51	0.067792	1.90	.0116314	0.38	.0384966	1.80
-24	.0027789	0.11	.1048287	5.04	.0495885	3.29	-0.00014	-0.00	-.007876	-0.26	.0633953	2.97
-23	.031005	1.25	.0719561	3.46	.0593956	3.94	0.079804	2.22	-.0405012	-1.33	.045132	2.12
-22	.0115528	0.46	.0679828	3.27	.0449414	2.98	0.133024	3.65	.0285826	0.94	.0133059	0.62
-21	.0502801	2.01	.0344164	1.65	.0561381	3.72	0.087732	2.43	.0053256	0.17	.0429001	2.01
-20	.0184931	0.74	.0220148	1.06	.036829	2.44	0.027288	0.76	-.0567497	-1.86	.0416494	1.95
-19	.0378994	1.51	.0038459	0.18	.044602	2.96	0.072286	2.00	-.0438561	-1.42	.0214359	1.01
-18	.0494263	1.96	.0465534	2.21	.0539186	3.58	0.006357	0.18	.0671569	2.18	-.0036175	-0.17
-17	.0202681	0.80	.0241634	1.15	.047865	3.17	-0.01945	-0.54	.0647456	2.10	.0231768	1.09
-16	.0325803	1.27	.0283386	1.35	.0471842	3.13	0.076006	2.07	-.0074673	-0.24	.0824069	3.88
-15	.0283189	1.12	.0212718	1.01	.0380475	2.52	-0.02266	-0.62	-.0302058	-0.98	.0572596	2.69
-14	-.0245318	-0.97	.0507816	2.41	.0224158	1.49	0.042328	1.17	-.0981823	-3.19	.0038657	0.18
-13	.0089881	0.36	-.002814	-0.13	.0282681	1.87	-0.01402	-0.39	-.0818634	-2.66	.0248031	1.17
-12	-.0350922	-1.39	-.0059388	-0.29	.0120657	0.80	0.010045	0.28	.019622	0.65	.0496942	2.34
-11	.0016723	0.07	-.0184839	-0.90	.0348024	2.31	0.031838	0.88	-.0851244	-2.83	.0456134	2.15
-10	-.0534105	-2.10	.0153882	0.76	.0225423	1.49	-0.02904	-0.80	.0065798	0.22	.0494258	2.33
-9	-.0135517	-0.53	-.0117729	-0.58	.0375954	2.49	0.047077	1.28	-.0163904	-0.55	.0978292	4.61
-8	.033434	1.29	.0108254	0.54	.0642058	4.26	-0.03406	-0.91	-.0013749	-0.05	.1130862	5.33
-7	-.0234378	-0.91	.1058664	5.31	.0703932	4.67	-0.01718	-0.46	-.0100936	-0.34	.1101342	5.19
-6	-.0147708	-0.58	.0330362	1.66	.045225	3.00	-0.00867	-0.24	-.0106742	-0.36	.0968419	4.56
-5	-.0541892	-2.13	.0001124	0.01	.0110628	0.73	-0.08003	-2.20	.0029317	0.10	.03538	1.67
-4	-.0416524	-1.63	-.0004744	-0.02	.0153382	1.02	-0.06251	-1.72	-.0701061	-2.36	.0723341	3.41
-3	-.0153035	-0.60	.0342655	1.73	.0359884	2.38	-0.03392	-0.93	-.1130146	-3.82	.0784524	3.70
-2	-.0275522	-1.06	.003259	0.16	.0279855	1.85	-0.08595	-2.31	-.074789	-2.53	.0575208	2.71
-1	-.0095293	-0.37	.0259137	1.31	.0364607	2.40	-0.0459	-1.25	-.0056524	-0.19	.0583656	2.75
0	.0026254	-0.11	.0635471	3.22	.0665562	4.36	0.000803	0.02	.0353229	1.20	.0570458	2.69
+1	.088037	3.42	-.0007758	-0.04	.0921149	6.03	-0.09601	-2.59	.0132162	0.45	.0896567	4.23
+2	.0610892	2.39	.0139231	0.71	.080533	5.26	-0.04469	-1.23	-.0029753	-0.10	.0948947	4.47
+3	.0038951	0.15	-.0087005	-0.44	.0558756	3.65	-0.07682	-2.10	.0207044	0.70	.1179218	5.56
+4	-.0093132	-0.37	.00254	0.13	.0415392	2.71	-0.00658	-0.18	.0284613	0.96	.0983872	4.64
+5	.0155196	0.61	.0292242	1.49	.0612004	3.99	-0.03154	-0.87	-.0647992	-2.19	.085464	4.03
+6	.0407595	1.60	.0005127	0.03	.0623146	4.06	-0.0738	-2.03	.0151235	0.51	.0521335	2.46
+7	-.0123053	-0.48	-.0055494	-0.28	.0324248	2.11	0.040215	1.11	-.0610951	-2.07	.1055954	4.98
+8	-.0421705	-1.65	-.0044541	-0.23	.0139921	0.91	-0.08483	-2.34	-.0128009	-0.43	.0711685	3.36

+9	-.0010568	-0.04	-.0384184	-1.96	.0237367	1.54	-0.04192	-1.16	-.0902132	-3.05	.0786589	3.71
+10	.0054923	0.22	-.0052784	-0.27	.0402003	2.61	0.054105	1.49	.0568266	1.92	.0662016	3.12
+11	-.0378703	-1.43	-.0130448	-0.67	-.0046743	-0.30	-0.0613	-1.59	.0237362	0.80	.0849631	4.00
+12	.0044176	0.17	.006856	0.35	.0361161	2.33	0.017758	0.48	.0343473	1.16	.0291157	1.37
+13	-.0054239	-0.21	-.0179954	-0.92	.0276946	1.79	0.066856	1.82	.0221417	0.75	.0766497	3.61
+14	.0180254	0.70	.0043582	0.22	.0530585	3.42	0.038967	1.07	-.0170344	-0.57	.1060853	5.00
+15	-.0432181	-1.70	-.0484028	-2.47	.0092859	0.60	0.007583	0.21	.0730628	2.46	.0334702	1.58
+16	-.0382538	-1.50	.0292103	1.49	.0109284	0.70	-0.06571	-1.81	-.088679	-2.98	.0710407	3.34
+17	-.0312868	-1.23	.0027026	0.14	.0185512	1.19	-0.0024	-0.07	.0136834	0.46	.0538207	2.54
+18	-.0161025	-0.63	-.0079512	-0.41	.0057609	0.37	-0.00894	-0.24	-.0407771	-1.37	.0686099	3.23
+19	-.0049901	-0.20	-.0822015	-4.19	.0056426	0.36	-0.05641	-1.55	-.0423802	-1.42	.0680873	3.21
+20	-.0154361	-0.60	-.090702	-4.62	-.0247502	-1.59	-0.0532	-1.44	-.0222844	-0.75	.068304	3.22
+21	-.0335042	-1.31	-.0970122	-4.94	-.0216942	-1.40	-0.07598	-2.09	-.0243325	-0.81	.0072443	0.34
+22	-.0007491	-0.03	-.0999773	-4.98	-.0029869	-0.19	0.022478	0.62	.019087	0.62	.0282584	1.34
+23	-.0229205	-0.90	-.0336002	-1.66	-.0040622	-0.26	-0.04707	-1.29	.0974965	3.14	.016719	0.80
+24	.0179274	0.70	-.0356379	-1.75	.01908	1.23	0.110982	3.04	.0218779	0.70	.0855371	4.07
+25	-.0046327	-0.18	-.0908134	-4.44	.0069778	0.45	0.01972	0.54	-.019719	-0.63	.0492957	2.35
+26	.0094169	0.37	-.0049885	-0.24	.0227645	1.47	0.033126	0.91	.0514984	1.65	.0741304	3.54
+27	-.0075317	-0.30	-.0558186	-2.72	.0029318	0.19	0.011398	0.31	-.029125	-0.93	.1222512	5.83
+28	.0129692	0.51	-.0601848	-2.93	.0209059	1.35	-0.01278	-0.35	-.0806312	-2.57	.0624316	2.98
+29	.0112291	0.44	-.0973996	-4.74	-.0012793	-0.08	0.01544	0.43	-.0311641	-0.99	.0766863	3.66
+30	.0281047	1.10	-.0773185	-3.76	.016326	1.05	0.020167	0.55	-.0722429	-2.29	.0435877	2.08
+31	.0022033	0.09	-.0879391	-4.27	.0082753	0.53	0.002475	0.07	-.099135	-3.15	.0275089	1.31
+32	.0128824	0.50	-.075345	-3.59	.0053415	0.34	0.087066	2.34	-.092901	-2.84	.0295492	1.42
+33	.0557673	2.16	-.0104553	-0.49	.0458939	2.96	0.008906	0.24	-.031062	-0.93	.0747402	3.61
+34	.013176	0.51	-.0587648	-2.78	.0126639	0.82	0.063101	1.71	-.03392	-1.01	.1345852	6.52
+35	-.0232065	-0.90	-.0416385	-1.96	.0130833	0.84	0.047899	1.29	-.0231482	-0.68	.0692115	3.35
+36	-.0161793	-0.62	-.0577434	-2.71	.0037746	0.24	-0.04183	-1.13	-.0410496	-1.21	.0411653	2.00
+37	-.0283684	-1.11	-.0613631	-2.87	-.0070171	-0.46	-0.00642	-0.18	-.0102315	-0.30	.0219361	1.05
+38	-.0240155	-0.95	-.0686826	-3.21	-.0034456	-0.23	0.019953	0.56	-.1434748	-4.21	.0940563	4.47
+39	-.0122497	-0.49	-.0606407	-2.83	.0103065	0.68	0.000684	0.02	.0488374	1.43	.032948	1.57
+40	-.0279629	-1.11	-.0981848	-4.57	-.0119061	-0.78	-0.03928	-1.10	-.0548187	-1.59	.0489582	2.33

Table 7. Changes In Betas Of Large-cap And Small-cap Stocks Around Earnings Announcements In Turmoil Periods

Event day	The betas of Large-Cap stocks around earnings news in Pre-Fin. Crisis Period	t-value	The betas of Large-Cap stocks around earnings news during Fin. Crisis Period	t-value	The betas of Large-Cap stocks around earnings news in Post-Fin. Crisis Period	t-value	The betas of Small-Cap stocks around earnings news in Fin. Crisis Period	t-value	The betas of Small-Cap stocks around earnings news during Fin. Crisis Period	t-value	The betas of Small-Cap stocks around earnings news in Post-Fin. Crisis Period	t-value
-40	0.0625704	1.44	-.0077472	-0.16	.0073487	0.25	0.0657344	1.28	.0607367	0.88	.0531459	4.29
-39	0.1854651	4.24	.0701929	1.46	.0072414	0.25	-0.1022162	-1.99	.2948143	4.21	.0354535	2.88
-38	0.0135662	0.31	.1954355	4.06	.0376152	1.29	0.0816588	1.58	.1880167	2.64	.0287263	2.34
-37	0.097523	2.20	.1281637	2.66	-.0590982	-2.03	-0.064079	-1.23	.483702	6.79	.0369006	3.00
-36	0.0305876	0.68	.1226394	2.54	.0318267	1.09	-0.0860652	-1.62	.0724491	1.02	.043439	3.53
-35	0.0659033	1.49	.1184798	2.44	-.0050101	-0.17	-0.0710504	-1.38	.077483	1.08	.0183394	1.49
-34	-0.0072065	-0.16	.1517321	3.13	-.0055565	-0.19	0.1323603	2.56	.3002893	4.19	.0448922	3.65
-33	0.0551991	1.24	.0061951	0.13	.0187085	0.64	0.0191696	0.37	.5221394	7.28	.0553821	4.51
-32	-0.0001171	-0.00	.0419957	0.89	.0377529	1.30	0.0742573	1.43	-.003021	-0.04	.0762328	6.21
-31	0.0517855	1.16	.009507	0.20	.0019734	0.07	-0.0914842	-1.78	.070354	1.01	.0414475	3.38
-30	0.1231449	2.77	-.0081226	-0.17	.0030501	0.10	0.0790135	1.53	.0878622	1.26	.0501604	4.09
-29	0.0520223	1.17	.0623956	1.29	.0270908	0.94	0.0994048	1.93	-.0233633	-0.32	.0468972	3.86
-28	0.1509594	3.41	.1137174	2.34	.0415786	1.44	0.0957766	1.86	.1110308	1.52	.0402788	3.33
-27	0.0682735	1.53	.1608619	3.26	-.0028943	-0.10	0.0982483	1.91	-.0935836	-1.28	.0417835	3.46
-26	0.0820388	1.85	.0583656	1.18	.0547191	1.91	0.1163382	2.26	.2164254	2.96	.0592737	4.91
-25	0.0574461	1.30	.1438306	2.90	-.0129632	-0.45	0.0385163	0.75	.1685756	2.27	.0856732	7.10
-24	0.0733967	1.65	.1366502	2.75	.0152023	0.53	0.1214434	2.36	.1461998	1.96	.0725534	6.01
-23	0.0374309	0.84	.1456487	2.94	.0134855	0.47	-0.0291185	-0.55	.0295963	0.40	.0708212	5.87
-22	0.0191916	0.42	.0589615	1.18	.0123536	0.43	0.2141524	3.97	.1931584	2.59	.0445989	3.70
-21	0.0802496	1.80	.1422898	2.86	.0559334	1.96	0.0336723	0.63	-.0422775	-0.57	.0549856	4.56
-20	0.1154157	2.59	.0594585	1.19	.031604	1.11	0.0217137	0.41	.0962213	1.29	.0617434	5.12
-19	0.0663048	1.48	.0376507	0.75	.0799675	2.80	0.0857195	1.61	-.046146	-0.62	.0815386	6.78
-18	0.0211695	0.47	.0480099	0.95	.0034193	0.12	0.1847166	3.44	.0692574	0.93	.0609142	5.07
-17	0.0862965	1.90	.0693661	1.37	.0136539	0.48	0.0406297	0.76	.0795539	1.06	.0814309	6.77
-16	0.0750237	1.65	.1334251	2.63	.0824841	2.90	0.0378734	0.69	-.0424313	-0.57	.1127427	9.38
-15	-0.0309154	-0.68	.0995151	1.96	.0530653	1.86	-0.0968747	-1.81	.0992883	1.32	.0848574	7.06

-14	-0.0079525	-0.17	.1459875	2.88	.02452	0.86	-0.1389606	-2.61	-.0531542	-0.71	.0721205	6.00
-13	-0.0038752	-0.09	.0992297	1.96	.0219427	0.77	0.0095062	0.18	.099578	1.33	.0964434	8.02
-12	0.0251433	0.55	.1443056	2.85	.0080722	0.28	-0.0581801	-1.09	-.1807297	-2.51	.0911503	7.58
-11	0.0046113	0.10	.0719358	1.42	.0161869	0.57	0.008777	0.16	-.2680229	-3.77	.1061891	8.84
-10	-0.0302157	-0.66	.1369315	2.70	.0291102	1.02	0.034441	0.65	.158196	2.23	.1212395	10.10
-9	-0.0357146	-0.77	.0163642	0.32	.041625	1.46	0.0171638	0.32	.0365077	0.51	.1763634	14.69
-8	0.038949	0.83	.0980028	1.96	.0721472	2.53	-0.1248868	-2.27	.0187114	0.26	.1445129	12.04
-7	-0.0485331	-1.05	.0850441	1.72	.0722422	2.53	-0.0683896	-1.26	.1253229	1.76	.1587336	13.22
-6	-0.0261868	-0.57	.2171451	4.38	.1183108	4.15	-0.0346606	-0.65	.1667683	2.34	.1532693	12.77
-5	0.0700674	1.52	.1491439	3.04	.0741915	2.60	-0.0665008	-1.24	.0703125	0.99	.0960833	8.00
-4	-0.0365643	-0.79	.0615723	1.26	-.0025448	-0.09	0.0094313	0.18	-.1884813	-2.64	.1163926	9.69
-3	0.1097075	2.39	.0851116	1.75	.0824134	2.89	-0.0268602	-0.50	.0042656	0.06	.1254901	10.45
-2	0.0461671	0.99	.1472398	3.05	.0594065	2.08	-0.014045	-0.25	-.1284488	-1.80	.112119	9.34
-1	-0.0199327	-0.43	.0611789	1.27	.0272522	0.96	-0.0044254	-0.08	.0659958	0.93	.1123194	9.35
0	0.0868849	1.86	.1638016	3.39	.0735487	2.58	0.0576613	1.08	-.0371783	-0.52	.1503589	13.60
+1	0.0687901	1.49	.178894	3.70	.0512479	1.80	-0.0468416	-0.87	.0421116	0.59	.1502177	12.51
+2	0.0332599	0.72	.1392556	2.90	.1209756	4.24	0.1764343	3.31	.0699608	0.98	.1468263	12.23
+3	0.1292297	2.80	.070842	1.47	.0546217	1.92	-0.201788	-3.79	.0180474	0.25	.1847649	15.39
+4	0.0052286	0.11	.1343993	2.80	.0733892	2.57	-0.1645613	-3.07	-.0747024	-1.05	.1718726	14.31
+5	-0.0100662	-0.22	.0523856	1.09	.1016189	3.56	-0.1596223	-3.00	-.0584398	-0.82	.1621213	13.50
+6	0.0468879	1.02	.0352884	0.73	.0602007	2.11	0.0878863	1.64	.0344071	0.48	.1408556	11.73
+7	-0.0864292	-1.89	.0789416	1.64	.0541866	1.90	0.1511929	2.82	-.101779	-1.43	.160909	13.40
+8	0.042552	0.93	.0543	1.13	.060042	2.11	-0.1188954	-2.24	-.0912686	-1.28	.1454511	12.12
+9	0.0335462	0.73	.1768377	3.68	.0675264	2.37	0.0998671	1.88	-.0727173	-1.02	.152803	12.73
+10	-0.0410441	-0.90	.1053981	2.20	.0727956	2.55	0.1134791	2.13	.0677196	0.95	.1412628	11.77
+11	-0.0157863	-0.34	.0434493	0.90	.0676563	2.37	-0.0239223	-0.42	.1916575	2.70	.1360798	11.33
+12	0.0464247	0.99	.1305918	2.72	.052838	1.85	-0.0331278	-0.61	.0764512	1.08	.1231729	10.25
+13	0.0327995	0.71	.0541861	1.13	.0893477	3.14	0.1344686	2.49	.0738862	1.04	.149806	12.47
+14	0.0630919	1.37	.0671472	1.40	.104655	3.67	0.0136716	0.25	-.014708	-0.21	.1564238	13.02
+15	0.050185	1.09	.120429	2.50	.0749924	2.63	0.1023693	1.93	.1440187	2.03	.1411261	11.75
+16	-0.0326601	-0.72	-.0055652	-0.12	.0780356	2.74	-0.0604883	-1.14	.0612932	0.87	.1200204	9.99
+17	0.0334382	0.73	.0639507	1.33	.1087592	3.82	-0.101716	-1.91	.0349028	0.49	.1241644	10.34
+18	0.0533064	1.17	.0842901	1.75	.0816011	2.87	0.1111823	2.06	-.3920225	-5.55	.1213562	10.10
+19	0.0003818	0.01	-.0313241	-0.65	.045216	1.59	0.1062339	2.00	-.1212732	-1.72	.1105566	9.20
+20	0.081839	1.78	.0889569	1.85	.0831765	2.92	0.0912627	1.71	-.2005714	-2.84	.1068353	8.90
+21	-0.0975031	-2.14	.0360235	0.75	.0428574	1.51	-0.0516087	-0.96	-.0545452	-0.77	.1175351	9.79
+22	0.0939479	2.05	.1029413	2.05	.0284861	1.01	0.1064073	2.01	-.0765332	-1.07	.0866186	7.27

+23	-0.0373416	-0.81	-.0922074	-1.79	.0134182	0.48	0.1556042	2.93	.0710469	0.98	.0910829	7.66
+24	-0.0101366	-0.22	.0440688	0.85	.0661116	2.36	0.0162798	0.30	-.0289843	-0.40	.1060145	8.93
+25	-0.0279451	-0.61	-.0022946	-0.04	.0345185	1.23	0.1004231	1.89	-.1933812	-2.67	.0841414	7.09
+26	0.0086064	0.19	.0589063	1.14	.0631386	2.25	0.159443	2.98	-.1394118	-1.93	.1239406	10.46
+27	-0.0830169	-1.81	.0395236	0.77	.0710309	2.53	-0.0168279	-0.32	.2070667	2.82	.1182748	9.99
+28	-0.0322865	-0.71	.016496	0.32	.0589842	2.11	0.0567049	1.06	-.3671341	-5.01	.1197651	10.11
+29	-0.0952908	-2.08	-.0564614	-1.08	.0635177	2.27	0.0747709	1.41	-.0582969	-0.80	.0820511	6.93
+30	-0.0376116	-0.82	-.0530625	-1.02	.0116284	0.42	0.152005	2.87	-.3951102	-5.41	.0852571	7.20
+31	-0.0901124	-1.96	-.0675703	-1.29	.0267986	0.96	0.0580074	1.10	-.2454425	-3.36	.0691795	5.85
+32	-0.1089779	-2.35	-.0596438	-1.14	.0679715	2.43	-0.1694946	-3.13	-.1087109	-1.45	.0895247	7.61
+33	-0.0209731	-0.45	-.037824	-0.72	.0456583	1.64	0.0341209	0.64	.0466871	0.60	.1049189	8.94
+34	0.0252779	0.54	.0276244	0.53	.0626824	2.25	-0.03056	-0.57	-.2413828	-3.11	.1286461	10.97
+35	-0.0909477	-1.96	.0061126	0.12	-.009925	-0.36	-0.0445212	-0.83	.0409135	0.53	.0935534	7.99
+36	0.0003986	0.01	-.0491795	-0.94	.0231223	0.83	-0.0015903	-0.03	-.1705006	-2.20	.0787996	6.73
+37	-0.0245132	-0.54	-.0069424	-0.13	.0290001	1.03	0.0446955	0.86	-.1220751	-1.58	.0537271	4.54
+38	-0.1238274	-2.73	.0134625	0.25	.0556229	1.98	0.1152919	2.22	-.2016073	-2.61	.0895146	7.54
+39	-0.0938307	-2.08	-.0876164	-1.62	.0706671	2.51	-0.084332	-1.63	-.2270188	-2.94	.0604914	5.09
+40	-0.089705	-2.00	.0106343	0.20	.0396456	1.41	-0.0801644	-1.52	-.2796963	-3.63	.074239	6.25

Table 8. Changes In Betas Of Large-cap And Small-cap Stocks Around News With Good Earnings Sign In Turmoil Periods

Event day	**The betas of Large-Cap stocks around news with Good earnings sign in Pre-Fin. Crisis Period**	**t-value**	**The betas of Large-Cap stocks around news with Good earnings sign during Fin. Crisis Period**	**t-value**	**The betas of Large-Cap stocks around news with Good earnings sign in Post-Fin. Crisis Period**	**t-value**	**The betas of Small-Cap stocks around news with Good earnings sign in Pre-Fin. Crisis Period**	**t-value**	**The betas of Small-Cap stocks around news with Good earnings sign during Fin. Crisis Period**	**t-value**	**The betas of Small-Cap stocks around news with Good earnings sign in Post-Fin. Crisis Period**	**t-value**
-40	.0435352	0.93	.002879	0.06	-.0126581	-0.41	.0336894	0.43	.0286384	0.24	.2018837	2.17
-39	.1601986	3.40	.0640184	1.29	.0205673	0.66	-.0753212	-0.97	.3942921	3.33	.143093	1.54
-38	.0119914	0.25	.2046182	4.12	.0464772	1.50	.1908463	2.41	.1773281	1.43	.1075742	1.17

-37	.0976086	2.05	.1169323	2.35	-.0673907	-2.17	-.1194166	-1.48	.3037954	2.45	-.084978	-0.92
-36	.0382996	0.79	.1317106	2.65	.0368067	1.19	-.2547264	-3.16	.419358	3.38	.0979611	1.06
-35	.0461908	0.97	.078351	1.57	.0067123	0.22	-.1305324	-1.65	.0157296	0.13	.0931494	1.01
-34	-.0145441	-0.30	.1638232	3.27	.0035032	0.11	.1463122	1.85	.3184384	2.56	.0988013	1.07
-33	.0599494	1.26	.0065448	0.13	-.0008682	-0.03	-.0533992	-0.68	1.122182	9.01	.0270237	0.29
-32	.0281434	0.59	.0217463	0.45	.0487794	1.58	.1084264	1.38	-.1767729	-1.49	-.0224831	-0.24
-31	.0569077	1.18	.0033504	0.07	-.0053554	-0.17	-.2074013	-2.63	-.0112481	-0.10	.0884861	0.96
-30	.1163335	2.43	-.0136617	-0.28	.0203552	0.66	.0405791	0.52	-.169612	-1.43	.0799611	0.87
-29	.0205574	0.43	.0685736	1.37	.027594	0.90	.1834884	2.33	-.0790665	-0.65	-.1227491	-1.34
-28	.1239218	2.60	.0988329	1.96	.053795	1.76	.1695795	2.15	.2453881	1.94	-.137858	-1.52
-27	.0545037	1.13	.1734149	3.38	.0004716	0.02	-.1085963	-1.38	.1994738	1.66	.0731307	0.81
-26	.0842964	1.76	.0623743	1.21	.0697606	2.30	.0851763	1.08	.1057821	0.88	-.0257733	-0.28
-25	.045229	0.95	.0865361	1.68	.0134563	0.44	-.1047275	-1.33	.1314604	1.09	-.0242915	-0.27
-24	.0829426	1.73	.1218931	2.36	.0059449	0.20	-.221542	-2.81	.3235845	2.69	-.0052564	-0.06
-23	.0264781	0.55	.1568541	3.04	.0212684	0.70	-.1560385	-1.94	-.1564488	-1.30	.1988132	2.20
-22	.0048265	0.10	.0433573	0.84	.0242147	0.80	.0457315	0.56	-.0524801	-0.44	.0345025	0.38
-21	.0706307	1.47	.1209824	2.33	.0359509	1.19	.0420041	0.52	.0165171	0.14	.0032606	0.04
-20	.1236684	2.58	.0647538	1.25	.03398	1.13	-.0234864	-0.29	.1461456	1.21	.2101921	2.32
-19	.0590509	1.23	.0346783	0.66	.0881217	2.92	.0366679	0.46	-.0784225	-0.65	.0193687	0.21
-18	.0100011	0.21	.0483407	0.91	-.0036335	-0.12	.0410362	0.51	-.0940957	-0.78	.1000903	1.11
-17	.0891228	1.82	.0840599	1.59	.0191794	0.64	.0392791	0.49	.2054422	1.71	.0864864	0.96
-16	.0453681	0.92	.1033738	1.96	.0955016	3.17	.134236	1.67	.1363039	1.14	.1870527	2.07
-15	-.041977	-0.86	.0797755	1.51	.0579314	1.93	-.154424	-1.89	.0696236	0.58	.207655	2.29
-14	-.0217973	-0.45	.148987	2.82	.0294365	0.98	-.0108804	-0.14	.4016687	3.37	-.0050507	-0.06
-13	.005499	0.11	.0709367	1.34	.0269849	0.90	-.284125	-3.50	.4819076	4.04	.0577411	0.64
-12	.0239048	0.49	.1295002	2.45	.0102995	0.34	-.2883756	-3.62	-.2990905	-2.62	.1584785	1.75
-11	.0189333	0.39	.0535379	1.01	.0205121	0.68	.0000527	0.00	-.0162756	-0.14	.2448598	2.71
-10	-.0234462	-0.48	.1351829	2.56	.0464508	1.54	.0078352	0.10	.600322	5.33	.1508661	1.68
-9	-.034076	-0.68	.0379401	0.72	.043511	1.45	-.1646327	-2.06	.1626878	1.45	.1857858	2.07
-8	.039027	0.77	.1067811	2.03	.071207	2.37	-.0628591	-0.74	-.0653589	-0.58	.0373615	0.42
-7	-.051806	-1.04	.0895985	1.73	.0738804	2.45	-.1378429	-1.66	.2351563	2.09	.1617925	1.80
-6	-.0380085	-0.76	.2177095	4.20	.1217596	4.04	-.0451701	-0.57	.208055	1.85	.2902154	3.23
-5	.0689598	1.39	.1357487	2.65	.0897745	2.98	-.1247819	-1.56	.3640591	3.23	-.0190083	-0.21
-4	-.0170229	-0.34	.0764309	1.50	-.005784	-0.19	-.2511938	-3.09	-.1364148	-1.21	.1938093	2.16
-3	.132582	2.68	.0561951	1.11	.0983745	3.27	-.1347612	-1.69	-.0074621	-0.07	.1210352	1.35
-2	.0607186	1.21	.1357865	2.69	.048554	1.61	-.1151532	-1.42	-.1352828	-1.20	.0894888	1.00
-1	.0113716	0.23	.0810922	1.61	.0373537	1.24	-.1482235	-1.82	-.0847029	-0.75	.1989638	2.22

0	.1206339	2.40	.1415237	2.81	.087969	2.92	-.0401616	-0.50	-.0995078	-0.88	.0002434	0.00
+1	.0762312	1.53	.1782982	3.53	.0512374	1.70	.0571225	0.69	.0017879	0.02	.2172098	2.42
+2	.0258424	0.52	.1403438	2.80	.1238144	4.11	.1740433	2.18	.0165169	0.15	.1102698	1.23
+3	.1581797	3.19	.0680274	1.36	.0663148	2.20	-.3069476	-3.85	.0461958	0.41	.2265529	2.52
+4	.0362763	0.73	.1282882	2.56	.0676884	2.25	-.3267241	-4.10	.0942461	0.84	.1470998	1.64
+5	.0070018	0.14	.0464021	0.93	.1040529	3.46	-.234179	-2.94	.3579575	3.18	.1645332	1.83
+6	.0817333	1.66	.0100599	0.20	.0689677	2.29	.0920092	1.15	.081177	0.72	.2613509	2.91
+7	-.0976435	-1.98	.063508	1.27	.067097	2.23	-.0153453	-0.19	.1280017	1.14	.1226419	1.37
+8	.0521751	1.06	.0686766	1.37	.0676792	2.25	.047577	0.60	.083329	0.74	.0390445	0.44
+9	.054253	1.10	.1733591	3.46	.071886	2.39	.1205202	1.51	-.0414645	-0.37	.1873647	2.09
+10	-.0318865	-0.65	.0942106	1.88	.0630048	2.09	-.0556777	-0.70	.016773	0.15	.1055245	1.17
+11	.0094691	0.19	.0581073	1.16	.0660782	2.19	.1168949	1.38	.2876734	2.48	.3928672	4.35
+12	.0791084	1.56	.125599	2.50	.0733165	2.44	-.1909074	-2.31	.0499275	0.43	.2236316	2.47
+13	.0573561	1.16	.0399297	0.80	.084869	2.82	.3100384	3.89	.1097581	0.94	.1753208	1.94
+14	.0835057	1.69	.0660022	1.32	.1064749	3.54	-.0009697	-0.01	.1012866	0.87	.1769238	1.96
+15	.0757651	1.53	.0911797	1.82	.0673781	2.24	.4117402	5.14	.1125454	0.97	.1402047	1.55
+16	-.0215984	-0.44	.0178048	0.35	.0772395	2.57	-.0465943	-0.58	.4110939	3.52	-.1780028	-1.97
+17	.0434252	0.88	.0704068	1.40	.0983848	3.27	.0808334	1.01	-.0193931	-0.17	.2349337	2.60
+18	.0684411	1.39	.078672	1.57	.0841002	2.79	.1062878	1.33	-.3948651	-3.37	.0626855	0.69
+19	-.0067216	-0.14	-.0180227	-0.36	.0370457	1.23	-.031018	-0.39	.0771571	0.66	.0221711	0.25
+20	.0912268	1.84	.0969022	1.93	.0928808	3.09	-.0026993	-0.03	-.1947743	-1.65	.1510379	1.67
+21	-.0949137	-1.93	.0252104	0.50	.0475661	1.58	-.0520906	-0.65	.2427445	2.04	.1601293	1.77
+22	.0817155	1.65	.0958391	1.83	.0308621	1.04	.0583791	0.73	.0589065	0.48	.1558302	1.73
+23	-.0225409	-0.45	-.1189051	-2.22	.0160684	0.54	.2216567	2.76	-.141184	-1.10	.389586	4.37
+24	-.0174766	-0.35	.0128824	0.24	.0723462	2.44	.0121712	0.15	-.0957916	-0.75	.2213449	2.48
+25	-.0369441	-0.75	-.0315098	-0.58	.0324797	1.10	.0972686	1.21	-.0745384	-0.58	.1482764	1.66
+26	.0163662	0.33	.0416112	0.77	.07245	2.45	.2603279	3.25	.0463742	0.36	.2202674	2.47
+27	-.1021752	-2.06	.075243	1.40	.0746745	2.52	-.2041293	-2.55	.8115822	6.33	.1455852	1.63
+28	-.0484652	-0.98	.0141594	0.26	.0798441	2.70	-.0869427	-1.06	-.3813332	-2.98	-.2955356	-3.31
+29	-.1187939	-2.40	-.0519113	-0.96	.065474	2.21	.0102765	0.13	.0730341	0.57	-.1752301	-1.96
+30	-.0148078	-0.30	-.0632889	-1.16	.0126677	0.43	.2911018	3.63	-.4488783	-3.51	.2018492	2.26
+31	-.0551842	-1.11	-.0828833	-1.52	.0407969	1.38	.0364959	0.46	-.1888226	-1.48	.0914963	1.03
+32	-.1156939	-2.31	-.0369273	-0.68	.0745932	2.52	-.1312035	-1.64	.0855052	0.64	.3396685	3.84
+33	-.023059	-0.46	-.0206837	-0.37	.0727922	2.47	-.0324554	-0.40	.0729535	0.55	.1917265	2.17
+34	.0118128	0.24	.0170113	0.31	.046969	1.59	-.067518	-0.84	-.1546993	-1.16	.4259442	4.80
+35	-.0840332	-1.68	.0074503	0.14	-.0172671	-0.59	-.071154	-0.88	-.2073801	-1.55	.153224	1.73
+36	.0224603	0.44	-.0493813	-0.91	.0409757	1.39	-.0736456	-0.91	-.3282287	-2.46	.1372535	1.55

+37	-.0254238	-0.51	.0021582	0.04	.0320413	1.08	-.0499522	-0.64	-.1496065	-1.12	.093129	1.03
+38	-.102303	-2.07	.0203981	0.36	.0508631	1.72	.0180011	0.24	.1390381	1.04	.1668927	1.85
+39	-.0957272	-1.94	-.0836434	-1.47	.0673068	2.27	-.1385785	-1.82	-.2909149	-2.18	.0278072	0.31
+40	-.0548909	-1.12	.0100552	0.18	.0414742	1.40	.0213017	0.28	-.1943442	-1.46	-.042896	-0.47

Table 9. Changes In Betas Of Large-cap And Small-cap Stocks Around News With Bad Earnings Sign In Turmoil Periods

Event day	**The betas of Large-Cap stocks around news with Bad earnings sign in Pre-Fin. Crisis Period**	**t-value**	**The betas of Large-Cap stocks around news with Bad earnings sign during Fin. Crisis Period**	**t-value**	**The betas of Large-Cap stocks around news with Bad earnings sign in Post-Fin. Crisis Period**	**t-value**	**The betas of Small-Cap stocks around news with Bad earnings sign in Pre Fin. Crisis Period**	**t-value**	**The betas of Small-Cap stocks around news with Bad earnings sign during Fin. Crisis Period**	**t-value**	**The betas of Small-Cap stocks around news with Bad earnings sign in Post-Fin. Crisis Period**	**t-value**
-40	.073814	0.64	-.1734645	-0.92	.1588309	1.86	.0233978	0.35	.0350306	0.60	.060937	0.76
-39	.2781536	2.41	.1562418	0.83	-.1089759	-1.28	-.1332402	-1.99	-.0140781	-0.24	.0431241	0.54
-38	-.0218661	-0.19	.0049585	0.03	-.0337127	-0.39	-.0110484	-0.17	.1037577	1.80	.1308031	1.64
-37	.0931544	0.79	.197344	1.05	-.0057911	-0.07	-.0401864	-0.60	-.0525086	-0.91	-.0818212	-1.03
-36	-.0391188	-0.33	-.0901887	-0.48	-.0022608	-0.03	.0427907	0.61	-.0064373	-0.11	-.06369	-0.80
-35	.1353599	1.17	.5213973	2.77	-.1098788	-1.29	-.0466368	-0.70	-.0077193	-0.13	-.0011355	-0.01
-34	-.010196	-0.09	-.1801778	-0.96	-.1073645	-1.26	.0913533	1.37	.040251	0.70	-.0115911	-0.15
-33	-.0128054	-0.11	-.0483583	-0.26	.1453387	1.70	.1157555	1.71	.0644136	1.12	.0008947	0.01
-32	-.1865726	-1.62	.182327	1.04	-.0759656	-0.89	.0112781	0.17	.0654984	1.14	.0883545	1.11
-31	-.0538467	-0.47	-.0100959	-0.06	.0320499	0.38	-.0118749	-0.18	-.0189256	-0.33	-.0211589	-0.27
-30	.1491501	1.29	-.0372266	-0.21	-.1705502	-2.00	.0785386	1.18	.1403173	2.42	.1675836	2.11
-29	.1660357	1.44	-.1363591	-0.78	-.0012581	-0.01	.0105681	0.16	-.0032378	-0.06	-.0063526	-0.08
-28	.3061655	2.66	.1706748	0.98	-.0841475	-0.99	.0342746	0.51	-.0152267	-0.26	-.0490214	-0.62
-27	.1381153	1.20	-.1263832	-0.72	-.0594775	-0.70	.2338868	3.50	.1201758	2.09	.0521597	0.66
-26	.0166408	0.14	-.1259927	-0.72	-.1000976	-1.17	.1278966	1.92	.0788442	1.37	.0553864	0.70
-25	.1088875	0.94	.7096541	4.07	-.2485667	-2.91	.1254986	1.88	.0764067	1.34	.0432198	0.55
-24	-.0064005	-0.06	.1975454	1.13	.0712751	0.84	.3730375	5.58	.1241419	2.17	-.0015042	-0.02

-23	.0601227	0.51	-.1056912	-0.61	-.0710196	-0.83	.0593192	0.86	.0044739	0.08	-.0118449	-0.15
-22	.0742686	0.63	.1074247	0.62	-.1144493	-1.34	.3077175	4.37	.0345522	0.60	-.04265	-0.55
-21	.0968594	0.84	.2424224	1.39	.2061368	2.42	.0091371	0.13	.0450301	0.79	.0485288	0.62
-20	.0485465	0.42	-.1158885	-0.66	-.0004959	-0.01	.0424132	0.61	.1899182	3.32	.2451175	3.14
-19	.0655759	0.56	-.0354671	-0.21	-.0116545	-0.14	.1142396	1.64	.0842916	1.47	.0590462	0.76
-18	.056782	0.49	-.0838887	-0.49	.0336203	0.39	.3012127	4.27	.0820254	1.43	-.0173735	-0.22
-17	.0346023	0.30	-.2048819	-1.19	-.0604081	-0.71	.023942	0.34	.0366333	0.64	.0436112	0.56
-16	.203329	1.74	.3331957	1.93	-.0418331	-0.49	-.0587151	-0.81	.063998	1.12	.1052254	1.35
-15	.0059612	0.05	.1859289	1.08	-.0075376	-0.09	-.0856897	-1.23	-.1124538	-1.97	-.1364089	-1.75
-14	.0287496	0.25	.0075035	0.04	-.0525724	-0.62	-.2374878	-3.42	.0238792	0.42	.1171415	1.50
-13	-.0749043	-0.64	.2978693	1.72	-.0466586	-0.55	.216156	3.12	.0535215	0.94	-.0312503	-0.40
-12	.0105395	0.09	.1822235	1.05	-.035106	-0.41	.0825478	1.19	.058623	1.02	.0339364	0.43
-11	-.1062964	-0.88	.1598735	0.92	-.0541418	-0.63	.0115467	0.17	.0826053	1.43	.110641	1.42
-10	-.078333	-0.67	.03977	0.23	-.1488075	-1.74	.0466575	0.67	.0300081	0.52	.0171302	0.22
-9	-.0739048	-0.63	-.3315471	-1.92	-.0169132	-0.20	.1367022	1.94	.2432581	4.20	.2752351	3.53
-8	.0154348	0.13	-.097	-0.60	.040774	0.48	-.1821128	-2.59	.0237825	0.41	.1027786	1.32
-7	-.0418573	-0.35	-.0720673	-0.45	.0142004	0.17	-.0353682	-0.50	.0806288	1.39	.0956893	1.23
-6	.0089232	0.08	.0983491	0.61	.0449335	0.53	-.0310567	-0.45	.087902	1.52	.126628	1.62
-5	.0564831	0.47	.1739291	1.08	-.1000129	-1.18	-.0408222	-0.58	.0935373	1.62	.1365579	1.75
-4	-.1863655	-1.59	-.205163	-1.27	-.0184318	-0.22	.1860869	2.68	.1047637	1.81	.0623608	0.80
-3	-.0392479	-0.33	.2768904	1.71	-.0881343	-1.04	.0372217	0.54	.2839353	4.91	.3732741	4.79
-2	-.048665	-0.42	.1562904	0.97	.1064839	1.25	.0588114	0.79	.1243702	2.15	.1661254	2.13
-1	-.2297835	-1.89	-.2630407	-1.63	-.0964829	-1.13	.0888543	1.26	.1400603	2.42	.15644	2.01
0	-.1166492	-0.98	.2878642	1.78	-.0901474	-1.06	.1183142	1.68	.2022623	3.54	.2273497	2.97
+1	.0231461	0.19	.0725848	0.45	.0075744	0.09	-.14275	-2.06	.0005589	0.01	.05235	0.67
+2	.0655134	0.56	.0123854	0.08	.0540916	0.64	.1462902	2.11	.0769285	1.33	.0393855	0.51
+3	-.0612975	-0.50	-.0167291	-0.10	-.0895648	-1.05	-.1359583	-1.96	.1635029	2.83	.2826966	3.63
+4	-.1846672	-1.58	.0864663	0.53	.0756447	0.89	-.0531847	-0.76	.1424183	2.46	.2127806	2.73
+5	-.0934158	-0.80	-.0034157	-0.02	.0382573	0.45	-.1097998	-1.58	-.0131243	-0.23	.0207466	0.27
+6	-.1595938	-1.34	.1943464	1.20	-.059821	-0.70	.0729361	1.04	.0101407	0.18	-.0345208	-0.44
+7	-.0144546	-0.12	.1258891	0.78	-.0954521	-1.12	.2617647	3.78	.1674703	2.89	.1155609	1.48
+8	-.0189636	-0.16	-.2050563	-1.27	-.0482222	-0.57	-.2626607	-3.79	.2008777	3.47	.3864828	4.96
+9	-.0869808	-0.74	.0936489	0.58	-.0141586	-0.17	.0676841	0.98	.1040652	1.80	.1101613	1.41
+10	-.0897399	-0.77	.1250451	0.77	.1125963	1.32	.2215815	3.20	.1645059	2.84	.1247916	1.60
+11	-.1656707	-1.39	-.2049492	-1.27	.0305268	0.36	-.1378506	-1.85	-.0517506	-0.89	-.0936656	-1.20
+12	-.1231809	-1.05	.0951051	0.59	-.1589103	-1.86	.0701123	1.00	.1997864	3.45	.2429203	3.11
+13	-.1073679	-0.88	.1350234	0.84	.0933661	1.09	-.0333733	-0.47	.13364	2.31	.2013282	2.58

+14	-.0201597	-0.17	.002187	0.01	.0564931	0.66	.0100544	0.14	.1381074	2.38	.180526	2.31
+15	-.0619293	-0.51	.36737	2.27	.096259	1.13	-.142342	-2.05	.049	0.85	.1284627	1.64
+16	-.0689275	-0.59	-.3069049	-1.90	.0325533	0.38	-.0696276	-1.00	.1190399	2.06	.1989558	2.55
+17	.0042485	0.04	-.0810662	-0.50	.1615593	1.89	-.2506115	-3.61	.0697955	1.20	.2083129	2.67
+18	-.0062777	-0.05	.0762947	0.47	.0184948	0.22	.1064933	1.49	.0531141	0.92	.0642503	0.82
+19	.0750215	0.64	-.2424173	-1.50	.0786142	0.92	.2079575	2.99	.2001779	3.46	.195811	2.51
+20	.0486927	0.42	-.0327612	-0.20	-.0397793	-0.47	.176575	2.54	.0562417	0.97	.0063163	0.08
+21	-.0877469	-0.75	.0937772	0.57	-.0145401	-0.17	-.0622284	-0.87	-.0293644	-0.51	-.0234294	-0.30
+22	.1892129	1.62	.1714148	0.98	-.0292271	-0.35	.1351181	1.94	.1502718	2.59	.1518153	1.94
+23	-.085706	-0.73	.1430147	0.82	-.04031	-0.48	.0886852	1.28	-.0490629	-0.85	-.1085777	-1.39
+24	.0789018	0.66	.3720502	2.13	-.0199373	-0.24	.0191616	0.27	.1844752	3.18	.2553179	3.27
+25	.0491921	0.42	.2286292	1.31	.010896	0.13	.1137598	1.64	.2159643	3.73	.2626516	3.36
+26	-.0065474	-0.06	.289585	1.66	-.0458641	-0.54	.0804855	1.14	.082177	1.42	.0865854	1.11
+27	.0678496	0.58	-.3652805	-2.09	-.0047955	-0.06	.1098232	1.58	.1197128	2.08	.1313192	1.69
+28	.1103346	0.94	.0226689	0.13	-.1731578	-2.05	.1817949	2.62	.1772719	3.07	.1743543	2.24
+29	.0931473	0.79	-.0798695	-0.46	-.0011214	-0.01	.099123	1.43	.148403	2.57	.165075	2.13
+30	-.1170318	-1.00	.0927458	0.53	-.0360409	-0.43	.0568195	0.82	.0539064	0.93	.0372601	0.48
+31	-.2510087	-2.10	.085637	0.49	-.1369335	-1.62	.079711	1.15	.0020711	0.04	-.032662	-0.42
+32	-.0077518	-0.06	-.2808947	-1.61	-.0282192	-0.33	-.196547	-2.71	-.0423616	-0.74	.0079348	0.10
+33	.0014283	0.01	-.1743481	-1.00	-.2092634	-2.48	.0991275	1.41	.133674	2.35	.1311392	1.72
+34	.1475913	1.21	.1369974	0.79	.1617518	1.91	.0381539	0.54	.1274315	2.24	.1735263	2.27
+35	-.0885432	-0.73	-.072615	-0.42	.0067271	0.08	-.0836717	-1.18	.0648447	1.14	.1013866	1.33
+36	-.0499194	-0.41	-.0531131	-0.30	-.1430594	-1.69	.0336874	0.47	.1953318	3.43	.2427365	3.18
+37	-.0285186	-0.24	-.040765	-0.23	-.0504545	-0.58	.1450236	2.08	.2081314	3.64	.2483104	3.20
+38	-.1970946	-1.71	-.051499	-0.30	.0641255	0.73	.1699528	2.44	-.0266576	-0.47	-.1154344	-1.49
+39	-.0832773	-0.73	-.0707359	-0.41	.0792635	0.90	-.0685323	-0.98	-.0569883	-1.00	-.0502503	-0.65
+40	-.247	-2.18	.0501033	0.29	-.0241148	-0.27	-.115302	-1.61	-.0794673	-0.27	-.0682041	-0.88

Table 10. Changes In Beta Around Earnings Announcements: By Dividend Payments

Event day	**Dividend stocks**	**t-value**	**Non-dividend stocks**	**t-value**	**Event day**	**Dividend stocks**	**t-value**	**Non-dividend stocks**	**t-value**
-40	0.041725	2.77	0.083359	7.46	0	0.094858	6.35	0.166452	15.96
-39	0.026095	1.73	0.0702	6.28	+1	0.101751	6.73	0.157167	14.06
-38	0.038129	2.53	0.091339	8.17	+2	0.111762	7.39	0.155516	13.91
-37	0.026674	1.77	0.096104	8.6	+3	0.105635	6.98	0.168054	15.04
-36	0.056295	3.74	0.083943	7.51	+4	0.087794	5.8	0.168571	15.08

-35	0.039694	2.63	0.078077	6.98	+5	0.103011	6.81	0.159178	14.24
-34	0.027976	1.86	0.097094	8.68	+6	0.073233	4.84	0.155035	13.87
-33	0.03198	2.12	0.101794	9.11	+7	0.069824	4.62	0.166503	14.9
-32	0.033241	2.21	0.111776	10.01	+8	0.082244	5.44	0.131052	11.73
-31	0.026798	1.78	0.105775	9.47	+9	0.086296	5.71	0.13997	12.52
-30	0.036485	2.42	0.098349	8.8	+10	0.099139	6.56	0.153734	13.75
-29	0.035178	2.33	0.078961	7.07	+11	0.079463	5.25	0.123088	11.01
-28	0.069708	4.62	0.092691	8.3	+12	0.067895	4.49	0.143775	12.86
-27	0.049587	3.29	0.098128	8.78	+13	0.063306	4.19	0.164445	14.7
-26	0.064896	4.3	0.137397	12.29	+14	0.094919	6.28	0.159774	14.29
-25	0.055671	3.69	0.12962	11.6	+15	0.057024	3.77	0.136195	12.18
-24	0.034252	2.27	0.110912	9.92	+16	0.078683	5.21	0.107915	9.65
-23	0.032667	2.16	0.1216	10.88	+17	0.053982	3.57	0.127451	11.39
-22	0.033173	2.2	0.112329	10.05	+18	0.081716	5.41	0.113901	10.18
-21	0.054825	3.63	0.11082	9.91	+19	0.046961	3.11	0.10354	9.26
-20	0.046511	3.08	0.09584	8.57	+20	0.064607	4.28	0.08562	7.66
-19	0.047611	3.15	0.122466	10.95	+21	0.047878	3.17	0.092236	8.25
-18	0.024871	1.65	0.120027	10.73	+22	0.033055	2.19	0.099926	8.94
-17	0.049523	3.28	0.115321	10.31	+23	0.050763	3.36	0.093895	8.4
-16	0.098871	6.54	0.130389	11.66	+24	0.069309	4.59	0.122392	10.95
-15	0.048299	3.19	0.116404	10.41	+25	0.042021	2.79	0.088794	7.94
-14	0.028862	1.91	0.110234	9.86	+26	0.07001	4.64	0.130569	11.68
-13	0.048438	3.2	0.121636	10.88	+27	0.055428	3.68	0.111583	9.99
-12	0.068209	4.51	0.110056	9.84	+28	0.081324	5.39	0.102004	9.13
-11	0.069443	4.59	0.123158	11.02	+29	0.023936	1.59	0.089597	8.02
-10	0.059816	3.96	0.126523	11.32	+30	0.011692	0.78	0.099845	8.94
-9	0.082612	5.46	0.177142	15.85	+31	0.045271	3	0.066058	5.91
-8	0.104343	6.9	0.147678	13.21	+32	0.05454	3.62	0.094	8.42
-7	0.07113	4.7	0.176333	15.78	+33	0.066504	4.41	0.109822	9.83
-6	0.095948	6.34	0.15324	13.71	+34	0.052643	3.49	0.12069	10.8
-5	0.064851	4.29	0.100411	8.98	+35	0.038008	2.52	0.084605	7.57
-4	0.043489	2.87	0.121515	10.87	+36	0.039517	2.62	0.07003	6.27
-3	0.065555	4.33	0.133755	11.97	+37	0.022779	1.51	0.052676	4.71
-2	0.074908	4.95	0.113609	10.16	+38	-0.00944	-0.63	0.082692	7.4
-1	0.036694	2.43	0.138844	12.42	+39	0.010286	0.68	0.065721	5.88
					+40	0.017638	1.17	0.058151	5.21

Table 11. Changes In Betas of Dividend Stocks Around Different Signs Of Earnings News

Event day	The betas of Dividend stocks around news with Good earnings sign	t-value	The betas of Dividend stocks around news with Bad earnings sign	t-value	Event day	The betas of Dividend stocks around news with Good earnings sign	t-value	The betas of Dividend stocks around news with Bad earnings sign	t-value
-40	.0402057	2.56	.06695	1.31	0	.1051408	6.76	-.0742022	-1.66
-39	.0280158	1.78	-.0200147	-0.39	+1	.1158335	7.35	-.1143365	-2.24
-38	.0335409	2.13	.0755099	1.48	+2	.1177432	7.47	-.0210519	-0.41
-37	.0265236	1.69	.0047766	0.09	+3	.124367	7.89	-.1631665	-3.2
-36	.0577508	3.67	.0225524	0.44	+4	.0908862	5.76	-.014459	-0.28
-35	.0459242	2.92	-.0754315	-1.48	+5	.1071229	6.79	-.0106529	-0.21
-34	.0266927	1.70	.0181982	0.36	+6	.0830416	5.27	-.0999027	-1.96
-33	.0253596	1.61	.0669915	1.31	+7	.0681157	4.32	.0179319	0.35
-32	.0327526	2.08	.0030824	0.06	+8	.0824796	5.23	.0161081	0.32
-31	.0269211	1.71	-.0058747	-0.12	+9	.0901767	5.72	-.0249955	-0.49
-30	.0416156	2.65	-.0402089	-0.79	+10	.1005438	6.38	.0153145	0.3
-29	.0331381	2.11	.0289145	0.57	+11	.0815935	5.18	-.0082412	-0.16
-28	.0686678	4.36	.040283	0.79	+12	.0730155	4.63	-.0501784	-0.98
-27	.046166	2.93	.0567436	1.11	+13	.0676002	4.29	-.0409369	-0.8
-26	.0661433	4.20	.0090562	0.18	+14	.0872923	5.54	.1200322	2.35
-25	.0561297	3.57	.0122436	0.24	+15	.06278	3.98	-.0631439	-1.24
-24	.0331925	2.11	.0029412	0.06	+16	.0758275	4.81	.0548449	1.07
-23	.0358787	2.28	-.0486437	-0.95	+17	.0462003	2.93	.0822153	1.61
-22	.0366255	2.33	-.0512432	-1	+18	.0868181	5.51	-.0262912	-0.52
-21	.0539414	3.42	.0129369	0.25	+19	.0446506	2.83	.0169062	0.33
-20	.0435728	2.77	.0273004	0.53	+20	.0606391	3.85	.055422	1.09
-19	.0461336	2.93	.007292	0.14	+21	.0417079	2.65	.0627658	1.23
-18	.0299799	1.90	-.0865821	-1.7	+22	.0363046	2.31	-.0506908	-0.99
-17	.0504845	3.20	-.0205849	-0.4	+23	.056303	3.58	-.0601281	-1.18
-16	.0942427	5.98	.0868915	1.7	+24	.0638705	4.06	.0791023	1.55
-15	.0423175	2.68	.0490374	0.96	+25	.0413996	2.63	.0079669	0.16
-14	.0330638	2.10	-.081292	-1.59	+26	.0738221	4.69	-.0154576	-0.3
-13	.0475564	3.02	-.0034506	-0.07	+27	.0502158	3.19	.0740394	1.45
-12	.0666776	4.23	.0177683	0.35	+28	.0844477	5.37	.0060268	0.12
-11	.0747261	4.74	-.0555838	-1.09	+29	.0262262	1.67	-.0402516	-0.79
-10	.0679478	4.31	-.0926593	-1.82	+30	.0150859	0.96	-.073222	-1.43
-9	.095155	6.04	-.1205123	-2.36	+31	.0445649	2.83	.0060232	0.12
-8	.1134555	7.20	-.0619677	-1.21	+32	.0504523	3.21	.086875	1.7
-7	.0742629	4.71	-.0318357	-0.62	+33	.0776928	4.94	-.0889684	-1.74
-6	.1027344	6.51	-.0461851	-0.91	+34	.042039	2.67	.1099619	2.15
-5	.0732254	4.64	-.0932094	-1.83	+35	.03981	2.53	-.0026054	-0.05
-4	.0459002	2.91	-.0554141	-1.09	+36	.0405872	2.58	.0206606	0.4
-3	.0724844	4.60	-.074907	-1.47	+37	.0319036	2.03	-.094577	-1.87
-2	.066834	4.24	.0892893	1.75	+38	-.0070452	-0.45	-.0666822	-1.33
-1	.0435367	2.76	-.105332	-2.06	+39	.0200298	1.27	-.111669	-2.22
					+40	.0146167	0.93	-.0138518	-0.28

Table 12. Changes In Betas Of Dividend Stocks Around Earnings Announcements In Turmoil Periods

Event day	The betas of Dividend stocks around earnings announcements in Pre-Financial Crisis	t-value	The betas of Dividend stocks around earnings announcements during the financial crisis	t-value	The betas of Dividend stocks around earnings announcements in the post-financial crisis	t-value
-40	.0613385	2.41	.0508011	1.30	.0218487	1.05
-39	.0462088	1.82	.0354706	0.90	-.002854	-0.14
-38	.0320674	1.26	.0693851	1.74	.0249497	1.20
-37	.0583753	2.26	.0770835	1.93	-.0150505	-0.73
-36	.0820372	3.16	.1406228	3.50	.012582	0.61
-35	.0741897	2.88	.0969955	2.41	-.0130927	-0.63
-34	.0018125	0.07	.0259269	0.64	.024744	1.20
-33	.0400448	1.55	.0107168	0.26	.0113953	0.55
-32	.0036214	0.14	-.0076239	-0.19	.0393165	1.90
-31	.0601293	2.33	-.0308331	-0.78	.0000451	0.00
-30	.0865256	3.35	-.0227232	-0.58	-.0006309	-0.03
-29	.0219433	0.85	.0288195	0.71	.018462	0.90
-28	.0679626	2.62	.1195372	2.92	.0319903	1.56
-27	.072975	2.80	.0332995	0.80	.0067867	0.33
-26	.095587	3.67	.0605906	1.46	.0232107	1.14
-25	.0496779	1.91	-.0141157	-0.34	.0464322	2.28
-24	-.0066508	-0.26	.0053216	0.13	.029685	1.46
-23	.014628	0.56	.0586527	1.43	.0042564	0.21
-22	.0100922	0.38	-.0016564	-0.04	.0087671	0.43
-21	.0203431	0.77	.0845159	2.06	.0309844	1.52
-20	.0527984	2.00	.0234099	0.57	.0192841	0.95
-19	.0146735	0.55	-.0209962	-0.51	.0454484	2.24
-18	-.0121177	-0.45	-.0301855	-0.73	.0215372	1.06
-17	-.0163573	-0.61	.0022888	0.06	.0578107	2.85
-16	.0701344	2.61	.0520901	1.26	.0930256	4.59
-15	.008091	0.30	.039143	0.95	.0316668	1.56
-14	-.0354478	-1.33	.0442365	1.08	.0142918	0.70
-13	-.0154423	-0.58	-.0329359	-0.80	.0585641	2.89
-12	-.0339012	-1.27	.0836227	2.07	.072337	3.56
-11	-.0190986	-0.72	.0360686	0.90	.0760496	3.75
-10	-.0568722	-2.13	.0076363	0.19	.0869006	4.28
-9	-.0204138	-0.76	-.0727134	-1.81	.1231979	6.07
-8	.0353822	1.28	-.0045589	-0.11	.1217729	6.00
-7	-.0685335	-2.53	.0714898	1.79	.0941245	4.64
-6	-.0256937	-0.95	.0658553	1.65	.121703	6.00
-5	-.0215703	-0.80	-.0318695	-0.80	.0942806	4.65
-4	-.0030901	-0.11	.0027444	0.07	.0351082	1.73
-3	.0152332	0.57	-.0280856	-0.71	.0685785	3.38
-2	.0089361	0.33	.0062694	0.16	.0771407	3.80
-1	-.0344512	-1.28	-.0153728	-0.39	.0393305	1.94
0	.0161848	-0.61	.0913461	2.34	.1058137	5.30
+1	.0243238	0.90	.0718989	1.82	.1111771	5.48
+2	.0034204	0.13	.0674944	1.71	.1393294	6.87
+3	.0439117	1.63	-.0324536	-0.82	.1282185	6.32
+4	-.0176952	-0.66	.0332252	0.84	.1088806	5.37
+5	-.0335236	-1.25	.0406763	1.03	.1421167	7.00
+6	.021764	0.81	-.0502424	-1.27	.0838133	4.13
+7	-.0061173	-0.23	-.0790607	-2.01	.1001013	4.93

+8	.0006738	0.03	.0085202	0.22	.095729	4.72
+9	-.0106963	-0.40	.034108	0.87	.1035666	5.11
+10	.0194443	0.73	-.0321171	-0.82	.1298664	6.40
+11	-.0111675	-0.41	.0272041	0.69	.0926182	4.56
+12	-.0060601	-0.22	-.0401318	-1.02	.0843141	4.15
+13	.010679	0.40	-.0385121	-0.98	.0728291	3.59
+14	.0267555	0.99	-.023315	-0.59	.1173889	5.78
+15	-.0136085	-0.51	-.039491	-1.00	.0739376	3.64
+16	-.0306859	-1.15	-.0076865	-0.20	.1130561	5.57
+17	-.0133936	-0.50	-.0211895	-0.54	.0658578	3.25
+18	.0396448	1.48	-.0018831	-0.05	.0819667	4.04
+19	-.0128918	-0.48	-.0571709	-1.45	.0642208	3.17
+20	-.0290203	-1.08	-.0177004	-0.45	.097638	4.82
+21	-.060002	-2.24	-.0859933	-2.18	.101867	5.03
+22	-.0156734	-0.59	-.1066738	-2.62	.0506704	2.52
+23	-.0117043	-0.44	-.096047	-2.34	.0798832	3.98
+24	.0373497	1.39	-.0304733	-0.73	.0741514	3.71
+25	.0108188	0.41	-.0921173	-2.20	.0528719	2.65
+26	-.0253416	-0.95	.0391538	0.94	.0869585	4.36
+27	-.0097127	-0.36	-.0451934	-1.07	.0727482	3.65
+28	-.0083394	-0.31	.0151849	0.36	.1068883	5.37
+29	.0106275	0.40	-.0834835	-1.98	.020886	1.05
+30	-.0315345	-1.18	-.1064105	-2.52	.0294708	1.48
+31	-.0255201	-0.96	-.0004048	-0.01	.0570911	2.87
+32	-.0014803	-0.05	-.0255326	-0.60	.0688232	3.47
+33	.0378517	1.40	-.0174066	-0.41	.0711661	3.59
+34	-.0125813	-0.46	-.0397832	-0.92	.0772485	3.90
+35	-.0105549	-0.39	-.0568845	-1.32	.0558892	2.82
+36	-.0252525	-0.92	.0263972	0.62	.044452	2.25
+37	-.0535348	-1.99	-.0513862	-1.19	.0432621	2.17
+38	-.0905601	-3.39	-.0788914	-1.82	.0258605	1.29
+39	-.0382562	-1.44	.0271114	0.62	.0053361	0.27
+40	-.0319718	-1.20	-.122818	-2.81	.0418115	2.09

Table 13. Changes In Betas Of Dividend Stocks Around Earnings Announcements In Turmoil Periods: By Signs Of Earnings News

Event day	The betas of Dividend stocks around news with Good earnings sign in Pre-Financial Crisis	t-value	The betas of Dividend stocks around news with Good earnings signduring the financial crisis	t-value	The betas of Dividend stocks around news with Good earnings sign in the period of Post-Financial Crisis	t-value	The betas of Dividend stocks around news with Bad earnings sign in Pre-Financial Crisis	t-value	The betas of Dividend stocks around news with Bad earnings signduring the financial crisis	t-value	The betas of Dividend stocks around news with Bad earnings sign in the period of Post-Financial Crisis	t-value
-40	.0533501	1.98	.0516849	1.28	.0227559	1.05	.1665167	2.22	.1106963	0.79	-.0129418	-0.17
-39	.0352592	1.31	.0323455	0.79	.0062316	0.29	.0773479	1.03	.061034	0.43	-.0992253	-1.30
-38	.006727	0.25	.0784779	1.90	.0276024	1.28	.2506868	3.34	-.0791007	-0.55	-.0308044	-0.40
-37	.0491765	1.80	.0812364	1.96	-.0126207	-0.59	.116715	1.54	-.0106743	-0.07	-.0836261	-1.10
-36	.0810782	2.95	.1290282	3.10	.0169642	0.79	.0644095	0.84	.2583556	1.80	-.0519256	-0.68
-35	.0716142	2.62	.0972385	2.33	-.0014978	-0.07	.0308968	0.41	.0549793	0.38	-.1855336	-2.44
-34	-.0051336	-0.19	.0348295	0.83	.0213287	0.99	.0509184	0.68	-.1037887	-0.72	.0418489	0.55
-33	.0315604	1.15	.0023025	0.05	.0022325	0.10	.0936241	1.22	.087496	0.61	.0692024	0.91
-32	-.0168562	-0.61	.0013285	0.03	.0450663	2.10	.1308131	1.74	-.1243123	-0.89	-.0507539	-0.67
-31	.050619	1.85	-.0318217	-0.78	.0044821	0.21	.1166251	1.55	-.0619136	-0.44	-.0729619	-0.96
-30	.0960617	3.51	-.0153601	-0.38	.0014257	0.07	.0201387	0.27	-.1384837	-0.99	-.0535018	-0.70
-29	.0276875	1.01	.0325991	0.78	.009081	0.43	-.0254536	-0.34	-.0679336	-0.46	.1273719	1.70
-28	.0524785	1.91	.133274	3.15	.0329839	1.56	.1614952	2.15	-.0949407	-0.64	-.0033815	-0.05
-27	.0634589	2.30	.0245396	0.57	.0054767	0.26	.1524349	2.01	.0933488	0.63	-.0032364	-0.04
-26	.0929875	3.36	.0662365	1.54	.0242416	1.15	.0893661	1.19	-.0182929	-0.12	-.0205441	-0.27
-25	.0510796	1.85	-.012369	-0.29	.0445554	2.11	.0210263	0.28	-.0776743	-0.53	.0341425	0.45
-24	-.007739	-0.28	.0018056	0.04	.0271724	1.29	-.0096837	-0.13	.0287833	0.19	.0263468	0.35
-23	.017475	0.63	.0737233	1.73	.0023012	0.11	-.0144917	-0.19	-.1648721	-1.12	-.008896	-0.12
-22	.0044385	0.16	.0058428	0.14	.0146508	0.69	.0290389	0.38	-.1253565	-0.85	-.0970214	-1.29
-21	.0168557	0.60	.0842489	1.99	.0289581	1.37	.0295115	0.39	.0487542	0.33	.0113219	0.15
-20	.0457736	1.63	.037496	0.89	.0134521	0.64	.0757764	1.00	-.1970081	-1.33	.0542692	0.72
-19	.0119875	0.43	-.026795	-0.63	.0450081	2.14	.0011861	0.02	.0227794	0.16	.0130096	0.17
-18	-.0115736	-0.41	-.0177736	-0.42	.0255785	1.22	-.0456663	-0.60	-.2249436	-1.53	-.0678794	-0.90
-17	-.0133928	-0.48	-.0035197	-0.08	.0574435	2.73	-.070356	-0.91	.045609	0.31	.0098318	0.13

-16	.0561109	1.98	.0470337	1.10	.0908181	4.32	.150453	1.91	.096335	0.66	.0752382	1.00
-15	.0012909	0.05	.0303699	0.71	.0269188	1.28	.0366878	0.48	.1149028	0.78	.0424815	0.57
-14	-.0428384	-1.52	.0487502	1.15	.0219873	1.05	-.0070606	-0.09	-.0288083	-0.20	-.1421849	-1.89
-13	-.0138467	-0.49	-.0341417	-0.80	.0553795	2.63	-.0539948	-0.69	-.0393018	-0.27	.0502364	0.67
-12	-.0306619	-1.09	.0983747	2.35	.0617004	2.93	-.0759495	-0.98	-.1338704	-0.94	.1539194	2.05
-11	-.0060192	-0.21	.033943	0.81	.0785085	3.74	-.1473314	-1.87	.0487517	0.34	-.0211688	-0.28
-10	-.04685	-1.66	.0128256	0.31	.0906587	4.32	-.1459449	-1.89	-.0940029	-0.66	-.0274927	-0.37
-9	-.0019533	-0.07	-.0647084	-1.56	.1329438	6.33	-.1808089	-2.30	-.1794515	-1.26	-.0697208	-0.93
-8	.046274	1.59	.0026775	0.06	.1276089	6.07	-.0682536	-0.86	-.09927	-0.73	-.0188544	-0.25
-7	-.0674122	-2.35	.0865872	2.10	.0925459	4.40	-.0925746	-1.17	-.1099832	-0.81	.0476323	0.64
-6	-.0364314	-1.27	.0775207	1.88	.1319936	6.28	.0433304	0.56	-.0721525	-0.53	-.0795066	-1.06
-5	-.0144438	-0.51	-.0415983	-1.01	.1032526	4.91	-.0778543	-0.99	.0706998	0.52	-.0929869	-1.24
-4	-.0007669	-0.03	.007963	0.19	.035318	1.68	-.0420682	-0.54	-.059957	-0.44	-.0459101	-0.61
-3	.0116748	0.41	-.0293436	-0.71	.0795109	3.78	.0385315	0.49	-.0199555	-0.15	-.1436926	-1.92
-2	.010401	0.36	-.013177	-0.32	.0644813	3.07	-.0267097	-0.34	.2156967	1.63	.1713347	2.28
-1	-.0342032	-1.20	-.0374206	-0.91	.0541531	2.58	-.0508813	-0.65	.2269826	1.71	-.2224506	-2.97
0	.0082359	-0.29	.0847068	2.09	.1180489	5.71	-.1220232	-1.69	.1319666	1.12	-.0831807	-1.33
+1	.0546449	1.91	.0864094	2.11	.1138325	5.42	-.2261392	-2.77	-.0938144	-0.71	-.0002335	-0.00
+2	-.0011798	-0.04	.068458	1.67	.1458639	6.94	.038389	0.48	.0563614	0.43	-.0255346	-0.34
+3	.0653749	2.30	-.0148849	-0.36	.1431947	6.81	-.1253814	-1.57	-.2317804	-1.75	-.1420633	-1.89
+4	-.0160048	-0.56	.0349367	0.85	.1098156	5.23	-.0433419	-0.56	.0136837	0.10	.0254158	0.34
+5	-.0227166	-0.80	.0253197	0.62	.1441337	6.86	-.1272511	-1.64	.2105165	1.59	.0401527	0.54
+6	.0295467	1.04	-.0258574	-0.63	.0890471	4.24	-.0406007	-0.52	-.3269906	-2.47	-.0608499	-0.81
+7	-.0108675	-0.38	-.0850125	-2.08	.0984038	4.68	.0262418	0.34	-.0170866	-0.13	.0433833	0.58
+8	-.0006682	-0.02	-.0024959	-0.06	.0969661	4.62	.0066819	0.09	.1265531	0.95	.0075545	0.10
+9	-.0032496	-0.11	.0191213	0.47	.1077869	5.13	-.0719392	-0.93	.2012547	1.52	-.0307634	-0.41
+10	.0243206	0.86	-.042567	-1.04	.1299161	6.18	-.0286682	-0.37	.0908286	0.68	.0497626	0.66
+11	-.0184118	-0.64	.026095	0.64	.0971587	4.62	.0442036	0.56	.0454099	0.34	-.0440761	-0.59
+12	-.0056684	-0.20	-.0551023	-1.35	.0936613	4.46	-.010444	-0.14	.1569493	1.18	-.1140987	-1.52
+13	.00229	0.08	-.051569	-1.26	.0856562	4.08	.0855592	1.10	.1397429	1.05	-.1723968	-2.30
+14	.0166693	0.58	-.0179698	-0.44	.1057714	5.03	.1230157	1.59	-.0443463	-0.33	.1901995	2.53
+15	-.0075335	-0.27	-.0505894	-1.24	.0805275	3.83	-.0443616	-0.56	.1136811	0.86	-.0864852	-1.15
+16	-.045058	-1.60	-.0064999	-0.16	.1118126	5.32	.0957294	1.23	.0046255	0.03	.0569905	0.76
+17	-.04507	-1.59	-.0193337	-0.47	.0647031	3.08	.2548057	3.24	-.0271069	-0.20	.0129965	0.17
+18	.0416415	1.47	-.0064234	-0.16	.0896572	4.27	.0487567	0.63	.0723946	0.54	-.0940872	-1.25
+19	-.0241235	-0.85	-.04747	-1.16	.0613651	2.92	.0979779	1.27	-.1504846	-1.13	.0277932	0.37
+20	-.0340316	-1.19	-.0314418	-0.77	.0937149	4.46	.020112	0.26	.1377649	1.03	.0873987	1.16

+21	-.0608992	-2.15	-.0906738	-2.22	.0897365	4.27	-.0347479	-0.45	-.0144765	-0.11	.1930149	2.57
+22	-.019032	-0.67	-.1142996	-2.72	.0579705	2.78	.0085938	0.11	.0314627	0.22	-.104066	-1.41
+23	-.0075007	-0.26	-.1055986	-2.48	.0877398	4.22	-.035654	-0.46	.050163	0.35	-.0944971	-1.28
+24	.0203797	0.72	-.0386484	-0.90	.0738269	3.56	.1691444	2.18	.1017403	0.71	.0169398	0.23
+25	.0020506	0.07	-.1135969	-2.62	.0593296	2.87	.0993224	1.28	.1791754	1.25	-.0862908	-1.17
+26	-.0208164	-0.74	.0397803	0.92	.088179	4.27	-.0397918	-0.51	.065767	0.46	.0031964	0.04
+27	-.0131218	-0.46	-.0449491	-1.03	.06274	3.04	.0027453	0.04	-.0342871	-0.24	.1688055	2.29
+28	-.0096459	-0.34	.0169547	0.39	.1096365	5.31	.0443084	0.57	.0152906	0.11	-.010296	-0.14
+29	.003933	0.14	-.1034429	-2.36	.0304771	1.48	.089091	1.15	.1473576	1.03	-.1664605	-2.26
+30	-.0353049	-1.25	-.1075067	-2.45	.0347558	1.69	-.0134416	-0.17	-.0622587	-0.43	-.1062701	-1.44
+31	-.0072238	-0.26	.0048243	0.11	.0464649	2.25	-.1291513	-1.65	-.048525	-0.34	.1177312	1.60
+32	-.0122528	-0.43	-.0294488	-0.66	.0636187	3.09	.0556931	0.70	.0251755	0.18	.1298508	1.76
+33	.0580383	2.02	-.0169196	-0.38	.078012	3.80	-.1074673	-1.35	-.0227232	-0.15	-.0694062	-0.95
+34	-.0274458	-0.95	-.0325141	-0.73	.0626503	3.05	.0729078	0.92	-.1276526	-0.84	.2008044	2.76
+35	-.0091398	-0.32	-.0700043	-1.57	.0562417	2.74	.0506356	0.62	.0921803	0.61	-.0182529	-0.25
+36	-.0258421	-0.89	.0334289	0.75	.0432255	2.11	.0340996	0.42	-.0460379	-0.30	.044553	0.61
+37	-.0386985	-1.35	-.0450359	-1.00	.0502843	2.44	-.135232	-1.73	-.121497	-0.80	-.0685906	-0.94
+38	-.0826282	-2.91	-.0832251	-1.84	.0237708	1.15	-.1696511	-2.19	.0206302	0.14	.0147223	0.20
+39	-.0073692	-0.26	.0387191	0.85	.0039396	0.19	-.2465828	-3.18	-.1018616	-0.67	-.0193857	-0.26
+40	-.0324172	-1.15	-.1349626	-2.97	.039297	1.89	-.025172	-0.32	.0117679	0.08	-.0192018	-0.26

Table 14. Changes In Betas Of Large-cap Dividend Stocks Around Different Signs Of Earnings News In Turmoil Periods

Event day	**The betas of Large-Cap dividend Stocks around news with Good earnings signin Pre-Fin. Crisis Period**	**t-value**	**The betas of Large-Cap dividend Stocks around news with Good earnings sign during Fin. Crisis Period**	**t-value**	**The betas of Large-Cap dividend Stocks around news with Good earnings sign in Post-Fin. Crisis Period**	**t-value**	**The betas of Large-Cap dividend Stocks around news with Bad earnings signin Pre-Fin. Crisis Period**	**t-value**	**The betas of Large-Cap dividend Stocks around news with Bad earnings sign during Fin. Crisis Period**	**t-value**	**The betas of Large-Cap dividend Stocks around news with Bad earnings sign in Post-Fin. Crisis Period**	**t-value**

-40	.0246513	0.39	-.0088455	-0.13	0.006291	0.16	.187811	1.07	-0.07043	-0.29	-.0893884	-0.63
-39	.1394441	2.18	.0307149	0.46	-0.00251	-0.07	.3304225	1.88	0.235494	0.97	-.0031366	-0.02
-38	-.0147134	-0.23	.1649514	2.49	0.045948	1.21	.04209	0.24	-0.14377	-0.59	.1024853	0.72
-37	.0916196	1.41	.0699416	1.06	-0.08187	-2.15	.2359747	1.30	0.133886	0.55	-.0546044	-0.38
-36	.010966	0.17	.0850067	1.28	0.002358	0.06	.0869364	0.48	0.029345	0.12	.0736378	0.52
-35	.0514137	0.79	.0815446	1.23	-0.05962	-1.56	.1334622	0.76	0.391085	1.60	-.133631	-0.94
-34	-.0228581	-0.35	.1213384	1.83	-0.00771	-0.20	.0063099	0.04	-0.31979	-1.31	-.1421877	-1.00
-33	.0853982	1.31	-.0237317	-0.36	-0.05981	-1.57	.0887114	0.50	-0.14162	-0.58	.1382596	0.97
-32	.0606491	0.93	-.0432964	-0.67	0.012339	0.32	.091508	0.52	0.004278	0.02	.069883	0.49
-31	.0999527	1.52	-.0784218	-1.21	-0.04484	-1.18	.0052799	0.03	-0.22717	-1.04	.0219396	0.15
-30	.1724444	2.65	-.0242964	-0.38	0.030177	0.79	.1716991	0.98	-0.01301	-0.06	-.1523468	-1.07
-29	.0063865	0.10	.054793	0.83	0.03725	0.98	.3654772	2.08	-0.14591	-0.67	.1361796	0.96
-28	.1207093	1.86	.1172105	1.78	0.057365	1.52	.384441	2.19	-0.00191	-0.01	-.1470143	-1.04
-27	.0805265	1.22	.1469094	2.15	-0.02058	-0.55	.3135219	1.78	-0.0452	-0.21	.0082292	0.06
-26	.1487867	2.29	.0479436	0.70	0.082352	2.20	.2310716	1.31	-0.14582	-0.67	-.2531747	-1.79
-25	.0638689	0.98	.0873798	1.28	0.001467	0.04	.1314245	0.75	0.155821	0.71	-.1693941	-1.20
-24	.0565987	0.87	.0866956	1.27	-0.01638	-0.44	.1426359	0.81	0.289366	1.32	.0675335	0.48
-23	.0126442	0.19	.0617477	0.91	0.005324	0.14	-.0066696	-0.04	-0.36526	-1.67	-.3012232	-2.13
-22	-.0370332	-0.56	.0381269	0.56	0.033738	0.90	.2045018	1.13	0.031904	0.15	-.198939	-1.40
-21	.0287316	0.44	.1328366	1.95	0.022132	0.59	.199461	1.14	0.085654	0.39	-.058795	-0.41
-20	.061335	0.94	.027371	0.40	0.016636	0.45	.204991	1.17	-0.13163	-0.60	.1087917	0.77
-19	.0583116	0.89	.0285758	0.42	0.086667	2.33	-.1440328	-0.80	0.01695	0.08	.0631581	0.45
-18	.0101748	0.15	.016824	0.24	0.022892	0.62	.0903799	0.50	-0.02877	-0.13	-.2066397	-1.46
-17	.128718	1.93	.0267557	0.38	0.022065	0.60	.111071	0.62	-0.16544	-0.77	-.0660821	-0.47
-16	.0580094	0.87	.1190472	1.70	0.089478	2.41	.4375063	2.43	0.475108	2.22	.06298	0.44
-15	-.0807675	-1.23	.1078865	1.54	0.072131	1.94	.2382851	1.32	0.133868	0.62	-.1642827	-1.16
-14	-.0887199	-1.33	.1416991	2.02	-0.01488	-0.40	.1960423	1.08	0.014867	0.07	.0666843	0.47
-13	-.0449479	-0.67	.0394516	0.56	0.028479	0.77	.0603804	0.33	0.209192	0.98	.0048337	0.03
-12	-.0379689	-0.57	.1285944	1.83	-0.00465	-0.13	.1964621	1.09	0.130144	0.61	-.003852	-0.03
-11	.025836	0.39	.0681142	0.97	0.066261	1.79	-.0517618	-0.27	0.07427	0.35	-.0677425	-0.48
-10	-.1256706	-1.88	.1180208	1.68	0.034337	0.93	.1809657	1.00	0.093034	0.43	.0132651	0.09
-9	-.0124634	-0.18	-.0552138	-0.79	0.060038	1.62	.1605326	0.89	-0.46902	-2.19	.0043609	0.03
-8	.0341482	0.50	.0720563	1.04	0.079821	2.15	.1486383	0.82	-0.01652	-0.08	.1778703	1.25
-7	-.117591	-1.74	.1100826	1.60	0.05838	1.57	.059744	0.33	-0.0378	-0.19	.1774103	1.25
-6	-.0770469	-1.14	.304497	4.42	0.120227	3.24	.2391054	1.32	0.063257	0.32	.1308704	0.92
-5	.0420779	0.62	.1376808	2.02	0.090428	2.44	.3375258	1.80	0.22905	1.17	-.1780242	-1.26
-4	-.022346	-0.33	.1205883	1.77	-0.02618	-0.71	-.0012663	-0.01	-0.34468	-1.76	.0334835	0.24

-3	.1132908	1.68	.0333283	0.49	0.089628	2.42	.2259246	1.25	0.240661	1.23	-.181365	-1.28
-2	.0577993	0.84	.1828703	2.73	0.047414	1.28	.0034411	0.02	0.122346	0.63	.6061675	4.28
-1	.0143682	0.21	.0819319	1.22	0.040296	1.09	-.0408655	-0.21	-0.40663	-2.08	-.1545667	-1.09
0	.1610431	2.34	.1285455	1.92	0.113091	3.05	.022822	0.13	0.325169	1.66	-.099434	-0.70
+1	.0592829	0.88	.1483866	2.22	0.063651	1.72	-.1010834	-0.56	-0.03106	-0.16	.0923427	0.65
+2	-.0117565	-0.17	.1040512	1.57	0.128416	3.46	.2400353	1.33	-0.07088	-0.36	-.0161794	-0.11
+3	.1863159	2.78	.1114496	1.68	0.078055	2.10	.043883	0.23	-0.06797	-0.35	-.1818326	-1.29
+4	.0089095	0.13	.1234076	1.86	0.051688	1.39	-.1784136	-0.99	-0.01876	-0.10	.087791	0.62
+5	.0055771	0.08	.0159585	0.24	0.083544	2.25	-.2785993	-1.54	0.022961	0.12	.165981	1.17
+6	.0705183	1.05	.0350019	0.53	0.049447	1.33	-.0931413	-0.52	0.223471	1.14	-.0273816	-0.19
+7	-.1186982	-1.78	.0227429	0.34	0.032012	0.86	.0891898	0.49	0.038431	0.20	-.02516	-0.18
+8	.0559918	0.84	.0170124	0.26	0.051659	1.39	-.0414581	-0.23	0.042088	0.22	.109457	0.77
+9	.0471115	0.70	.1536628	2.32	0.035785	0.96	-.092591	-0.51	-0.07763	-0.40	-.0897859	-0.63
+10	.0052168	0.08	.1391817	2.10	0.089927	2.42	-.1651141	-0.91	0.100031	0.51	-.1038434	-0.73
+11	-.0157167	-0.23	.0465531	0.70	0.064365	1.73	-.0846318	-0.45	-0.05429	-0.28	.0734327	0.52
+12	.0138085	0.20	.056859	0.86	0.042086	1.13	-.1075534	-0.59	0.173426	0.89	-.0982497	-0.69
+13	.0864434	1.29	.0088924	0.13	0.066522	1.79	-.0194724	-0.10	0.061266	0.31	.1171687	0.83
+14	.0748787	1.11	.1136388	1.71	0.118655	3.20	.0483163	0.27	0.003655	0.02	.137545	0.97
+15	.0537557	0.80	.092717	1.40	0.031274	0.84	.033707	0.17	0.412384	2.11	.1066462	0.75
+16	-.0886101	-1.33	.0341148	0.51	0.083483	2.25	.0666973	0.37	-0.49234	-2.52	.0468513	0.33
+17	.0720715	1.08	.0882861	1.33	0.094075	2.54	.1951354	1.08	-0.29086	-1.49	.1634397	1.15
+18	.0947008	1.41	.0934023	1.41	0.087619	2.36	-.0540102	-0.30	-0.15151	-0.77	-.1541734	-1.09
+19	.0180127	0.27	-.056882	-0.86	0.036409	0.98	.2103776	1.16	-0.45291	-2.32	-.0697656	-0.49
+20	.0945187	1.40	.1656025	2.49	0.102172	2.76	.069164	0.38	-0.09179	-0.46	-.0141017	-0.10
+21	-.078513	-1.18	-.0054595	-0.08	0.027383	0.74	-.1799513	-0.99	0.060616	0.30	-.0342859	-0.24
+22	.0834917	1.25	.1166475	1.68	0.041984	1.14	.1834147	1.01	0.057644	0.26	.05435	0.40
+23	.023097	0.34	-.1392666	-1.98	0.033913	0.93	.0145192	0.08	0.07831	0.36	-.2467914	-1.79
+24	-.0423794	-0.63	.023202	0.33	0.060628	1.66	.0667215	0.37	0.095739	0.44	-.0097914	-0.07
+25	-.0315116	-0.47	-.0797278	-1.12	0.063712	1.74	.1424048	0.78	0.249216	1.14	.0364479	0.27
+26	.0020298	0.03	.0587767	0.83	0.060412	1.65	-.0335734	-0.19	0.31926	1.46	-.0286251	-0.21
+27	-.1247496	-1.85	.0018243	0.03	0.120983	3.30	.1162448	0.64	-0.3759	-1.72	.0455487	0.33
+28	-.0049625	-0.07	.0869115	1.21	0.092753	2.54	.0096999	0.05	0.012395	0.06	-.0311802	-0.23
+29	-.07747	-1.15	.0002782	0.00	0.042391	1.16	.2415306	1.33	-0.06007	-0.28	-.0155528	-0.11
+30	.01109	0.16	-.0131642	-0.18	0.00207	0.06	-.013291	-0.07	0.086416	0.40	-.0655684	-0.48
+31	-.0271806	-0.41	-.0014968	-0.02	0.018618	0.51	-.2884515	-1.54	0.110854	0.51	-.0360459	-0.26
+32	-.0956773	-1.41	-.0601948	-0.84	0.038816	1.06	-.0991746	-0.51	-0.30691	-1.41	-.1673142	-1.21
+33	.0239525	0.35	-.0267914	-0.37	0.023915	0.66	-.080568	-0.41	-0.24182	-1.11	-.0773617	-0.56

+34	.0602098	0.88	.0406	0.56	0.024286	0.67	-.0294513	-0.15	0.03135	0.14	.1843091	1.34
+35	-.0646072	-0.95	.0578733	0.80	-0.00896	-0.25	-.0550628	-0.28	0.105121	0.48	.0581309	0.42
+36	-.0368744	-0.54	-.0131634	-0.18	0.038124	1.05	-.1169539	-0.60	-0.16537	-0.76	-.1510587	-1.09
+37	-.0425693	-0.63	-.0180836	-0.25	0.041679	1.14	-.0787926	-0.42	-0.17985	-0.83	-.0134854	-0.10
+38	-.1713575	-2.57	.0112684	0.15	0.03024	0.83	-.4179597	-2.22	-0.05989	-0.27	-.0606979	-0.44
+39	-.1400455	-2.11	-.0854649	-1.14	0.056407	1.54	-.3592888	-1.91	-0.08421	-0.39	-.1750207	-1.27
+40	-.0501062	-0.76	-.0069707	-0.09	0.005057	0.14	-.2390445	-1.27	-0.26434	-1.21	.0618706	0.45

Table 15. Changes In Betas Of Non-dividend Stocks Around Different Signs Of Earnings News

Event day	**The betas of Non-dividend Stocks around news with Good earnings sign**	**t-value**	**The betas of Non-dividend Stocks around news with Bad earnings sign**	**t-value**	**Event day**	**The betas of Non-dividend Stocks around news with Good earnings sign**	**t-value**	**The betas of Non-dividend Stocks around news with Bad earnings sign**	**t-value**
-40	0.08824	6.21	.043057	2.39	**0**	.1474006	11.58	.0960434	6.33
-39	0.046674	3.29	.0621744	3.46	**+1**	.1469665	10.36	.065927	3.67
-38	0.082166	5.78	.0635721	3.54	**+2**	.1353314	9.54	.0802299	4.47
-37	0.07566	5.33	.0839572	4.67	**+3**	.1429423	10.07	.1007636	5.61
-36	0.073831	5.20	.0553766	3.08	**+4**	.1440033	10.15	.1008791	5.62
-35	0.07582	5.34	.0314825	1.75	**+5**	.1477163	10.41	.0701128	3.91
-34	0.06241	4.39	.1010914	5.62	**+6**	.1495938	10.54	.0557986	3.11
-33	0.066192	4.66	.1032502	5.75	**+7**	.1372176	9.67	.1054312	5.87
-32	0.090974	6.41	.0819093	4.56	**+8**	.1132029	7.98	.0524283	2.92
-31	0.092256	6.49	.0666182	3.71	**+9**	.1244071	8.77	.0599307	3.34
-30	0.065554	4.61	.0876292	4.88	**+10**	.1210885	8.53	.1023248	5.70
-29	0.054177	3.81	.0569725	3.17	**+11**	.0862519	6.08	.0805074	4.48
-28	0.074305	5.23	.054043	3.01	**+12**	.1273871	8.97	.0700396	3.90
-27	0.072893	5.13	.0685568	3.81	**+13**	.1355722	9.55	.1131044	6.29
-26	0.107182	7.54	.1160031	6.45	**+14**	.13799	9.72	.0995789	5.54
-25	0.115483	8.13	.0778245	4.33	**+15**	.117821	8.30	.0725303	4.04
-24	0.090605	6.38	.0681956	3.79	**+16**	.0947985	6.67	.0381383	2.12
-23	0.098863	6.96	.0808853	4.50	**+17**	.1136016	8.00	.0608693	3.39
-22	0.07517	5.29	.0935592	5.21	**+18**	.0916761	6.45	.062786	3.49
-21	0.073668	5.19	.089336	4.97	**+19**	.0853922	6.01	.0477613	2.66
-20	0.070636	4.97	.053155	2.96	**+20**	.0598359	4.21	.0446079	2.48
-19	0.10507	7.40	.0639669	3.56	**+21**	.0973987	6.86	.0035065	0.20

-18	0.110083	7.75	.047613	2.65	**+22**	.0743482	5.23	.0632725	3.52
-17	0.099665	7.02	.0502636	2.80	**+23**	.077463	5.45	.0444338	2.47
-16	0.098258	6.92	.0900113	5.01	**+24**	.084664	5.96	.11002	6.12
-15	0.099227	6.99	.0490501	2.73	**+25**	.0611845	4.31	.0630368	3.51
-14	0.093399	6.58	.0398617	2.22	**+26**	.1088747	7.66	.0937538	5.22
-13	0.113071	7.96	.0368864	2.05	**+27**	.0793303	5.58	.0958546	5.33
-12	0.071367	5.03	.0710735	3.96	**+28**	.0937859	6.60	.0500816	2.79
-11	0.095361	6.72	.0649226	3.61	**+29**	.0587257	4.13	.0754441	4.20
-10	0.100664	7.09	.063182	3.52	**+30**	.0865922	6.10	.0495575	2.76
-9	0.147086	10.37	.1194581	6.65	**+31**	.0540829	3.81	.0304711	1.70
-8	0.118176	8.33	.087574	4.88	**+32**	.0777003	5.47	.0583197	3.24
-7	0.155916	10.99	.1010645	5.63	**+33**	.1008651	7.10	.0735983	4.09
-6	0.122865	8.66	.0939439	5.23	**+34**	.0949522	6.68	.1141337	6.35
-5	0.070146	4.94	.0410962	2.29	**+35**	.0672863	4.74	.0723203	4.02
-4	0.095494	6.73	.055583	3.10	**+36**	.0648881	4.57	.0317121	1.76
-3	0.112144	7.90	.0610207	3.40	**+37**	.0346717	2.44	.040812	2.27
-2	0.099088	6.98	.0294799	1.64	**+38**	.0665328	4.69	.0730923	4.06
-1	0.118102	8.32	.0650076	3.62	**+39**	.0484512	3.42	.051092	2.84
					+40	.0494864	3.49	.0340022	1.98

Table 16. Changes In Betas Of Non-dividend Stocks Around Earnings News In Turmoil Periods

Event day	The betas of Non-dividend Stocks around earnings news in Pre Fin. Crisis Period	t-value	The betas of Non-dividend Stocks around earnings news in Fin. Crisis Period	t-value	The betas of Non-Dividend stocks around earnings announcements in the post-financial crisis	t-value
-40	.0453244	1.89	.0486641	2.67	.0612632	4.21
-39	.0096569	0.40	.0843957	4.53	.0460533	3.18
-38	.0819393	3.41	.1136789	6.08	.0284356	1.97
-37	.0365461	1.49	.1194933	6.38	.0517247	3.58
-36	.0497361	2.04	.0623941	3.33	.0510752	3.54
-35	.0507609	2.11	.0867994	4.62	.0263965	1.83
-34	.072767	3.02	.0741219	3.94	.0490544	3.40
-33	.0661079	2.75	.0219107	1.16	.0678982	4.71
-32	.0582867	2.42	.0420626	2.28	.0858679	5.95
-31	.1224183	5.09	-.02023	-1.10	.0523645	3.63
-30	.0567232	2.36	.0363695	1.99	.0638287	4.42
-29	.0216125	0.90	.0060958	0.32	.0536334	3.76
-28	.0476681	1.98	.0864095	4.51	.0408727	2.87
-27	.0328665	1.35	.0898122	4.68	.0503663	3.55
-26	.1395125	5.78	.0756587	3.93	.0683332	4.82
-25	.0726913	3.01	.0532529	2.76	.095634	6.74
-24	.0101838	0.42	.0983005	5.09	.0834252	5.89
-23	.0617779	2.53	.0430777	2.23	.0887096	6.26
-22	.0690528	2.79	.0824888	4.26	.0529074	3.73
-21	.0816779	3.32	.0203901	1.05	.0599632	4.23
-20	.0207001	0.84	.0016373	0.08	.0720806	5.09
-19	.0680557	2.76	.0002032	0.01	.0901734	6.39
-18	.0577946	2.33	.0826613	4.21	.0704089	4.99
-17	.0223019	0.90	.0517999	2.64	.0859027	6.08
-16	.0488486	1.93	.0120984	0.62	.11593	8.21
-15	.0218134	0.87	-.001225	-0.06	.098258	6.96
-14	.0155271	0.62	-.0043838	-0.22	.0869259	6.16
-13	.0132323	0.53	-.0238972	-1.22	.1048079	7.42
-12	-.0085306	-0.34	-.0195457	-1.01	.093832	6.65
-11	.0272226	1.09	-.0586937	-3.06	.1119876	7.94
-10	-.0352437	-1.41	.015248	0.80	.1285431	9.12
-9	.0209764	0.83	.0012273	0.06	.189322	13.43
-8	.0115532	0.45	.008068	0.43	.1482042	10.52
-7	-.0020541	-0.08	.066929	3.57	.1751818	12.43
-6	-.0036634	-0.15	.0031171	0.17	.1595118	11.32
-5	-.0677599	-2.71	.005493	0.29	.0932967	6.62
-4	-.055794	-2.23	-.0324808	-1.74	.137829	9.78
-3	-.0263823	-1.05	-.0104012	-0.56	.1396229	9.91
-2	-.0568663	-2.22	-.032508	-1.75	.1193874	8.47
-1	-.0134351	-0.53	.0200368	1.08	.131211	9.31
0	.0109153	0.45	.0387852	2.13	.1592985	12.51
+1	.0346847	1.37	-.0194613	-1.05	.1587765	11.27
+2	.0370552	1.48	-.011611	-0.63	.1457877	10.35
+3	-.0359227	-1.43	.0040574	0.22	.1985191	14.09
+4	-.0028579	-0.11	-.0006179	-0.03	.1875931	13.31
+5	.0139866	0.56	-.0144113	-0.78	.1647433	11.69
+6	.0028162	0.11	.0143276	0.77	.1550316	11.00

+7	.0125204	0.50	-.0127382	-0.69	.1763277	12.51
+8	-.0686088	-2.74	-.0173253	-0.94	.1574763	11.18
+9	-.012371	-0.50	-.0845937	-4.57	.1645849	11.68
+10	.0258116	1.03	.0163543	0.88	.1413345	10.03
+11	-.0540833	-2.05	-.0199573	-1.08	.1462208	10.37
+12	.0159983	0.63	.0183744	0.99	.1316472	9.33
+13	.02184	0.87	-.0091491	-0.50	.1701366	12.06
+14	.0266224	1.06	-.0094257	-0.51	.1652532	11.72
+15	-.0288504	-1.15	-.0164275	-0.89	.1586288	11.25
+16	-.0515624	-2.06	-.0189708	-1.03	.1191276	8.45
+17	-.0235948	-0.94	-7.85e-06	-0.00	.1390923	9.86
+18	-.0287151	-1.14	-.0361268	-1.96	.1306759	9.27
+19	-.0256087	-1.02	-.0875306	-4.75	.1218845	8.64
+20	-.0291684	-1.14	-.1008199	-5.46	.1067959	7.58
+21	-.0445299	-1.78	-.091332	-4.94	.1197478	8.50
+22	.0122503	0.49	-.0727913	-3.85	.0950103	6.79
+23	-.0386246	-1.55	.0102396	0.54	.0920807	6.60
+24	.0513763	2.06	-.0367189	-1.93	.1134303	8.13
+25	.0006162	0.02	-.0855263	-4.47	.091614	6.57
+26	.0284559	1.14	-.017535	-0.92	.1329467	9.55
+27	.0014539	0.06	-.0671001	-3.50	.1300292	9.34
+28	.0054194	0.22	-.1060467	-5.53	.1216391	8.74
+29	.0104171	0.42	-.0939743	-4.90	.0987537	7.10
+30	.0507758	2.03	-.0873357	-4.56	.1003868	7.21
+31	.0060716	0.24	-.1314053	-6.85	.0709681	5.10
+32	.0449484	1.77	-.110591	-5.61	.0939969	6.81
+33	.0379926	1.50	-.031645	-1.59	.113511	8.24
+34	.0413638	1.63	-.0699783	-3.50	.1424823	10.35
+35	-.0103934	-0.41	-.0461204	-2.30	.1033437	7.52
+36	-.0271077	-1.07	-.0864734	-4.30	.0878023	6.39
+37	-.0185972	-0.75	-.0607906	-3.01	.055064	3.96
+38	.0087896	0.36	-.1063801	-5.27	.107532	7.71
+39	-.0034674	-0.14	-.0527526	-2.61	.0758521	5.43
+40	-.0308399	-1.26	-.0838084	-4.14	.0831181	5.96

Table 17. Changes In Betas Of No-dividend Stocks Around Different Signs Of Earnings News In Turmoil Periods

Event day	The betas of Non-dividend Stocks around news with Good earnings sign in Pre-Fin. Crisis Period	t-value	The betas of Non-dividend Stocks around news with Good earnings sign during Fin. Crisis Period	t-value	The betas of Non-dividend Stocks around news with Good earnings sign in Post-Fin. Crisis Period	t-value	The betas of Non-dividend Stocks around news with Bad earnings sign in Pre-Fin. Crisis Period	t-value	The betas of Non-dividend Stocks around news with Bad earnings sign during Fin. Crisis Period	t-value	The betas of Non-dividend Stocks around news with Bad earnings sign in Post-Fin. Crisis Period	t-value
-40	.0598868	1.99	.061053	2.63	.0664627	3.57	.0051321	0.13	.003292	0.11	.0292322	1.26
-39	-.0175364	-0.58	.0634877	2.69	.0320197	1.73	.0246449	0.63	.0832952	2.81	.0288886	1.25
-38	.0516913	1.72	.1182665	4.99	.0357955	1.94	.1075475	2.75	.0832392	2.81	-.0172227	-0.75
-37	.0128374	0.42	.087461	3.68	.0450575	2.44	.0558133	1.41	.1410339	4.74	.0313266	1.36
-36	.0190213	0.62	.0957496	4.03	.0449288	2.43	.0716662	1.80	-.0169721	-0.57	.0224323	0.97
-35	.0685538	2.26	.0492738	2.07	.0291922	1.58	.004871	0.12	.1099001	3.70	-.0218136	-0.95
-34	.0233057	0.77	.0400071	1.68	.0351817	1.91	.1308749	3.34	.1007025	3.38	.0341589	1.48
-33	.024332	0.81	.030422	1.28	.0398805	2.16	.1256348	3.20	-.0195541	-0.66	.0616549	2.68
-32	.0679741	2.25	.0355059	1.52	.0570333	3.09	.0172607	0.44	.0236661	0.82	.0798981	3.48
-31	.1149437	3.80	.0004004	0.02	.0392937	2.13	.1225418	3.14	-.0868991	-3.00	.0200543	0.87
-30	.023032	0.76	.0521934	2.26	.0312336	1.69	.0924511	2.37	-.0274517	-0.95	.0646675	2.81
-29	.0035474	0.12	.0228	0.96	.0286316	1.57	.0419048	1.07	-.0630927	-2.08	.0417379	1.84
-28	.0618088	2.04	.0336889	1.40	.0261959	1.44	.0077004	0.20	.1315557	4.30	.0060483	0.27
-27	.0221279	0.73	.0912406	3.79	.0263709	1.45	.035708	0.91	.0511118	1.67	.0283287	1.25
-26	.1040896	3.43	.0675529	2.80	.0513739	2.83	.1808869	4.62	.0527283	1.71	.0381987	1.69
-25	.0628527	2.08	.054858	2.27	.0926256	5.10	.0715837	1.83	.017317	0.56	.0392906	1.74
-24	.0065088	0.21	.1450572	6.01	.054316	2.99	.001074	0.03	-.0084657	-0.27	.0658417	2.92
-23	.0356582	1.16	.0697512	2.89	.0740081	4.08	.0885949	2.25	-.0323877	-1.05	.0488892	2.17
-22	.014505	0.47	.0912878	3.77	.0320299	1.77	.1416204	3.53	.0372397	1.21	.0209617	0.93
-21	.0625569	2.02	.0130042	0.54	.0274212	1.51	.0932317	2.35	.0046817	0.15	.0452675	2.01
-20	.0084199	0.27	.0159626	0.66	.0479468	2.65	.0226624	0.57	-.049041	-1.59	.041519	1.84
-19	.0476678	1.53	.0154094	0.63	.0889501	4.93	.0768636	1.94	-.0462705	-1.48	.0233731	1.04
-18	.0729918	2.33	.0707686	2.88	.0688716	3.82	.0100575	0.25	.0832846	2.67	.0016955	0.08

-17	.0327273	1.04	.0345132	1.41	.0788133	4.37	-.0159978	-0.40	.0659818	2.11	.0250429	1.11
-16	.0230013	0.72	.0211064	0.86	.0888997	4.93	.0698349	1.73	-.0126329	-0.40	.083825	3.73
-15	.0388403	1.23	.016683	0.68	.074758	4.15	-.0273879	-0.69	-.0384968	-1.23	.0593822	2.64
-14	-.0177089	-0.56	.0510718	2.08	.0852997	4.73	.0463895	1.17	-.1018244	-3.26	.013391	0.60
-13	.0173064	0.55	.0091219	0.37	.1060917	5.89	-.0102299	-0.26	-.0846055	-2.72	.024805	1.10
-12	-.0371489	-1.18	-.0490435	-2.04	.0733482	4.07	.0173151	0.44	.0275723	0.90	.0452152	2.01
-11	.0040508	0.13	-.0412678	-1.73	.0975488	5.41	.0464704	1.17	-.0930306	-3.05	.0502039	2.24
-10	-.0563249	-1.79	.0154694	0.65	.1197461	6.65	-.0181993	-0.46	.0114965	0.38	.0549038	2.45
-9	-.0180244	-0.56	.0086578	0.37	.1844481	10.25	.0664023	1.65	-.0084739	-0.28	.1085927	4.84
-8	.0274954	0.86	.0133325	0.57	.1062217	5.90	-.0313355	-0.76	.0037836	0.12	.1222248	5.45
-7	-.0063504	-0.20	.1130618	4.90	.1546175	8.59	-.0111718	-0.28	-.0050752	-0.17	.1153388	5.14
-6	-.0066498	-0.21	.0153028	0.66	.1328361	7.38	-.0121454	-0.30	-.0078778	-0.26	.108343	4.83
-5	-.0698158	-2.21	.0155135	0.68	.0656135	3.65	-.0788844	-1.98	-.0019057	-0.06	.0440957	1.97
-4	-.0586006	-1.85	-.0037844	-0.17	.1155736	6.42	-.0643517	-1.62	-.0715455	-2.38	.0801808	3.58
-3	-.02577	-0.81	.0579721	2.53	.1105607	6.14	-.0395084	-0.99	-.1193204	-3.97	.0925974	4.13
-2	-.0433746	-1.34	.0086704	0.38	.1027086	5.71	-.0915314	-2.24	-.0932994	-3.11	.0529285	2.36
-1	-.0002068	-0.01	.0497556	2.18	.1073031	5.96	-.045325	-1.13	-.0206622	-0.69	.0758585	3.38
0	-.0018327	-0.06	.0512349	2.33	.1555671	10.11	.0102269	0.28	.0249732	0.89	.0878488	4.93
+1	.1010671	3.16	-.0344015	-1.51	.1393013	7.74	-.0852489	-2.10	.018849	0.63	.0961656	4.29
+2	.0845234	2.66	-.007415	-0.33	.1135997	6.31	-.0493811	-1.24	-.0074412	-0.25	.1030159	4.59
+3	-.0203833	-0.64	-.0068414	-0.30	.1801711	10.01	-.0724364	-1.81	.0351816	1.17	.1337515	5.97
+4	-.0076428	-0.24	-.010158	-0.45	.1813199	10.08	-.0047077	-0.12	.0284791	0.95	.1042192	4.65
+5	.0303292	0.96	.0301288	1.33	.1532101	8.51	-.0240878	-0.60	-.0824446	-2.75	.0894582	3.99
+6	.0443377	1.40	.0099828	0.44	.1556334	8.65	-.0757831	-1.90	.0350558	1.17	.0598697	2.67
+7	-.0136908	-0.43	.0240801	1.06	.1581824	8.79	.0417045	1.05	-.0646986	-2.15	.1106597	4.94
+8	-.0590602	-1.86	-.0055416	-0.24	.1493236	8.30	-.0932883	-2.34	-.0222083	-0.74	.0764778	3.41
+9	-.0006536	-0.02	-.0607525	-2.68	.1560483	8.67	-.0403221	-1.01	-.109071	-3.63	.0862922	3.85
+10	-.0025646	-0.08	.0086846	0.38	.1300176	7.22	.0603809	1.51	.0534047	1.77	.0683134	3.05
+11	-.0470799	-1.42	-.0280637	-1.24	.122851	6.82	-.0712644	-1.67	.0206012	0.68	.0935324	4.17
+12	.0075207	0.23	.0307888	1.36	.1360119	7.55	.0202462	0.50	.0255566	0.85	.0382036	1.70
+13	-.0094468	-0.30	-.0059859	-0.26	.1656804	9.20	.0662939	1.64	.0139085	0.46	.0916081	4.08
+14	.018314	0.58	.0123128	0.54	.1513646	8.40	.0338934	0.85	-.0167019	-0.55	.1022095	4.55
+15	-.0578537	-1.83	-.0479023	-2.11	.1806341	10.03	.012735	0.32	.0684805	2.27	.0414071	1.84
+16	-.0358076	-1.13	.0422436	1.87	.0953435	5.29	-.0779382	-1.95	-.0963674	-3.19	.0731479	3.26
+17	-.0273254	-0.86	.0110045	0.49	.1386765	7.70	-.0217009	-0.54	.014386	0.48	.0574048	2.56
+18	-.0388865	-1.22	-.0086114	-0.38	.112027	6.22	-.0132118	-0.33	-.0494331	-1.64	.078565	3.50
+19	.0018342	0.06	-.0952916	-4.21	.10297	5.72	-.0685312	-1.72	-.0376143	-1.25	.071072	3.17

+20	-.0089888	-0.28	-.1125697	-4.97	.0804413	4.46	-.0602793	-1.48	-.0353129	-1.17	.0687579	3.06
+21	-.0231174	-0.73	-.09957	-4.39	.147797	8.21	-.0800019	-2.00	-.0265097	-0.87	-.0019334	-0.09
+22	.006847	0.22	-.0953318	-4.13	.0825098	4.61	.0222409	0.56	.0163551	0.52	.0374727	1.68
+23	-.0301843	-0.95	-.006504	-0.28	.0872082	4.89	-.0487961	-1.22	.0977652	3.10	.0238029	1.07
+24	.0165096	0.52	-.0350137	-1.50	.0823046	4.61	.1058085	2.64	.012923	0.41	.0907626	4.09
+25	-.006654	-0.21	-.0820908	-3.50	.0674392	3.78	.0133296	0.33	-.0330031	-1.04	.0583391	2.63
+26	.0211789	0.67	-.0207845	-0.88	.119975	6.74	.0394312	0.99	.0482849	1.52	.0792797	3.58
+27	-.0064864	-0.21	-.0579012	-2.46	.0928175	5.21	.0128668	0.32	-.0324943	-1.02	.1205437	5.44
+28	.0214858	0.68	-.0868338	-3.70	.113795	6.39	-.0168064	-0.42	-.0884189	-2.78	.0679232	3.07
+29	.0133521	0.42	-.0967762	-4.12	.060859	3.42	.0102401	0.26	-.0448692	-1.41	.091187	4.12
+30	.0519728	1.64	-.0672116	-2.86	.0852343	4.79	.0218243	0.54	-.0750363	-2.35	.0531515	2.40
+31	.0049188	0.16	-.1212867	-5.15	.0653423	3.67	.0128422	0.32	-.1051459	-3.29	.0234773	1.06
+32	.0217045	0.68	-.0910687	-3.79	.0935836	5.29	.0888861	2.17	-.1020787	-3.06	.024893	1.13
+33	.055075	1.71	-.0074595	-0.31	.0975513	5.53	.016559	0.41	-.0329588	-0.97	.0839781	3.84
+34	.0289017	0.90	-.0667842	-2.75	.1165611	6.61	.0614263	1.51	-.0296818	-0.87	.1319965	6.05
+35	-.0284335	-0.89	-.0300991	-1.23	.0884792	5.02	.047175	1.16	-.0309375	-0.90	.0741106	3.40
+36	-.012785	-0.40	-.090328	-3.69	.0850306	4.83	-.0462662	-1.14	-.0435942	-1.26	.0420394	1.93
+37	-.0248946	-0.79	-.0679999	-2.77	.0394595	2.22	.0042407	0.11	-.0045373	-0.13	.0280307	1.26
+38	-.0014982	-0.05	-.0652487	-2.66	.0871141	4.89	.0342115	0.87	-.1543385	-4.46	.0998123	4.49
+39	-.0144322	-0.46	-.0971229	-3.95	.0699597	3.92	.0211044	0.54	.0563938	1.62	.0358112	1.61
+40	-.026298	-0.84	-.083551	-3.39	.0765231	4.29	-.0400432	-1.02	-.0603197	-1.72	.0534442	2.40

Table 18. Changes In Betas Of Large-cap Non-dividend Stocks Around Earnings News In Turmoil Periods

Event day	The betas of Large-Cap Non-dividend Stocks around earnings news in Pre Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around earnings news in Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around earnings news in the post-financial crisis	t-value
-40	.0591993	1.01	.0153441	0.21	.0002146	0.01
-39	.2038635	3.46	.102626	1.41	-.0032822	-0.09
-38	-.0083613	-0.14	.290251	3.98	.0493196	1.34
-37	.0281269	0.47	.189376	2.59	-.0782316	-2.12
-36	.0004242	0.01	.1802026	2.46	.006824	0.19
-35	.0489632	0.82	.125885	1.70	-.0633473	-1.72
-34	-.0161303	-0.27	.250123	3.37	-.014228	-0.39
-33	-.0532625	-0.89	.0855563	1.15	-.0449252	-1.22
-32	-.1588729	-2.66	.1715685	2.37	.0165468	0.45
-31	-.0706741	-1.18	.1575765	2.21	-.037279	-1.01
-30	-.0133194	-0.22	-.0064944	-0.09	.0203216	0.55
-29	.0240463	0.41	.0874134	1.18	.0457557	1.25
-28	.0932251	1.57	.1077598	1.41	.0462792	1.26
-27	-.0521041	-0.88	.1941712	2.58	-.0164046	-0.45
-26	-.1407615	-2.35	.0971822	1.27	.0629962	1.74
-25	-.0233939	-0.39	.2174363	2.85	-.0088144	-0.24
-24	.0449784	0.75	.1825076	2.39	-.0088304	-0.24
-23	.0354275	0.60	.3678606	4.84	-.0105466	-0.29
-22	.0274414	0.46	.0757119	0.98	.0223044	0.62
-21	.1002486	1.68	.1624662	2.10	.0199322	0.55
-20	.1560614	2.62	.1511712	1.96	.0255421	0.71
-19	.077448	1.29	.0523454	0.68	.0889568	2.46
-18	-.0203107	-0.34	.1031643	1.33	.0121935	0.34
-17	-.0405697	-0.67	.150315	1.94	.0200196	0.56
-16	-.0420143	-0.68	.0829546	1.07	.090965	2.53
-15	-.0629612	-1.03	.0616271	0.80	.0604887	1.68
-14	.0205942	0.34	.1519586	1.97	-.0057782	-0.16
-13	-.0016967	-0.03	.163232	2.12	.0308568	0.86
-12	.0480352	0.79	.1608738	2.09	-.0004088	-0.01
-11	-.0749641	-1.23	.0627186	0.82	.0623033	1.73
-10	.0574038	0.93	.1603834	2.09	.0375105	1.04
-9	-.1802606	-2.89	.1927819	2.51	.0605999	1.68
-8	-.0325148	-0.52	.1509155	1.96	.0908315	2.52
-7	.0001047	0.00	.056513	0.75	.0706909	1.96
-6	-.0594403	-0.97	.0950259	1.26	.1259336	3.50
-5	.016258	0.26	.1406277	1.89	.0781661	2.17
-4	-.1245846	-2.04	.0339241	0.46	-.0178216	-0.49
-3	.0153787	0.25	.1233667	1.68	.0772638	2.15
-2	-.0120261	-0.20	.0844587	1.15	.0873922	2.43
-1	-.1296115	-2.11	.0997515	1.36	.0328998	0.91
0	-.0681752	-1.10	.1786508	2.43	.1045436	2.90
+1	.0834618	1.34	.2518678	3.42	.0699553	1.94
+2	.0236574	0.39	.2198207	2.99	.1242634	3.45
+3	.0018671	0.03	.0177665	0.24	.0663046	1.84
+4	-.0063084	-0.10	.1666607	2.27	.0592202	1.64
+5	-.0140367	-0.23	.1011747	1.38	.0937464	2.60
+6	-.0036602	-0.06	-.0076295	-0.10	.0496228	1.38

+7	-.1091757	-1.78	.1652845	2.25	.0335886	0.93
+8	-.0007686	-0.01	.1084681	1.47	.0601994	1.67
+9	-.0056844	-0.09	.2482995	3.38	.0331731	0.92
+10	-.1394767	-2.29	.0441555	0.60	.0828349	2.30
+11	-.0484957	-0.79	.0499946	0.68	.0701574	1.95
+12	.1053908	1.69	.2345654	3.18	.0381258	1.06
+13	-.0830754	-1.34	.1188453	1.61	.0742688	2.06
+14	.0311822	0.51	.0034196	0.05	.124102	3.45
+15	.023285	0.37	.1043117	1.41	.0412592	1.15
+16	.0198431	0.32	.0078588	0.11	.0866306	2.41
+17	-.0945453	-1.53	.0661123	0.89	.1041068	2.89
+18	-.016035	-0.26	.0916811	1.24	.0770609	2.14
+19	-.10402	-1.67	.0734275	0.99	.0356213	0.99
+20	.0346801	0.57	-.0184516	-0.25	.0997357	2.77
+21	-.1382514	-2.26	.0863195	1.16	.0285834	0.80
+22	.0700019	1.14	.0855821	1.12	.0466683	1.31
+23	-.1812561	-2.94	-.0662057	-0.83	.0201573	0.57
+24	.0229838	0.37	.0526973	0.66	.0608081	1.72
+25	-.0797342	-1.29	.0668716	0.83	.0660731	1.87
+26	.0213969	0.35	.0215148	0.27	.0587952	1.66
+27	-.0604226	-0.98	.1740623	2.20	.1211141	3.41
+28	-.1022554	-1.66	-.0943436	-1.17	.0897097	2.53
+29	-.2166575	-3.52	-.1416336	-1.76	.0441509	1.25
+30	-.1439414	-2.34	-.1541072	-1.92	.0019185	0.05
+31	-.1733684	-2.77	-.2313905	-2.84	.0189625	0.54
+32	-.1475403	-2.40	-.0296303	-0.36	.03009	0.85
+33	-.0865342	-1.38	-.0180554	-0.22	.0206727	0.59
+34	-.0162735	-0.26	.0091379	0.11	.0378417	1.07
+35	-.1419008	-2.30	-.0813831	-1.00	-.000379	-0.01
+36	.0892976	1.43	-.0855547	-1.05	.0305302	0.87
+37	.0219756	0.36	.060584	0.73	.0413848	1.17
+38	.0156645	0.26	.0368294	0.44	.0271986	0.77
+39	.0295792	0.49	-.0949779	-1.13	.0461883	0.30
+40	-.15846	-2.62	.1053099	Oca.25	.0137566	0.39

Table 19. Changes In Betas Of Large-cap Non-dividend Stocks Around Different Signs Of Earnings News in Turmoil Periods

Event day	The betas of Large-Cap Non-dividend Stocks around news with Good earnings sign in Pre-Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around news with Good earnings sign during Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around news with Good earnings sign in Post-Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around news with Bad earnings sign in Pre-Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around news with Bad earnings sign during Fin. Crisis Period	t-value	The betas of Large-Cap Non-dividend Stocks around news with Bad earnings sign in Post-Fin. Crisis Period	t-value
-40	.0791169	1.22	.0371737	0.50	.0062908	0.16	-.1023076	-0.76	-.3685272	-1.24	.0002146	0.01
-39	.2048788	3.14	.1153456	1.53	-.0025136	-0.07	.2178144	1.63	-.0041951	-0.01	-.0032822	-0.09
-38	.0398101	0.60	.2897391	3.85	.0459483	1.21	-.1059716	-0.79	.3407895	1.15	.0493196	1.34
-37	.0991921	1.51	.1730516	2.30	-.0818721	-2.15	-.0923005	-0.69	.3380984	1.14	-.0782316	-2.12
-36	.084654	1.27	.2062343	2.74	.0023576	0.06	-.2097726	-1.57	-.2096136	-0.71	.006824	0.19
-35	.0412843	0.63	.0764963	1.00	-.0596151	-1.56	.1178792	0.88	.7532152	2.54	-.0633473	-1.72
-34	-.0010786	-0.02	.2567638	3.35	-.0077113	-0.20	-.008164	-0.06	.0657039	0.22	-.014228	-0.39
-33	.003043	0.05	.0849665	1.11	-.059814	-1.57	-.1824568	-1.32	.1249609	0.42	-.0449252	-1.22
-32	-.030992	-0.47	.1358756	1.83	.0123388	0.32	-.5678969	-4.26	.5959334	2.01	.0165468	0.45
-31	-.0373701	-0.56	.1266389	1.72	-.0448435	-1.18	-.149518	-1.12	.486031	1.64	-.037279	-1.01
-30	-.0010621	-0.02	-.0045617	-0.06	.030177	0.79	.0688322	0.52	-.1312594	-0.44	.0203216	0.55
-29	.0509178	0.77	.0851345	1.11	.0372498	0.98	-.1106044	-0.83	-.1617466	-0.54	.0457557	1.25
-28	.1214097	1.85	.0593793	0.75	.0573653	1.52	.1780192	1.34	.5784975	1.95	.0462792	1.26
-27	-.0003605	-0.01	.2118403	2.72	-.0205793	-0.55	-.0907108	-0.68	-.3322667	-1.12	-.0164046	-0.45
-26	-.0843711	-1.27	.0909641	1.15	.0823518	2.20	-.2476051	-1.86	-.060258	-0.20	.0629962	1.74
-25	-.0011825	-0.02	.0866126	1.09	.0014668	0.04	-.0058572	-0.04	1.968717	6.63	-.0088144	-0.24
-24	.1406262	2.12	.1889535	2.39	-.0163804	-0.44	-.1946572	-1.46	-.0125289	-0.04	-.0088304	-0.24
-23	.0488245	0.74	.3354742	4.26	.0053244	0.14	.1117909	0.84	.5761229	1.94	-.0105466	-0.29
-22	.0957737	1.44	.0392944	0.49	.0337375	0.90	-.071249	-0.54	.2637715	0.89	.0223044	0.62
-21	.1690772	2.57	.1039175	1.30	.0221315	0.59	-.050454	-0.38	.6044265	2.04	.0199322	0.55

-20	.2737209	4.16	.1356847	1.69	.0166362	0.45	-.1637506	-1.23	.0440263	0.15	.0255421	0.71
-19	.0644507	0.97	.0545006	0.68	.0866666	2.33	.2648665	2.00	-.2031634	-0.68	.0889568	2.46
-18	.0233303	0.35	.1110409	1.39	.0228921	0.62	.0030293	0.02	-.2583271	-0.87	.0121935	0.34
-17	.0129584	0.19	.1664273	2.08	.0220649	0.60	-.073025	-0.55	-.3401319	-1.15	.0200196	0.56
-16	.0066986	0.10	.0674072	0.84	.0894779	2.41	-.0813214	-0.61	-.0582388	-0.20	.090965	2.53
-15	.0381439	0.56	.0271071	0.34	.0721314	1.94	-.2969222	-2.24	.2794291	0.94	.0604887	1.68
-14	.1067072	1.58	.1523242	1.90	-.0148788	-0.40	-.2008634	-1.52	-.0475569	-0.16	-.0057782	-0.16
-13	.112997	1.67	.1248342	1.57	.0284794	0.77	-.2602542	-1.96	.48291	1.63	.0308568	0.86
-12	.1624245	2.40	.1301424	1.63	-.0046529	-0.13	-.2496282	-1.89	.2757707	0.93	-.0004088	-0.01
-11	-.0037326	-0.06	.0261595	0.33	.0662607	1.79	-.1942469	-1.47	.3372307	1.14	.0623033	1.73
-10	.2102272	3.08	.1586424	1.99	.0343368	0.93	-.3949699	-2.99	-.1300433	-0.44	.0375105	1.04
-9	-.0912005	-1.31	.1898044	2.38	.0600382	1.62	-.3828408	-2.89	-.0245183	-0.08	.0605999	1.68
-8	.0474871	0.68	.1662308	2.09	.0798207	2.15	-.1662942	-1.26	-.3788815	-1.28	.0908315	2.52
-7	.0978534	1.43	.0545905	0.70	.0583798	1.57	-.2096651	-1.52	-.2153163	-0.73	.0706909	1.96
-6	.0409359	0.60	.0705424	0.90	.1202271	3.24	-.2939451	-2.22	.1631883	0.55	.1259336	3.50
-5	.1286265	1.89	.131358	1.70	.0904275	2.44	-.2694719	-2.03	-.0318711	-0.11	.0781661	2.17
-4	-.0173636	-0.26	.0045886	0.06	-.0261832	-0.71	-.403451	-3.04	.1729441	0.58	-.0178216	-0.49
-3	.1654096	2.42	.0910043	1.20	.0896275	2.42	-.3481804	-2.62	.3451411	1.16	.0772638	2.15
-2	.06734	0.99	.0557651	0.73	.047414	1.28	-.1449968	-1.09	.2176866	0.73	.0873922	2.43
-1	.0047631	0.07	.0776627	1.02	.0402961	1.09	-.4725764	-3.56	.1273033	0.43	.0328998	0.91
0	.0363404	0.53	.1609799	2.12	.1130909	3.05	.3269269	-2.38	.1355137	0.46	.1045436	2.90
+1	.107286	1.57	.2258003	2.97	.0636513	1.72	.1879354	1.30	.3430782	1.16	.0699553	1.94
+2	.1047631	1.55	.1993333	2.63	.1284163	3.46	-.1328895	-1.00	.2217491	0.75	.1242634	3.45
+3	.0884723	1.28	-.0082072	-0.11	.0780552	2.10	-.1662564	-1.25	.0965609	0.33	.0663046	1.84
+4	.0998795	1.46	.1337065	1.76	.0516877	1.39	-.2413461	-1.82	.3616982	1.22	.0592202	1.64
+5	.0090132	0.13	.0948336	1.25	.0835442	2.25	.0685658	0.52	-.1229823	-0.41	.0937464	2.60
+6	.0945137	1.40	-.0321215	-0.42	.0494472	1.33	-.2475219	-1.79	.0665354	0.22	.0496228	1.38
+7	-.0528217	-0.77	.1326953	1.75	.0320124	0.86	-.1453392	-1.10	.3478252	1.17	.0335886	0.93
+8	.0361838	0.53	.1581068	2.08	.0516589	1.39	-.0123231	-0.09	-.9869267	-3.32	.0601994	1.67
+9	.0679307	1.01	.207122	2.73	.0357846	0.96	-.1064591	-0.80	.5670345	1.91	.0331731	0.92
+10	-.1177157	-1.74	.0161912	0.21	.0899273	2.42	-.0749993	-0.57	.1596494	0.54	.0828349	2.30
+11	.0590981	0.87	.0765843	1.01	.0643647	1.73	-.2802868	-2.12	-.6973649	-2.35	.0701574	1.95
+12	.2206064	3.17	.2433341	3.20	.0420858	1.13	-.1753492	-1.33	-.1802941	-0.61	.0381258	1.06
+13	-.0129512	-0.19	.0933139	1.23	.0665217	1.79	-.20775	-1.51	.3158591	1.06	.0742688	2.06

+14	.1019722	1.51	-.0079427	-0.10	.1186545	3.20	-.1383604	-1.00	-.0426552	-0.14	.124102	3.45
+15	.1257604	1.81	.0817493	1.07	.0312744	0.84	-.2028617	-1.53	.1918897	0.65	.0412592	1.15
+16	.1298514	1.90	-.0203229	-0.27	.0834834	2.25	-.2567557	-1.94	.2089682	0.70	.0866306	2.41
+17	-.0192335	-0.28	.0287409	0.38	.0940753	2.54	-.205459	-1.55	.5078785	1.71	.1041068	2.89
+18	.0064756	0.09	.0391048	0.51	.0876186	2.36	.0191057	0.14	.7192714	2.42	.0770609	2.14
+19	-.053126	-0.76	.0461181	0.60	.0364088	0.98	-.1143343	-0.86	.3486243	1.17	.0356213	0.99
+20	.0869714	1.28	-.0327065	-0.43	.1021723	2.76	-.0203011	-0.15	.0523817	0.18	.0997357	2.77
+21	-.131762	-1.93	.071138	0.93	.0273831	0.74	-.0060288	-0.05	.113198	0.38	.0285834	0.80
+22	.0829625	1.21	.0534517	0.68	.0419844	1.14	.1432751	1.08	.5079073	1.71	.0466683	1.31
+23	-.1324823	-1.92	-.0977882	-1.18	.0339125	0.93	-.2187064	-1.64	.3142069	1.06	.0201573	0.57
+24	.0469146	0.68	-.0171736	-0.21	.0606278	1.66	.0848944	0.61	.9807627	3.30	.0608081	1.72
+25	-.0584899	-0.85	.0448103	0.54	.0637123	1.74	-.0712387	-0.53	.2200189	0.74	.0660731	1.87
+26	.0483958	0.70	.0088745	0.11	.0604115	1.65	.0261924	0.20	.2629081	0.89	.0587952	1.66
+27	-.0476006	-0.69	.2046182	2.50	.1209834	3.30	.0214318	0.16	-.3143892	-1.06	.1211141	3.41
+28	-.1607795	-2.33	-.1033043	-1.24	.0927534	2.54	.191546	1.44	.1150787	0.39	.0897097	2.53
+29	-.2213481	-3.21	-.1379557	-1.65	.0423912	1.16	-.0986746	-0.74	-.0431415	-0.15	.0441509	1.25
+30	-.0911616	-1.32	-.1730974	-2.07	.0020699	0.06	-.2436786	-1.83	.0741639	0.25	.0019185	0.05
+31	-.1270557	-1.80	-.2514872	-2.96	.0186176	0.51	-.2184388	-1.64	.0050717	0.02	.0189625	0.54
+32	-.1752686	-2.52	-.0216764	-0.26	.0388158	1.06	.0876013	0.66	-.1518578	-0.51	.03009	0.85
+33	-.1149366	-1.65	-.0034569	-0.04	.0239146	0.66	.0404192	0.30	-.0685512	-0.23	.0206727	0.59
+34	-.0805903	-1.17	-.0180108	-0.21	.0242864	0.67	.2687174	2.02	.3887296	1.31	.0378417	1.07
+35	-.1213557	-1.76	-.0737194	-0.87	-.0089558	-0.25	-.1017923	-0.76	-.2623371	-0.88	-.000379	-0.01
+36	.1512702	2.15	-.1036505	-1.22	.0381244	1.05	-.0159144	-0.12	.1593283	0.54	.0305302	0.87
+37	-.0041763	-0.06	.0393343	0.46	.0416792	1.14	.0610361	0.47	.4144412	1.40	.0413848	1.17
+38	.0513381	0.74	.0375887	0.44	.03024	0.83	-.009356	-0.08	-.0150484	-0.05	.0271986	0.77
+39	-.0008684	-0.01	-.0860227	-0.98	.0564072	1.54	.1610608	1.34	.0190288	0.06	.0461883	1.30
+40	-.0989404	-1.42	.0456195	0.52	.0050572	0.14	-.2706249	-2.25	.8217889	2.77	.0137566	0.39

Table. 20 (a). Changes In Beta Around Earnings Announcements: By Types of Sectors

Event day	**Wholesales Trades**	**t-value**	**Insurance Firms**	**t-value**	**Electricity**	**t-value**	**Retail Trades**	**t-value**	**Transportation**	**t-value**	**Mining**	**t-value**

-40	0.0536802	1.02	0.194413	2.53	0.052178	0.76	0.158226	3.21	0.132664	2.24	0.2828	4.27
-39	0.0633471	1.2	0.086637	1.13	-0.03274	-0.47	0.162	3.28	0.086172	1.45	0.20538	3.1
-38	0.0793717	1.5	0.155812	2.03	0.048016	0.7	0.142108	2.88	0.198309	3.34	0.077073	1.16
-37	0.0528679	1	0.058918	0.77	0.467686	6.77	0.097028	1.97	0.117814	1.99	0.268415	4.05
-36	0.0525657	0.99	0.223664	2.91	0.028675	0.42	0.075009	1.52	0.048909	0.82	0.161082	2.43
-35	0.0343096	0.65	0.091587	1.19	0.233241	3.38	0.069935	1.42	0.129701	2.19	0.174964	2.64
-34	0.0799882	1.51	0.161271	2.1	-0.0726	-1.05	0.119596	2.42	0.154358	2.6	0.27787	4.19
-33	0.0484085	0.92	0.225971	2.94	0.055761	0.81	0.130403	2.64	0.096908	1.64	0.190375	2.87
-32	-0.0149647	-0.28	0.157881	2.05	0.071499	1.04	0.088196	1.79	0.058884	1	0.220326	3.3
-31	-0.0499677	-0.95	0.325503	4.23	0.060459	0.88	0.108542	2.2	0.083012	1.4	0.146148	2.19
-30	-0.0478047	-0.9	0.173071	2.25	0.098723	1.43	0.026433	0.54	0.035266	0.6	0.227018	3.4
-29	0.0342366	0.65	0.108017	1.4	0.038538	0.56	0.128977	2.62	0.070184	1.19	0.209953	3.15
-28	0.0475034	0.9	0.112988	1.47	0.126195	1.83	0.08516	1.73	0.086298	1.46	0.160104	2.4
-27	0.0989178	1.87	-0.0066	-0.09	0.107628	1.56	0.087705	1.78	0.078174	1.32	0.215891	3.24
-26	0.0412828	0.78	0.077826	1.01	-0.01926	-0.28	0.080065	1.62	0.106447	1.8	0.293471	4.4
-25	0.0298454	0.56	0.083776	1.09	0.115467	1.67	0.055464	1.12	0.177641	3.01	0.242454	3.64
-24	0.183691	3.47	0.051004	0.66	0.091772	1.33	0.09826	1.99	0.266871	4.51	0.218375	3.28
-23	0.119433	2.26	-0.012	-0.16	0.007765	0.11	0.023668	0.48	0.145089	2.45	0.283858	4.26
-22	0.0182382	0.34	0.096388	1.25	0.094003	1.36	0.118697	2.41	0.139893	2.37	0.089636	1.34
-21	0.1111463	2.1	0.229321	2.97	0.059172	0.86	0.077639	1.57	0.054544	0.92	0.203672	3.06
-20	0.1701473	3.22	-0.09439	-1.22	0.104584	1.51	0.105622	2.14	0.155364	2.63	0.249894	3.75
-19	0.1640456	3.1	0.01864	0.24	0.1034	1.5	0.279434	5.67	0.219617	3.71	0.30932	4.64
-18	0.1235009	2.33	0.081809	1.06	0.114006	1.65	0.045362	0.92	0.16907	2.86	0.302187	4.53
-17	0.1607513	3.04	0.176885	2.29	0.057763	0.84	0.108408	2.2	0.14632	2.47	0.223973	3.36
-16	0.1241985	2.35	0.033732	0.44	0.091179	1.32	0.157947	3.2	0.097669	1.65	0.370704	5.56
-15	0.0462156	0.87	0.13617	1.76	0.077788	1.12	0.108112	2.19	0.17528	2.96	0.338018	5.07
-14	0.1437367	2.71	0.104421	1.35	0.113434	1.64	0.220066	4.46	0.168105	2.84	0.171386	2.57
-13	0.0868395	1.64	0.126935	1.65	0.022848	0.33	0.18652	3.78	0.277637	4.7	0.338293	5.07
-12	0.0219728	0.41	0.068921	0.89	0.072699	1.05	0.143189	2.9	0.138148	2.34	0.316247	4.75
-11	0.0323967	0.61	0.018222	0.24	0.042095	0.61	0.15207	3.08	0.016031	0.27	0.40148	6.03
-10	0.1276855	2.42	0.095191	1.23	0.123888	1.79	0.168735	3.42	0.078402	1.33	0.286819	4.31
-9	0.0798472	1.51	0.155004	2.01	0.170749	2.47	0.131711	2.67	0.262485	4.44	0.37795	5.69
-8	0.143489	2.71	0.190112	2.47	0.055956	0.81	0.171219	3.48	0.113188	1.92	0.384742	5.8
-7	0.1271306	2.4	0.236367	3.07	0.144725	2.09	0.226721	4.6	0.098542	1.67	0.408203	6.16

-6	0.170136	3.22	0.263043	3.41	0.11503	1.66	0.224122	4.55	0.153875	2.61	0.414928	6.26
-5	0.0561577	1.06	0.055868	0.72	0.130507	1.89	0.176165	3.58	0.210759	3.57	0.447856	6.76
-4	0.2197474	4.16	0.137172	1.78	0.078114	1.13	0.125743	2.55	0.12717	2.16	0.445202	6.72
-3	0.1056703	2	0.121081	1.57	0.038663	0.56	0.200016	4.06	0.124013	2.1	0.287498	4.34
-2	-0.0263556	-0.5	0.204339	2.65	0.020764	0.3	0.134683	2.73	0.161799	2.74	0.360849	5.44
-1	0.1181493	2.24	0.055093	0.71	0.098396	1.42	0.181941	3.69	0.132595	2.25	0.36455	5.5
0	0.1809091	3.42	0.118214	1.53	0.151429	2.19	0.19981	4.06	0.12912	2.19	0.424184	6.4
+1	0.1518043	2.87	-0.06558	-0.85	0.150576	2.18	0.179265	3.64	0.149854	2.54	0.223487	3.37
+2	0.1165982	2.21	-0.00076	-0.01	0.028665	0.41	0.1752	3.56	0.273932	4.64	0.368548	5.56
+3	0.1408156	2.66	0.149198	1.94	0.075311	1.09	0.138835	2.82	0.145452	2.47	0.468032	7.06
+4	0.0940164	1.78	0.112592	1.46	0.051578	0.75	0.249682	5.07	0.190767	3.23	0.647501	9.77
+5	0.1737737	3.29	0.013771	0.18	0.154004	2.23	0.158857	3.22	0.178358	3.02	0.284704	4.29
+6	0.1377216	2.6	0.194813	2.53	0.193238	2.8	0.097511	1.98	0.242815	4.12	0.364299	5.5
+7	0.2032995	3.84	0.097232	1.26	0.200811	2.91	0.143613	2.91	0.347	5.88	0.381737	5.76
+8	0.0843591	1.6	0.083782	1.09	0.046918	0.68	0.093066	1.89	0.099606	1.69	0.367866	5.55
+9	0.0660185	1.25	0.001606	0.02	0.150828	2.18	0.181502	3.68	0.106184	1.8	0.309429	4.65
+10	0.0618785	1.17	-0.05275	-0.68	0.080909	1.17	0.240635	4.88	0.208999	3.54	0.42572	6.4
+11	0.06538	1.24	0.023964	0.31	0.028627	0.41	0.105976	2.15	0.216217	3.66	0.463202	6.96
+12	0.1252727	2.37	0.035236	0.46	0.100068	1.45	0.236515	4.8	0.347691	5.88	0.446866	6.71
+13	0.0672046	1.27	0.035965	0.47	0.02173	0.31	0.216523	4.39	0.271104	4.59	0.299733	4.5
+14	0.1078799	2.04	0.00937	0.12	0.160609	2.32	0.24757	5.02	0.217387	3.67	0.34011	5.1
+15	0.131135	2.48	-0.03602	-0.47	0.467471	6.76	0.195568	3.96	0.138514	2.34	0.246632	3.7
+16	0.1239153	2.34	0.088765	1.15	0.068522	0.99	0.182527	3.7	0.111579	1.89	0.363804	5.46
+17	0.1331751	2.52	0.057195	0.74	0.159749	2.31	0.158603	3.22	0.23903	4.04	0.393184	5.9
+18	0.1324041	2.5	0.042689	0.55	-0.00362	-0.05	0.074786	1.52	0.212738	3.6	0.367464	5.51
+19	0.1325576	2.5	0.052585	0.68	0.143198	2.07	0.127901	2.59	0.030802	0.52	0.383775	5.76
+20	0.1055312	1.99	-0.06273	-0.81	0.06073	0.88	0.18643	3.78	0.170989	2.89	0.332928	4.99
+21	0.1481961	2.8	-0.06278	-0.81	0.025617	0.37	0.199634	4.05	0.144295	2.44	0.261578	3.92
+22	0.0808308	1.53	0.069278	0.9	0.04791	0.69	0.13695	2.78	0.195437	3.31	0.319745	4.8
+23	0.1156103	2.19	-0.01438	-0.19	0.039174	0.57	-0.00669	-0.14	0.147314	2.49	0.321926	4.83
+24	0.1958532	3.7	0.032685	0.42	0.060217	0.87	0.199495	4.04	0.165623	2.8	0.460658	6.91
+25	0.0408752	0.77	0.079046	1.03	0.122616	1.78	0.03276	0.66	0.114633	1.94	0.334642	5.02
+26	0.1133003	2.14	0.106655	1.39	0.132186	1.91	0.235366	4.77	0.172809	2.92	0.375258	5.63
+27	0.2161625	4.09	0.055416	0.72	0.116599	1.69	0.205422	4.17	0.067503	1.14	0.469765	7.05

+28	0.0084784	0.16	0.033267	0.43	0.047605	0.69	0.178247	3.62	0.077056	1.3	0.356509	5.35
+29	0.0829661	1.57	0.021853	0.28	-0.04513	-0.65	0.150095	3.04	0.026207	0.44	0.326849	4.89
+30	0.0749075	1.42	-0.02032	-0.26	0.073096	1.06	0.047336	0.96	0.17523	2.97	0.290301	4.35
+31	0.088641	1.69	0.168674	2.19	0.058429	0.85	0.077199	1.56	0.132297	2.24	0.306453	4.59
+32	0.2013316	3.83	0.118068	1.54	0.02648	0.38	0.152423	3.08	0.077529	1.31	0.32235	4.83
+33	0.0752207	1.43	0.127128	1.65	0.05396	0.78	0.169626	3.43	0.210856	3.57	0.385574	5.77
+34	0.0597076	1.13	0.036854	0.48	0.10503	1.52	0.141392	2.86	0.162204	2.74	0.43121	6.45
+35	-0.0346542	-0.66	0.093685	1.22	0.099436	1.44	0.082647	1.67	0.125443	2.12	0.389756	5.83
+36	-0.039312	-0.75	0.032463	0.42	0.106772	1.55	0.096677	1.95	0.262553	4.43	0.212051	3.17
+37	0.0045638	0.09	-0.18512	-2.42	-0.07112	-1.03	0.023703	0.48	0.076662	1.27	0.201596	3.02
+38	0.0662582	1.25	-0.09607	-1.26	0.01324	0.19	0.115727	2.34	0.117987	1.94	0.21443	3.21
+39	0.098524	1.86	0.149241	1.96	-0.05144	-0.74	0.134904	2.73	0.149574	2.47	0.2913	4.36
+40	-0.0839036	-1.59	0.044324	0.58	0.032619	0.47	0.045772	0.93	0.142729	2.37	0.253985	3.77

Table 20 (b). Changes In Beta Around Earnings Announcements: By Types of Sectors

Event day	**Real Estate Trusts**	**t-value**	**Textile & Leather**	**t-value**	**Securities**	**t-value**	**Tourism**	**t-value**	**Weaving. Clothing andLeather Firms**	**t-value**	**Wholesale and Retail Trades**	**t-value**
-40	0.080658	1.91	0.065595	1.52	0.124761	1.83	-0.00539	-0.07	0.020818	0.59	0.139254	3.55
-39	0.117428	2.78	0.014395	0.33	0.144918	2.12	0.159356	2.13	0.05771	1.63	0.138182	3.52
-38	0.111836	2.64	0.004808	0.11	0.171812	2.52	0.187151	2.5	0.036423	1.03	0.14208	3.62
-37	0.191146	4.52	0.12321	2.85	0.019071	0.28	0.018035	0.24	0.103531	2.92	0.095813	2.44
-36	0.169564	4.01	0.031521	0.73	-0.00057	-0.01	0.163092	2.17	0.0005	0.01	0.087258	2.22
-35	0.163979	3.88	0.088156	2.04	0.152191	2.23	0.055422	0.74	0.066134	1.86	0.060379	1.54
-34	0.119455	2.82	-0.00326	-0.08	0.002375	0.03	0.193776	2.58	0.028136	0.79	0.12333	3.14
-33	0.223919	5.29	0.075995	1.76	0.086601	1.27	0.21974	2.93	0.085465	2.41	0.097757	2.49
-32	0.180661	4.27	0.047359	1.1	0.06526	0.96	0.091619	1.22	0.061286	1.73	0.064106	1.64
-31	0.261616	6.19	0.033091	0.77	0.150345	2.2	0.222794	2.97	0.016565	0.47	0.061696	1.57
-30	0.178111	4.21	0.154769	3.58	0.046786	0.69	0.168498	2.25	0.148295	4.17	0.011907	0.3
-29	0.036059	0.85	0.048534	1.12	0.054393	0.8	0.145456	1.94	0.113145	3.18	0.116739	2.98
-28	0.133459	3.16	0.073425	1.7	0.074417	1.09	0.172048	2.3	0.067893	1.91	0.098547	2.51

-27	0.150994	3.57	0.092433	2.14	0.320565	4.7	0.148876	1.99	0.092852	2.61	0.121499	3.1
-26	0.160407	3.8	0.167902	3.88	0.112923	1.66	0.327107	4.37	0.116955	3.29	0.085374	2.18
-25	0.256311	6.07	0.173713	4.02	0.065444	0.96	0.083049	1.11	0.15143	4.26	0.067876	1.73
-24	0.144904	3.43	0.12024	2.78	0.055318	0.81	0.074377	0.99	0.086694	2.44	0.154072	3.93
-23	0.210189	4.97	0.060776	1.4	0.080781	1.18	0.129849	1.73	0.119696	3.36	0.088315	2.25
-22	0.139898	3.31	0.096867	2.24	0.152824	2.24	0.123308	1.65	0.08727	2.45	0.099851	2.54
-21	0.19526	4.62	0.116578	2.69	0.015221	0.22	0.204532	2.73	0.08918	2.5	0.113672	2.9
-20	0.204657	4.84	0.018408	0.43	-0.01354	-0.2	0.242652	3.24	0.027538	0.77	0.156778	3.99
-19	0.161213	3.82	0.068083	1.57	0.026322	0.39	0.169283	2.26	0.093848	2.63	0.282976	7.21
-18	0.209604	4.96	0.108313	2.5	-0.02487	-0.36	0.06938	0.93	0.081646	2.29	0.100775	2.57
-17	0.237304	5.62	0.080437	1.86	0.081775	1.2	0.269861	3.6	0.069061	1.94	0.160836	4.1
-16	0.253721	6.01	0.166457	3.84	0.029714	0.43	0.140789	1.88	0.139669	3.92	0.164635	4.19
-15	0.2871	6.8	0.166804	3.85	-0.04019	-0.59	0.053169	0.71	0.084306	2.36	0.103097	2.62
-14	0.193629	4.58	0.102323	2.36	0.052743	0.77	0.053897	0.72	0.047312	1.33	0.221812	5.65
-13	0.228883	5.42	0.094268	2.18	0.171972	2.52	0.153936	2.05	0.04184	1.17	0.175865	4.48
-12	0.189948	4.5	0.019233	0.44	0.081746	1.2	0.148959	1.99	0.043403	1.22	0.119098	3.03
-11	0.099594	2.36	0.151215	3.49	0.1129	1.65	0.262873	3.51	0.107495	3.01	0.132571	3.38
-10	0.272837	6.47	0.120218	2.78	0.076702	1.12	0.185896	2.48	0.109424	3.07	0.191898	4.89
-9	0.570024	13.51	0.181931	4.2	0.044183	0.65	0.32898	4.39	0.192166	5.39	0.135957	3.47
-8	0.268596	6.37	0.196902	4.55	0.12928	1.89	0.256601	3.42	0.112834	3.16	0.178527	4.55
-7	0.328672	7.79	0.166715	3.85	0.1698	2.49	0.222943	2.97	0.115918	3.25	0.21521	5.49
-6	0.281379	6.67	0.210324	4.86	0.11311	1.66	0.093902	1.25	0.131468	3.69	0.247594	6.31
-5	0.134605	3.19	0.097744	2.26	0.091159	1.33	0.199706	2.66	0.061658	1.73	0.157529	4.02
-4	0.236093	5.6	0.145308	3.36	0.177205	2.59	0.123916	1.65	0.069822	1.96	0.178009	4.54
-3	0.271376	6.43	0.150086	3.47	0.111301	1.63	0.11914	1.59	0.065001	1.82	0.21047	5.37
-2	0.267505	6.34	0.172291	3.98	0.134777	1.97	0.120476	1.61	0.068776	1.93	0.09167	2.34
-1	0.259096	6.14	0.202707	4.68	0.121151	1.77	0.071855	0.96	0.113305	3.18	0.190751	4.86
0	0.270745	6.42	0.234247	5.41	0.127451	1.87	0.129321	1.72	0.235256	6.6	0.226582	5.78
+1	0.202529	4.8	0.207829	4.8	0.060507	0.89	0.147212	1.96	0.139279	3.91	0.209348	5.34
+2	0.225548	5.35	0.163989	3.79	0.088524	1.3	0.041393	0.55	0.122717	3.44	0.187543	4.78
+3	0.319002	7.56	0.174951	4.04	0.075949	1.11	0.165736	2.21	0.134763	3.78	0.165545	4.22
+4	0.325558	7.72	0.195739	4.52	0.137822	2.02	0.31138	4.15	0.165507	4.64	0.207174	5.28
+5	0.284866	6.75	0.130194	3.01	0.00437	0.06	0.143069	1.91	0.122902	3.45	0.208972	5.33
+6	0.259611	6.15	0.172143	3.98	0.199694	2.92	0.127628	1.7	0.14005	3.93	0.144489	3.68

+7	0.270026	6.4	0.140976	3.26	0.174714	2.56	0.150084	2	0.133314	3.74	0.19457	4.96
+8	0.371439	8.8	0.060182	1.39	0.042567	0.62	0.140086	1.87	0.031363	0.88	0.122721	3.13
+9	0.27097	6.42	0.16824	3.88	0.153393	2.25	0.211283	2.82	0.144963	4.07	0.161896	4.13
+10	0.252936	5.99	0.170251	3.93	0.110362	1.62	0.203906	2.72	0.163718	4.59	0.205621	5.24
+11	0.203174	4.81	0.070419	1.63	0.038323	0.56	0.29391	3.92	0.08254	2.32	0.114761	2.92
+12	0.296586	7.02	0.160767	3.71	0.101475	1.48	0.192263	2.56	0.088562	2.48	0.201292	5.13
+13	0.210831	4.99	0.207296	4.78	0.105588	1.54	0.316669	4.22	0.17517	4.91	0.191734	4.88
+14	0.389912	9.23	0.140379	3.24	0.062062	0.91	0.326881	4.36	0.114374	3.21	0.204988	5.22
+15	0.2332	5.52	0.152297	3.52	0.172274	2.52	0.076538	1.02	0.129893	3.64	0.194863	4.96
+16	0.190152	4.5	0.128247	2.96	0.070155	1.03	0.13561	1.81	0.044753	1.26	0.199487	5.08
+17	0.19964	4.73	0.099873	2.31	0.115281	1.69	0.108225	1.44	0.105651	2.96	0.167316	4.26
+18	0.227422	5.38	0.094088	2.17	0.310139	4.54	0.231566	3.09	0.048256	1.35	0.120667	3.07
+19	0.248489	5.88	0.039786	0.92	0.069346	1.02	0.164284	2.19	0.039865	1.12	0.144889	3.69
+20	0.28567	6.76	0.124772	2.88	0.024196	0.35	0.129201	1.72	0.088771	2.49	0.154442	3.93
+21	0.209317	4.95	0.078509	1.81	0.080216	1.17	0.164024	2.19	0.008551	0.24	0.205489	5.24
+22	0.207888	4.92	0.099152	2.29	-0.00113	-0.02	0.184665	2.46	0.049767	1.4	0.131877	3.36
+23	0.215038	5.09	0.120355	2.78	0.108132	1.58	0.180259	2.41	0.068281	1.92	0.059681	1.52
+24	0.23698	5.61	0.020473	0.47	0.171236	2.51	0.306642	4.09	0.009485	0.27	0.225479	5.75
+25	0.219663	5.2	0.070287	1.63	0.080749	1.18	0.252114	3.36	-0.01592	-0.45	0.063925	1.63
+26	0.313278	7.41	0.098407	2.28	0.054771	0.8	0.185696	2.48	0.064437	1.81	0.210001	5.35
+27	0.239689	5.67	0.114391	2.65	-0.00605	-0.09	0.238228	3.17	0.062013	1.74	0.243167	6.2
+28	0.28849	6.83	0.080809	1.87	0.268455	3.93	0.165571	2.2	0.064426	1.81	0.137457	3.51
+29	0.226423	5.36	0.145293	3.36	0.023502	0.34	0.02415	0.32	0.059426	1.67	0.152648	3.89
+30	0.117242	2.77	0.093627	2.17	-0.14505	-2.13	0.142986	1.9	0.06361	1.79	0.087343	2.22
+31	0.145761	3.45	0.132365	3.06	0.089032	1.31	0.13699	1.82	0.077873	2.19	0.110575	2.82
+32	0.217795	5.15	0.072463	1.68	0.072624	1.06	0.23072	3.07	0.024028	0.68	0.191115	4.87
+33	0.195448	4.62	0.125283	2.9	-0.02921	-0.43	0.194787	2.59	0.112422	3.16	0.085188	2.17
+34	0.237427	5.61	0.192401	4.45	0.118452	1.73	0.203975	2.72	0.125436	3.53	0.119345	3.04
+35	0.265626	6.28	0.143839	3.33	0.044862	0.66	0.200446	2.67	0.113249	3.18	0.053961	1.37
+36	0.178282	4.21	0.098833	2.29	0.072658	1.06	0.06869	0.92	0.105483	2.97	0.062108	1.58
+37	0.136657	3.25	0.057818	1.33	0.049444	0.73	0.11499	1.53	0.018036	0.5	0.023354	0.59
+38	0.171059	4.06	0.109126	2.5	0.201543	2.98	0.090848	1.21	0.094217	2.64	0.109126	2.77
+39	0.184302	4.39	0.024678	0.56	0.037502	0.55	0.149233	1.98	0.052414	1.46	0.124952	3.17
+40	0.141647	3.37	0.094951	2.17	0.002886	0.04	0.058929	0.78	0.056077	1.57	0.035944	0.91

Table 20 (c). Changes In Beta Around Earnings Announcements: By Types of Sectors

Event day	Oil and Coal derivatives	t-value	Services	t-value	Holds and Investment Firms	t-value	Financial institutions	t-value	Banks and Private finance corporations	t-value	Metal main	t-value
-40	0.122653	2.12	-0.00422	-0.07	0.138758	5.22	0.090551	5.05	-0.01359	-0.29	0.061145	1.29
-39	0.112334	1.94	0.12272	2.14	0.071044	2.67	0.090669	5.05	0.068852	1.46	-0.02748	-0.58
-38	0.059334	1.03	0.110234	1.92	0.11321	4.25	0.106507	5.93	0.041079	0.87	0.029836	0.63
-37	0.014585	0.25	0.153584	2.68	0.085776	3.22	0.080213	4.47	0.021905	0.46	-0.09474	-2
-36	-0.02271	-0.39	0.087705	1.53	0.075331	2.83	0.077309	4.31	-0.03106	-0.66	0.040239	0.85
-35	0.077333	1.34	0.020912	0.36	0.098702	3.71	0.082629	4.6	-0.03257	-0.69	-0.00642	-0.14
-34	0.094016	1.63	0.119793	2.09	0.164208	6.17	0.091187	5.08	-0.02806	-0.59	0.029905	0.63
-33	0.068397	1.18	0.146751	2.56	0.088986	3.35	0.085736	4.78	-0.02655	-0.56	-0.00308	-0.07
-32	-0.02035	-0.35	0.050018	0.87	0.050371	1.89	0.086339	4.81	0.015516	0.33	0.067817	1.43
-31	-0.05329	-0.92	0.136689	2.38	0.079617	2.99	0.106831	5.95	0.009693	0.2	0.05453	1.15
-30	0.005295	0.09	0.058023	1.01	0.100669	3.79	0.096654	5.38	0.028033	0.59	0.017597	0.37
-29	-0.08191	-1.42	0.079608	1.39	0.171375	6.44	0.08728	4.86	0.008395	0.18	0.113991	2.41
-28	0.106317	1.84	0.101708	1.77	0.131961	4.96	0.103411	5.76	0.062465	1.32	0.037249	0.79
-27	-0.01061	-0.18	0.109852	1.92	0.06169	2.32	0.105595	5.88	0.062376	1.32	-0.01247	-0.26
-26	-0.069	-1.19	0.081509	1.42	0.156599	5.89	0.101344	5.65	-0.06089	-1.29	0.150877	3.18
-25	0.081252	1.41	0.133935	2.33	0.086366	3.25	0.116129	6.47	0.049985	1.06	-0.03242	-0.68
-24	-0.06754	-1.17	0.080174	1.4	0.076907	2.89	0.072873	4.06	0.007338	0.16	0.109175	2.3
-23	-0.08844	-1.53	0.102406	1.78	0.13755	5.17	0.108425	6.04	0.01886	0.4	0.107284	2.26
-22	-0.00904	-0.16	0.140737	2.45	0.04257	1.6	0.087779	4.89	0.06528	1.39	0.103091	2.17
-21	-0.01424	-0.25	0.121264	2.11	0.087978	3.31	0.11873	6.61	0.101299	2.16	0.111376	2.35
-20	-0.02347	-0.41	0.13487	2.35	0.149979	5.64	0.112465	6.27	0.034073	0.73	0.059429	1.25
-19	0.067872	1.17	0.139217	2.42	0.129745	4.88	0.122044	6.8	0.044891	0.96	0.115832	2.44
-18	0.008646	0.15	0.106715	1.86	0.125215	4.7	0.102534	5.71	-0.02886	-0.62	0.075074	1.58
-17	0.003806	0.07	0.106162	1.85	0.089303	3.35	0.122452	6.82	0.085951	1.84	0.085241	1.8
-16	0.014204	0.25	0.114572	1.99	0.20911	7.86	0.13857	7.72	-0.05441	-1.17	0.071923	1.52
-15	-0.08066	-1.39	0.094959	1.65	0.16471	6.19	0.151254	8.43	0.018836	0.4	0.134346	2.83

-14	0.058702	1.01	0.202803	3.53	0.113268	4.25	0.109259	6.09	-0.03945	-0.84	0.144247	3.04
-13	-0.01764	-0.3	0.123145	2.14	0.110544	4.15	0.126056	7.02	0.055456	1.19	0.192595	4.06
-12	-0.0204	-0.35	0.165495	2.88	0.069045	2.59	0.082264	4.58	-0.05412	-1.16	0.167714	3.53
-11	0.045321	0.78	0.144671	2.52	0.106054	3.98	0.08127	4.53	-0.02324	-0.5	0.108658	2.29
-10	0.026994	0.47	0.16711	2.91	0.074289	2.79	0.126683	7.06	0.018182	0.39	0.141784	2.99
-9	-0.00916	-0.16	0.264398	4.61	0.136774	5.14	0.202749	11.3	-0.02038	-0.44	0.257377	5.42
-8	0.036667	0.63	0.151679	2.64	0.163623	6.15	0.168448	9.39	0.018966	0.41	0.127529	2.69
-7	0.087938	1.52	0.159919	2.79	0.117091	4.4	0.183821	10.25	0.107668	2.3	0.095347	2.01
-6	-0.01199	-0.21	0.155069	2.7	0.164576	6.19	0.158685	8.84	-0.00959	-0.21	0.155844	3.28
-5	0.019779	0.34	0.103031	1.79	0.114819	4.32	0.102015	5.69	0.008703	0.19	0.068921	1.45
-4	-0.04076	-0.7	0.085456	1.49	0.113877	4.28	0.113909	6.35	-0.10636	-2.28	0.125475	2.64
-3	0.059036	1.02	0.128773	2.24	0.17094	6.43	0.180541	10.06	0.157645	3.37	0.126438	2.66
-2	-0.01113	-0.19	0.049098	0.86	0.122229	4.6	0.138798	7.74	-0.01196	-0.26	0.128947	2.71
-1	-0.0028	-0.05	0.14927	2.6	0.17891	6.73	0.145883	8.13	0.014596	0.31	0.103204	2.17
0	-0.02229	-0.39	0.154383	2.69	0.183888	6.92	0.167753	9.35	0.033028	0.71	0.168269	3.54
+1	0.15577	2.69	0.158545	2.76	0.101376	3.81	0.10512	5.86	-0.00671	-0.14	0.124948	2.63
+2	0.026139	0.45	0.137247	2.39	0.152072	5.72	0.130051	7.25	0.018159	0.39	0.21175	4.46
+3	0.087745	1.52	0.207755	3.62	0.156679	5.89	0.162666	9.07	0.007832	0.17	0.118054	2.49
+4	0.070379	1.22	0.193855	3.38	0.150758	5.67	0.164918	9.19	0.01164	0.25	0.086506	1.82
+5	-0.0411	-0.71	0.14958	2.61	0.144364	5.43	0.137316	7.65	0.039679	0.85	0.2178	4.59
+6	0.079365	1.37	0.107975	1.88	0.183872	6.92	0.15461	8.62	-0.00585	-0.13	0.09096	1.92
+7	-0.00019	0	0.151766	2.64	0.206354	7.76	0.163261	9.1	-0.03199	-0.68	0.143362	3.02
+8	0.094892	1.64	0.114681	2	0.133205	5.01	0.146914	8.19	-0.0053	-0.11	0.185391	3.9
+9	-0.02736	-0.47	0.150946	2.63	0.230394	8.66	0.171378	9.55	-0.02124	-0.45	0.147954	3.12
+10	-0.04546	-0.79	0.136794	2.38	0.193476	7.27	0.162173	9.04	0.033875	0.73	0.184899	3.89
+11	0.028711	0.5	0.114974	2	0.11364	4.27	0.110562	6.16	-0.01005	-0.22	0.215656	4.54
+12	0.058054	1	0.175137	3.05	0.137245	5.16	0.166172	9.26	0.113311	2.43	0.203715	4.29
+13	-0.00544	-0.09	0.176518	3.07	0.206122	7.74	0.173314	9.65	0.113097	2.42	0.186709	3.93
+14	-0.03589	-0.62	0.271728	4.73	0.163219	6.13	0.16717	9.31	0.009795	0.21	0.148373	3.13
+15	0.152674	2.64	0.191934	3.34	0.153675	5.77	0.115486	6.43	-0.10523	-2.25	0.170368	3.59
+16	-0.00104	-0.02	0.106992	1.86	0.205381	7.72	0.169828	9.46	0.131695	2.82	0.133781	2.82
+17	0.058608	1.01	0.174178	3.03	0.171828	6.45	0.126893	7.07	-0.02358	-0.5	0.149717	3.15
+18	0.055191	0.95	0.150723	2.62	0.13072	4.91	0.160853	8.96	0.027607	0.59	0.071827	1.51
+19	-0.06489	-1.12	0.098585	1.72	0.152624	5.73	0.133684	7.45	0.029787	0.64	0.064134	1.35

+20	-0.04015	-0.69	0.130447	2.27	0.091824	3.45	0.09622	5.36	-0.02361	-0.5	0.133426	2.81
+21	0.060189	1.04	0.134825	2.35	0.106547	4	0.106182	5.91	0.004006	0.09	0.269018	5.67
+22	-0.03039	-0.53	0.139761	2.43	0.099411	3.73	0.101974	5.68	0.039711	0.85	0.09274	1.95
+23	0.065226	1.13	0.084446	1.47	0.125444	4.71	0.119674	6.66	0.032337	0.69	0.030559	0.64
+24	0.059334	1.03	0.192164	3.35	0.149829	5.63	0.133913	7.46	-0.01899	-0.4	0.12337	2.6
+25	-0.02233	-0.39	0.099463	1.73	0.08537	3.21	0.077093	4.29	-0.14797	-3.13	0.112023	2.36
+26	0.053049	0.92	0.171542	2.99	0.170512	6.41	0.148621	8.28	0.020741	0.44	0.191593	4.04
+27	0.105464	1.83	0.169699	2.96	0.175524	6.6	0.10991	6.12	-0.0964	-2.04	0.11195	2.36
+28	-0.11538	-2	0.103518	1.8	0.113416	4.27	0.142592	7.95	0.001828	0.04	0.171888	3.62
+29	-0.10211	-1.77	0.074779	1.3	0.119165	4.48	0.074685	4.16	-0.09032	-1.91	0.073831	1.56
+30	0.005486	0.09	0.101513	1.77	0.141962	5.34	0.065493	3.65	-0.02039	-0.43	0.059357	1.25
+31	-0.0718	-1.24	0.092948	1.62	0.063602	2.39	0.067721	3.77	0.011548	0.24	0.013973	0.29
+32	0.081748	1.42	0.131592	2.29	0.060565	2.28	0.080439	4.48	-0.10636	-2.25	0.056465	1.19
+33	0.114409	1.98	0.125566	2.19	0.098146	3.69	0.092975	5.18	-0.01851	-0.39	0.077609	1.64
+34	-0.03334	-0.58	0.129679	2.26	0.127673	4.79	0.114828	6.39	-0.01725	-0.36	0.112198	2.37
+35	-0.00049	-0.01	0.09418	1.64	0.090999	3.42	0.111775	6.23	-0.0275	-0.58	-0.00453	-0.1
+36	0.063198	1.09	0.071012	1.24	0.084834	3.18	0.083829	4.67	0.01597	0.34	0.065655	1.39
+37	-0.08583	-1.49	0.060898	1.06	0.068291	2.54	0.041273	2.3	-0.00231	-0.05	0.043106	0.91
+38	-0.03359	-0.58	0.080087	1.39	0.096976	3.61	0.077216	4.3	-0.05703	-1.22	0.017267	0.36
+39	-0.07295	-1.26	0.08131	1.41	0.080159	2.98	0.095329	5.3	-0.00454	-0.1	0.036857	0.77
+40	-0.06878	-1.18	0.081821	1.42	0.103886	3.86	0.069346	3.86	-0.05431	-1.16	0.103257	2.16

Table 20 (d). Changes In Beta Around Earnings Announcements: By Types of Sectors

Event day	**Vehicle**	**t-value**	**Production Firms**	**t-value**	**Manufacturing Firms**	**t-value**	**Electrical machines Firms**	**t-value**	**Food. Beverage and Tobacco Firms**	**t-value**	**Forest. Paper and Printing**	**t-value**
-40	0.008951	0.23	0.04053	3.25	0.046688	3.44	0.110361	1.5	0.024841	0.65	0.083206	1.97
-39	0.080731	2.08	0.010981	0.88	-0.00156	-0.11	-0.07621	-1.03	0.04957	1.29	0.051462	1.22
-38	0.033082	0.85	0.026343	2.11	0.027098	1.99	0.025909	0.35	0.005357	0.14	0.032276	0.76
-37	-0.02954	-0.76	0.02246	1.8	0.027317	2.01	0.017379	0.24	0.008421	0.22	0.016568	0.39

-36	0.087283	2.24	0.028468	2.28	0.033746	2.48	-0.03435	-0.47	0.029401	0.76	0.006522	0.15
-35	0.124601	3.2	0.042239	3.38	0.049678	3.65	0.147062	2	0.033945	0.88	0.05524	1.3
-34	0.065112	1.67	0.024991	2	0.031069	2.28	0.0817	1.11	0.001573	0.04	0.035589	0.84
-33	0.010563	0.27	0.028638	2.29	0.024806	1.82	-0.00512	-0.07	0.033182	0.86	0.063373	1.5
-32	0.039928	1.03	0.046048	3.69	0.046366	3.41	0.150139	2.04	0.034244	0.89	0.065038	1.54
-31	0.068776	1.77	0.031466	2.52	0.034257	2.52	0.188764	2.56	0.018513	0.48	0.088877	2.1
-30	0.02305	0.59	0.04233	3.39	0.038179	2.8	0.038934	0.53	0.029112	0.76	0.060516	1.43
-29	-0.02056	-0.53	0.024713	1.98	0.012597	0.93	-0.01175	-0.16	-0.00272	-0.07	0.060348	1.43
-28	0.068586	1.76	0.037083	2.97	0.040215	2.95	0.028741	0.39	0.057628	1.5	-0.0145	-0.34
-27	0.07086	1.82	0.027482	2.2	0.026154	1.92	0.114266	1.55	0.060439	1.57	0.005423	0.13
-26	0.017722	0.45	0.086319	6.9	0.08386	6.16	0.257741	3.5	0.096506	2.51	0.072248	1.71
-25	0.004817	0.12	0.058662	4.69	0.054839	4.02	0.112156	1.52	0.080526	2.09	0.091485	2.16
-24	-0.01216	-0.31	0.057827	4.62	0.058266	4.28	0.28236	3.83	0.120999	3.14	0.023107	0.55
-23	0.056145	1.44	0.042404	3.39	0.032086	2.35	0.036014	0.49	-0.03202	-0.83	0.033733	0.8
-22	0.006189	0.16	0.039071	3.12	0.036546	2.68	0.090048	1.22	0.0484	1.26	0.045049	1.06
-21	0.033002	0.85	0.041561	3.32	0.04387	3.22	-0.08678	-1.18	0.08488	2.2	0.080274	1.89
-20	0.008844	0.23	0.015778	1.26	0.022676	1.66	0.125891	1.71	-0.01282	-0.33	0.097794	2.31
-19	0.01138	0.29	0.037957	3.03	0.037474	2.75	0.10844	1.47	0.058244	1.51	0.111629	2.63
-18	0.049184	1.26	0.030931	2.47	0.038589	2.83	0.169805	2.3	0.028499	0.74	0.018643	0.44
-17	-0.00616	-0.16	0.048832	3.9	0.049027	3.59	0.240336	3.26	0.051464	1.34	0.036216	0.85
-16	0.045834	1.17	0.080798	6.45	0.074804	5.48	0.093818	1.27	0.15144	3.93	0.094515	2.23
-15	0.043411	1.11	0.032582	2.6	0.046371	3.4	0.124895	1.69	0.055342	1.44	-0.00357	-0.08
-14	0.00537	0.14	0.022651	1.81	0.030093	2.2	0.067739	0.92	0.036988	0.96	0.015472	0.36
-13	0.0056	0.14	0.034079	2.72	0.033659	2.46	0.077046	1.04	0.054219	1.41	0.056313	1.33
-12	0.012801	0.33	0.052822	4.21	0.057672	4.22	0.16059	2.18	0.130722	3.39	0.049576	1.17
-11	0.057843	1.48	0.063228	5.04	0.06445	4.72	0.106145	1.44	0.107417	2.79	0.066692	1.57
-10	0.00178	0.05	0.039827	3.18	0.033765	2.47	0.024445	0.33	0.06471	1.68	0.001716	0.04
-9	0.095831	2.45	0.082739	6.6	0.07776	5.69	0.097024	1.31	0.054765	1.42	0.104522	2.47
-8	0.072239	1.85	0.066784	5.33	0.076052	5.57	0.197704	2.68	0.073175	1.9	0.063209	1.49
-7	0.05766	1.47	0.078701	6.28	0.084446	6.18	0.083751	1.13	0.099976	2.6	0.141925	3.35
-6	0.106756	2.73	0.085599	6.83	0.102766	7.52	0.328275	4.45	0.063389	1.65	0.099798	2.35
-5	0.043762	1.12	0.043384	3.46	0.057135	4.18	0.115805	1.57	0.094791	2.46	0.024219	0.57
-4	-0.00265	-0.07	0.041996	3.35	0.053393	3.91	-0.00434	-0.06	0.03376	0.88	0.095404	2.25
-3	0.01014	0.26	0.038691	3.09	0.043254	3.17	0.10754	1.46	0.098725	2.56	0.034482	0.81

-2	0.058123	1.49	0.051636	4.12	0.070702	5.17	-0.0431	-0.58	0.071876	1.87	0.106902	2.52
-1	-0.01663	-0.43	0.052645	4.2	0.052289	3.83	0.123177	1.67	0.093455	2.43	0.018954	0.45
0	0.097801	2.5	0.094159	7.51	0.096385	7.05	0.122811	1.66	0.076675	1.99	0.058323	1.38
+1	0.182476	4.67	0.10661	8.5	0.11262	8.24	0.263504	3.57	0.080952	2.1	0.115739	2.73
+2	0.0399	1.02	0.094685	7.55	0.106347	7.78	0.13891	1.88	0.140694	3.65	0.048822	1.15
+3	0.060551	1.55	0.098642	7.87	0.103893	7.6	0.272151	3.69	0.153294	3.98	0.141135	3.33
+4	0.080037	2.05	0.089866	7.17	0.100889	7.38	0.026208	0.36	0.126553	3.29	0.089988	2.12
+5	0.096665	2.47	0.092803	7.4	0.103278	7.56	0.073676	1	0.075339	1.96	0.076847	1.81
+6	0.089154	2.28	0.087683	6.99	0.086331	6.32	0.1675	2.27	0.162406	4.22	0.023466	0.55
+7	0.066708	1.71	0.075827	6.05	0.084696	6.2	0.004248	0.06	0.113252	2.94	0.052153	1.23
+8	0.081278	2.08	0.058489	4.66	0.070657	5.17	0.077421	1.05	0.106828	2.77	0.135435	3.2
+9	0.037989	0.97	0.067801	5.41	0.065899	4.82	0.01276	0.17	0.084951	2.21	0.100973	2.38
+10	0.029036	0.74	0.092865	7.41	0.081497	5.97	0.102887	1.39	0.097792	2.54	0.094354	2.23
+11	0.107404	2.75	0.077867	6.21	0.085418	6.25	0.208904	2.83	0.092814	2.41	0.103495	2.44
+12	0.023009	0.59	0.055427	4.42	0.064742	4.74	0.046518	0.63	0.047178	1.22	0.135113	3.18
+13	0.055698	1.43	0.086756	6.92	0.07954	5.82	0.234254	3.17	0.107602	2.79	0.117467	2.77
+14	-0.01103	-0.28	0.07628	6.08	0.067614	4.95	0.037766	0.51	0.185553	4.81	0.066873	1.58
+15	0.038208	0.98	0.073791	5.89	0.077168	5.65	0.174226	2.36	0.138842	3.6	0.103563	2.44
+16	0.066404	1.7	0.038442	3.07	0.055655	4.08	0.006342	0.09	0.033514	0.87	0.100202	2.36
+17	0.065696	1.68	0.055071	4.39	0.05465	4	-0.02565	-0.35	0.067093	1.74	0.09794	2.31
+18	-0.02144	-0.55	0.041232	3.29	0.044998	3.3	0.050832	0.69	0.071235	1.85	0.060603	1.43
+19	-0.04193	-1.07	0.018964	1.51	0.025099	1.84	0.05468	0.74	0.06048	1.57	0.008097	0.19
+20	0.099476	2.55	0.053476	4.27	0.057009	4.18	-0.0227	-0.31	0.057419	1.49	0.194285	4.58
+21	0.067595	1.73	0.03872	3.09	0.062234	4.56	0.018848	0.26	0.065974	1.71	0.110667	2.61
+22	0.018304	0.47	0.024913	1.99	0.032258	2.37	0.081195	1.1	0.052221	1.36	-0.04084	-0.96
+23	0.047052	1.21	0.033429	2.67	0.037926	2.78	-0.02861	-0.39	0.108255	2.81	0.036733	0.87
+24	0.069137	1.77	0.048698	3.89	0.056395	4.14	0.049192	0.67	0.104488	2.72	0.026638	0.63
+25	0.070278	1.8	0.034302	2.74	0.037959	2.79	-0.05753	-0.78	0.094211	2.45	0.063157	1.49
+26	0.054887	1.41	0.073999	5.92	0.074838	5.49	0.100524	1.36	0.077082	2	-0.00656	-0.15
+27	0.11667	2.99	0.058683	4.69	0.057915	4.25	0.00975	0.13	0.066977	1.74	0.066331	1.57
+28	0.03221	0.83	0.064044	5.12	0.057555	4.23	0.089576	1.22	0.100131	2.61	0.044549	1.05
+29	0.035578	0.91	0.02851	2.28	0.03928	2.89	-0.00685	-0.09	0.072683	1.89	-0.04692	-1.11
+30	-0.0148	-0.38	0.036061	2.89	0.034827	2.56	0.005334	0.07	0.073806	1.92	0.053202	1.26
+31	0.017028	0.44	0.026645	2.13	0.028408	2.09	-0.04553	-0.62	0.035837	0.93	0.027556	0.65

+32	0.062448	1.61	0.05987	4.8	0.066907	4.92	0.134916	1.83	0.069834	1.82	0.028197	0.67
+33	0.106294	2.73	0.071509	5.73	0.069611	5.12	0.023842	0.32	0.145628	3.8	0.126109	2.98
+34	0.116064	2.99	0.066117	5.29	0.076344	5.61	0.058389	0.79	0.103458	2.69	0.096852	2.29
+35	-0.04397	-1.13	0.026107	2.09	0.020028	1.47	-0.17678	-2.4	0.017283	0.45	0.047002	1.11
+36	0.063199	1.63	0.0457	3.66	0.039902	2.93	-0.0504	-0.68	0.070585	1.84	0.120783	2.85
+37	0.045795	1.18	0.026763	2.14	0.025371	1.86	0.024453	0.33	0.051479	1.34	0.020275	0.48
+38	0.019458	0.5	0.033141	2.65	0.021914	1.61	0.050601	0.69	0.112084	2.91	0.032465	0.77
+39	-0.01892	-0.49	0.011128	0.89	0.011477	0.84	0.067161	0.91	-0.00917	-0.24	-0.01294	-0.3
+40	0.0448	1.16	0.023784	1.9	0.026469	1.94	-0.01113	-0.15	0.046592	1.21	0.068715	1.62

Table 20 (e). Changes In Beta Around Earnings Announcements: By Types of Sectors

Event day	**Construction and Public Works**	**t-value**	**IT**	**t-value**	**Restaurants and Hotels**	**t-value**	**Stone and Land related Trades**	**t-value**
-40	0.185078	2.64	0.09516	2.29	0.026791	0.39	0.013711	0.48
-39	0.104868	1.5	0.029331	0.71	0.187422	2.74	-0.05099	-1.78
-38	-0.09079	-1.29	0.034462	0.83	0.096861	1.42	0.005238	0.18
-37	0.185517	2.64	0.093859	2.26	0.106042	1.55	0.026802	0.93
-36	0.034012	0.48	0.135986	3.27	0.127716	1.87	0.071343	2.49
-35	-0.06064	-0.86	0.101861	2.45	0.137716	2.01	0.024709	0.86
-34	0.132631	1.89	0.071552	1.72	0.194832	2.85	0.020954	0.73
-33	0.113338	1.62	0.096504	2.32	0.182636	2.68	0.03355	1.17
-32	0.195741	2.79	0.113357	2.73	0.072074	1.06	0.026276	0.92
-31	0.092463	1.32	0.020372	0.49	0.211691	3.1	0.033263	1.16
-30	0.164911	2.35	0.070313	1.69	0.16354	2.4	0.033556	1.17
-29	0.114817	1.64	0.009618	0.23	0.066752	0.98	-0.03285	-1.14
-28	0.147068	2.1	0.024917	0.6	0.136304	2	0.03023	1.05
-27	0.170703	2.43	0.076254	1.83	0.11846	1.74	0.011008	0.38
-26	0.156814	2.23	0.172587	4.15	0.200015	2.93	0.041352	1.44
-25	0.180242	2.57	0.147105	3.54	0.078291	1.15	0.036133	1.26

-24	0.052093	0.74	0.122987	2.96	0.104735	1.53	-0.00536	-0.19
-23	0.071391	1.02	0.076648	1.84	0.094916	1.39	0.011493	0.4
-22	0.120572	1.72	0.022929	0.55	0.136871	2	0.003956	0.14
-21	0.106514	1.52	0.100269	2.41	0.151697	2.22	0.005416	0.19
-20	0.147555	2.1	0.12766	3.07	0.181492	2.66	0.00708	0.25
-19	0.092461	1.32	0.106361	2.56	0.136522	2	-0.03697	-1.28
-18	0.144926	2.06	0.081628	1.96	0.12847	1.88	-0.04928	-1.71
-17	0.198123	2.82	0.094167	2.26	0.11839	1.73	0.031095	1.08
-16	0.187657	2.67	0.081666	1.96	0.082675	1.21	0.078422	2.72
-15	0.225724	3.21	0.030031	0.72	0.051481	0.75	0.010207	0.35
-14	0.139012	1.98	0.109078	2.62	0.07191	1.05	-0.04475	-1.55
-13	0.19101	2.72	0.140609	3.38	0.154283	2.26	0.006253	0.22
-12	0.193694	2.76	0.060731	1.46	0.157523	2.31	0.014376	0.5
-11	0.229484	3.27	0.214443	5.15	0.135218	1.98	0.005733	0.2
-10	0.304449	4.34	0.168672	4.06	0.164434	2.41	0.030751	1.07
-9	0.162722	2.32	0.165368	3.98	0.269358	3.94	0.029008	1.01
-8	0.178414	2.54	0.163942	3.94	0.237114	3.47	0.036156	1.25
-7	0.121379	1.73	0.218146	5.24	0.167594	2.45	0.055915	1.94
-6	0.225706	3.22	0.091159	2.19	0.110281	1.61	0.026068	0.9
-5	0.194122	2.77	0.148172	3.56	0.142279	2.08	-0.00071	-0.02
-4	0.040048	0.57	0.14222	3.42	0.028976	0.42	0.008744	0.3
-3	0.128645	1.83	0.150457	3.62	0.074754	1.09	-0.02789	-0.97
-2	0.255046	3.64	0.112727	2.71	0.11916	1.74	0.053808	1.86
-1	0.119291	1.7	0.084869	2.04	0.172239	2.52	0.030848	1.07
0	0.143851	2.05	0.224955	5.41	0.112196	1.64	0.041987	1.45
+1	0.143358	2.04	0.149861	3.6	0.119541	1.75	0.139946	4.85
+2	0.171031	2.44	0.215813	5.19	0.094282	1.38	0.081573	2.83
+3	0.579668	8.27	0.219244	5.27	0.151834	2.22	0.018238	0.63
+4	0.382309	5.45	0.189547	4.56	0.244335	3.58	0.056535	1.96
+5	0.110637	1.58	0.225748	5.43	0.125841	1.84	0.083817	2.9

+6	0.16746	2.39	0.144083	3.46	0.097744	1.43	0.031529	1.09
+7	0.183777	2.62	0.124624	3	0.086075	1.26	0.057464	1.99
+8	0.406941	5.8	0.189769	4.56	0.048353	0.71	0.008445	0.29
+9	0.148725	2.12	0.154576	3.72	0.105429	1.54	0.01812	0.63
+10	0.080058	1.14	0.117481	2.82	0.133602	1.96	0.068992	2.39
+11	0.137287	1.96	0.171995	4.13	0.177171	2.59	0.030158	1.05
+12	0.200942	2.86	0.127022	3.05	0.133575	1.96	0.007588	0.26
+13	0.141156	2.01	0.171869	4.13	0.161897	2.37	-0.01633	-0.57
+14	0.303097	4.31	0.191885	4.61	0.192104	2.81	-0.0011	-0.04
+15	0.010642	0.15	0.108827	2.62	0.129818	1.9	-0.02847	-0.99
+16	0.143215	2.04	0.11773	2.83	0.112198	1.64	0.023566	0.82
+17	0.139667	1.99	0.112727	2.71	0.028883	0.42	0.036571	1.27
+18	0.257075	3.66	0.118056	2.84	0.13092	1.92	-0.0021	-0.07
+19	0.166208	2.37	0.19467	4.68	0.122981	1.8	-0.00743	-0.26
+20	0.177732	2.53	0.126567	3.04	0.056389	0.83	-0.01711	-0.59
+21	-0.06388	-0.91	0.094027	2.26	0.088773	1.3	-0.05474	-1.9
+22	0.078556	1.12	0.110532	2.66	0.071707	1.05	0.010092	0.35
+23	0.147266	2.1	0.037314	0.9	0.145839	2.14	-0.03232	-1.12
+24	-0.0197	-0.28	0.076352	1.84	0.22983	3.37	-0.00019	-0.01
+25	0.114822	1.64	0.037084	0.89	0.122902	1.8	0.006753	0.23
+26	0.052277	0.75	0.068196	1.64	0.105462	1.55	0.065146	2.27
+27	0.249614	3.56	0.147009	3.54	0.15717	2.3	-0.02666	-0.93
+28	0.178051	2.54	0.142194	3.43	0.119967	1.75	0.068776	2.39
+29	0.07418	1.06	0.097844	2.36	0.008438	0.12	0.019423	0.68
+30	0.300836	4.29	0.14116	3.4	0.055783	0.82	0.023654	0.82
+31	0.156274	2.23	0.088767	2.14	0.066137	0.97	0.030954	1.08
+32	0.05027	0.72	0.103816	2.5	0.132389	1.94	0.06138	2.14
+33	0.028527	0.41	0.099812	2.41	0.186904	2.73	0.000288	0.01
+34	0.06009	0.86	0.128891	3.11	0.136906	2	-0.01113	-0.39
+35	0.113742	1.62	0.063998	1.54	0.075929	1.11	0.00314	0.11

+36	-0.06377	-0.91	0.126478	3.05	0.020765	0.3	0.003451	0.12
+37	0.169512	2.4	0.055996	1.34	0.031996	0.47	3.65E-05	0
+38	0.135614	1.92	-0.0087	-0.21	0.117879	1.73	-0.02381	-0.83
+39	0.07584	1.07	-0.0426	-1.02	0.124867	1.84	0.014817	0.52
+40	0.012408	0.17	-0.02752	-0.66	-0.05525	-0.81	-0.00137	-0.05

Table 21. Robustness Tests Results

Event day	**Beta estimation**	**t-value**	**Continuous Beta**	**t-value**	**Beta estimation with trading volume and realized variation**	**t-value**	**Event day**	**Beta estimation**	**t-value**	**Continues Beta**	**t-value**	**Beta estimation with trading volume and realized variation**	**t-value**
-40	0.075635	7.97	0.07387	7.79	0.073295	7.74	**0**	0.1549255	17.26	0.15581	16.36	0.14769	16.5
-39	0.0619358	6.52	0.058135	6.1	0.059888	6.33	**+1**	0.1485561	15.63	0.158201	16.58	0.141002	14.87
-38	0.0810404	8.53	0.080673	8.48	0.077905	8.23	**+2**	0.1494907	15.72	0.148931	15.64	0.142477	15.03
-37	0.0821811	8.65	0.084388	8.86	0.080097	8.46	**+3**	0.1579421	16.61	0.156796	16.53	0.150638	15.89
-36	0.0798207	8.4	0.077061	8.1	0.077225	8.15	**+4**	0.1544184	16.24	0.164154	17.17	0.146612	15.46
-35	0.0713235	7.51	0.073933	7.78	0.068729	7.25	**+5**	0.1504803	15.83	0.153599	16.15	0.145624	15.36
-34	0.0836942	8.81	0.089627	9.39	0.08119	8.57	**+6**	0.1404739	14.78	0.142645	14.98	0.135714	14.31
-33	0.0879213	9.26	0.090433	9.48	0.084318	8.9	**+7**	0.1485641	15.63	0.152219	15.98	0.1435	15.14
-32	0.0962254	10.13	0.094003	9.87	0.092076	9.72	**+8**	0.1238856	13.03	0.12806	13.46	0.118566	12.51
-31	0.0903028	9.51	0.085261	8.99	0.084249	8.9	**+9**	0.1317361	13.86	0.133138	13.99	0.12635	13.33
-30	0.086848	9.14	0.090324	9.5	0.082763	8.74	**+10**	0.1452493	15.28	0.146456	15.4	0.139704	14.74
-29	0.071474	7.52	0.067977	7.13	0.068211	7.2	**+11**	0.1170226	12.31	0.120471	12.66	0.111958	11.81
-28	0.089964	9.47	0.090102	9.49	0.084582	8.93	**+12**	0.1304813	13.72	0.136527	14.34	0.125402	13.22
-27	0.0897196	9.44	0.092567	9.75	0.084945	8.97	**+13**	0.1452639	15.27	0.149535	15.68	0.139705	14.73
-26	0.1236781	13.02	0.123088	12.94	0.118807	12.54	**+14**	0.1485888	15.62	0.151309	15.88	0.143462	15.12
-25	0.115728	12.18	0.116861	12.26	0.110859	11.7	**+15**	0.1218792	12.81	0.128773	13.5	0.116162	12.25
-24	0.0964439	10.15	0.096262	10.09	0.092015	9.71	**+16**	0.1047644	11.01	0.098925	10.38	0.100173	10.56

-23	0.1046617	11.01	0.107841	11.33	0.100743	10.63	**+17**	0.1142498	12.01	0.122389	12.81	0.108561	11.45
-22	0.09758	10.26	0.099552	10.46	0.092998	9.81	**+18**	0.1098049	11.55	0.114788	12.01	0.104415	11.01
-21	0.101272	10.65	0.098795	10.37	0.095552	10.08	**+19**	0.0938965	9.87	0.095095	9.96	0.088842	9.37
-20	0.087809	9.24	0.090972	9.54	0.082844	8.74	**+20**	0.0838973	8.82	0.084476	8.87	0.0781	8.24
-19	0.1087378	11.44	0.109988	11.56	0.103457	10.91	**+21**	0.0852125	8.96	0.081881	8.6	0.080407	8.48
-18	0.1018032	10.7	0.101775	10.67	0.096383	10.16	**+22**	0.087772	9.23	0.086911	9.14	0.083261	8.78
-17	0.1038863	10.92	0.10762	11.29	0.099266	10.47	**+23**	0.087132	9.17	0.103614	10.85	0.082416	8.69
-16	0.1267155	13.32	0.125102	13.13	0.120861	12.74	**+24**	0.1133132	11.92	0.113005	11.86	0.108555	11.45
-15	0.1045369	10.99	0.102922	10.79	0.098582	10.39	**+25**	0.0809466	8.52	0.080558	8.47	0.076291	8.05
-14	0.0953497	10.02	0.098943	10.37	0.089643	9.45	**+26**	0.1195232	12.58	0.12022	12.61	0.114705	12.11
-13	0.1087785	11.44	0.111834	11.74	0.103468	10.91	**+27**	0.1014152	10.67	0.102521	10.76	0.096897	10.23
-12	0.1042548	10.96	0.103377	10.87	0.098419	10.38	**+28**	0.0997476	10.5	0.098454	10.35	0.096331	10.17
-11	0.1148588	12.08	0.117151	12.29	0.109039	11.5	**+29**	0.0772955	8.14	0.08428	8.85	0.0732	7.73
-10	0.1152173	12.12	0.112737	11.83	0.108979	11.5	**+30**	0.082427	8.68	0.088953	9.36	0.077894	8.22
-9	0.1597171	16.8	0.160246	16.8	0.154492	16.3	**+31**	0.0636338	6.7	0.061827	6.49	0.059683	6.3
-8	0.1417592	14.91	0.150248	15.76	0.135729	14.32	**+32**	0.0871145	9.17	0.086968	9.16	0.08253	8.72
-7	0.1565194	16.46	0.157951	16.53	0.150785	15.9	**+33**	0.1017864	10.72	0.114889	12.03	0.097487	10.3
-6	0.1441768	15.17	0.140932	14.81	0.138223	14.58	**+34**	0.1071926	11.28	0.11057	11.63	0.103658	10.94
-5	0.0962906	10.13	0.101964	10.71	0.090206	9.51	**+35**	0.0758386	7.98	0.085299	8.94	0.071354	7.53
-4	0.1079522	11.36	0.111922	11.75	0.102373	10.8	**+36**	0.0649552	6.84	0.067937	7.11	0.061228	6.46
-3	0.122298	12.86	0.114344	12.04	0.116526	12.29	**+37**	0.0478358	5.04	0.053374	5.6	0.044659	4.71
-2	0.1087119	11.43	0.11687	12.26	0.102459	10.81	**+38**	0.0635682	6.69	0.065854	6.92	0.060063	6.34
-1	0.1197163	12.59	0.115784	12.11	0.113782	12	**+39**	0.0546764	5.76	0.061043	6.41	0.051577	5.45
							+40	0.0504367	5.31	0.052872	5.55	0.048388	5.11