LUND UNIVERSITY
School of Economics and Management

Dividend Signals and Voluntary Disclosure

A new approach from Sweden

by

Jens-Petter Brigg Gjesdal

Henrik Dackerud

May 2016

Master's Programme in Corporate and Financial Management

Supervisor: Håkan Jankensgård

Abstract

This study examines whether a change in dividends is connected with a change in future earnings and can thereby be interpreted as a signal from the management to the market. This is a well-debated subject that has been researched several times before this study, often with contradicting results. This thesis presents a new approach where it is investigated if firms choose between different ways to convey information to the market by adding the variable of voluntary disclosure. By doing this the thesis aims to investigate if the dividend of firms with a higher level of voluntary disclosure have a lower signalling value and thereby are less usable to predict future earnings. The sample consists of Swedish firms listed on Large Cap, Mid Cap, Small Cap and the Nordic Growth Market. Several models is used to investigate the relation between dividends and future earnings. The sample is then divided into three segments after level of voluntary disclosure and same models are then applicated these segments. This approach is also supplemented by a multiplicative interaction model. The results of this research showed that no clear connection could be proven and a change in dividend therefore can't be seen as a credible signal of future earnings. Further no convincing evidence for whether dividends and voluntary disclosure was used side by side or instead of each other was found.

Keywords: dividend signalling, information asymmetry, corporate disclosure

Acknowledgements

We would like to express our gratitude to our supervisor Håkan Jankensgård for his guidance and helpful counselling throughout the process of writing our thesis. Further we would like to extend our appreciation to Jens Forssbaeck for his helpful inputs regarding statistical theory and best practices.

Table of Contents

List of Tables

1 Introduction

1.1 Background

The prediction of future earnings is, to say the least, a well debated subject and a key aspect in finance. The fundamental factor behind the stock price is the company's estimated future earnings and analysts, professional investors and enthusiastic private investors spend a lot of time and effort trying to interpret all the possible signs of how the profitability is developing to get a successful trading strategy.

The separation of ownership and control creates an information asymmetry between managers and the market. This is because managers generally have better information about the value of the firm than the market has. Investors recognize this and demand a discount when investing since they risk misreading the potential of the stock. Firms that find themselves undervalued, have therefore incentives to send signals regarding their true value to the market, without revealing strategic and competitive advantages. For a signal to be effective it is crucial that it is costly so that weak firms cannot pretend to be a strong firm by mimicking the behaviour of one (Ogden, Joseph P., Jen, Frank C. & O'Connor, Philip F. 2003).

1.1.1 Signalling Tools

Even though Miller and Modigliani (1961) concluded that in a perfect capital market dividends are irrelevant to the paying firm's value, they recognized that if the dividend rate alters the stock price often follows. This is referred to as the "informational content of dividends", meaning that if a firm with a stable target payout ratio changes the dividend investors often interpret this as if the assumed future profit of the firm have been changed. In other words a company can signal its opinion of its true value by the dividend. Dividends are considered to be costly and therefore are considered to be seen an effective signal. The explanation of why dividends are costly and therefore an effective signalling tool are several. Bhattacharya (1979) argues that the cost consists of the higher probability of future equity issuances. Miller and Rock (1985) explain the cost as an opportunity cost, where a firm could choose to reinvest the cash used for dividends instead and gained a profit from the investment.

Empirical studies have shown that the market react positively on a raise in dividends and vice versa. This can be interpreted as dividends do send a signal considering future earning levels (Ogden, Joseph P., Jen, Frank C. & O'Connor, Philip F. 2003). In 1956 Lintner presented the idea of dividend smoothing which means that companies tend to set long-term dividends-to-earnings ratio targets and avoids to change the dividend until management are sure that an increased level of earnings are sustainable and lasting. This implies that an increased dividend should be considered as a sign of higher future sustainable earnings.

However some research argues that dividends rather lag than lead. This means that dividends are increased after the increment in earnings, putting the signalling value out of play (Benartzi, Michaely and Thaler, 1997). But, since the market seems to appreciate dividend increments it is reasonable to assume that there at least exists a perception of a signal value in dividends.

Another tool of signalling to the market is the written information that companies provide. In every market economy there is regulations of what information firms need to report. Thereby firms are forced to disclose information even if they would prefer to keep it. However some firms chose to disclose more information than the regulations demand. This can be seen as another way to communicate with the market in an attempt to reduce the information asymmetry (Healy, PM, Palepu, KG 2001). Darrough and Stoughton (1990) describe the decision of how much a firm should disclose as a trade-off between decreasing the information asymmetry and giving away strategic information. Thus, voluntary disclosure comes with a cost as well.

1.2 Problem discussion

The signalling value of the dividend is well debated and researched numerous of times, as will be shown in the literature overview. There is no consensus in the literature whether the dividend can be used as a signal of future earnings since previous research has resulted in different conclusions. The literature that have been reviewed in this study have not taken into account the possibility that a company choose a specific strategy to communicate with the market. The possibility that some companies actually use dividends as a signal and some don’t, which would make it difficult to get a significant result in a regression, haven’t been considered. In this research voluntary disclosure will be taken into account as a possible

alternative for companies to communicate with the market and will thereby offer a way to understand why the previous research conclusions has been divided.

1.3 Research Purpose and Research Questions

This thesis aims to investigate if the dividend of firms with a higher level of voluntary disclosure have a lower signalling value and thereby are less usable to predict future earnings.

The research contribution of the study will firstly be if dividends of Swedish firms can be used to predict their future earnings. Secondly, the hypothesis concerning whether companies with low voluntary disclosure use dividend as a signalling tool in higher extent will be tested.

The research questions of this thesis will thereby be:

1. Can dividends paid by Swedish firms be used to predict future earnings?
2. Is the dividend signalling value affected by the level of voluntary disclosure?

1.4 Outline of the Thesis

Chapter 2 Literature review: Previous theory and research is presented. The structure for the literature review is as follows: First the literature for dividend signaling is gone through in chronological order to give a clear view of the influential research that has been made on this topic and present the main aspects of them. This is followed by a review of the literature of corporate disclosure which takes off with Healy and Palepu's (2001) walk through of the previous literature on this subject. Then the main articles are selected for deeper evaluation. The literature review also includes a presentation of empirical evidence where these theories have been tested.

Chapter 3 Hypothesis: The hypothesis for the thesis is presented and also linked to relevant theory.

Chapter 4 Methodology: In this chapter the research approach and design are described. In the Research Design the chosen variables are described and explained. Major decisions in the

research design are discussed and motivated in separate sections, finally, the validity and reliability of this thesis are also discussed.

Chapter 5 Descriptive Statistics: In this chapter the sample is described. First the data for the voluntary disclosure is described, and then the financial data from Datastream, through highlighting relevant information about the data.

Chapter 6 Results: Results from the conducted regressions is presented.

Chapter 7 Analysis: In this chapter, the results stated in the previous section are analysed. First Hypothesis 1 is analysed through the results of regressions following Nissim and Ziv (2001) and Benartzi et al. (2005). The results are also compared to previous research and similarities and differences is discussed. Secondly Hypothesis 2 is analysed based on the premise that voluntary disclosure and dividends are substitutes in the choice of communication tools.

Chapter 8 Conclusion: In the last chapter the conclusions drawn from the analysis are presented and the research question is answered. Suggestions for further research are also discussed.

2 Literature Review

In this chapter previous theory and research will be presented. First the literature for dividend signalling is gone through in chronological order to give a clear view of the influential research that has been made on this topic and present the main aspects of them. This is followed by a review of the literature of corporate disclosure. The literature review ends with a presentation of empirical evidence where these theories have been tested.

2.1 Dividend Signalling

2.1.1 Lintner (1956)

The starting point of all research on a firm's dividend policy was John Lintner's 1956 publication in the American Economic Review: "Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes". This classical study investigated 600 listed US firms whereas 28 of them were selected for an in-depth survey with their respective CEO and CFO's. From the survey Lintner found that managers believed that the majority of stockholders preferred a stable dividend rate, and that a premium for stability and gradual growth was assigned by the market. Therefore managers wanted to avoid changes if this later on had to be reversed and were very reluctant to decrease dividends as it signalled poor performance to the market. Because of this the existing payout ratio was used as a benchmark in their decision making. This practice, known as dividend smoothing, was achieved by only changing the dividends a fraction of the amount indicated from the financial figures. Still, earnings was the primary source for determining the degree of change, where how conservative the management was played a role in how fast the growth occurred. And finally Lintner found that the firms had a long-term payout ratio target. Based on these findings, Lintner derived an equation that incorporated the most important factors of the dividend policy decision, which he tested and found satisfactory predictions. The equation was

1. $D_{it}^{*} = r_i E_{it}$
2. $\Delta D_{it} = \alpha_i + c_i(D_{it}^{*} - D_{i(t-1)}) + u_{it}$

(Rewritten) $D_{it} = \alpha_{it} + b\, P_{it} + d\, D_{i(t-1)} + u_{it}$

The subscript *t* identifies year, the subscript *i* identifies company

$E_{it} = profits$

$r_i = target\ payout\ ratio$

$P_t = current\ year's\ profits\ after\ taxes$

$\Delta D_t = change\ in\ dividend\ payments$

$D_t\ and\ D_{t-1} = amount\ of\ dividends\ paid\ in\ year\ identified$

D_{it}^{*} = The dividends which the company would have paid in the current year if its dividend were based simply on its fixed target payout ratio r_i applied to current profits.

c_i = fraction of difference between target dividend and actual dividend paid preceding year.

U = discrepancy between observed change ΔD_{it} and expected based on the other terms of equation, error term.

b = cr

d = (1-c)

2.1

Summing it up, dividend depends on the current earnings of the firm, and the dividend payout last year. And the adjustment factor is linked to how conservative the management of the firm is. There have since been several empirical studies to check if Lintner's initial proposals still holds. Fama and Babiak (1968) found that Lintner's model performed well when applied to a sample period of 1946-64 on large industrial firms. DeAngelo, DeAngelo, Skinner (1992) found evidence in their sample of NYSE firms between 1980 and 1985 that current income was an important factor when determining dividend changes, and that managers reluctance to dividend cuts was present as they only did reduce when earnings were especially poor. DeAngelo et al. did not use the bottom line earnings as explanatory variable, but instead adjusted income for unusual items. The same team revisited the topic in 1996 under a somewhat different angle, however they still found that management only engaged in small dividend changes. Dewenter and Warther (1998) which focused on comparing US and Japanese firms through 1982-1993 also found evidence that US firm's magnitude of dividend changes is significantly tied to performance; however this was not the case for Japanese firms.

2.1.2 Bhattacharya (1979)

In his article “Imperfect Information, Dividend Policy, and ‘The Bird in the Hand’ Fallacy” Bhattacharya (1979) presented a model for dividends as a tool for management to convey information about future earnings of the company. Investors are assumed to be unable to forecast different firms’ profitability. Investors are also eager to have their investments valued at a fair price since they want to have the opportunity to realize the investment before it generates cash flows. Bhattacharya further assumes that frictionless access to extra external financing is unavailable and is therefore costlier than internal financing. If management have committed to pay dividend, they will pay the promised dividend even if the cash flows of the firm turns out to be lower than expected and maybe even lower than the total dividend. The shortfall that arises is assumed to be covered somehow, essentially by taking in new external cash. Postponement of investments are also suggested but the investment policy is assumed to be given in the model. It is important to notice that Bhattacharya assumes that all cash flows generated by the firm can be rationally reinvested. The managers are the ones that take the decisions regarding the dividends and they are the only ones who know the cash flow distributions of the projects and their wealth is positively related to the market price of the stock. In the model Bhattacharya shows that managers will decide to pay dividend if they can be confident enough that future cash flows is greater than the promised dividend. If they are, they will pay a dividend that is high enough so firms with less certain cash flows don’t mimic the behaviour. A firm could pay dividend that is higher than the cash flow but in the long run this will imply that the firm will need costly external financing. The cost of paying too high dividends will then exceed the benefits. Therefore a dividend will be an effective signal to market that management is confident in the future cash flows and investors will by this signal be able to distinguish which firms are of high quality and which firms that are not.

2.1.3 Miller and Rock (1985)

Building on Miller and Modigliani’s standard finance model, Miller and Rock further developed the model in 1985 to research dividend policy under asymmetric information and allowing for shares to be traded. When introducing these new assumptions, several new issues had to be accounted for. This new model uses a two period system, where firms invest at time zero and at time one use the cash flow generated (plus additional funds raised) to be reinvested or pay dividends. And then at time two the process starts over again. The model

also holds that the dividend announcement comes before the earnings announcement, so that the management has superior information which introduces the information asymmetry. This new model alters the perception about the firm value for external investors, as well as the managers. The reason is that managers now consider both the public dividend announcement and the yet to be revealed earnings statement when evaluating the firm. The investors on the other hand can't take for granted that the firm consistently follows the optimum investment or the dividend -policies. They show in their research that the use of dividends as a signalling tool is only sensible for the good-news firms, and that the signalling costs also might be worthwhile to avoid the false impression that the firm's earnings weren't good enough to justify a distribution of dividends. However it is unfavourable for firms to pay dividends at the expense of investments, so window dressing is not a problem for this model. By adjusting the model to allow for information asymmetry and trading of shares (not just owning them), Miller & Rock found that:(1) unforeseen operational cash flow changes is the driver of the dividend announcement effect on the stock price;(2) the information content of unpredicted dividend change are similar to the information conveyed by unforeseen earnings change; (3) companies paying large dividends also have a stronger capacity to generate cash flows. Based on these conclusions, the authors argued that a signalling equilibrium where dividends is linked to future cash flows is possible, however the investment rate would be lower and dividends higher than in a perfect information diffusion context.

2.1.4 John and Williams (1985)

John and Williams develop a model for signalling equilibrium with the aspect of taxes. The starting position for the model is that firms don't pay taxes or have transaction costs in conjunction with distributing dividends, issuing new equity or retiring securities. All investors pay taxes on dividends at the same level which is constant, but there are no transaction costs when trading securities. The firm's sources and uses of funds are visible for outsiders for free through public audits. However production technology is not. Managers have to, instead, use dividends or net new issues of shares to communicate this to the market. The authors also include information asymmetry, meaning managers are insiders and possess information about the firm's future expected cash flows and possible investment that outsiders lack. The market pays a premium for dividend paying firms with higher future expected cash flows and investment opportunities. This premium exceeds the taxes that the owners need to pay for the dividend. If not, the firm won't be paying high dividends, if any at all. With a high cost of

dividends, meaning a significant tax rate, only well performing companies with valuable inside information find it worthwhile to pay dividends. As a result of this poor performing companies will lack incentives to mimic a well performing firm. The signalling equilibrium implies that the dividend of a “good” firm is higher and that their stock will be valued at a higher price.

2.1.5 Asquith and Mullins (1986)

Payouts, both stock repurchase and dividends, are looked upon as good news. The payout signalling idea is based on the fact that by performing a payout the firm shows that it is able to generate cash and are confident enough to transfer it to its owners. By this demonstration of financial strength the firm can differentiate itself from weaker firms. A payout also put pressure on the management to keep performing well so they can avoid dividend cuts, or even worse, an issuance of new equity. With this in mind a change of the dividend should reveal a change in management's perception of the firm's profitability.

False signalling, meaning increased dividends without sustainable reasons, is punished since management sooner or later need to disappoint the market by cutting the dividend. The stock price will usually fall more than what the stock price have increased from initiating or increasing dividends. This, and the fact that new external capital comes with costs that internally raised capital lacks, limits the management to keep the dividend payout on a sustainable level.

In the article Asquith and Mullins discuss if dividends is an unnecessary expensive signalling tool and if information disclosure could be a cheaper substitute. They present three reasons why dividends are an effective signalling tool. Dividends are very concrete and are, as the authors put is, backed by hard, cold cash. After a dividend announcement the firm must come up with the cash. Other signals from the firm may lack the credibility that a cash dividend has. Statements from managements and financial statements can be perceived as abstract in comparison. This leads us to the second reason, namely that dividends are simple to interpret for the market. Other information is often comprehensive and complex. It’s often up to analysts and experts to interpret this information and mediate this to investors. A dividend on the other hand is comprehensible to most people. The third reason is that by communicating with dividends companies don’t have to reveal information that competitors find useful.

Instead of showing how they reach success they simply show that they are successful by paying dividend.

2.2 Corporate Disclosure

2.2.1 Healy and Palepu (2001)

In an efficient market corporate disclosure has a vigorous function according to Healy and Palepu (2001). Mandatory disclosure is made through regulated financial reports like the financial statements. Some firms add voluntary disclosure, such as management forecasts, analysts' presentations, press releases, information content on their homepage, and other corporate reports. Information can be shared direct to the market or via intermediaries such as the financial press, analysts and other experts. The reason why companies need to reveal information stems from the information asymmetry and agency conflicts between principals and agents.

A fundamental challenge in a market economy is to allocate capital to investment opportunities. There are many companies with investment opportunities that are in need of the capital from the market. The authors embodies two reason why matching difficulties occurs. Firstly the insiders have insider information, which is unavailable for the investors, about the value of the investment opportunities and they have incentives to overstate the value to be overcompensated. This gives the investors an ‘‘information problem’’. When the investment is done, most investors take a passive role and remain outsiders. Then the "agency problem" occurs since insiders have incentives to spend the invested capital in their own interest instead of the investor's. Healy and Palepu (2001) argues that these problems can lead to a non-functioning capital market. Disclosure, by contracts, regulation and via intermediaries, is presented as a solution for these problems.

Motives for voluntary disclosure

In the article Healy and Palepu refers to six capital market aspects that have influence over managers' disclosure decisions. *Capital markets transactions hypothesis* implies that managers of companies that are about to issue public debt or equity have incentives to disclose voluntary information to lower the information asymmetry and thereby lower the premium that investors will demand for bearing the information risk. This will obviously

lower the cost of capital. The *Corporate control contest hypothesis* means that managers have incentives to voluntary disclose information to reduce the risk of undervaluation and to explain the performance in case of poor earnings. The logic behind this is that managers often is evaluated on the basis of the performance of the stock. Thereby it's in the manager's interest to have a constant fair valued stock and this is facilitated by the voluntary disclosure. Moreover, managers often have stock-based compensation. By using voluntary disclosure the compensation can increase in value (if the information revealed is positive). Managers can also, by revealing insider information, avoid insider regulations and enable themselves to act on the market. This is called the *Stock compensation hypothesis.* According to the *Litigation cost hypothesis* managers can increase voluntary disclosure if there is threat of legal actions if disclosures is inadequate or is made untimely. However, potential litigations can also have the opposite effect since managers can be more cautious to reveal forecasts and other forward-looking information. *Management talent signalling hypothesis* says that managers that find themselves talented in their profession reveal this to owners and the market. By voluntary disclosure, such as earnings forecasts, they can communicate their self-image to the market. The last hypothesis is the *Proprietary cost hypothesis*. It involves a cost of voluntary disclosure based on the assumption that voluntary disclosure contains strategic information that competitors find valuable. This has to be weighted against the benefits of potentially lower capital costs.

2.2.2 Verrecchia (1983)

In 1983, Verrecchia formulated a model to examine managers of risky assets discretion in information disclosure, a phenomenon dubbed threshold level of disclosure. He showed that firms in less competitive industries necessarily didn't see any costs associated with public disclosures while firms in highly competitive industries viewed public disclosure as potentially costly as competitors could take advantage of the information. Verrecchia suggested that investors reacted less negatively to withholding of information the greater proprietary costs was associated with disclosure of information. The reasoning was that as the threshold level rises, the range of possible favourable observations increases for the firm, whereas more voluntary disclosure is not justified in light of the proprietary costs. It showed a correlation between the threshold level of disclosure and the proprietary cost.

2.2.3 Darrough & Stoughton (1990)

Darrough and Stoughton (1990) analyses firms incentives to voluntary reveal proprietary information by using a model with one active company, which possess the information, and another firm which consider to enter the same business. The company that is already operating in the business is now facing a trade-off between trying to lower the cost of capital by convey positive information to outsiders and the risk of giving possible entrants proprietary information. The risk of giving away strategic information to competitors can be interpreted as a cost of disclosure, but the authors make the conclusion that the threat of entries of new competitors encourages voluntary disclosure. This is in contrast with Verrecchia conclusions, something that Darrough and Stoughton draw attention to in the article. The reason of the contradiction is that the two articles have different ways to predict how competition affects the cost in their respective model.

2.3 Empirical Evidence

2.3.1 Jagannathan et al. (2000)

Jagannathan et al. conducted a research to examine the different usage of stock repurchases and dividends. Prior research (Brealey & Myers, 1996 or Grinblatt & Titman, 1988) suggested that the two were more or less equivalent methods of distributing cash flows, and the discussion of choice was focused on the different tax advantages, as Black (1976) had shown. However, Jagannathan et al. found that taxes alone were not enough to account for the different uses in practice. They found that an influencing factor in determining how to distribute cash flow was what type of firm and where it was in its business cycle. Dividend was found to be less volatile, and stock repurchases appeared to vary procyclical. A disproportional large fraction of the variation in total payouts was contributed to repurchases. The combination of these findings was consistent to the conclusion that firms with higher permanent operating cash flows payed dividends, while companies with higher temporary cash flows used stock repurchases. Further, they did not find any evidence that repurchases was replacing dividends, instead they found that repurchases serve as a complementary part to dividends for paying out short term cash flows.

2.3.2 Nissim and Ziv (2001)

In this article the authors examines the relationship between dividend changes and future profitability by investigating US firms under the period of 1963-1998. They first use a model where future earnings follow a random walk with a drift, which they refer to as a model following the prior studies. This model show no proof for dividend changes to be positively related with changes in future earnings. They then modify the model to address what the author argues is measurement errors in the dependent variable that is correlated with the dividend change and the omission of a control variable that is correlated with the dividend change. With this modified model the authors find evidence for a relation between dividend changes and future profitability.

2.3.3 Hanlon, Myers and Shevlin (2007)

The impact of dividend propensity on the stock market's ability to anticipate future earnings was examined by Hanlon, Myers and Shevlin (2007), where they found significantly higher levels of share price anticipation among the dividend paying firms, as opposed to non-dividend firms. When the authors added a control variable for disclosure score a small improvement of the model was showed. However since this was not the main purpose of the article the authors did not assess this relationship further.

2.3.4 Clarkson, Richardon and Kao (1994)

Clarkson, Richardon and Kao (1994) base their study on Darrough and Stoughton's (1990) findings. They ask themselves why some companies include estimated forecasts in the annual report and some companies don't. Like Darrough and Stoughton's (1990) they address the pros and cons with voluntary disclosure regarding the financial market and competitors. They find that for firms that can reveal good information the probability of including a forecast increases when they require additional financing but decreases when there is threat of new entrances of competitors. For firms that can reveal negative information the opposite applies.

3 Hypothesis

In this chapter the hypothesis for the thesis is presented and also linked to relevant theory.

This research is focused on two hypotheses based on the dividend signalling assumptions. The first hypothesis is formulated to evaluate the relationship between changes in dividends and the future performance of a firm.

Hypothesis 1

As discussed in the literature review previous research has shown that changes in dividend can contain information about future earnings. The following hypothesis tests if this holds in the Swedish market.

H1: An increase (decrease) of dividend is associated with higher (lower) future earnings.

If the null hypothesis can be rejected the dividend signalling model is supported, which implies that management has proprietary information that they want to convey to the market. If it can't be rejected it implies that dividends are not always used as a way to send signals to the market and are therefore an uncertain tool in the process of predicting future firm performance.

This research aims to test for a relation between changes in dividend and future earnings. However, earlier research has been somewhat contradictable. The research of Healy and Palepu (1988) and Nissim and Ziv (2001) supports the theory, while, DeAngelo, DeAngelo and Skinner (1996), Benartzi, Michaely and Thaler (1997) and Benartzi et al. (2005) could not support it.

Hypothesis 2

After analyzing the relationship between dividend changes and future earnings, the same connection will be evaluated but with voluntary corporate disclosure included.

H1: A higher (lower) level of voluntary disclosure is associated with weaker (stronger) signalling content of dividends.

A rejection of the null hypothesis would imply that a company, in at least to some extent, choose between dividends and voluntary disclosure of information when conveying information to the market. It would contribute to the literature with another reason why companies chose to reveal information voluntary.

4 Methodology

In this chapter the research approach and design are described. In the Research Design the chosen variables are described and explained. The validity and reliability of this thesis is also discussed.

4.1 Research Approach

The chosen data is an unbalanced panel data, which is preferred to dropping observations to make the sample a balanced since this will worsen the performance of the estimators, as shown by Baltagi and Chang (1997). Since a greater sample will be investigated it comes natural to use a quantitative approach to answer the research questions. This means that the thesis will focus on the quantification and analysis of the data. In addition to this a deductive approach will be used. A deductive approach is to use hypothesis to test an existing theory and from the analysis find evidence for, or challenge, the theory (Bryman & Bell, 2011). Since this thesis will test the signalling theory the deductive approach is a logical choice.

4.2 Chosen market

A broad majority of the articles found during the research of this thesis examines companies in common law countries, especially the United States. Sweden is, on the other hand, a civil law country. La porta (2008) divide the civil law countries into French, German and Scandinavian legal origins. Scandinavian countries are thus so distinct from others so are seen as a separate family.

The matter of legal origin is important since there is reason to believe that this influence the dividend policies of firms. As La Porta et al. (1998, 2000) states different legal regimes with differences in shareholder protection induces differences in payout policies. In common law countries shareholders are better protected than shareholders in civil law countries and dividends are generally higher in common law countries. This was supported by Lin (2013).

In addition he also found that dividends are more sensitive to earnings in civil law countries. Dividend sensitivity to earnings is crucial if dividend signalling theory should be applicable.

The decision of using Swedish firms instead of using the Scandinavian region as a whole is based on practical reasons. Data for voluntary disclosure is central in this research. Such data is only found for Swedish firms and it is provided jointly by Kanton, a finance consulting firm, and Aktiespararna, an independent organization for Swedish private investors.

4.3 Payout definition

Grullon and Michaely (2002) show that corporations in United States have been increasing share repurchases on the expense of dividends. They also show that firms that are facing their first payout to its owners choose repurchases in higher extent than dividends and also that dividend paying firms often turn to repurchase programs when they want to increase the total payout. The result of their test of the Lintner dividend model (1956) supports their idea of repurchases being a substitute for dividend.

Despite this stock repurchases is excluded in this study. This decision is based on the following findings.

Guay and Harford (2000) found that firms paying dividends had a higher permanent component of cash flow increase than those firms who used stock repurchases. Further they found that stock repurchases was more linked to previous cash flow "shocks" that were not sustainable, i.e. that repurchases lagged sudden and unsustainable increases in cash flow.

Baker, M., Mendel, B., & Wurgler, J. (2015) suggest that dividends are better as a signalling tool because of the simplicity. Dividends have only one number to consider. With stock repurchases both the repurchase price and the number of stocks that is supposed to be repurchased must be considered. Only the price is likely to be clearly unveiled and since the stock price probably will be varying over time a firm cannot commit to having a stable repurchasing price over time. The authors also argue that a repurchase risks to pass unnoticed by investors that isn't interested in selling their own stocks whereas a dividend is distributed to each current investor. Because of this repurchase programs cannot be seen as a substitute to dividends, even when they are financially equivalent.

Asquith and Mullins (1986) states that a dividend appears to be the appropriate choice for regular signalling of the company's future prospects. Repurchases however, appears to be more suitable for sporadic signals which can be done on the management's discretion, and is not expected by the market.

Brav et al. (2005) did a survey covering 256 public companies and 128 private firms. Some of the conclusions drawn from the survey is that financial executives find repurchases to be independent of previous repurchase programs and flexible. Further, the financial executives don't expect any major consequences of a reduction in repurchases and they don't use repurchases as a way to signal the firm quality to the market.

Since this study focusing on the value of the dividend signal, and since it's questionable if the signal of repurchases is equivalent to the signal of dividend, stock repurchases are excluded. However, the possibility that stock repurchases have to some extent replaced dividend, and that firms are more cautious with dividend increments; is noted and can be considered a limitation of this research.

4.4 Data Collection Method

The data that is required to answer the research questions is secondary data. As mentioned before the data for corporate voluntary disclosure is retrieved from Kanton's website. The rest of the data, such as dividends and earnings, is retrieved from the database Datastream.

The voluntary disclosure data consisted of 340 companies with unbalanced data. To be able to produce a total score for the voluntary disclosure all three parts of the evaluation (annual, quarterly and the web-based) need to be graded. Therefore incomplete observations were removed, that is observations with just one or two grades was removed. This resulted in the complete removal of 16 companies and 31 additional removed years. Also, two consecutive years of data is needed to be able to conduct the chosen regressions. Due to this 19 additional companies was removed, making the final sample contain 305 companies. A list of all the companies included in the sample is available in appendix A.

Financial data was collected from Datastream. All the concerned companies are listed companies and the published information is therefore looked upon as reliable. The data

sample is unbalanced because some data wasn't available for the whole period. Also years where dividend was initiated was removed, in line with previous research (Benartzi, Michaely and Thaler, 1997). In total there are 1923 observations for financial data. Even if data is collected for years where firms have no voluntary disclosure data the collection of financial data is limited to companies that are included in the voluntary disclosure sample. This means that swedish firms that don't live up to the requirements in the voluntary disclosure sample, like companies introduced on the Small Cap list after 2010 or companies listed on Aktietorget and First North, isn't included.

4.5 Research Design

In financial research, panel data has several advantages compared to cross-sectional regression, such as increased number of observations, multicollinearity problems is reduced and increased degrees of freedom. They all improve the efficiency of the econometric estimates. Furthermore, as Baltagi (1995) and Verbeek (2004) has shown, panel data has the ability to control for hidden individual heterogeneity which is neglected in cross-sectional or time series estimations, which otherwise would provide biased results. Panel data will capture the heterogeneity by firms specific random- or fixed effects components based on the characteristics of the data set. Essentially cross-sectional or time series data is inferior to panel data in empirical analysis (Gujarati, 2003). While some previous research in dividend signalling has used a dynamic panel regression, it will not be employed in this thesis due to the lack of historical data in corporate disclosure score. The reasoning is that the model requires a minimum of six consecutive years of data before a company can be included in the sample, and this would reduce our number of observations too much for the results to be reliable (Guad et al., 2005).

Before running any regression we check for multicollinearity because if detected this could inflate the adjusted R-squared and make the confidence intervals of the parameters wide, leading to wrongful conclusions (Brooks, 2008). The question of multicollinearity is of degree not of kind according to Gujarati (2003). Therefore it is not the absence or presence of multicollinearity that must be measured, but its degree in any particular sample. Gujarati further states that it only becomes a problem when the correlation of coefficients is in excess of 0.8.

Next we will look at the pooled regression to have a benchmark and to check for initial signs of heterogeneity or other potential problems. Whether pooled sample, fixed effects or random effects should be used will be determined through a Likelihood Ratio Test and a Hausman Test. The Likelihood Ratio Test, where the null hypothesis says that the all constant terms are equal, is performed to compare the pooled OLS regression with Fixed Effect Model. By testing the significance of firm effects, we will find the preferred estimation method, thus if pooled OLS regression is the best, the test tells us that there is no significant firm effects on the events. We then apply the Hausman statistic test for comparison between Random Effects Model and Fixed Effect Model, where the null hypothesis says the former is the appropriate to use. In addition, the Hausman test can verify any presence of correlation between the unobservable heterogeneity and the independent variables. This is done by comparing the coefficients of the estimated random effects and the fixed effects. The null hypothesis says that the coefficients on both models are similar, should the coefficients differ from each other, than the fixed effects model is accordingly consistent and efficient. So in event of rejecting the null hypothesis, we will analyse the results from the Fixed Effect Model, failing to reject we make use of Random Effects Model (Brooks, 2008). A problem arises when the tests shows that one can use fixed effects in both cross-section and period, and that random effects should be used. The reason this creates a problem is that random effects can't be used in two dimensions; so should this problem prevail, the authors will have to carefully analyse the different results to see which effects provide the most reliable results, i.e. high adjusted R-squared and significant coefficients.

Heteroscedasticity will be tested through a Breusch-Pagan-Godfrey test. It will be made manually by making a new regression with the same independent variables but with the squared residuals of the original regression as the dependent variables. If heteroscedasticity is proven, this will be handled with White's robust standard errors. White's robust standard errors can be utilized for cross-section, period or both. According to theory (Brooks, 2008), robust standard errors should be used in the same dimension as fixed or random effects are used. In case of a pooled regression, the most accurate too use is White's period robust standard errors because of the low number of periods and high number of cross-sectional observations.

Due to the relatively large number of observations no actions will be taken if the normality assumption is violated according to the central limit theorem. (Brooks, 2008). However,

extreme outliers in the data will be evaluated and be handled with the winsorizing method at the lower 1% and upper 99% level.

4.5.1 Methodology for Hypothesis 1

To measure future performance the changes in future earnings will be used as the measuring indicator. The logic is that a change in earnings will measure unexpected profitability because annual earnings follows a random walk (Ball and Watts ,1972, Watts and Leftwich, 1977) therefore a random sample of firms will on average have a change in earnings of zero. The calculation of earnings change is done in the same manner as prior research such as Nissim and Ziv (2001) and Benartzi et al. (2005) so that the results of this thesis is comparable. The annual earnings change is expressed as the difference in earnings in year t, and earnings in year t-1, which is scaled by the book value of equity at the end of year t-1. The book value of equity is chosen to get comparable results with Nissim and Ziv (2001) and Benartzi et al. (2005). The reason to use book value instead of market value is that the market value of the equity contains expectations about future earnings and the earnings to price ratio are therefore likely to be negatively related to expected changes in earnings (Nissim and Ziv 2001). The change in earnings for company i in year t is therefor:

$$\Delta E_{i,t} = \frac{(E_{i,t} - E_{i,t-1})}{BV_{i,t-1}} \qquad (4.1)$$

$$E_{i,t} = Earnings\ before\ extraordinary\ items\ for\ share\ i\ in\ year\ t$$

$$BV_{i,t-1} = Book\ value\ of\ equity\ for\ share\ i\ at\ the\ end\ of year\ t-1$$

Year 0 is defined as fiscal year of the dividend announcement and earnings before extraordinary items are used to eliminate impermanent factors of earnings. This means that earnings and dividend announcements in the year t is matched with each other. To test it the results of Nissim and Ziv (2001) and Benartzi et al. (2005) hold for our example, the same regression that Nissim and Ziv (2001) used to examine the relationship between dividend changes and future earnings changes will be used in this thesis:

$$(E_{i,t} - E_{i,t-1})/BV_{i,t-1} = \alpha + \beta_1 DI * \Delta D_{i,0} + \beta_2 DD * \Delta D_{i,0} + \beta_3 Roe_{i,t-1} + \beta_4 (E_{i,0} - E_{i,-1})$$

$E_i = Earnings\ before\ extraordinary\ items\ for$ share (4.2)

i in year relative to the dividend event year (year 0); 1 and 2.

$$BV_{i,t-1} = Book\ value\ of\ equity\ for\ share\ i\ at\ the\ end\ of\ year\ t-1.$$

$$Roe_{i,-1} = return\ on\ equity\ for\ share\ i, calculated\ as\ E_{i,-1}/BV_{i,-1}$$

DI = dummy variables that takes value 1 if dividend increases, and zero otherwise

DD = dummy variable that take value 1 if dividend decreases and zero otherwise

The same regressions will be performed but with change in ROA as the dependent variable because of its wide use as a performance measure of firms (Barber and Lyon, 1997; Fama French, 2000). Further Benartzi et al. (2005) infer that ROA is superior to ROE in several aspects: i) ROA is not sensitive to the capital structure of a firm, while ROE is; ii) ROE may be obscured by income taxes and special items while ROA is not affected. Moreover, ROA is shown to be better at detecting abnormal operating performance (Barber and Lyon, 1997). Thus, the adjusted model of Nissim and Ziv´s equation will be:

$$Roa_t - Roa_{t-1} = \alpha + \beta_1 DI * \Delta D_{i,0} + \beta_2 DD * \Delta D_{i,0} + \beta_3 Roa_{i,t-1} + \beta_3 (Roa_{i,0} - Roa_{i,-1}) \quad (4.3)$$

Benartzi et al.'s (1997) approach for measuring dividend change will be used since annual data is used in the research, as opposed to Nissim and Ziv (2001) who looked at quarterly dividend change.

$$Change\ in\ dividends = (dividend_t - dividend_{t-1})/dividend_{t-1} \quad (4.4)$$

To control for the mean reversion of earnings, return on equity and prior changes in earnings is included in the regression in line with Nissim and Ziv's (2001) research. However this method was criticized by Benartzi et al. (2005) since it assumes that the mean reversion is uniform across all the observations, in other words that the relationship between future earnings and past earnings level and changes follow each other linearly. So to overcome this problem the modified partial adjustment model proposed by Fama and French (2000) to control for the non-linearity in the relationship, as Benartzi et al. (2005) did, is also used. Further, Benartzi et al.'s (2005) model is adjusted by not distinguishing between dividend increases and decreases as shown in equation 4.5 below; the reason for this is to have a comparison for earlier research which did not separate between the different dividend events.

$$(E_{i,t} - E_{i,t-1})/BV_{i,t-1} = \alpha + \beta_1 \Delta D_{i,o} + (\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}) * DFE_{i,0} + (\lambda_1 + \lambda_2 * NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}) * CE_{i,0} + \varepsilon_{i,t} \quad (4.5)$$

Where:

$DFE_{i,0}$ = $ROE_{i,0}$ – E $ROE_{i,0}$;
E $ROE_{i,0}$ = fitted value from the cross-sectional regression of $ROE_{i,0}$ on the log of total assets in year -1, the market-to-book ratio of equity in year -1, and $ROE_{i,-1}$;
$CE_{i,0}$ = $(E_{i,0} - E_{i,-1}) / BV_{i,-1}$;
$NDFED_0$ = dummy variable that takes value 1 if $DFE_{i,0}$ is negative and 0 otherwise;
$PDFED_0$ = dummy variable that takes value 1 if $DFE_{i,0}$ is positive and 0 otherwise;
$NCED_0$ = dummy variable that takes value 1 if $CE_{i,0}$ is negative and 0 otherwise;
$PCED_0$ = dummy variable that takes value 1 if $CE_{i,0}$ is positive and 0 otherwise.

$$(E_{i,t} - E_{i,t-1})/BV_{i,t-1} = \alpha + \beta_1 DI * \Delta D_{i,o} + \beta_2 DD * \Delta D_{i,0} + (\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}) * DFE_{i,0} + (\lambda_1 + \lambda_2 * NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}) * CE_{i,0} + \varepsilon_{i,t} \quad (4.6)$$

The dummy variables and squared terms are included to pick up the nonlinearities in the mean reversion and autocorrelation of earnings. The empirical evidence of the nonlinear mean reversion process of earnings is backed by research such as Brooks and Buckmaster (1976) and Fama and French (2000).

One notable difference between this thesis and Nissim and Ziv (2001) & Benartzi *et al.* (2005) is that the cross sectional means from annual regressions are not produced, nor used, because our sample is relatively small due to Sweden being a much smaller market than the US, and therefore have fewer observations that can be analyzed. Had we used annual regressions, the questions of how reliable the coefficients are could be raised. However, by using a panel data regression instead, we avoid this problem.

4.5.2 Methodology to test Hypothesis 2

To test descriptive data combined with financial data, a multiplicative interaction model will be used: $Earnings\ change_{i,t} = \alpha + \beta_1 divchange_{i,0} + \beta_2 disclosure_{i,0} + \beta_3 divchange_{i,o} * disclosure_{i,0} + \varepsilon_{i,t}$
(4.7)

Earnings change = Change in earnings as described by (eq 4.1)

Disclosure = Total score from voluntary disclosure data provided by Kanton. Divchange = Change in dividends as described by (eq 4.4)

By using an multiplicative interaction model we can combine the two different types of data to test our hypothesis, further the model captures the intuition behind conditional hypothesis well (Wright 1976; Friedrich 1982; Aiken and West 1991). Even though multiplicative interaction models are common in quantitative science literature, a cautionary note should be emphasized here, as researchers often misinterpret the results or do not apply the model correctly in their study. The interpretation of the model can be simplified to the following: an increase in X is associated with an increase in Y when condition Z is met. So, the partial derivative with regards to dividend changes (which is the full effect of dividend changes) in this model is $\beta_1 + \beta_3 * disclosure$, so for instance if β_3 is negative and significant, the effect of dividend changes is lower the higher the disclosure index (Brambor, 2006). For our analysis it can provide information whether dividends and voluntary disclosure acts as complementary or substitutes.

Further, to test if there's any difference in the dividend signalling value between companies with high- and low voluntary disclosure levels, the sample will be divided into three segments. The sectioning is done by calculating the average for the total score of voluntary disclosure for each firm. By doing this a firm can't end up in more than one segments. One potential drawback of this approach is that a firm that drastically increases or decreases the voluntary disclosure will get an average score that will be misleading for some of the observations. This approach is chosen under the assumption that voluntary disclosure policies are sticky and not volatile. When the segmentation is done the original regressions will be made on the segments separately.

A prerequisite for both the Multiplicative Interaction Model and the regressions for the segmented samples is that a broad majority of the managers must in some extent be able to predict future earnings. That is, possess trustworthy insider information about the company's potential. If they don't, the results will be restricted due to incorrect decisions by the management.

4.6 Validity and Reliability

The method of the first hypothesis follows the earlier recognized and accepted literature. In the choice between variables a consistent approach has been used, i.e. one particular approach has been used at the time to avoid mistakes. This will make it easier to interpret the results, compare it to earlier results and to repeat in future research. In this thesis, observations of firms initiating dividends are not included. The reason for this is that the way dividend change is calculated does not allow for initiations (can´t divide on zero). The signalling value of dividend initiations can be investigated separately, like in Healy and Palepu (1988), but this will not be done in this thesis. The second hypothesis is investigated both by the same method as Hypothesis 1 and by a interaction model as a complement. By doing this a more reliable result should appear. The research is made on Swedish firms listed on Large Cap, Mid Cap, Small Cap and Nordic Growth Market (NGM). Because there are companies in different sizes in the sample, they will contribute to a result that can be seen as general for the Swedish market.. Other markets can have characteristics that make a generalization of this thesis' results inappropriate. The results of this thesis will probably not be useful for unlisted firms since unlisted firms don't have the same incentives to communicate with the market and might not consider minority owners in the same extent as listed firms in the dividend decision.

The data is considered to be trustworthy as Datastream is a recognized source for financial information. The disclosure data is more vulnerable if the provider, Kanton, chooses to stop publishing their results or even stop grading the companies in the future. However, Kanton is transparent regarding how they score the companies and the criteria are quantitative so it would be possible to reproduce the results if Kanton stopped providing it. By the same logic, it would be possible to score companies' voluntary disclosure in other countries with the same criteria even if other countries have different legislation regarding which information that is mandatory and which is voluntary.

The data for voluntary disclosure is available from 2007 to 2014 which makes the investigated time period relatively short. Nissim and Ziv (2001) looked at US firms under the period of 1963-1997 and Benartzi et al. (2005) had an even longer time period. However, studies with shorter time period have been conducted, for example DeAngelo, DeAngelo and Skinner (1996) had a time period of eight years. Since information for voluntary disclosure is vital for this research the time period is limited to eight years.

5 Descriptive statistics

In this chapter the sample is described. First the data for the voluntary disclosure is described and then the financial data from Datastream through highlighting relevant information about the data.

5.1 Disclosure data

As earlier mentioned the data for firms voluntary disclosure is arrived from Kanton and Aktiespararna. The data is provided for 2007-2014 for firms listed on Nasdaq OMX and the NGM, which is a marketplace for companies aiming for listing on the bigger lists. However, NGM wasn't included in the survey in 2011 and firms listed on the Small Cap list[1] have not been included since 2010. In addition to this the firm also need to have the headquarter located in Sweden and have all the information published in Swedish to be included. The firms are evaluated on the level of voluntary disclosure in the annual report, quarterly reports and the Investor Relations website. The evaluation is carried out through controlling for

[1] The list for firms with a market capitalization under 150 million euros.
http://www.nasdaqomxnordic.com/utbildning/aktier/varhandlarmanaktier

specific criteria. The firm is then scored if they provides the requested information. These gradings are used in an annual competition where Kanton and Aktiespararna appoints an award of the best listed company of the year. To get a combined rating they simply add the scores for the annual report, quarterly report and the Investor Relations website together. In this thesis the combined score will be used in line with Kanton's method. In total there is 1277 observations that has a score for the annual report, quarterly report and the Investor Relations website so a total score is possible to calculate.

Table 5.1 Descriptive statistics for Voluntary Disclosure

	Annual Report	Quarterly Report	IR Website	Total score
Large Cap				
Average Score	28,1	8,7	13,4	50,0
Top Score	45,5	20,5	31,5	88,5
Mid Cap				
Average Score	26,0	9,2	10,4	44,3
Top Score	45	19,5	31,5	92,5
Small Cap				
Average Score	26,4	9,9	8,4	42,9
Top Score	46	21	25,5	81,0
NGM				
Average Score	17,8	8,0	4,3	29,9
Top Score	41,0	17,5	14,0	65,0
Average for all firms each years				
2007	29,7	14,8	10,3	52,9
2008	27,5	8,6	9,5	43,5
2009	31,3	10,3	11,9	51,6
2010	18,5	5,7	6,6	29,9
2011	22,8	6,8	10,3	39,9
2012	23,1	7,2	10,7	40,6
2013	24,0	7,7	11,0	42,6
2014	24,3	8,1	11,1	43,5

This is a description for the whole data sample from Kanton, not only the companies that pay dividends. Notable in the description of the data is that the average score decreases drastically in 2010 due to a reform of the criteria which meant stricter requirements (Kanton, 2016). It is also visible that Large Cap companies have the highest scores on average, followed by Mid Cap, Small Cap and NGM. By this, size and voluntary disclosure seems to be connected. The difference between large and small firms is highest on the ranking for the website for Investor Relations. A possible explanation for this is that it requires resources to maintain a Investor Relations website and it's more likely that big companies have resources to this. A large

company might also draw attention from more potential investors, making it necessary to have a well-functioning Investor Relations website.

5.2 Financial data

Overall, there is more financial data in the sample than voluntary disclosure data. This is because financial data has been collected regardless of presence of voluntary disclosure data. Financial data has thus been collected for 2007-2014, if available, even if voluntary data only is available for two of these years. Missing data exists due to mergers, delistings etc. The data contains of total 1923 observations.

Table 5.2 Descriptive statistics for Financial data

	Dividend paying firms	Increased dividends	Decreased dividends
2007	151	90	31
2008	132	30	93
2009	128	68	48
2010	138	101	27
2011	138	91	33
2012	142	65	48
2013	139	85	23
2014	140	104	15

The number of dividend paying firms in the sample varies and are highest in 2007 with a drop in 2008. From the dividend increases and decreases it is possible to distinguish a general payout decrease during the financial crises in 2008 and a recovery the following years.

Table 5.3 Further Descriptive statistics for Financial data

	Firms Large Cap	*Paying dividends*	Firms Mid Cap	*Paying dividends*	Firms Small Cap	*Paying dividends*	Firms NGM	*Paying dividends*
2007	54	88,9%	68	75,0%	99	53,5%	32	18,8%
2008	49	81,6%	64	62,5%	105	55,2%	32	18,8%
2009	46	87,0%	61	65,8%	105	58,1%	31	19,4%
2010	46	93,5%	63	63,5%	105	62,9%	29	17,2%
2011	50	90,0%	67	59,7%	95	51,6%	26	15,4%
2012	50	90,0%	72	61,1%	93	51,6%	22	18,2%
2013	54	88,9%	70	61,4%	91	46,2%	19	21,1%
2014	59	86,4%	64	60,9%	79	48,1%	23	30,4%

It's is obvious that larger firms are more likely to pay dividends since the proportion of dividend paying firms are highest in the Large Cap list, followed by Mid Cap, Small Cap and

the NGM. A possible explanation for this is that high growth, not yet so profitable, firms are likely to be listed on NGM or Small Cap. There should be more mature and profitable firms on the Large and Mid-Cap lists. Notable in this data is that the information regarding listing is arrived from the voluntary disclosure data. This data is only provided if the company is included in the voluntary disclosure ranking. As earlier mentioned there are more observations for the financial data than the voluntary disclosure data which implies that the listing information is in some extent insufficient. When listing information has been missing the closest observation has been used, meaning if a company have been listed on Small Cap 2010 and no information is available for 2011 the company is assumed to be listed on Small Cap also in 2011. This can be wrong since companies occasionally change lists. However, since the listing information is only used in this description of the data and not in the regressions this is considered as acceptable.

6 Results

In this chapter the results from the conducted regressions is presented.

6.1 Regressions for Hypothesis 1

6.1.1 Regression results following Nissim and Ziv (2001)

Multicollinearity was controlled for first to see if the model was well specified. By performing redundant fixed effects tests and Hausman tests, the appropriate panel regression is selected. To get the proper model autocorrelation was controlled for before arriving at our final results (see appendix B, C, D and E). Underneath in tables 6.1 and 6.2 are the important numbers for our hypothesis testing shown. To clarify, the unlagged version refers to T=1, while the lagged version is T=2.

Table 6.1 Results from model following Nissim and Ziv (2001) with change in ROE as dependent variable (see appendix B and C)

Nissim ROE	T=1	T=2
Dividend increase	0,074921	-0,057331
Prob	0,004***	0,0012***
Dividend decrease	0,020414	-0,005774
Prob	0,7101	0,9271
R-squared	0,357229	0,027482
adjusted R-squared	0,205198	0,027482

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

Dividend increases are significant on a 1% level for both regressions. For the lagged version the coefficient is negative and for the unlagged the coefficient is positive. Appendix B.1 presents the correlation matrix for the independent variables along with the probability of statistical significance. We see that the correlation is in between -0.61 and 0.14, which tells us that there is no problem we need to address here.

Table 6.2 Results from model following Nissim and Ziv (2001) with change in ROA as dependent variable (see appendix D and E)

Nissim ROA	T=1	T=2
Dividend increase	1,484525	-1,462426
Prob	0,0000***	0,0084***
Dividend decrease	1,182722	1,372526
Prob	0,2521	0,3710
R-squared	0,547177	0,010725
adjusted R-squared	0,443125	0,007419

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

6.1.2 Regression results following Benartzi et al. (2005)

Multicollinearity and autocorrelation was controlled for in the same way as for the Nissim and Ziv approach. We see that several of explanatory variables are correlated above the 0.8 threshold; however this is the main idea behind the choice of using squared terms since the dummy variables are supposed to capture the fact that negative changes in earnings revert faster than positive changes, and that larger changes revert faster than small changes. So the correlation is a consequence from taking care of the linear mean reverting process of earnings, and therefore no remedies are imposed to reduce the correlation (Benartzi et al., 2005). Redundant fixed effects tests and Hausman tests was also performed to get the suitable model as well as the BPG test (See appendix G and I).

Table 6.3 Results from model following Benartzi et al. (2005) with dividend change as explanatory variable (see appendix G and I)

Benartzi et al. dividend change		
	T=1	T=2
Dividend change	0,049938	-0,04322
Prob	0,0288**	0,0671*
R-squared	0,249732	0,040123
adjusted R-squared	0,242338	0,033305

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

Using the adjusted Benartzi et al.'s (2005) model dividend change has a positive impact on change in earnings for T=1 at a 5% significance level and a negative impact for T=2, however only on a 10% significance level.

Table 6.4 Results from model following Benartzi et al. (2005) with dividend increase and decrease as explanatory variables (see appendix F and H)

Benartzi et al. dividend increase/decrease		
	T=1	T=2
Dividend increase	0,0387	-0,074268
Prob	0,1657	0,0006***
Dividend decrease	0,074552	0,018698
Prob	0,1276	0,7517
R-squared	0,249922	0,041478
adjusted R-squared	0,242031	0,033906

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

When we then compare the adjusted model with the exact model as Benartzi et al. used, we see that by dividing the dividend change into dividend increases and dividend decreases the significance for T=1 disappears. For the lagged regression there is now a significant negative relationship between dividend increase and change in earnings but there is no significant relationship between dividend decreases and earning changes.

6.2 Regressions for Hypothesis 2

Table 6.5 Results from Multiplicative interaction model (see appendix J and K)

Multiplicative Interaction model		
Dependent var:	**ROE**	**ROA**
Total	-0,001512	-0,039125
Prob	0,5916	0,1938
Dividend change	-0,049634	-2,480265
Prob	0,6007	0,1569
Tot*DivChange	0,000483	0,03622
Prob	0,7724	0,2304
R-squared	0,349927	0,002138
adjusted R-squared	0,13221	-0,000523

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

In table 6.5 the results from the interaction model is presented. No significant connection between dividend change and voluntary disclosure could be established using this model.

Table 6.6 Results from regressions following Nissim and Ziv (2001) made on segmented sample (see appendix L, M, N, O, T, U, V, W, AB, AC, AD and AE)

	High disclosure	Mid disclosure	Low disclosure
Nissim and Ziv ROE T=1			
Dividend increase	-0.008649	0.100882	0.096156
Prob	0.8333	0.0327**	0.0001***
Dividend decrease	0.028378	0.022321	-0.119051
Prob	0.6303	0.7515	0.2502
Nissim and Ziv ROE T=2			
Dividend increase	-0.066915	-0.040340	-0.086241
Prob	0.1486	0.4078	0.4098
Dividend decrease	-0.061821	0.110799	-0.121785
Prob	0.3127	0.0978*	0.5142
Nissim and Ziv ROA T=1			
Dividend increase	2.254934	1.829601	0.316134
Prob	0.0001***	0.0736*	0.6413
Dividend decrease	0.741461	0.618132	2.679185
Prob	0.4551	0.6707	0.2647
Nissim and Ziv ROA T=2			
Dividend increase	-2.235525	-1.275853	-1.240992
Prob	0.0244**	0.4402	0.1216
Dividend decrease	1.163993	1.537435	0.992317
Prob	0.4988	0.5565	0.7872

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

The results from the regressions following Nissim and Ziv (2001) made on the segmented samples is given in table 6.6. For the regressions made with change in return on equity as dependent variable the coefficient for dividend increase is significant on a 1% level for low disclosure, 5% level for mid disclosure and not significant for high disclosure. The coefficient for dividend decreases is nonsignificant for all of the segments except Mid disclosure in the lagged return on equity regression. Unlike the study of the whole sample the regressions with change of return on assets as dependent variable do not confirm the same pattern as the return on equity regressions. On the contrary the segment with high voluntary disclosure have a positive coefficient for dividend increase at a 1% significance level, the mid segment a significance level of 10% and the segment with low voluntary disclosure is not significant at all. For the lagged version the coefficient for dividend increases are negative and significant for the high disclosure segment. None of the other coefficients are significant.

Table 6.7 Results from regressions following Benartzi et al. (2001) made on segmented sample (see appendix P, Q, R, S, X, Y, Z, AA, AF, AG, AH and AI).

	High disclosure	Mid disclosure	Low disclosure
Benartzi et al T=1 dividend change			
Dividend change	0.013370	0.069554	0.057165
Prob	0.6854	0.0545*	0.0845*
Benartzi et al T=1 dividend increase and decrease			
Dividend increase	-0.000459	0.085543	0.094541
Prob	0.9909	0.0819*	0.0011***
Dividend decrease	0.039365	0.038696	-0.061222
Prob	0.6158	0.5878	0.6310
Benartzi et al T=2 dividend change			
Dividend change	-0.054802	0.008413	-0.071935
Prob	0.2093	0.8074	0.1630
Benartzi et al T=2 dividend increase and decrease			
Dividend increase	-0.082927	-0.055510	-0.052899
Prob	0.0065***	0.2060	0.0906*
Dividend decrease	-0.052370	0.126674	-0.127954
Prob	0.4949	0.0332**	0.5757

*,**,*** marks significantly different from zero at 10%, 5% and 1% respectively.

Table 6.7 shows the coefficients for dividend change in the regressions following Benartzi et al. (2005). Notable is that dividend increase is significant at a 1% level for firms with low level of voluntary disclosure. For the lagged version the coefficient for dividend increase is negative and significant at a 1% level for the segment with high disclosure.

7 Analysis

In this chapter, the results stated in the previous section are analysed. First Hypothesis 1 is analyzed through the results of regressions following Nissim and Ziv (2001) and Benartzi et al. (2005). The results are also compared to previous research and similarities and differences is discussed. Secondly Hypothesis 2 is analysed based on the premise that voluntary disclosure and dividends are substitutes in the choice of communication tools.

7.1 Hypothesis 1

According to the first hypothesis a clear connection between dividend changes and changes in earnings should be visible. An increase of the dividend should imply an increase in earnings and dividend decrease should imply the opposite. As earlier mentioned this would mean that management have inside information about future earnings and use the dividend to communicate this to the market.

The results of the regressions following Nissim and Ziv (2001) in table 6.1 imply that a dividend increase is a sign of a short term earnings increase. This is because the coefficient for dividend increases is positive for T=1 but negative for the regression with lagged variables, indicating that the earnings will decrease again. However the positive coefficient is higher than the negative for the lagged regression, so a small long term increment in earnings is suggested. This differs from Nissim and Ziv's (2001) results which had positive coefficients for dividend increases in both regressions. Further the dividend decrease don't show any significant impact at all, in neither the T=1 or T=2 regression. This implies that the market cannot interpret a decrease of the dividend as a credible sign of lower future earnings. A possible explanation for the lack of correlation between dividend decreases and future earnings might be accounting conservatism according to Nissim and Ziv (2001).

Table 6.2 shows that the same relation holds when change in return on assets is the dependent variable. This further strengthens the relationship between dividend increases and earning improvements. Also this regression have a higher adjusted R-squared of T=1 which tells us

that the model captures even more of the actual relationship. Since Nissim and Ziv (2001) didn't do the regression with return on assets a comparison cannot be made.

When we consider the regression results controlling for non-linear patterns in the behaviour of earnings, we see that dividend change is significant for the unlagged regression, but it is insignificant when dividend change is divided into increases and decreases. This can be a result from potential outliers getting a greater impact on the significance level when the sample size is reduced. However, this indicates that a dividend change as a tool for predicting the future development of a company's profitability is highly limited. This is in line with Benartzi et al.'s findings since they couldn't find any significant relationship between a dividend change and changes in earnings. Further, the lagged regressions show that dividend change is only significant at a 10% level, but when divided, dividend increase is significant at a 1% level, while dividend decrease is insignificant. That means that the significant change in dividends is caused by the highly significant dividend increase which is further proved by the fact that they both have negative coefficients unlike dividend decrease. But the lagged model, regardless if dividends are split into segments or not, has a very poor fit, i.e. lacking some other explanatory variables. This is an expected result based on the fact that there are numerous reasons for changes in earnings over the long haul, something that isn't considered in this thesis. Overall the regressions following Benartzi et al. indicate that dividend changes are not related to earning changes.

Notably, the results from of this thesis match the results of the original articles. The regressions following Nissim and Ziv (2001) finds a relation between dividend- and earning increases, just like Nissim and Ziv did. On the other hand, Benartzi et al. (2005) could not support the dividend signalling theory, and likewise, our corresponding regressions yielded the same results. This indicates that the model used by Benartzi et al. requires a clearer connection between dividend- and earning changes, something that is considered important in the cautionary approach taken in the attempt to test this connection.

The difficulties to find a reliable connection could be an effect of the lead or lag discussion mentioned in the introduction. It is possible that different firms have different approaches in this matter, making it hard to see a clear pattern. The investigated time period, 2007-2014, contains a high portion of dividend decreases, especially during 2008 probably due to the financial crises. It is an established idea that firms try to avoid dividend decreases if possible. Bhattacharya (1979) argued that managers would prioritize a promised dividend even if cash

flow was even lower than the payout. This could mean that the signalling value of a dividend decrease in a contraction is vague since it's possible that earnings have decreased for some time but management have tried to retain the dividends on the established level. This way of trying to avoid dividend decreases, until it's inevitable, can be a plausible explanation for getting no significant results for dividend decreases. However, by the same logic, management should be cautious with dividend increases since they want to have a stable dividend. Earlier theories reviewed in this thesis, such as Miller and Rock (1985), John and Williams (1985) and Asquith and Mullins (1986) assumes that firms don't raise payouts if they don't have valid reasons to do so. Trying to mimic a more profitable firm is assumed to be too expensive. This can't be supported since every regression showing a significant positive connection between dividend- and earnings increases for T=1 shows the opposite relation in T=2. This indicates that even if a significant earnings improvement can be proved, the improvement isn't especially sustainable. Under the assumption that management attempt to use dividends as a signalling tool, this could imply that the insider information that management is considered to hold, by for example Bhattacharya (1979) and John and Williams (1985), is to some extent overrated. As Asquith and Mullins (1986) suggested, a change in dividends should reveal a change in management's perception of the firm's profitability. However, if this is the case management's perception is not reliable.

7.2 Hypothesis 2

To be able to support Hypothesis 2 voluntary disclosure must be able to be interpreted as a substitute to dividends in the context of market signalling. In other words should the connection between dividends- and earnings change be more apparent for firms with low level of voluntary disclosure than for firms with high level of voluntary disclosure. The regressions following Nissim and Ziv (2001) with change in return on equity as dependent variable in some extent support this idea. According to this coefficient, a dividend increase has a highly significant positive impact on future earnings for firms with low disclosure. A similar effect was found for firms with a medium level of voluntary disclosure but a nonsignificant effect for firms with a high score. No significance can be proven for dividend decreases, which is not surprising since no significance could be shown for the whole sample either. The lagged regressions are overall less significant than the corresponding regression for the whole sample.

As mentioned in the results the regressions with change of return on assets as dependent variable don't show the same connection between voluntary disclosure and signalling value of dividends, but rather the opposite. This makes it hard to support the idea that firms with low level of voluntary disclosure use dividend as a way to communicate with the market in larger extent than firms that reveal a lot of voluntary information, with findings from the models following Nissim and Ziv (2001). Remembering Benartzi et al.'s argumentation, ROA is considered to be more stable than ROE and therefore is considered to be more reliable in this case.

When we utilized the Multiplicative Interaction Model we found no significant coefficients at all, and for ROA the adjusted R-squared showed a negative number (which can be interpreted as zero). This tells us that the used independent variables says nothing for ROA, and only slightly for ROE. Asquith and Mullins (1986) raised a relevant question by asking if dividends might be an unnecessarily expensive signaling tool, and that firms should instead increase the level of voluntary disclosure to signal good prospect to the market. However, our results cannot confirm whether there is any relationship between dividends and voluntary disclosure, i.e. if they act as substitutes or complementary, so we cannot provide an answers to this question. Asquith and Mullins (1986) proposed that this could come about because voluntary disclosure lacked the credibility that cash dividends have. Further we could not see the relationship which was suggested by Hanlon, Myers and Shevlin (2007) article.

Under the assumption that dividends lead earnings, the poor results when combining corporate disclosure and dividends can indicate that the model misses some information, especially in regards to the voluntary disclosure. Healy (2001) postulated that voluntary disclosure was a tradeoff between lowering cost of capital and higher proprietary cost in sharing strategic information; similar to what Darrough and Stoughton (1990) argued, only that they saw proprietary cost in a more narrow view, namely associated with new entrants to the market. What this means for our analysis is that our data lack information of the market conditions the companies operate in. And if such data could be obtained that distinguish whether some industries where more competitive than others, it is possible we could get rid of the noise created by firms in industries where disclosure was associated with high proprietary costs and voluntary disclosure was too expensive. As Verrecchia (1983) coined the term, the threshold level of disclosure is too high.

As mentioned in the method chapter a prerequisite for both the Multiplicative Interaction Model and the regressions for the segmented samples is that at least most managers are able to predict future earnings. Accordingly, it is possible that firms which choose to disclose a low level of voluntary information tries to convey information through dividends, but simply fail. This is something that our model would not capture.

8 Conclusions

In the last chapter the conclusions drawn from the analysis is presented and the research question is answered. Suggestions for further research are also discussed.

This study set out to determine whether the dividend information hypothesis was true for the Swedish market, and if dividends and voluntary disclosure could be seen as substitutes of each other as a signalling tool.

Returning to Hypothesis 1 of this study

H1: An increase (decrease) of dividend is associated with higher (lower) future earnings

it is now possible to state that there is no credible connection between dividend changes and future performance. Even though some of the tests showed a significant relationship between dividend increases and future performance, we could not provide convincing evidence for the information content of dividends, and therefore we cannot reject the H0 for Hypothesis 1.

Our analysis for the Swedish market produce the same results as Nissim and Ziv (2001) and Benartzi et al. (2005) obtained from the US market in regards to the information content of dividends.

Turning to Hypothesis 2

H1: A higher (lower) level of voluntary disclosure is associated with weaker (stronger) signalling content of dividends

the relevance of voluntary disclosure on dividend signalling is clearly not supported by the current findings. We were unable to find any significant relationship between the two variables using the Multiplicative Interaction model. When dividing the sample into segments after voluntary disclosure level we got contradictory results regarding dividend increases and nonsignificant results for dividend decreases. Thereby we do not reject the H0 for Hypothesis 2.

This research gives us evidence that a change in dividends is no credible signal for a future change in earnings. Thereby it provides the market with an argument to not include dividends when trying to predict a Swedish company's prospects.

Further we cannot provide any proof for whether or not dividends and voluntary disclosure are used as substitutes or complements by Swedish firms in their attempts to convey information to the market.

8.1 Proposal for further research

As this thesis have not been able to show any clear evidence supporting the idea that firms with low (high) voluntary disclosure use dividends as a signalling tool to a higher (lower) extent, we suggest further research into possible factors that might have influenced our conclusions.

Firstly, one might differentiated between firms dependent on their capital structure. According to the pecking order theory, high levered firms would prefer to keep the internally generated cash and instead use voluntary disclosure as a substitute to dividends as signalling tool.

Secondly, firms that believe their proprietary costs are relatively high might be more willing to pay dividends than reveal strategic information. By adding a variable for the competitiveness in the market one could address the contradicting theories of proprietary costs from voluntary disclosure, proposed by Verrecchia (1983) and Darrough and Stoughton (1990).

Lastly, since we have only assessed the information content of dividends in regards to future earnings, it would be interesting to look at the market reactions following dividend announcements instead, while controlling for the voluntary disclosure. The thought behind this is that firms which communicate a lot with investors, suffers in less extent from information asymmetry, and will not surprise the market with the change in dividends.

References

Aiken, Leona, and Stephen West. 1991. Multiple Regression: Testing and Interpreting Interactions. London: Sage.

Akerlof, George A.. 1970. “The Market for "lemons": Quality Uncertainty and the Market Mechanism”. *The Quarterly Journal of Economics* 84 (3). Oxford University Press: 488–500.

Baker, Malcolm, Mendel, Brock, & Wurgler, Jeffrey, 2015, “Dividends as Reference Points: A Behavioral Signaling Approach”, *Review of Financial Studies*

Ball, Ray J. and Watts, Ross, 1972, “Some Time Series Properties of Accounting Income”, *The Journal of Finance* 27 (3), 663-681.

Baltagi Badi H. and Chang, Young-Jae, 1994, “Incomplete Panels: A Comparative Study of Alternative Estimators for the Unbalanced One-way Error Component Regression Model”, *Journal of Econometrics* 62 (2), 67-89

Baltagi Badi H., 1995, *Econometric Analysis of Panel Data*, Wiley, Chichester.

Barber, Brad M. and Lyon, John. D., 1997, “Detecting Long-run Abnormal Stock

Returns: The Empirical Power and Specification of Test Statistics?”, *Journal of*

Financial Economics 43 (3), 341-372.

Benartzi, Shlomo, Grullon, Gustavo, Michaely, Roni and Thaler, Richard, 2005, “Dividend Changes do not Signal Changes in Future Profitability”, *The Journal of Business*, 78 (5),

Benartzi, Shlomo, Michaely, Roni and Thaler, Richard, 1997, “Do Changes in Dividends Signal the Future or the Past?”, *The Journal of Finance* 52

Bhattacharya, Sudipto, 1979, “Imperfect Information, Dividend Policy, and ‘The Bird in the Hand Fallacy’”, *Bell Journal of Economics* 10 (1), 259-270.

Black, Fischer, 1976, “The Dividend Puzzle”, *The Journal of Portfolio Management*, Winter 2 (2), 5-8.

Brav, Alon, Graham, John R., Harvey, Campbell R. and Michaely, Roni, 2005, "Payout Policy in the 21st Century", *Journal of Financial Economics* 77 (3), 483-528.

Brambor, Thomas, Clark, William and Golder, Matt, 2006, "Understanding interaction models: improving empirical analyses", Political Analysis 14:63-82.

Brealey, R., Myers, S., 1996. Principles of Corporate Finance., 5th Edition. McGraw-Hill, New York.

Brooks, Chris (2008). Introductory econometrics for finance. 2. ed. Cambridge: Cambridge University Press

Clarkson, PM, Kao, JL, Richardson, GD, 1994, "The voluntary inclusion of forecasts in the MD&A section of annual reports", *Contemporary accounting research* vol. 11 No. 1-2, 423-450.

Darrough, MN, Stoughton, NM, 1990, "financial disclosure policy in an entry game", *Journal of accounting and economics* 12, 219-243

DeAngelo, Harry, DeAngelo Linda and Skinner, Douglas J., 1992, "Dividends and Losses", *The Journal of Finance* 47 (5), 1837-1863.

DeAngelo, Harry, DeAngelo, Linda and Skinner, Douglas J., 1996, "Reversal of Fortune: Dividend Signaling and the Disappearance of Sustained Earnings Growth", *Journal of Financial Economics* 40 (3)

Dewenter, Kathryn L. and Warther, Vincent A., 1998, "Dividends, Asymmetric Information, and Agency Conflicts: Evidence from a Comparison of the Dividend Policies of Japanese and U.S. Firms", *The Journal of Finance* 53 (3), 879-904.

Fama, Eugene F. and Babiak, Harvey, 1968, "Dividend Policy: An Empirical Analysis", *Journal of the American Statistical Association* 63 (324), 1132-1161.

Friedrich, Robert. 1982. ''In Defense of Multiplicative Terms in Multiple Regression Equations.'' American Journal of Political Science 26:797–833.

Gaud, Philippe, Elion, Jani, Hoesli, Martin and Bender, André, 2005, "The Capital

Structure of Swiss Companies: An Empirical Analysis Using Dynamic Panel Data", *European Financial Management Review* 11 (1), 51-70.

Gujarati, Damodar N., 2003, *Basis Econometrics*, Fourth Edition, McGraw-Hill, Irwin.

Grinblatt, M., Titman, S., 1998. Financial Markets and Corporate Strategy. Irwin/McGraw Hill, Boston, MA.

Grullon, Gustavo and Michaely, Roni. 2002. Dividends, share repurchases, and the substitution hypothesis *The Journal of Finance* Vol. 57, No. 4,

Guay, W., Harford, J., 2000. The cash flow permanence and information content of dividend increases vs. repurchases. *Journal of Financial Economics* 57, 385}415.

Hanlon, Michelle and Myers, James N. and Shevlin, Terry J., Are Dividends Informative About Future Earnings? (January 31, 2007). Available at SSRN: http://ssrn.com/abstract=964279 or http://dx.doi.org/10.2139/ssrn.964279

Healy, PM, Hutton, AP, Palepu, KG, 1999, "Stock performance and intermediation changes surrounding sustained increases in disclosure", *Contemporary accounting research* 16 (3), 485-520

Healy, PM, Palepu, KG., 1988, "Earnings Information Conveyed by Dividend Initiations and Omissions", *Journal of Financial Economics* 21 (2),

Healy, PM, Palepu, KG, 2001, "Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature". *Journal of Accounting and Economics* 31, 405-440.

John, Kose and Williams, Joseph, 1985, "Dividends, Dilution, and Taxes: A Signalling Equilibrium", *The Journal of Finance* 40 (4), 1053-1070.

Kanton AB (2016) Årets Börsbolag Available online: http://www.kanton.se/%C3%A5rets-b%C3%B6rsbolag [Accessed 15 April 2016]

La Porta, Rafael, Lopes-de-Silanes, Florencio, Shleifer, Andrei and Vishny, Robert W., 2000, "Agency Problems and Dividend Policies around the World", *The Journal of Finance* 55 (1), 1-33.

Lin CT (2013) Dividend Policies, Legal Regimes and Market Systems in the Asian Pacific Region. Modelling and Simulation Society of Australia and New Zealand Inc. Working Paper Available online: http://www.mssanz.org.au/MODSIM03/Volume_03/B17/03_Lin_Dividend.pdf [Accessed 20 April 2016]

Lintner, John, 1956, "Distribution of Incomes of Corporations among Dividends, Retained Earnings and Taxes", *The American Economic Review* 46 (2), 97-113.

Miller, Merton and Modigliani, Franco, 1961, "Dividend Policy, Growth, and the Valuation of Shares", *The Journal of Business* 34 (4), 411-433

Miller, Merton H. and Rock, Kevin, 1985, "Dividend Policy Under Asymmetric Information", *The Journal of Finance* 40 (4), 1031-1051.

Nissim, Doron and Ziv, Amir, 2001, "Dividend Changes and Future Profitability", *The*

Journal of Finance 56 (6), 2111–2133

Ogden, Joseph P., Jen, Frank C. & O'Connor, Philip F. (2003). Advanced corporate finance: policies and strategies. Upper Saddle River, NJ: Prentice Hall

Verbeek, Marno, 2004, *A Guide to Modern Econometrics*, 2nd Edition, John Wiley &

Sons, Ltd.

Verrecchia, RE, 1983, "Descretionary disclosure", *Journal of accounting and economics* 5, 179-194.

Watts, Ross, and Leftwich, Richard, 1977, "The Time Series of Annual Accounting

Earnings", *Journal of Accounting Research* 15 (2), 253-271.

Welker, Michael, 1995, "Disclosure Policy, Information Asymmetry, and Liquidity in Equity Markets". *Contemplary accounting research* Vol. 11 No. 2: 801-827.

Wright, Gerald. 1976. ''Linear Models for Evaluating Conditional Relationships.'' American Journal of Political Science 2:349–373.

Appendices

Appendix A. List of firms used in study.

3L System	Fast Partner	Nordnet
Aarhus Karlshamn	Feelgood	Note
Academedia	Fenix Outdoor	Novacast
Acando	Fingerprint Cards	Novotek
Acapinvest	Firefly	Oasmia
A-Com	FormPipe	Obducat
Active Biotech	Gant	Odd Molly
Addnode	Generic Sweden	OEM
Addtech	Getinge	OMX
Aerocrine	Geveko	Opcon
AIK Fotboll	Sotkamo Silver	Orc Software
Alfa Laval	Ginger Oil	Orexo
West Siberian	Global Health	Oriflame
Alltele	Glycorex	Ortivus
Anoto	Guideline Oil	PA Resources
Arcam	Gunnebo	Panalarm
Arena Personal	Gunnebo Industrier	Panaxia
Arise Windpower	H & M	Partnertech
Artimplant	ICA Gruppen	Paynova
Aspiro	Haldex	Peab
Assa Abloy	Heba	Phonera
Atlas Copco	Hemtex	Polyplank
Atrium Ljungberg	Hexagon	Poolia

Audiodev	HEXPOL	Precio Systemutveckling
Autoliv	HiQ	Precise Biometrics
Avalon	HL Display	Prevas
Avanza	HMS Networks	Pricer
Avega	Holmen	Proact IT
Axfood	Home Properties	Probi
Axis	HQ	Proffice
B&B Tools	Hufvudstaden	Profilgruppen
Balder	Human Care	Q-Med
Ballingslöv	Husqvarna	Ratos
BE Group	Höganäs	Raysearch Laboratories
Beijer	IBS	Readsoft
Beijer Alma	IFS	Rejler
Beijer Electronics	Industrivärden	Rezidor
Benchmark Oil & Gas	Indutrade	RNB
Bergs Timber	Intellecta	Rottneros
Betsson	AXACTOR	Rörvik Timber
Bilia	Intoi	SAAB
Billerud	Intrum Justitia	Sagax
Biogaia	Investor	Sandvik
Bioinvent	ITAB Shop	SAS
Biolin	Jeeves	SCA
Biophausia	JM	n:scn
Biotage	KABE	SCANIA
Biovitrum	KappAhl	Catella
Björn Borg	Karo Bio	SEB

Boliden	Karolinska Development	Seco Tools
Bong Ljungdahl	Kinnevik	Sectra
Borås Wäfveri	Klövern	Securitas
Boss Media	Know IT	Securitas Direct
Brinova	Kungsleden	Semcon
Brio	Lagercrantz	Sensys Traffic
Broström	Lammhults	Servage
BTS	Latour	Svenska Handelsbanken
Bure	Lifeassays	Sigma
Byggmax	Lindab	Sintercast
C2SAT	Lindex	Skanska
Cardo	Loomis	SKF
Carnegie	Lundbergföretagen	SkiStar
Cash Guard	Lundin Mining	Softronic
Castellum	Lundin Petroleum	SSAB
Catech	Malmbergs	Studsvik
Catena	Meda	Sweco
Qliro Group	Medirox	Swedbank
CellaVision	Medivir	Svedbergs
Biotech-IgG	Megacon	Swedish Match
Cision	Mekonomen	Swedol
Clas Ohlson	Melker Schörling	Sveriges bostadsrättscentrum
Cloetta	Micro Systemation	SwitchCore
Concentric	Micronic Mydata	Systemair
Concordia	Midelfart Sonesson	Tatura

Confidence	Midway	Tele2
Connecta	Mobyson	Tele5 Voice Services
Consilium	Modul 1	Teleca
Corem	Amasten	Telelogic
CTT Systems	MQ Holding	Teligent
Cybercom	MSC Konsult	Ticket
Dagon	MTG	Tilgin
DGC One	MultiQ	Tradedoubler
Image systems	Munters	Transatlantic
Diös	NAXS	Transmode
Doro	NCC	Trelleborg
Duni	Nederman	Tretti
Duroc	Neonet	Tricorona
East Capital Explorer	Net Entertainment	Unibet
Elanders	Net Insight	Uniflex
Electra Gruppen	Netonnet	Wallenstam
Electrolux	New Wave	VBG
Elekta	Technology Nexus	Venue Retail Group
Elektronikgruppen	NGM Holding	Elos Medtech
Elos	NGS	Wihlborgs
Enaco	Nibe	Vitrolife
Enea	Nilörngruppen	Volvo
Eniro	Niscayah	XANO
Ericsson	Nobia	XponCard
European Institute of Science	Nolato	Zodiak

eWork	Nordea	ÅF AB
Fabege	Nordic Mines	Öresund
Fagerhult	Nordic Service Partners	

Nissim approach, ROE; T=1

B.1 Correlation

Covariance Analysis: Ordinary
Date: 05/18/16 Time: 16:45
Sample: 2007 2014
Included observations: 1922
Balanced sample (listwise missing value deletion)

Correlation Probability	DI*WIN_CHAN	DD*WIN_CHA	WIN_ROE_LA	WIN_CHANGE
DI*WIN_CHANGE_D	1.000000 -----			
DD*WIN_CHANGE_	0.144279 0.0000	1.000000 -----		
WIN_ROE_LASTYE	0.103750 0.0000	-0.103246 0.0000	1.000000 -----	
WIN_CHANGE_EAR	0.073047 0.0014	0.141018 0.0000	-0.614363 0.0000	1.000000 -----

B.2 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/18/16 Time: 16:35
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.092614	0.014477	6.397178	0.0000
DI*WIN_CHANGE_DIVIDENDS	0.056157	0.031993	1.755298	0.0794
DD*WIN_CHANGE_DIVIDEND	0.022278	0.048921	0.455391	0.6489
WIN_ROE_LASTYEAR	-0.308849	0.023176	-13.32610	0.0000
WIN_CHANGE_EARNINGS	-0.336215	0.030590	-10.99112	0.0000

R-squared	0.111540	Mean dependent var	0.055153
Adjusted R-squared	0.109222	S.D. dependent var	0.511880
S.E. of regression	0.483117	Akaike info criterion	1.386131
Sum squared resid	357.8058	Schwarz criterion	1.403486
Log likelihood	-1060.935	Hannan-Quinn criter.	1.392588
F-statistic	48.11443	Durbin-Watson stat	2.014068
Prob(F-statistic)	0.000000		

B.3 Fixed effect test

B.4 Cross section random effects test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROE_T1
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	276.575802	4	0.0000

B.5 Period random effects test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROE_T1
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	5.109023	4	0.2763

B.6 Regression using appropriate FE or RE effect based on results in prior tables.
Cross-sectional/period fixed effects

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/18/16 Time: 17:23
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.123017	0.015058	8.169674	0.0000
DI*WIN_CHANGE_DIVIDENDS	0.074921	0.035954	2.083763	0.0374
DD*WIN_CHANGE_DIVIDEND	0.020414	0.055458	0.368094	0.7129
WIN_ROE_LASTYEAR	-0.531078	0.035843	-14.81698	0.0000
WIN_CHANGE_EARNINGS	-0.621473	0.035997	-17.26476	0.0000

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.357229	Mean dependent var	0.055153
Adjusted R-squared	0.205198	S.D. dependent var	0.511880
S.E. of regression	0.456349	Akaike info criterion	1.439544
Sum squared resid	258.8606	Schwarz criterion	2.463458
Log likelihood	-812.0092	Hannan-Quinn criter.	1.820512
F-statistic	2.349707	Durbin-Watson stat	2.408782
Prob(F-statistic)	0.000000		

B.7 BPG test

Cross-sectional/period fixed effects

Dependent Variable: NSM_ROE1_BOTHFIX_RESIDQ
Method: Panel Least Squares
Date: 05/18/16 Time: 17:33
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.202530	0.019937	10.15857	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.017570	0.044058	-0.398801	0.6901
DD*WIN_CHANGE_DIVIDEND	0.016818	0.067369	0.249636	0.8029
WIN_ROE_LASTYEAR	-0.254179	0.031916	-7.963935	0.0000
WIN_CHANGE_EARNINGS	-0.137110	0.042125	-3.254804	0.0012

R-squared	0.044401	Mean dependent var	0.168310
Adjusted R-squared	0.041908	S.D. dependent var	0.679700
S.E. of regression	0.665305	Akaike info criterion	2.026103
Sum squared resid	678.5525	Schwarz criterion	2.043457
Log likelihood	-1553.073	Hannan-Quinn criter.	2.032560
F-statistic	17.80753	Durbin-Watson stat	1.481165
Prob(F-statistic)	0.000000		

B.8 final result with cross-sectional/period fixed effects and white diagonal

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 14:15
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.123017	0.020272	6.068405	0.0000
DI*WIN_CHANGE_DIVIDENDS	0.074921	0.025956	2.886466	0.0040
DD*WIN_CHANGE_DIVIDEND	0.020414	0.054912	0.371749	0.7101
WIN_ROE_LASTYEAR	-0.531078	0.105328	-5.042127	0.0000
WIN_CHANGE_EARNINGS	-0.621473	0.095445	-6.511326	0.0000

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.357229	Mean dependent var	0.055153
Adjusted R-squared	0.205198	S.D. dependent var	0.511880
S.E. of regression	0.456349	Akaike info criterion	1.439544
Sum squared resid	258.8606	Schwarz criterion	2.463458
Log likelihood	-812.0092	Hannan-Quinn criter.	1.820512
F-statistic	2.349707	Durbin-Watson stat	2.408782
Prob(F-statistic)	0.000000		

Nissim, ROE; T=2

C.1 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/18/16 Time: 18:03
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.100987	0.017050	5.922982	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.057331	0.037162	-1.542739	0.1231
DD*WIN_CHANGE_DIVIDEND	-0.005774	0.053437	-0.108046	0.9140
WIN_ROE_LASTYEAR	-0.141979	0.026964	-5.265497	0.0000
WIN_CHANGE_EARNINGS	-0.136003	0.035539	-3.826811	0.0001

R-squared	0.027482	Mean dependent var	0.071446
Adjusted R-squared	0.024424	S.D. dependent var	0.518663
S.E. of regression	0.512290	Akaike info criterion	1.504056
Sum squared resid	333.8249	Schwarz criterion	1.524229
Log likelihood	-955.3396	Hannan-Quinn criter.	1.511632
F-statistic	8.986331	Durbin-Watson stat	2.124593
Prob(F-statistic)	0.000000		

C.2 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROE_T2
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.911166	(276,991)	0.8263
Cross-section Chi-square	288.795577	276	0.2861
Period F	1.078180	(5,991)	0.3708
Period Chi-square	6.927872	5	0.2261
Cross-Section/Period F	0.926936	(281,991)	0.7793
Cross-Section/Period Chi-square	297.999320	281	0.2324

C.3 BPG test

Dependent Variable: NISSIM_ROET2_POLRESIDQ
Method: Panel Least Squares
Date: 05/24/16 Time: 14:25
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.306809	0.038313	8.008053	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.085342	0.083506	-1.021991	0.3070
DD*WIN_CHANGE_DIVIDEND	-0.099974	0.120077	-0.832586	0.4052
WIN_ROE_LASTYEAR	-0.330821	0.060590	-5.460025	0.0000
WIN_CHANGE_EARNINGS	-0.177472	0.079859	-2.222304	0.0264

R-squared	0.028202	Mean dependent var	0.261413
Adjusted R-squared	0.025146	S.D. dependent var	1.165901
S.E. of regression	1.151148	Akaike info criterion	3.123305
Sum squared resid	1685.581	Schwarz criterion	3.143478
Log likelihood	-1989.230	Hannan-Quinn criter.	3.130881
F-statistic	9.228577	Durbin-Watson stat	1.275024
Prob(F-statistic)	0.000000		

C.4 Final result

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/24/16 Time: 14:29
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.100987	0.017055	5.921139	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.057331	0.017661	-3.246292	0.0012
DD*WIN_CHANGE_DIVIDEND	-0.005774	0.063083	-0.091525	0.9271
WIN_ROE_LASTYEAR	-0.141979	0.050643	-2.803525	0.0051
WIN_CHANGE_EARNINGS	-0.136003	0.054478	-2.496446	0.0127

R-squared	0.027482	Mean dependent var	0.071446
Adjusted R-squared	0.024424	S.D. dependent var	0.518663
S.E. of regression	0.512290	Akaike info criterion	1.504056
Sum squared resid	333.8249	Schwarz criterion	1.524229
Log likelihood	-955.3396	Hannan-Quinn criter.	1.511632
F-statistic	8.986331	Durbin-Watson stat	2.124593
Prob(F-statistic)	0.000000		

Nissim Roa T=1

D.1 Correlation

Covariance Analysis: Ordinary
Date: 05/19/16 Time: 11:31
Sample: 2007 2014
Included observations: 1921
Balanced sample (listwise missing value deletion)

Correlation Probability	DI*WIN_CHAN	DD*WIN_CHA	WIN_ROA_LA	WIN_ROA_TO
DI*WIN_CHANGE_D	1.000000 -----			
DD*WIN_CHANGE	0.144644 0.0000	1.000000 -----		
WIN_ROA_LASTYE	0.129399 0.0000	-0.125865 0.0000	1.000000 -----	
WIN_ROA_TODAY-	0.063100 0.0057	0.110413 0.0000	-0.446228 0.0000	1.000000 -----

D.2 Pooled regression

Dependent Variable: WIN_ROA_TODAY(1)-WIN_ROA_TODAY
Method: Panel Least Squares
Date: 05/18/16 Time: 18:47
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 284
Total panel (unbalanced) observations: 1537

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.821235	0.406234	-2.021583	0.0434
DI*WIN_CHANGE_DIVIDENDS	2.739758	0.904636	3.028575	0.0025
DD*WIN_CHANGE_DIVIDENDS	-0.051914	1.388296	-0.037394	0.9702
WIN_ROA_LASTYEAR	-0.254376	0.020936	-12.15047	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYE	-0.566313	0.025129	-22.53600	0.0000

R-squared	0.251574	Mean dependent var	-0.528351
Adjusted R-squared	0.249620	S.D. dependent var	15.81457
S.E. of regression	13.69929	Akaike info criterion	8.075813
Sum squared resid	287511.2	Schwarz criterion	8.093176
Log likelihood	-6201.262	Hannan-Quinn criter.	8.082273
F-statistic	128.7405	Durbin-Watson stat	2.231430
Prob(F-statistic)	0.000000		

D.3 Fixed test

Redundant Fixed Effects Tests
Equation: NISSIM_ROA_T1
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.793290	(283,1243)	0.0000
Cross-section Chi-square	756.559226	283	0.0000
Period F	0.605024	(6,1243)	0.7265
Period Chi-square	4.482219	6	0.6117
Cross-Section/Period F	2.828477	(289,1243)	0.0000
Cross-Section/Period Chi-square	776.779445	289	0.0000

D.4 Cross section random effects test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROA_T1
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	692.842788	4	0.0000

D.5 Period random effects test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROA_T1
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	19.857503	4	0.0005

D.6 Regression using appropriate FE or RE effect based on results in prior tables

Dependent Variable: WIN_ROA_TODAY(1)-WIN_ROA_TODAY
Method: Panel Least Squares
Date: 05/18/16 Time: 19:02
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 284
Total panel (unbalanced) observations: 1537

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.889514	0.377865	2.354053	0.0187
DI*WIN_CHANGE_DIVIDENDS	1.484525	0.903739	1.642647	0.1007
DD*WIN_CHANGE_DIVIDENDS	1.162722	1.413612	0.836667	0.4029
WIN_ROA_LASTYEAR	-1.070664	0.037465	-28.57765	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYE	-1.017859	0.027680	-36.77287	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.547177	Mean dependent var	-0.528351
Adjusted R-squared	0.443125	S.D. dependent var	15.81457
S.E. of regression	11.80147	Akaike info criterion	7.941592
Sum squared resid	173954.1	Schwarz criterion	8.941738
Log likelihood	-5815.113	Hannan-Quinn criter.	8.313728
F-statistic	5.258711	Durbin-Watson stat	2.173964
Prob(F-statistic)	0.000000		

D.7 BPG test

Dependent Variable: NSM_ROA1_CROSSFIX_RESQ
Method: Panel Least Squares
Date: 05/18/16 Time: 19:04
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 284
Total panel (unbalanced) observations: 1537

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	136.6274	11.45992	11.92219	0.0000
DI*WIN_CHANGE_DIVIDENDS	-35.89907	25.51993	-1.406707	0.1597
DD*WIN_CHANGE_DIVIDENDS	81.31089	39.16405	2.076161	0.0380
WIN_ROA_LASTYEAR	-5.708593	0.590594	-9.665846	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYE	-3.043736	0.708901	-4.293598	0.0000

R-squared	0.067636	Mean dependent var	113.1777
Adjusted R-squared	0.065202	S.D. dependent var	399.7097
S.E. of regression	386.4592	Akaike info criterion	14.75518
Sum squared resid	2.29E+08	Schwarz criterion	14.77254
Log likelihood	-11334.35	Hannan-Quinn criter.	14.76164
F-statistic	27.78386	Durbin-Watson stat	1.608857
Prob(F-statistic)	0.000000		

D.8 Final result

Dependent Variable: WIN_ROA_TODAY(1)-WIN_ROA_TODAY
Method: Panel Least Squares
Date: 05/18/16 Time: 19:06
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 284
Total panel (unbalanced) observations: 1537
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.889514	0.366956	2.424036	0.0155
DI*WIN_CHANGE_DIVIDENDS	1.484525	0.344400	4.310470	0.0000
DD*WIN_CHANGE_DIVIDENDS	1.182722	1.032188	1.145840	0.2521
WIN_ROA_LASTYEAR	-1.070664	0.120057	-8.917971	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYE	-1.017859	0.074194	-13.71883	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.547177	Mean dependent var	-0.528351
Adjusted R-squared	0.443125	S.D. dependent var	15.81457
S.E. of regression	11.80147	Akaike info criterion	7.941592
Sum squared resid	173954.1	Schwarz criterion	8.941738
Log likelihood	-5815.113	Hannan-Quinn criter.	8.313728
F-statistic	5.258711	Durbin-Watson stat	2.173964
Prob(F-statistic)	0.000000		

Nissim ROA T=2

E.1 Pooled regression

Dependent Variable: WIN_ROA_TODAY(2)-WIN_ROA_TODAY(1)
Method: Panel Least Squares
Date: 05/18/16 Time: 19:10
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 271
Total panel (unbalanced) observations: 1202

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.415918	0.533822	0.779132	0.4361
DI*WIN_CHANGE_DIVIDENDS	-1.462426	1.147544	-1.274396	0.2028
DD*WIN_CHANGE_DIVIDENDS	1.372526	1.870623	0.733727	0.4633
WIN_ROA_LASTYEAR	0.005015	0.026754	0.187467	0.8513
WIN_ROA_TODAY-WIN_ROA_LASTYE	-0.090031	0.031940	-2.818787	0.0049

R-squared	0.010725	Mean dependent var	0.107793
Adjusted R-squared	0.007419	S.D. dependent var	15.88317
S.E. of regression	15.82414	Akaike info criterion	8.365102
Sum squared resid	299733.0	Schwarz criterion	8.386282
Log likelihood	-5022.426	Hannan-Quinn criter.	8.373080
F-statistic	3.244273	Durbin-Watson stat	2.845036
Prob(F-statistic)	0.011683		

E.2 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROA_T2
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.337110	(270,922)	1.0000
Cross-section Chi-square	113.163158	270	1.0000
Period F	0.681432	(5,922)	0.6376
Period Chi-square	4.433685	5	0.4888
Cross-Section/Period F	0.345162	(275,922)	1.0000
Cross-Section/Period Chi-square	117.781495	275	1.0000

E.3 BPG

Dependent Variable: NSM_ROA2_POLRESIDQ
Method: Panel Least Squares
Date: 05/24/16 Time: 15:07
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 271
Total panel (unbalanced) observations: 1202

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	300.7187	27.06875	11.10944	0.0000
DI*WIN_CHANGE_DIVIDENDS	-76.55604	58.18902	-1.315644	0.1885
DD*WIN_CHANGE_DIVIDENDS	171.9863	94.85445	1.813161	0.0701
WIN_ROA_LASTYEAR	-12.36211	1.356627	-9.112388	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYE	-8.293369	1.619582	-5.120684	0.0000

R-squared	0.076430	Mean dependent var	249.3619
Adjusted R-squared	0.073344	S.D. dependent var	833.5516
S.E. of regression	802.4016	Akaike info criterion	16.21725
Sum squared resid	7.71E+08	Schwarz criterion	16.23843
Log likelihood	-9741.565	Hannan-Quinn criter.	16.22522
F-statistic	24.76453	Durbin-Watson stat	1.191590
Prob(F-statistic)	0.000000		

E.4 Final

Dependent Variable: WIN_ROA_TODAY(2)-WIN_ROA_TODAY(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 15:08
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 271
Total panel (unbalanced) observations: 1202
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.415918	0.376201	1.105573	0.2691
DI*WIN_CHANGE_DIVIDENDS	-1.462426	0.553994	-2.639788	0.0084
DD*WIN_CHANGE_DIVIDENDS	1.372526	1.533555	0.894996	0.3710
WIN_ROA_LASTYEAR	0.005015	0.033528	0.149592	0.8811
WIN_ROA_TODAY-WIN_ROA_LASTYE	-0.090031	0.048515	-1.855753	0.0637

R-squared	0.010725	Mean dependent var	0.107793
Adjusted R-squared	0.007419	S.D. dependent var	15.88317
S.E. of regression	15.82414	Akaike info criterion	8.365102
Sum squared resid	299733.0	Schwarz criterion	8.386282
Log likelihood	-5022.426	Hannan-Quinn criter.	8.373080
F-statistic	3.244273	Durbin-Watson stat	2.845036
Prob(F-statistic)	0.011683		

Benartzi et. al approach

Splittet by dividends increase and decrease. T=1

F.1 Correlation

Covariance Analysis: Ordinary
Date: 05/19/16 Time: 12:44
Sample: 2007 2014
Included observations: 1922
Balanced sample (listwise missing value deletion)

Correlation Probability	DI*WIN_CHAN	DD*WIN_CHA	WIN_DFE	WIN_DFE*ND	NDFED*WIN_	PDFED*WIN_	WIN_CHANGE
DI*WIN_CHANGE_D	1.000000 —						
DD*WIN_CHANGE_	0.144279 0.0000	1.000000 —					
WIN_DFE	0.139648 0.0000	0.023234 0.3087	1.000000 —				
WIN_DFE*NDFED	0.116018 0.0000	-0.016146 0.4793	0.883001 0.0000	1.000000 —			
NDFED*WIN_DFE*	-0.079104 0.0005	0.026586 0.2440	-0.771475 0.0000	-0.924191 0.0000	1.000000 —		
PDFED*WIN_DFE*	0.038964 0.0877	0.050401 0.0271	0.525801 0.0000	0.123316 0.0000	-0.072305 0.0015	1.000000 —	
WIN_CHANGE_EAR	0.073047 0.0014	0.141018 0.0000	0.313209 0.0000	0.121677 0.0000	-0.051672 0.0235	0.466365 0.0000	1.000000 —
NCED*WIN_CHANG	0.087069 0.0001	0.176143 0.0000	0.345760 0.0000	0.341493 0.0000	-0.236343 0.0000	0.098282 0.0000	0.532456 0.0000
NCED*WIN_CHANG	-0.052596 0.0211	-0.109374 0.0000	-0.311045 0.0000	-0.335236 0.0000	0.261557 0.0000	-0.063409 0.0054	-0.453458 0.0000
PCED*WIN_CHANG	0.009879 0.6651	0.053054 0.0200	0.175747 0.0000	-0.031634 0.1657	0.054498 0.0169	0.503638 0.0000	0.831882 0.0000

F.2 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/19/16 Time: 12:32
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.040786	0.022725	-1.794716	0.0729
DI*WIN_CHANGE_DIVIDENDS	0.050419	0.029733	1.695722	0.0901
DD*WIN_CHANGE_DIVIDENDS	0.079556	0.046204	1.721818	0.0853
WIN_DFE	-0.002227	0.001573	-1.415108	0.1572
WIN_DFE*NDFED	-0.000467	0.002349	-0.198678	0.8425
NDFED*WIN_DFE*WIN_DFE	2.98E-05	8.76E-06	3.400318	0.0007
PDFED*WIN_DFE*WIN_DFE	2.30E-05	1.67E-05	1.380524	0.1676
WIN_CHANGE_EARNINGS	-0.236432	0.079059	-2.990569	0.0028
NCED*WIN_CHANGE_EARNINGS	-0.625010	0.194083	-3.220321	0.0013
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.476360	0.163190	-2.919061	0.0036
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.121264	0.027946	4.339193	0.0000

R-squared	0.233621	Mean dependent var	0.055153
Adjusted R-squared	0.228602	S.D. dependent var	0.511880
S.E. of regression	0.449580	Akaike info criterion	1.246121
Sum squared resid	308.6407	Schwarz criterion	1.284301
Log likelihood	-947.2672	Hannan-Quinn criter.	1.260327
F-statistic	46.54863	Durbin-Watson stat	2.046805
Prob(F-statistic)	0.000000		

F.3 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMAFRENCH_T1_POOLEDDIDD
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.097400	(284,1237)	0.1521
Cross-section Chi-square	345.591779	284	0.0072
Period F	5.961078	(6,1237)	0.0000
Period Chi-square	43.838782	6	0.0000
Cross-Section/Period F	1.190751	(290,1237)	0.0259
Cross-Section/Period Chi-square	378.658138	290	0.0004

F.4 Cross section random effects test

Correlated Random Effects - Hausman Test
Equation: FAMAFRENCH_T1_POOLEDDIDD
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	136.417447	10	0.0000

F.5 Regression using appropriate FE or RE effect based on results in prior tables

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/19/16 Time: 12:34
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.048387	0.022679	-2.133544	0.0330
DI*WIN_CHANGE_DIVIDENDS	0.038700	0.029850	1.296458	0.1950
DD*WIN_CHANGE_DIVIDENDS	0.074552	0.046257	1.611699	0.1072
WIN_DFE	-0.001639	0.001566	-1.047132	0.2952
WIN_DFE*NDFED	-0.001246	0.002340	-0.532554	0.5944
NDFED*WIN_DFE*WIN_DFE	2.77E-05	8.71E-06	3.174956	0.0015
PDFED*WIN_DFE*WIN_DFE	1.99E-05	1.65E-05	1.202575	0.2293
WIN_CHANGE_EARNINGS	-0.222084	0.078482	-2.829759	0.0047
NCED*WIN_CHANGE_EARNINGS	-0.666576	0.192942	-3.454789	0.0006
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.476231	0.162117	-2.937571	0.0034
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.114069	0.027748	4.110883	0.0000

Effects Specification

Period fixed (dummy variables)

R-squared	0.249922	Mean dependent var	0.055153
Adjusted R-squared	0.242031	S.D. dependent var	0.511880
S.E. of regression	0.445650	Akaike info criterion	1.232424
Sum squared resid	302.0759	Schwarz criterion	1.291429
Log likelihood	-930.7340	Hannan-Quinn criter.	1.254378
F-statistic	31.67429	Durbin-Watson stat	2.061371
Prob(F-statistic)	0.000000		

F.6 BPG test

Dependent Variable: FAMA1_DIDD_RESIDQ
Method: Panel Least Squares
Date: 05/19/16 Time: 12:36
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020119	0.032078	0.627193	0.5306
DI*WIN_CHANGE_DIVIDENDS	0.010178	0.041970	0.242501	0.8084
DD*WIN_CHANGE_DIVIDENDS	-0.030131	0.065220	-0.461985	0.6442
WIN_DFE	-0.002948	0.002221	-1.327406	0.1846
WIN_DFE*NDFED	0.001200	0.003316	0.361960	0.7174
NDFED*WIN_DFE*WIN_DFE	6.64E-05	1.24E-05	5.370600	0.0000
PDFED*WIN_DFE*WIN_DFE	5.93E-05	2.35E-05	2.523226	0.0117
WIN_CHANGE_EARNINGS	0.206021	0.111597	1.846120	0.0651
NCED*WIN_CHANGE_EARNINGS	-0.858591	0.273960	-3.133996	0.0018
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.206130	0.230352	-0.894847	0.3710
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.054911	0.039448	1.391984	0.1641

R-squared	0.263351	Mean dependent var	0.196408
Adjusted R-squared	0.258527	S.D. dependent var	0.736986
S.E. of regression	0.634610	Akaike info criterion	1.935513
Sum squared resid	614.9680	Schwarz criterion	1.973693
Log likelihood	-1477.410	Hannan-Quinn criter.	1.949719
F-statistic	54.58997	Durbin-Watson stat	1.716509
Prob(F-statistic)	0.000000		

F.7 Final result

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/19/16 Time: 12:37
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.048387	0.022808	-2.121521	0.0340
DI*WIN_CHANGE_DIVIDENDS	0.038700	0.027908	1.386701	0.1657
DD*WIN_CHANGE_DIVIDENDS	0.074552	0.048909	1.524292	0.1276
WIN_DFE	-0.001639	0.001542	-1.063141	0.2879
WIN_DFE*NDFED	-0.001246	0.003030	-0.411241	0.6810
NDFED*WIN_DFE*WIN_DFE	2.77E-05	2.05E-05	1.349574	0.1774
PDFED*WIN_DFE*WIN_DFE	1.99E-05	2.13E-05	0.933016	0.3510
WIN_CHANGE_EARNINGS	-0.222084	0.125186	-1.774024	0.0763
NCED*WIN_CHANGE_EARNINGS	-0.666576	0.317836	-2.097232	0.0361
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.476231	0.317570	-1.499610	0.1339
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.114069	0.055301	2.062695	0.0393

Effects Specification

Period fixed (dummy variables)

R-squared	0.249922	Mean dependent var	0.055153
Adjusted R-squared	0.242031	S.D. dependent var	0.511880
S.E. of regression	0.445650	Akaike info criterion	1.232424
Sum squared resid	302.0759	Schwarz criterion	1.291429
Log likelihood	-930.7340	Hannan-Quinn criter.	1.254378
F-statistic	31.67429	Durbin-Watson stat	2.061371
Prob(F-statistic)	0.000000		

Benartzi et al. without concerning whether it's a dividend increase or decrease T=1

G.1 Correlation

Covariance Analysis: Ordinary
Date: 05/19/16 Time: 13:00
Sample: 2007 2014
Included observations: 1922
Balanced sample (listwise missing value deletion)

Correlation Probability	WIN_CHANGE	WIN_DFE	WIN_DFE*ND	NDFED*WIN_	PDFED*WIN_	WIN_CHANGE	NCED*WIN_C
WIN_CHANGE_DIVI	1.000000 —						
WIN_DFE	0.119817 0.0000	1.000000 —					
WIN_DFE*NDFED	0.080449 0.0004	0.883001 0.0000	1.000000 —				
NDFED*WIN_DFE*	-0.046461 0.0417	-0.771475 0.0000	-0.924191 0.0000	1.000000 —			
PDFED*WIN_DFE*	0.057089 0.0123	0.525801 0.0000	0.123316 0.0000	-0.072305 0.0015	1.000000 —		
WIN_CHANGE_EAR	0.132090 0.0000	0.313209 0.0000	0.121677 0.0000	-0.051672 0.0235	0.466365 0.0000	1.000000 —	
NCED*WIN_CHANG	0.161784 0.0000	0.345760 0.0000	0.341493 0.0000	-0.236343 0.0000	0.098282 0.0000	0.532456 0.0000	1.000000 —
NCED*WIN_CHANG	-0.099330 0.0000	-0.311045 0.0000	-0.335236 0.0000	0.261557 0.0000	-0.063409 0.0054	-0.453458 0.0000	-0.929915 0.0000
PCED*WIN_CHANG	0.036169 0.1129	0.175747 0.0000	-0.031634 0.1657	0.054498 0.0169	0.503638 0.0000	0.831882 0.0000	0.078342 0.0006

G.2 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/19/16 Time: 12:30
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.043884	0.021865	-2.007086	0.0449
WIN_CHANGE_DIVIDENDS	0.059584	0.023456	2.540200	0.0112
WIN_DFE	-0.002243	0.001573	-1.425994	0.1541
WIN_DFE*NDFED	-0.000498	0.002348	-0.212159	0.8320
NDFED*WIN_DFE*WIN_DFE	2.96E-05	8.75E-06	3.383603	0.0007
PDFED*WIN_DFE*WIN_DFE	2.32E-05	1.66E-05	1.394023	0.1635
WIN_CHANGE_EARNINGS	-0.237979	0.078980	-3.013160	0.0026
NCED*WIN_CHANGE_EARNINGS	-0.615964	0.193197	-3.188274	0.0015
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.472594	0.162977	-2.899761	0.0038
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.121790	0.027920	4.362171	0.0000

R-squared	0.233494	Mean dependent var	0.055153
Adjusted R-squared	0.228980	S.D. dependent var	0.511880
S.E. of regression	0.449470	Akaike info criterion	1.244986
Sum squared resid	308.6916	Schwarz criterion	1.279695
Log likelihood	-947.3939	Hannan-Quinn criter.	1.257900
F-statistic	51.71806	Durbin-Watson stat	2.045921
Prob(F-statistic)	0.000000		

G.3 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA_FRENCHT1_POOLED
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.099626	(284,1238)	0.1469
Cross-section Chi-square	345.969030	284	0.0070
Period F	5.964371	(6,1238)	0.0000
Period Chi-square	43.827727	6	0.0000
Cross-Section/Period F	1.192575	(290,1238)	0.0249
Cross-Section/Period Chi-square	378.900626	290	0.0003

G.4 Cross section random effects test

Correlated Random Effects - Hausman Test
Equation: FAMA_FRENCHT1_POOLED
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	135.666696	9	0.0000

G.5 Regression using appropriate FE or RE effect based on results in prior tables

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/19/16 Time: 13:02
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.052274	0.021790	-2.398935	0.0166
WIN_CHANGE_DIVIDENDS	0.049938	0.023706	2.106557	0.0353
WIN_DFE	-0.001656	0.001565	-1.058302	0.2901
WIN_DFE*NDFED	-0.001292	0.002338	-0.552487	0.5807
NDFED*WIN_DFE*WIN_DFE	2.74E-05	8.70E-06	3.151120	0.0017
PDFED*WIN_DFE*WIN_DFE	2.01E-05	1.65E-05	1.218003	0.2234
WIN_CHANGE_EARNINGS	-0.223940	0.078408	-2.856063	0.0043
NCED*WIN_CHANGE_EARNINGS	-0.655877	0.192130	-3.413719	0.0007
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.472009	0.161941	-2.914693	0.0036
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.114695	0.027724	4.137047	0.0000

Effects Specification

Period fixed (dummy variables)

R-squared	0.249732	Mean dependent var	0.055153
Adjusted R-squared	0.242338	S.D. dependent var	0.511880
S.E. of regression	0.445559	Akaike info criterion	1.231376
Sum squared resid	302.1522	Schwarz criterion	1.286910
Log likelihood	-930.9281	Hannan-Quinn criter.	1.252039
F-statistic	33.77397	Durbin-Watson stat	2.060239
Prob(F-statistic)	0.000000		

G.6 BPG test

Dependent Variable: FAMA1_US_RESIDQ
Method: Panel Least Squares
Date: 05/19/16 Time: 13:03
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.024107	0.030840	0.781684	0.4345
WIN_CHANGE_DIVIDENDS	-0.002166	0.033085	-0.065473	0.9478
WIN_DFE	-0.002920	0.002218	-1.316432	0.1882
WIN_DFE*NDFED	0.001248	0.003311	0.377009	0.7062
NDFED*WIN_DFE*WIN_DFE	6.69E-05	1.23E-05	5.417613	0.0000
PDFED*WIN_DFE*WIN_DFE	5.91E-05	2.35E-05	2.514573	0.0120
WIN_CHANGE_EARNINGS	0.206927	0.111400	1.857517	0.0634
NCED*WIN_CHANGE_EARNINGS	-0.873877	0.272501	-3.206871	0.0014
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.214251	0.229877	-0.932023	0.3515
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.054848	0.039380	1.392775	0.1639

R-squared	0.264229	Mean dependent var	0.196458
Adjusted R-squared	0.259895	S.D. dependent var	0.736925
S.E. of regression	0.633972	Akaike info criterion	1.932857
Sum squared resid	614.1345	Schwarz criterion	1.967566
Log likelihood	-1476.367	Hannan-Quinn criter.	1.945771
F-statistic	60.97035	Durbin-Watson stat	1.715677
Prob(F-statistic)	0.000000		

G.7 Final result

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/19/16 Time: 13:04
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 285
Total panel (unbalanced) observations: 1538
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.052274	0.023458	-2.228410	0.0260
WIN_CHANGE_DIVIDENDS	0.049938	0.022826	2.187776	0.0288
WIN_DFE	-0.001656	0.001532	-1.080803	0.2800
WIN_DFE*NDFED	-0.001292	0.003042	-0.424623	0.6712
NDFED*WIN_DFE*WIN_DFE	2.74E-05	2.05E-05	1.336283	0.1817
PDFED*WIN_DFE*WIN_DFE	2.01E-05	2.13E-05	0.947543	0.3435
WIN_CHANGE_EARNINGS	-0.223940	0.125323	-1.786903	0.0742
NCED*WIN_CHANGE_EARNINGS	-0.655877	0.313715	-2.090676	0.0367
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.472009	0.314896	-1.498934	0.1341
PCED*WIN_CHANGE_EARNINGS*WIN_C	0.114695	0.055252	2.075869	0.0381

Effects Specification

Period fixed (dummy variables)

R-squared	0.249732	Mean dependent var	0.055153
Adjusted R-squared	0.242338	S.D. dependent var	0.511880
S.E. of regression	0.445559	Akaike info criterion	1.231376
Sum squared resid	302.1522	Schwarz criterion	1.286910
Log likelihood	-930.9281	Hannan-Quinn criter.	1.252039
F-statistic	33.77397	Durbin-Watson stat	2.060239
Prob(F-statistic)	0.000000		

Benartzi et al. approach, increase/decrease; T=2

H.1 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/19/16 Time: 13:15
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.051309	0.028913	1.774618	0.0762
DI*WIN_CHANGE_DIVIDENDS	-0.074268	0.036797	-2.018330	0.0438
DD*WIN_CHANGE_DIVIDENDS	0.018698	0.054393	0.343749	0.7311
WIN_DFE	-0.002734	0.001928	-1.418192	0.1564
WIN_DFE*NDFED	0.002563	0.002904	0.882600	0.3776
NDFED*WIN_DFE*WIN_DFE	2.26E-05	1.12E-05	2.017435	0.0439
PDFED*WIN_DFE*WIN_DFE	3.08E-05	1.99E-05	1.545511	0.1225
WIN_CHANGE_EARNINGS	0.126560	0.097596	1.296768	0.1949
NCED*WIN_CHANGE_EARNINGS	-0.452100	0.240243	-1.881846	0.0601
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.252626	0.203433	-1.241817	0.2145
PCED*WIN_CHANGE_EARNINGS*WIN_C	-0.037985	0.034322	-1.106725	0.2686

R-squared	0.041478	Mean dependent var	0.071446
Adjusted R-squared	0.033906	S.D. dependent var	0.518663
S.E. of regression	0.509794	Akaike info criterion	1.498958
Sum squared resid	329.0209	Schwarz criterion	1.543339
Log likelihood	-946.0844	Hannan-Quinn criter.	1.515624
F-statistic	5.478279	Durbin-Watson stat	2.212135
Prob(F-statistic)	0.000000		

H.2 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMAFRENCH_T1_POOLEDDIDD
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.895350	(276,985)	0.8680
Cross-section Chi-square	285.852796	276	0.3290
Period F	0.995309	(5,985)	0.4194
Period Chi-square	6.435584	5	0.2661
Cross-Section/Period F	0.905515	(281,985)	0.8437
Cross-Section/Period Chi-square	293.430406	281	0.2929

H.3 BPG test

Dependent Variable: FAMA2_SPLIT_RESIDQ
Method: Panel Least Squares
Date: 05/19/16 Time: 13:20
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.092612	0.060173	1.539094	0.1240
DI*WIN_CHANGE_DIVIDENDS	-0.113935	0.076581	-1.487770	0.1371
DD*WIN_CHANGE_DIVIDENDS	0.001457	0.113203	0.012874	0.9897
WIN_DFE	-0.002529	0.004013	-0.630149	0.5287
WIN_DFE*NDFED	-0.000736	0.006043	-0.121731	0.9031
NDFED*WIN_DFE*WIN_DFE	5.03E-05	2.33E-05	2.157738	0.0311
PDFED*WIN_DFE*WIN_DFE	2.93E-05	4.15E-05	0.706785	0.4798
WIN_CHANGE_EARNINGS	0.666284	0.203117	3.280297	0.0011
NCED*WIN_CHANGE_EARNINGS	-1.409466	0.499992	-2.818977	0.0049
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.504127	0.423383	-1.190712	0.2340
PCED*WIN_CHANGE_EARNINGS*WIN_C	-0.134588	0.071430	-1.884199	0.0598

R-squared	0.083448	Mean dependent var	0.257651
Adjusted R-squared	0.076208	S.D. dependent var	1.103876
S.E. of regression	1.060980	Akaike info criterion	2.964840
Sum squared resid	1425.109	Schwarz criterion	3.009221
Log likelihood	-1882.050	Hannan-Quinn criter.	2.981507
F-statistic	11.52640	Durbin-Watson stat	1.600552
Prob(F-statistic)	0.000000		

H.4 Final result

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/19/16 Time: 13:27
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.051309	0.026215	1.957240	0.0505
DI*WIN_CHANGE_DIVIDENDS	-0.074268	0.021675	-3.426438	0.0006
DD*WIN_CHANGE_DIVIDENDS	0.018698	0.059071	0.316529	0.7517
WIN_DFE	-0.002734	0.001807	-1.513185	0.1305
WIN_DFE*NDFED	0.002563	0.003851	0.665430	0.5059
NDFED*WIN_DFE*WIN_DFE	2.26E-05	2.61E-05	0.866663	0.3863
PDFED*WIN_DFE*WIN_DFE	3.08E-05	2.20E-05	1.400699	0.1615
WIN_CHANGE_EARNINGS	0.126560	0.121639	1.040458	0.2983
NCED*WIN_CHANGE_EARNINGS	-0.452100	0.281248	-1.607480	0.1082
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.252626	0.290827	-0.868647	0.3852
PCED*WIN_CHANGE_EARNINGS*WIN_C	-0.037985	0.045758	-0.830123	0.4066

R-squared	0.041478	Mean dependent var	0.071446
Adjusted R-squared	0.033906	S.D. dependent var	0.518663
S.E. of regression	0.509794	Akaike info criterion	1.498958
Sum squared resid	329.0209	Schwarz criterion	1.543339
Log likelihood	-946.0844	Hannan-Quinn criter.	1.515624
F-statistic	5.478279	Durbin-Watson stat	2.212135
Prob(F-statistic)	0.000000		

Benartzi et al. T=2 Unsplittet

I.1 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/19/16 Time: 14:01
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.040656	0.027802	1.462311	0.1439
WIN_CHANGE_DIVIDENDS	-0.043220	0.028557	-1.513451	0.1304
WIN_DFE	-0.002737	0.001929	-1.419383	0.1560
WIN_DFE*NDFED	0.002360	0.002901	0.813684	0.4160
NDFED*WIN_DFE*WIN_DFE	2.16E-05	1.12E-05	1.930579	0.0538
PDFED*WIN_DFE*WIN_DFE	3.11E-05	1.99E-05	1.560857	0.1188
WIN_CHANGE_EARNINGS	0.119212	0.097472	1.223039	0.2215
NCED*WIN_CHANGE_EARNINGS	-0.411670	0.238407	-1.726750	0.0845
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.232632	0.202946	-1.146278	0.2519
PCED*WIN_CHANGE_EARNINGS*WIN_C	-0.035637	0.034287	-1.039375	0.2988

R-squared	0.040123	Mean dependent var	0.071446
Adjusted R-squared	0.033305	S.D. dependent var	0.518663
S.E. of regression	0.509953	Akaike info criterion	1.498803
Sum squared resid	329.4858	Schwarz criterion	1.539150
Log likelihood	-946.9857	Hannan-Quinn criter.	1.513955
F-statistic	5.884594	Durbin-Watson stat	2.213787
Prob(F-statistic)	0.000000		

I.2 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA2_UNSPLIT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.903404	(276,986)	0.8476
Cross-section Chi-square	287.892935	276	0.2990
Period F	0.998355	(5,986)	0.4175
Period Chi-square	6.448695	5	0.2650
Cross-Section/Period F	0.912659	(281,986)	0.8236
Cross-Section/Period Chi-square	295.229428	281	0.2682

I.3 BPG test

Dependent Variable: FAMA2_US_RESIDQ
Method: Panel Least Squares
Date: 05/19/16 Time: 14:06
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.079857	0.057961	1.377772	0.1685
WIN_CHANGE_DIVIDENDS	-0.076377	0.059535	-1.282881	0.1998
WIN_DFE	-0.002533	0.004021	-0.630107	0.5287
WIN_DFE*NDFED	-0.001043	0.006047	-0.172503	0.8631
NDFED*WIN_DFE*WIN_DFE	4.80E-05	2.33E-05	2.059109	0.0397
PDFED*WIN_DFE*WIN_DFE	2.95E-05	4.15E-05	0.710504	0.4775
WIN_CHANGE_EARNINGS	0.660172	0.203205	3.248797	0.0012
NCED*WIN_CHANGE_EARNINGS	-1.372824	0.497021	-2.762105	0.0058
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.502689	0.423092	-1.188131	0.2350
PCED*WIN_CHANGE_EARNINGS*WIN_C	-0.131171	0.071481	-1.835062	0.0667

R-squared	0.081734	Mean dependent var	0.258015
Adjusted R-squared	0.075211	S.D. dependent var	1.105512
S.E. of regression	1.063126	Akaike info criterion	2.968105
Sum squared resid	1432.011	Schwarz criterion	3.008452
Log likelihood	-1885.135	Hannan-Quinn criter.	2.983257
F-statistic	12.53046	Durbin-Watson stat	1.608748
Prob(F-statistic)	0.000000		

I.4 Final result

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/23/16 Time: 18:39
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 277
Total panel (unbalanced) observations: 1277
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.040656	0.023123	1.758253	0.0789
WIN_CHANGE_DIVIDENDS	-0.043220	0.023588	-1.832262	0.0671
WIN_DFE	-0.002737	0.001804	-1.517128	0.1295
WIN_DFE*NDFED	0.002360	0.003810	0.619383	0.5358
NDFED*WIN_DFE*WIN_DFE	2.16E-05	2.59E-05	0.831423	0.4059
PDFED*WIN_DFE*WIN_DFE	3.11E-05	2.19E-05	1.417087	0.1567
WIN_CHANGE_EARNINGS	0.119212	0.121743	0.979207	0.3277
NCED*WIN_CHANGE_EARNINGS	-0.411670	0.277340	-1.484352	0.1380
NCED*WIN_CHANGE_EARNINGS*WIN_C	-0.232632	0.287370	-0.809523	0.4184
PCED*WIN_CHANGE_EARNINGS*WIN_C	-0.035637	0.045698	-0.779848	0.4356

R-squared	0.040123	Mean dependent var	0.071446
Adjusted R-squared	0.033305	S.D. dependent var	0.518663
S.E. of regression	0.509953	Akaike info criterion	1.498803
Sum squared resid	329.4858	Schwarz criterion	1.539150
Log likelihood	-946.9857	Hannan-Quinn criter.	1.513955
F-statistic	5.884594	Durbin-Watson stat	2.213787
Prob(F-statistic)	0.000000		

Multiplicative Interaction Model

Earnings

J.1 Correlation

Covariance Analysis: Ordinary
Date: 05/24/16 Time: 15:46
Sample: 2007 2014
Included observations: 1352
Balanced sample (listwise missing value deletion)

Correlation Probability	WIN_CHANGE	TOTAL
WIN_CHANGE_DIVI	1.000000 -----	
TOTAL	-0.065934 0.0153	1.000000 -----

J.2 Pooled regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 12:36
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.200982	0.047444	4.236223	0.0000
WIN_CHANGE_DIVIDENDS	-0.088221	0.083257	-1.059625	0.2895
TOTAL	-0.003311	0.000973	-3.402629	0.0007
WIN_CHANGE_DIVIDENDS*TOT	0.001271	0.001712	0.742411	0.4580

R-squared	0.010765	Mean dependent var	0.046143
Adjusted R-squared	0.008127	S.D. dependent var	0.499153
S.E. of regression	0.497120	Akaike info criterion	1.443567
Sum squared resid	278.0195	Schwarz criterion	1.461384
Log likelihood	-810.8933	Hannan-Quinn criter.	1.450299
F-statistic	4.080978	Durbin-Watson stat	1.749352
Prob(F-statistic)	0.006784		

J.3 Fixed effects test

Redundant Fixed Effects Tests
Equation: INTERACTION
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.516285	(274,845)	0.0000
Cross-section Chi-square	451.483802	274	0.0000
Period F	2.869444	(6,845)	0.0090
Period Chi-square	22.771887	6	0.0009
Cross-Section/Period F	1.574502	(280,845)	0.0000
Cross-Section/Period Chi-square	474.007148	280	0.0000

J.4 Period Random Effects

Correlated Random Effects - Hausman Test
Equation: INTERACTION
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	0.378278	3	0.9447

J.5 Cross-section Random Effects

Correlated Random Effects - Hausman Test
Equation: INTERACTION
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.126992	3	0.2481

J.6 Output based on prior test

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 12:28
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.117650	0.121461	0.968624	0.3330
WIN_CHANGE_DIVIDENDS	-0.049634	0.093858	-0.528823	0.5971
TOTAL	-0.001512	0.002625	-0.575905	0.5648
WIN_CHANGE_DIVIDENDS*TOT	0.000483	0.001885	0.256374	0.7977

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.349927	Mean dependent var	0.046143
Adjusted R-squared	0.132210	S.D. dependent var	0.499153
S.E. of regression	0.464987	Akaike info criterion	1.519734
Sum squared resid	182.6998	Schwarz criterion	2.784801
Log likelihood	-573.8897	Hannan-Quinn criter.	1.997708
F-statistic	1.607258	Durbin-Watson stat	2.608585
Prob(F-statistic)	0.000000		

J.7 BPG

Dependent Variable: RESID_INTRACT_FIXQ
Method: Panel Least Squares
Date: 05/24/16 Time: 12:38
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.431580	0.063924	6.751421	0.0000
TOTAL	-0.005771	0.001311	-4.401395	0.0000
WIN_CHANGE_DIVIDENDS	-0.130710	0.112178	-1.165200	0.2442
WIN_CHANGE_DIVIDENDS*TOT	0.001635	0.002306	0.708872	0.4786

R-squared	0.018012	Mean dependent var	0.161824
Adjusted R-squared	0.015394	S.D. dependent var	0.675021
S.E. of regression	0.669805	Akaike info criterion	2.039876
Sum squared resid	504.7184	Schwarz criterion	2.057694
Log likelihood	-1147.510	Hannan-Quinn criter.	2.046608
F-statistic	6.878515	Durbin-Watson stat	1.169482
Prob(F-statistic)	0.000136		

J.8 Final Result

Dependent Variable: WIN CHANGE EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 16:08
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.117650	0.132134	0.890389	0.3735
WIN CHANGE DIVIDENDS	-0.049634	0.094806	-0.523533	0.6007
TOTAL	-0.001512	0.002816	-0.536740	0.5916
WIN CHANGE DIVIDENDS*TOT	0.000483	0.001671	0.289287	0.7724

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.349927	Mean dependent var	0.046143
Adjusted R-squared	0.132210	S.D. dependent var	0.499153
S.E. of regression	0.464987	Akaike info criterion	1.519734
Sum squared resid	182.6998	Schwarz criterion	2.784801
Log likelihood	-573.8897	Hannan-Quinn criter.	1.997708
F-statistic	1.607258	Durbin-Watson stat	2.608585
Prob(F-statistic)	0.000000		

Multiplicative Interaction Model

ROA

K.1

Dependent Variable: ROA TODAY(1)-ROA LASTYEAR(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 16:24
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.287661	1.526024	0.843802	0.3990
WIN_CHANGE_DIVIDENDS	-2.480265	2.677951	-0.926180	0.3546
TOTAL	-0.039125	0.031303	-1.249896	0.2116
WIN_CHANGE_DIVIDENDS*TOT	0.036220	0.055052	0.657926	0.5107

R-squared	0.002138	Mean dependent var	-0.583808
Adjusted R-squared	-0.000523	S.D. dependent var	15.98563
S.E. of regression	15.98981	Akaike info criterion	8.385318
Sum squared resid	287633.4	Schwarz criterion	8.403135
Log likelihood	-4729.512	Hannan-Quinn criter.	8.392050
F-statistic	0.803458	Durbin-Watson stat	2.607449
Prob(F-statistic)	0.491986		

K.2 Fixed test

Redundant Fixed Effects Tests
Equation: INTERACTION_ROA
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.337135	(274,845)	1.0000
Cross-section Chi-square	117.129983	274	1.0000
Period F	1.574940	(6,845)	0.1513
Period Chi-square	12.555536	6	0.0507
Cross-Section/Period F	0.369381	(280,845)	1.0000
Cross-Section/Period Chi-square	130.363313	280	1.0000

K.3 BPG

Dependent Variable: INTR ROA POL RESISQ
Method: Panel Least Squares
Date: 05/24/16 Time: 16:39
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	755.1526	101.1211	7.467806	0.0000
WIN_CHANGE_DIVIDENDS	-340.2748	177.4528	-1.917551	0.0554
TOTAL	-10.67945	2.074252	-5.148577	0.0000
WIN_CHANGE_DIVIDENDS*TOT	5.178393	3.647983	1.419522	0.1560

R-squared	0.024733	Mean dependent var	254.7683
Adjusted R-squared	0.022133	S.D. dependent var	1071.479
S.E. of regression	1059.556	Akaike info criterion	16.77262
Sum squared resid	1.26E+09	Schwarz criterion	16.79044
Log likelihood	-9464.146	Hannan-Quinn criter.	16.77936
F-statistic	9.510214	Durbin-Watson stat	1.049092
Prob(F-statistic)	0.000003		

K.4 Final result

Dependent Variable: ROA TODAY(1)-ROA LASTYEAR(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 16:39
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 275
Total panel (unbalanced) observations: 1129
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.287661	1.534153	0.839330	0.4015
WIN CHANGE DIVIDENDS	-2.480265	1.750923	-1.416547	0.1569
TOTAL	-0.039125	0.030093	-1.300120	0.1938
WIN CHANGE DIVIDENDS*TOT	0.036220	0.030182	1.200044	0.2304

R-squared	0.002138	Mean dependent var	-0.583808
Adjusted R-squared	-0.000523	S.D. dependent var	15.98563
S.E. of regression	15.98981	Akaike info criterion	8.385318
Sum squared resid	287633.4	Schwarz criterion	8.403135
Log likelihood	-4729.512	Hannan-Quinn criter.	8.392050
F-statistic	0.803458	Durbin-Watson stat	2.607449
Prob(F-statistic)	0.491986		

High disclosure

Nissim and Ziv ROE T=1

L.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROE1
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.724286	(94,400)	0.9705
Cross-section Chi-square	79.376356	94	0.8595
Period F	2.613391	(6,400)	0.0170
Period Chi-square	19.418268	6	0.0035
Cross-Section/Period F	0.908150	(100,400)	0.7160
Cross-Section/Period Chi-square	103.324386	100	0.3899

L.2 Hausman test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	27.001179	4	0.0000

L.3 BPG test

Dependent Variable: NISSIM_ROE1_RESIDSQUARED
Method: Panel Least Squares
Date: 05/20/16 Time: 13:04
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.115758	0.025378	4.561363	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.035618	0.052844	-0.674022	0.5006
DD*WIN_CHANGE_DIVIDEND...	-0.054676	0.074916	-0.729838	0.4658
WIN_ROE_LASTYEAR	-0.016285	0.043018	-0.378557	0.7052
WIN_CHANGE_EARNINGS	0.102468	0.061493	1.666330	0.0963

R-squared	0.011207	Mean dependent var	0.115450
Adjusted R-squared	0.003297	S.D. dependent var	0.449952
S.E. of regression	0.449209	Akaike info criterion	1.247196
Sum squared resid	100.8945	Schwarz criterion	1.289024
Log likelihood	-309.9171	Hannan-Quinn criter.	1.263602
F-statistic	1.416797	Durbin-Watson stat	1.745933
Prob(F-statistic)	0.227144		

L.4 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/20/16 Time: 12:46
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.057074	0.019536	2.921496	0.0036
DI*WIN_CHANGE_DIVIDENDS	-0.008649	0.041065	-0.210611	0.8333
DD*WIN_CHANGE_DIVIDEND...	0.028378	0.058918	0.481654	0.6303
WIN_ROE_LASTYEAR	-0.182076	0.033639	-5.412638	0.0000
WIN_CHANGE_EARNINGS	-0.220077	0.047610	-4.622503	0.0000

Effects Specification

Period fixed (dummy variables)

R-squared	0.122064	Mean dependent var	0.015645
Adjusted R-squared	0.104292	S.D. dependent var	0.362991
S.E. of regression	0.343541	Akaike info criterion	0.722524
Sum squared resid	58.30225	Schwarz criterion	0.814544
Log likelihood	-171.4372	Hannan-Quinn criter.	0.758617
F-statistic	6.868317	Durbin-Watson stat	2.096975
Prob(F-statistic)	0.000000		

Nissim and Ziv ROE T=2

M.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROE2
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.845262	(89,314)	0.8267
Cross-section Chi-square	88.701282	89	0.4890
Period F	1.095493	(5,314)	0.3628
Period Chi-square	7.142318	5	0.2103
Cross-Section/Period F	0.855676	(94,314)	0.8140
Cross-Section/Period Chi-square	94.187808	94	0.4752

M.2 BPG Test

Dependent Variable: NISSIM_ROE2_RESIDSQUARED
Method: Panel Least Squares
Date: 05/20/16 Time: 13:12
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.124699	0.031964	3.901268	0.0001
DI*WIN_CHANGE_DIVIDENDS	-0.069393	0.064336	-1.078601	0.2814
DD*WIN_CHANGE_DIVIDEND...	-0.147314	0.085100	-1.731067	0.0842
WIN_ROE_LASTYEAR	-0.023999	0.052365	-0.458304	0.6470
WIN_CHANGE_EARNINGS	-0.045333	0.074887	-0.605354	0.5453

R-squared	0.015297	Mean dependent var	0.128878
Adjusted R-squared	0.005643	S.D. dependent var	0.503984
S.E. of regression	0.502560	Akaike info criterion	1.473830
Sum squared resid	103.0473	Schwarz criterion	1.522540
Log likelihood	-299.3459	Hannan-Quinn criter.	1.493096
F-statistic	1.584498	Durbin-Watson stat	1.284162
Prob(F-statistic)	0.177523		

M.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/20/16 Time: 13:11
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.067285	0.022972	2.928973	0.0036
DI*WIN_CHANGE_DIVIDENDS	-0.066915	0.046238	-1.447192	0.1486
DD*WIN_CHANGE_DIVIDEND...	-0.061821	0.061161	-1.010780	0.3127
WIN_ROE_LASTYEAR	-0.121835	0.037634	-3.237349	0.0013
WIN_CHANGE_EARNINGS	-0.129995	0.053821	-2.415327	0.0162

R-squared	0.041831	Mean dependent var	0.039950
Adjusted R-squared	0.032437	S.D. dependent var	0.367193
S.E. of regression	0.361189	Akaike info criterion	0.813200
Sum squared resid	53.22657	Schwarz criterion	0.861910
Log likelihood	-162.9259	Hannan-Quinn criter.	0.832466
F-statistic	4.453054	Durbin-Watson stat	1.917914
Prob(F-statistic)	0.001561		

Nissim and Ziv ROA T=1

N.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.517749	(93,400)	0.0000
Cross-section Chi-square	232.254291	93	0.0000
Period F	0.541136	(6,400)	0.7769
Period Chi-square	4.074471	6	0.6666
Cross-Section/Period F	2.648396	(99,400)	0.0000
Cross-Section/Period Chi-square	254.061262	99	0.0000

N.2 Hausman test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	179.663521	4	0.0000

N.3 BPG Test

Dependent Variable: NISSIM_ROA1_RESIDSQUARED
Method: Panel Least Squares
Date: 05/24/16 Time: 10:43
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 94
Total panel (unbalanced) observations: 504

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	62.84412	8.662389	7.254826	0.0000
DI*WIN_CHANGE_DIVIDENDS	-9.592973	17.60615	-0.544865	0.5861
DD*WIN_CHANGE_DIVIDENDS	26.20114	24.88623	1.052837	0.2929
WIN_ROA_LASTYEAR	-2.559152	0.674923	-3.791768	0.0002
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-3.438372	0.770850	-4.460497	0.0000

R-squared	0.051225	Mean dependent var	46.13188
Adjusted R-squared	0.043619	S.D. dependent var	152.3079
S.E. of regression	148.9491	Akaike info criterion	12.85496
Sum squared resid	11070733	Schwarz criterion	12.89685
Log likelihood	-3234.449	Hannan-Quinn criter.	12.87139
F-statistic	6.735271	Durbin-Watson stat	1.502718
Prob(F-statistic)	0.000028		

N.4 Regression

Dependent Variable: WIN_ROA_TODAY(1)-WIN_ROA_TODAY
Method: Panel Least Squares
Date: 05/24/16 Time: 12:17
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 94
Total panel (unbalanced) observations: 504
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.909043	0.915138	3.178801	0.0016
DI*WIN_CHANGE_DIVIDENDS	2.254934	0.582732	3.869588	0.0001
DD*WIN_CHANGE_DIVIDENDS	0.741461	0.991717	0.747653	0.4551
WIN_ROA_LASTYEAR	-0.874788	0.171483	-5.101304	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-0.939238	0.102905	-9.127212	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.506445	Mean dependent var	-1.063999
Adjusted R-squared	0.388526	S.D. dependent var	9.677517
S.E. of regression	7.567507	Akaike info criterion	7.058270
Sum squared resid	23250.47	Schwarz criterion	7.879327
Log likelihood	-1680.684	Hannan-Quinn criter.	7.380342
F-statistic	4.294874	Durbin-Watson stat	2.117367
Prob(F-statistic)	0.000000		

Nissim and Ziv ROA T=2

O.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROA2
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.792233	(89,290)	0.9029
Cross-section Chi-square	84.660114	89	0.6105
Period F	1.006081	(5,290)	0.4143
Period Chi-square	6.689828	5	0.2447
Cross-Section/Period F	0.821749	(94,290)	0.8685
Cross-Section/Period Chi-square	91.861083	94	0.5432

O.2 BPG Test

Dependent Variable: NISSIM_ROA1_RESIDSQUARED
Method: Panel Least Squares
Date: 05/23/16 Time: 17:48
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 94
Total panel (unbalanced) observations: 504

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	62.84412	8.662389	7.254826	0.0000
DI*WIN_CHANGE_DIVIDENDS	-9.592973	17.60615	-0.544865	0.5861
DD*WIN_CHANGE_DIVIDENDS	26.20114	24.88623	1.052837	0.2929
WIN_ROA_LASTYEAR	-2.559152	0.674923	-3.791768	0.0002
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-3.438372	0.770850	-4.460497	0.0000

R-squared	0.051225	Mean dependent var	46.13188
Adjusted R-squared	0.043619	S.D. dependent var	152.3079
S.E. of regression	148.9491	Akaike info criterion	12.85496
Sum squared resid	11070733	Schwarz criterion	12.89685
Log likelihood	-3234.449	Hannan-Quinn criter.	12.87139
F-statistic	6.735271	Durbin-Watson stat	1.502718
Prob(F-statistic)	0.000028		

O.3 Regression

Dependent Variable: WIN_ROA_TODAY(2)-WIN_ROA_TODAY(1)
Method: Panel Least Squares
Date: 05/23/16 Time: 18:02
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 389
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.305560	0.923792	0.330767	0.7410
DI*WIN_CHANGE_DIVIDENDS	-2.235525	0.989148	-2.260051	0.0244
DD*WIN_CHANGE_DIVIDENDS	1.163993	1.719298	0.677017	0.4988
WIN_ROA_LASTYEAR	0.004962	0.098257	0.050500	0.9598
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	0.065987	0.068247	0.966888	0.3342

R-squared	0.012497	Mean dependent var	-0.300417
Adjusted R-squared	0.002210	S.D. dependent var	9.654829
S.E. of regression	9.644153	Akaike info criterion	7.383351
Sum squared resid	35715.72	Schwarz criterion	7.434297
Log likelihood	-1431.062	Hannan-Quinn criter.	7.403548
F-statistic	1.214875	Durbin-Watson stat	2.283857
Prob(F-statistic)	0.303945		

Benartzi et al. T=1 Dividend change

P.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA1_UNSPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.725305	(94,395)	0.9698
Cross-section Chi-square	80.409689	94	0.8399
Period F	5.080369	(6,395)	0.0000
Period Chi-square	37.540376	6	0.0000
Cross-Section/Period F	1.050064	(100,395)	0.3665
Cross-Section/Period Chi-square	119.046290	100	0.0941

P.2 BPG Test

Dependent Variable: FAMA1_UNSPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 14:12
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017430	0.034057	0.511781	0.6090
WIN_CHANGE_DIVIDENDS	-0.025159	0.035726	-0.704211	0.4816
WIN_DFE	0.001017	0.002943	0.345652	0.7298
WIN_DFE*NDFED	-0.004528	0.004194	-1.079555	0.2809
NDFED*WIN_DFE*WIN_DFE	-1.35E-05	1.43E-05	-0.941035	0.3471
PDFED*WIN_DFE*WIN_DFE	4.21E-06	3.94E-05	0.106823	0.9150
WIN_CHANGE_EARNINGS	0.224763	0.173281	1.297103	0.1952
NCED*WIN_CHANGE_EARNINGS	-0.553928	0.345703	-1.602321	0.1097
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.131620	0.262743	-0.500948	0.6166
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.027431	0.090428	0.303344	0.7618

R-squared	0.077326	Mean dependent var	0.106982
Adjusted R-squared	0.060550	S.D. dependent var	0.408067
S.E. of regression	0.395520	Akaike info criterion	1.002372
Sum squared resid	77.43579	Schwarz criterion	1.086026
Log likelihood	-243.0988	Hannan-Quinn criter.	1.035184
F-statistic	4.609362	Durbin-Watson stat	1.950153
Prob(F-statistic)	0.000007		

P.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/21/16 Time: 14:13
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.060688	0.030607	-1.982803	0.0479
WIN_CHANGE_DIVIDENDS	0.013370	0.032982	0.405380	0.6854
WIN_DFE	-0.001705	0.002476	-0.688830	0.4913
WIN_DFE*NDFED	-0.005006	0.004429	-1.130328	0.2589
NDFED*WIN_DFE*WIN_DFE	-3.20E-05	1.46E-05	-2.194250	0.0287
PDFED*WIN_DFE*WIN_DFE	7.36E-05	4.33E-05	1.700071	0.0898
WIN_CHANGE_EARNINGS	-0.257961	0.237299	-1.087071	0.2775
NCED*WIN_CHANGE_EARNINGS	-0.448298	0.462005	-0.970331	0.3324
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.644403	0.254760	-2.529454	0.0117
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.147693	0.158213	0.933506	0.3510

Effects Specification

Period fixed (dummy variables)

R-squared	0.186460	Mean dependent var	0.015645
Adjusted R-squared	0.161505	S.D. dependent var	0.362991
S.E. of regression	0.332389	Akaike info criterion	0.666146
Sum squared resid	54.02578	Schwarz criterion	0.799994
Log likelihood	-152.2019	Hannan-Quinn criter.	0.718645
F-statistic	7.471802	Durbin-Watson stat	2.016202
Prob(F-statistic)	0.000000		

Benartzi et al. T=2 Dividend change

Q.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA2_UNSPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.834265	(89,309)	0.8448
Cross-section Chi-square	88.937548	89	0.4819
Period F	1.788513	(5,309)	0.1149
Period Chi-square	11.782676	5	0.0379
Cross-Section/Period F	0.876204	(94,309)	0.7743
Cross-Section/Period Chi-square	97.589679	94	0.3794

Q.2 BPG Test

Dependent Variable: FAMA2_UNSPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 13:58
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.056048	0.030859	1.816295	0.0701
WIN_CHANGE_DIVIDENDS	-0.055067	0.030136	-1.827259	0.0684
WIN_DFE	0.000728	0.002582	0.282074	0.7780
WIN_DFE*NDFED	-0.000783	0.003755	-0.208534	0.8349
NDFED*WIN_DFE*WIN_DFE	1.07E-05	1.34E-05	0.792879	0.4283
PDFED*WIN_DFE*WIN_DFE	-8.08E-06	3.34E-05	-0.242109	0.8088
WIN_CHANGE_EARNINGS	0.091300	0.157811	0.578541	0.5632
NCED*WIN_CHANGE_EARNINGS	-0.336795	0.308861	-1.090443	0.2762
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.059525	0.234097	-0.254274	0.7994
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.019346	0.082804	0.233637	0.8154

R-squared	0.052530	Mean dependent var	0.100053
Adjusted R-squared	0.031371	S.D. dependent var	0.321684
S.E. of regression	0.316598	Akaike info criterion	0.561545
Sum squared resid	40.39432	Schwarz criterion	0.658965
Log likelihood	-105.9590	Hannan-Quinn criter.	0.600076
F-statistic	2.482600	Durbin-Watson stat	1.723016
Prob(F-statistic)	0.009092		

Q.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/24/16 Time: 12:21
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 413
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.107226	0.048201	2.224531	0.0268
WIN_CHANGE_DIVIDENDS	-0.054802	0.043560	-1.258082	0.2093
WIN_DFE	-0.005229	0.003972	-1.316461	0.1890
WIN_DFE*NDFED	0.009147	0.005868	1.558782	0.1201
NDFED*WIN_DFE*WIN_DFE	4.12E-05	2.56E-05	1.612883	0.1078
PDFED*WIN_DFE*WIN_DFE	9.68E-05	5.98E-05	1.619992	0.1063
WIN_CHANGE_EARNINGS	-0.344756	0.260620	-1.322829	0.1869
NCED*WIN_CHANGE_EARNINGS	0.780182	0.461576	1.690259	0.0920
NCED*WIN_CHANGE_EARNINGS*WIN_C...	0.611670	0.338921	1.804756	0.0721
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.155590	0.174241	0.892962	0.3726

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.256139	Mean dependent var	0.039950
Adjusted R-squared	0.008186	S.D. dependent var	0.367193
S.E. of regression	0.365687	Akaike info criterion	1.039449
Sum squared resid	41.32169	Schwarz criterion	2.052617
Log likelihood	-110.6462	Hannan-Quinn criter.	1.440169
F-statistic	1.033013	Durbin-Watson stat	2.413494
Prob(F-statistic)	0.409448		

Benartzi et al 1 dividend increase and decrease

R.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA1_SPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.723480	(94,394)	0.9707
Cross-section Chi-square	80.410822	94	0.8399
Period F	5.020622	(6,394)	0.0001
Period Chi-square	37.205536	6	0.0000
Cross-Section/Period F	1.043562	(100,394)	0.3815
Cross-Section/Period Chi-square	118.656935	100	0.0983

R.2 BPG Test

Dependent Variable: FAMA1_SPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 14:04
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011494	0.035963	0.319597	0.7494
DI*WIN_CHANGE_DIVIDENDS	-0.006906	0.047661	-0.144896	0.8849
DD*WIN_CHANGE_DIVIDENDS	-0.061423	0.067541	-0.909413	0.3636
WIN_DFE	0.000952	0.002961	0.321433	0.7480
WIN_DFE*NDFED	-0.004479	0.004219	-1.061722	0.2889
NDFED*WIN_DFE*WIN_DFE	-1.34E-05	1.44E-05	-0.926101	0.3548
PDFED*WIN_DFE*WIN_DFE	4.61E-06	3.96E-05	0.116285	0.9075
WIN_CHANGE_EARNINGS	0.223005	0.174408	1.278640	0.2016
NCED*WIN_CHANGE_EARNINGS	-0.534238	0.349275	-1.529560	0.1268
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.124823	0.264556	-0.471823	0.6373
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.027973	0.091028	0.307301	0.7587

R-squared	0.076294	Mean dependent var	0.106920
Adjusted R-squared	0.057596	S.D. dependent var	0.409781
S.E. of regression	0.397805	Akaike info criterion	1.015833
Sum squared resid	78.17501	Schwarz criterion	1.107853
Log likelihood	-245.4978	Hannan-Quinn criter.	1.051926
F-statistic	4.080222	Durbin-Watson stat	1.950112
Prob(F-statistic)	0.000021		

R.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/21/16 Time: 14:05
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.055483	0.030595	-1.813447	0.0704
DI*WIN_CHANGE_DIVIDENDS	-0.000459	0.040188	-0.011411	0.9909
DD*WIN_CHANGE_DIVIDENDS	0.039365	0.078393	0.502146	0.6158
WIN_DFE	-0.001688	0.002479	-0.681029	0.4962
WIN_DFE*NDFED	-0.004950	0.004402	-1.124457	0.2614
NDFED*WIN_DFE*WIN_DFE	-3.17E-05	1.44E-05	-2.198229	0.0284
PDFED*WIN_DFE*WIN_DFE	7.34E-05	4.32E-05	1.700057	0.0898
WIN_CHANGE_EARNINGS	-0.255241	0.236947	-1.077208	0.2819
NCED*WIN_CHANGE_EARNINGS	-0.460172	0.462610	-0.994729	0.3204
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.648261	0.256183	-2.530456	0.0117
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.146239	0.158104	0.924959	0.3554

Effects Specification

Period fixed (dummy variables)

R-squared	0.186932	Mean dependent var	0.015645
Adjusted R-squared	0.160274	S.D. dependent var	0.362991
S.E. of regression	0.332633	Akaike info criterion	0.669527
Sum squared resid	53.99446	Schwarz criterion	0.811740
Log likelihood	-152.0555	Hannan-Quinn criter.	0.725307
F-statistic	7.012236	Durbin-Watson stat	2.021344
Prob(F-statistic)	0.000000		

Benartzi et al 2 dividend increase and decrease

S.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.829667	(89,308)	0.8520
Cross-section Chi-square	88.754909	89	0.4874
Period F	1.784432	(5,308)	0.1157
Period Chi-square	11.793799	5	0.0377
Cross-Section/Period F	0.872136	(94,308)	0.7823
Cross-Section/Period Chi-square	97.467049	94	0.3827

S.2 BPG Test

Dependent Variable: FAMA2_SPLITT_RESID_SQUAR
Method: Panel Least Squares
Date: 05/21/16 Time: 13:24
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.131255	0.030031	4.370610	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.031470	0.037904	-0.830260	0.4069
DD*WIN_CHANGE_DIVIDENDS	-0.062457	0.050660	-1.232881	0.2183
WIN_DFE	-0.000854	0.002381	-0.358486	0.7202
WIN_DFE*NDFED	0.001858	0.003466	0.536002	0.5923
NDFED*WIN_DFE*WIN_DFE	2.23E-05	1.24E-05	1.793477	0.0736
PDFED*WIN_DFE*WIN_DFE	1.75E-05	3.08E-05	0.567853	0.5705
WIN_CHANGE_EARNINGS	0.203626	0.145607	1.398462	0.1627
NCED*WIN_CHANGE_EARNINGS	-0.572207	0.286704	-1.995808	0.0466
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.156832	0.216766	-0.723508	0.4698
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.005417	0.076409	-0.070894	0.9435

R-squared	0.094982	Mean dependent var	0.187103
Adjusted R-squared	0.072469	S.D. dependent var	0.303141
S.E. of regression	0.291951	Akaike info criterion	0.401810
Sum squared resid	34.26455	Schwarz criterion	0.508972
Log likelihood	-71.97369	Hannan-Quinn criter.	0.444193
F-statistic	4.218988	Durbin-Watson stat	1.521972
Prob(F-statistic)	0.000014		

S.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/21/16 Time: 14:05
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 95
Total panel (unbalanced) observations: 505
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.055483	0.030595	-1.813447	0.0704
DI*WIN_CHANGE_DIVIDENDS	-0.000459	0.040188	-0.011411	0.9909
DD*WIN_CHANGE_DIVIDENDS	0.039365	0.078393	0.502146	0.6158
WIN_DFE	-0.001688	0.002479	-0.681029	0.4962
WIN_DFE*NDFED	-0.004950	0.004402	-1.124457	0.2614
NDFED*WIN_DFE*WIN_DFE	-3.17E-05	1.44E-05	-2.198229	0.0284
PDFED*WIN_DFE*WIN_DFE	7.34E-05	4.32E-05	1.700057	0.0898
WIN_CHANGE_EARNINGS	-0.255241	0.236947	-1.077208	0.2819
NCED*WIN_CHANGE_EARNINGS	-0.460172	0.462610	-0.994729	0.3204
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.648261	0.256183	-2.530456	0.0117
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.146239	0.158104	0.924959	0.3554

Effects Specification

Period fixed (dummy variables)

R-squared	0.186932	Mean dependent var	0.015645
Adjusted R-squared	0.160274	S.D. dependent var	0.362991
S.E. of regression	0.332633	Akaike info criterion	0.669527
Sum squared resid	53.99446	Schwarz criterion	0.811740
Log likelihood	-152.0555	Hannan-Quinn criter.	0.725307
F-statistic	7.012236	Durbin-Watson stat	2.021344
Prob(F-statistic)	0.000000		

Mid disclosure

Nissim and Ziv ROE T=1

Redundant Fixed Effects Tests
Equation: NISSIM_ROE1
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.728652	(95,405)	0.0000
Cross-section Chi-square	252.806687	95	0.0000
Period F	1.007150	(6,405)	0.4201
Period Chi-square	7.568180	6	0.2715
Cross-Section/Period F	2.711415	(101,405)	0.0000
Cross-Section/Period Chi-square	263.940369	101	0.0000

T.1 Fixed effects test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROE1
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	179.029744	4	0.0000

T.2 Hausman test

T.3 BPG Test

T.4 Regression

Nissim and Ziv ROE T=2

U.1 Fixed effects test

U.2 BPG Test

U.3 Regression

Dependent Variable: NISSIM_ROE1_RESIDSQUARED
Method: Panel Least Squares
Date: 05/20/16 Time: 15:53
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 511

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.098046	0.017797	5.509150	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.005893	0.040947	-0.143920	0.8856
DD*WIN_CHANGE_DIVIDEND...	0.009084	0.058967	0.154050	0.8776
WIN_ROE_LASTYEAR	-0.001312	0.029036	-0.045194	0.9640
WIN_CHANGE_EARNINGS	-0.078148	0.039800	-1.963543	0.0501

R-squared	0.010069	Mean dependent var	0.095161
Adjusted R-squared	0.002243	S.D. dependent var	0.330871
S.E. of regression	0.330500	Akaike info criterion	0.633317
Sum squared resid	55.27054	Schwarz criterion	0.674769
Log likelihood	-156.8125	Hannan-Quinn criter.	0.649567
F-statistic	1.286684	Durbin-Watson stat	0.879072
Prob(F-statistic)	0.274134		

Redundant Fixed Effects Tests
Equation: NISSIM_ROE2
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.930418	(92,323)	0.6543
Cross-section Chi-square	99.909227	92	0.2690
Period F	1.693184	(5,323)	0.1357
Period Chi-square	10.995887	5	0.0515
Cross-Section/Period F	0.973057	(97,323)	0.5544
Cross-Section/Period Chi-square	108.953127	97	0.1914

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/21/16 Time: 14:25
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 93
Total panel (unbalanced) observations: 425

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.085477	0.022715	3.763069	0.0002
DI*WIN_CHANGE_DIVIDENDS	-0.040340	0.048688	-0.828533	0.4078
DD*WIN_CHANGE_DIVIDEND...	0.110799	0.066769	1.659440	0.0978
WIN_ROE_LASTYEAR	-0.103973	0.035480	-2.930430	0.0036
WIN_CHANGE_EARNINGS	-0.174522	0.047281	-3.691135	0.0003

R-squared	0.046133	Mean dependent var	0.037553
Adjusted R-squared	0.037048	S.D. dependent var	0.383567
S.E. of regression	0.376394	Akaike info criterion	0.895336
Sum squared resid	59.50250	Schwarz criterion	0.943007
Log likelihood	-185.2588	Hannan-Quinn criter.	0.914169
F-statistic	5.078201	Durbin-Watson stat	2.336503
Prob(F-statistic)	0.000526		

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/21/16 Time: 14:22
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 511

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.167438	0.022784	7.349019	0.0000
DI*WIN_CHANGE_DIVIDENDS	0.100882	0.047084	2.142588	0.0327
DD*WIN_CHANGE_DIVIDEND...	0.022321	0.070450	0.316834	0.7515
WIN_ROE_LASTYEAR	-0.623259	0.058481	-10.65751	0.0000
WIN_CHANGE_EARNINGS	-0.727611	0.054644	-13.31551	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.441198	Mean dependent var	0.033579
Adjusted R-squared	0.306596	S.D. dependent var	0.413072
S.E. of regression	0.343968	Akaike info criterion	0.877078
Sum squared resid	48.62712	Schwarz criterion	1.706114
Log likelihood	-124.0935	Hannan-Quinn criter.	1.202087
F-statistic	3.277802	Durbin-Watson stat	2.337184
Prob(F-statistic)	0.000000		

Dependent Variable: NISSIM_ROE2_RESIDSQUARED
Method: Panel Least Squares
Date: 05/20/16 Time: 15:57
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 93
Total panel (unbalanced) observations: 425

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.133585	0.021878	6.106018	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.052835	0.046894	-1.126681	0.2605
DD*WIN_CHANGE_DIVIDEND...	0.071681	0.064309	1.114637	0.2656
WIN_ROE_LASTYEAR	-0.032640	0.034173	-0.955142	0.3401
WIN_CHANGE_EARNINGS	-0.044798	0.045539	-0.983720	0.3258

R-squared	0.009777	Mean dependent var	0.108345
Adjusted R-squared	0.000346	S.D. dependent var	0.362587
S.E. of regression	0.362524	Akaike info criterion	0.820245
Sum squared resid	55.19803	Schwarz criterion	0.867916
Log likelihood	-169.3020	Hannan-Quinn criter.	0.839078
F-statistic	1.036682	Durbin-Watson stat	1.106182
Prob(F-statistic)	0.387888		

Nissim and Ziv ROA T=1

V.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROA1
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.216395	(95,406)	0.0000
Cross-section Chi-square	287.284804	95	0.0000
Period F	0.943025	(6,406)	0.4639
Period Chi-square	7.086136	6	0.3130
Cross-Section/Period F	3.175629	(101,406)	0.0000
Cross-Section/Period Chi-square	298.093371	101	0.0000

V.2 Hausman Test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROA1
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	265.490593	4	0.0000

V.3 BPG Test

Dependent Variable: NISSIM_ROA1_RESIDSQ
Method: Panel Least Squares
Date: 05/23/16 Time: 18:35
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 512

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	93.45201	15.47078	6.040549	0.0000
DI*WIN_CHANGE_DIVIDENDS	-19.10782	34.81011	-0.548916	0.5833
DD*WIN_CHANGE_DIVIDENDS	40.56830	50.79170	0.798719	0.4248
WIN_ROA_LASTYEAR	-2.909301	1.061615	-2.740448	0.0064
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-2.816735	1.120841	-2.513055	0.0123

R-squared	0.021564	Mean dependent var	72.28411
Adjusted R-squared	0.013845	S.D. dependent var	288.9685
S.E. of regression	286.9612	Akaike info criterion	14.16629
Sum squared resid	41749788	Schwarz criterion	14.20768
Log likelihood	-3621.570	Hannan-Quinn criter.	14.18251
F-statistic	2.793499	Durbin-Watson stat	1.251170
Prob(F-statistic)	0.025741		

V.4 Regression

Dependent Variable: WIN_ROA_TODAY(1)-WIN_ROA_TODAY
Method: Panel Least Squares
Date: 05/24/16 Time: 12:37
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 512
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.500753	0.804422	6.838146	0.0000
DI*WIN_CHANGE_DIVIDENDS	1.829601	1.020119	1.793518	0.0736
DD*WIN_CHANGE_DIVIDENDS	0.618132	1.452571	0.425543	0.6707
WIN_ROA_LASTYEAR	-1.246970	0.128708	-9.688375	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-1.126603	0.109827	-10.25795	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.598651	Mean dependent var	-0.522819
Adjusted R-squared	0.502210	S.D. dependent var	13.43337
S.E. of regression	9.477805	Akaike info criterion	7.509106
Sum squared resid	37009.46	Schwarz criterion	8.336904
Log likelihood	-1822.331	Hannan-Quinn criter.	7.833603
F-statistic	6.207455	Durbin-Watson stat	2.010350
Prob(F-statistic)	0.000000		

Nissim and Ziv ROA T=2

W.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.568083	(89,299)	0.9990
Cross-section Chi-square	62.179515	89	0.9863
Period F	1.621642	(5,299)	0.1540
Period Chi-square	10.649124	5	0.0588
Cross-Section/Period F	0.612518	(94,299)	0.9972
Cross-Section/Period Chi-square	70.090069	94	0.9692

W.2 BPG Test

Dependent Variable: NISSIM_ROA2_RESIDSQ
Method: Panel Least Squares
Date: 05/23/16 Time: 18:48
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 398

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	207.3290	43.39207	4.778038	0.0000
DI*WIN_CHANGE_DIVIDENDS	-51.08798	88.25748	-0.578852	0.5630
DD*WIN_CHANGE_DIVIDENDS	98.41052	139.6014	0.704940	0.4813
WIN_ROA_LASTYEAR	-4.226675	2.962146	-1.426896	0.1544
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-5.175876	3.021644	-1.712934	0.0875

R-squared	0.011453	Mean dependent var	165.7314
Adjusted R-squared	0.001391	S.D. dependent var	692.8887
S.E. of regression	692.4065	Akaike info criterion	15.93071
Sum squared resid	1.88E+08	Schwarz criterion	15.98079
Log likelihood	-3165.211	Hannan-Quinn criter.	15.95054
F-statistic	1.138268	Durbin-Watson stat	1.199010
Prob(F-statistic)	0.338019		

W.3 Regression

Dependent Variable: WIN_ROA_TODAY(2)-WIN_ROA_TODAY(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 11:04
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 398

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.256143	0.811890	0.315490	0.7526
DI*WIN_CHANGE_DIVIDENDS	-1.275853	1.651346	-0.772614	0.4402
DD*WIN_CHANGE_DIVIDENDS	1.537435	2.612018	0.588600	0.5565
WIN_ROA_LASTYEAR	0.031519	0.055423	0.568698	0.5699
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-0.130757	0.056537	-2.312780	0.0213

R-squared	0.026973	Mean dependent var	0.182449
Adjusted R-squared	0.017069	S.D. dependent var	13.06731
S.E. of regression	12.95531	Akaike info criterion	7.973371
Sum squared resid	65961.11	Schwarz criterion	8.023452
Log likelihood	-1581.701	Hannan-Quinn criter.	7.993208
F-statistic	2.723556	Durbin-Watson stat	2.677016
Prob(F-statistic)	0.029235		

Benartzi et al. T=1 Dividend change

X.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA1_UNSPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.384310	(95,400)	0.0174
Cross-section Chi-square	145.255040	95	0.0007
Period F	2.778817	(6,400)	0.0117
Period Chi-square	20.867687	6	0.0019
Cross-Section/Period F	1.469982	(101,400)	0.0051
Cross-Section/Period Chi-square	161.304671	101	0.0001

X.2 Hausman test

Correlated Random Effects - Hausman Test
Equation: FAMA1_UNSPLITT
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	57.637991	9	0.0000

X.3 BPG Test

Dependent Variable: FAMA1_UNSPLITT_RESQUARE
Method: Panel Least Squares
Date: 05/20/16 Time: 17:11
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 511

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011057	0.019597	0.564231	0.5728
WIN_CHANGE_DIVIDENDS	0.006296	0.020799	0.302715	0.7622
WIN_DFE	-0.000229	0.001395	-0.164241	0.8696
WIN_DFE*NDFED	0.000112	0.002566	0.043705	0.9652
NDFED*WIN_DFE*WIN_DFE	6.49E-05	2.08E-05	3.118761	0.0019
PDFED*WIN_DFE*WIN_DFE	1.35E-05	1.64E-05	0.826640	0.4088
WIN_CHANGE_EARNINGS	0.230377	0.086950	2.649530	0.0083
NCED*WIN_CHANGE_EARNINGS	-0.738370	0.164769	-4.481243	0.0000
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.292257	0.107965	-2.706970	0.0070
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.076891	0.047763	-1.609858	0.1081

R-squared	0.236087	Mean dependent var	0.092875
Adjusted R-squared	0.222364	S.D. dependent var	0.248041
S.E. of regression	0.218732	Akaike info criterion	-0.182564
Sum squared resid	23.96967	Schwarz criterion	-0.099661
Log likelihood	56.64521	Hannan-Quinn criter.	-0.150064
F-statistic	17.20379	Durbin-Watson stat	1.736470

X.4 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 12:34
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 511
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017908	0.048578	-0.368651	0.7126
WIN_CHANGE_DIVIDENDS	0.069554	0.036067	1.928466	0.0545
WIN_DFE	-0.002575	0.003187	-0.808005	0.4196
WIN_DFE*NDFED	-0.002818	0.006710	-0.419987	0.6747
NDFED*WIN_DFE*WIN_DFE	7.36E-05	6.72E-05	1.094479	0.2744
PDFED*WIN_DFE*WIN_DFE	2.11E-06	4.29E-05	0.049183	0.9608
WIN_CHANGE_EARNINGS	-0.445007	0.236706	-1.879994	0.0608
NCED*WIN_CHANGE_EARNINGS	-0.134949	0.471962	-0.285932	0.7751
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.437241	0.324174	-1.348786	0.1782
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.224503	0.123791	1.813566	0.0705

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.454622	Mean dependent var	0.033579
Adjusted R-squared	0.304644	S.D. dependent var	0.413072
S.E. of regression	0.344452	Akaike info criterion	0.895815
Sum squared resid	47.45895	Schwarz criterion	1.816044
Log likelihood	-117.8807	Hannan-Quinn criter.	1.256575
F-statistic	3.031244	Durbin-Watson stat	2.416698
Prob(F-statistic)	0.000000		

Benartzi et al. T=2 Dividend change

Y.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA2_UNSPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.114343	(92,318)	0.2473
Cross-section Chi-square	118.761875	92	0.0317
Period F	1.574232	(5,318)	0.1669
Period Chi-square	10.391550	5	0.0649
Cross-Section/Period F	1.150288	(97,318)	0.1862
Cross-Section/Period Chi-square	127.819511	97	0.0197

Y.2 BPG Test

Dependent Variable: FAMA2_UNSPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 14:40
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 93
Total panel (unbalanced) observations: 425

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005223	0.050040	-0.104369	0.9169
WIN_CHANGE_DIVIDENDS	0.012735	0.049036	0.259700	0.7952
WIN_DFE	0.003764	0.003445	1.092629	0.2752
WIN_DFE*NDFED	-0.018664	0.006638	-2.811829	0.0052
NDFED*WIN_DFE*WIN_DFE	-0.000186	6.51E-05	-2.862394	0.0044
PDFED*WIN_DFE*WIN_DFE	-4.30E-05	3.84E-05	-1.118360	0.2641
WIN_CHANGE_EARNINGS	0.301151	0.205370	1.466378	0.1433
NCED*WIN_CHANGE_EARNINGS	-0.811487	0.402981	-2.013709	0.0447
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.323768	0.272412	-1.188523	0.2353
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.057405	0.109305	-0.525187	0.5997

R-squared	0.057827	Mean dependent var	0.139387
Adjusted R-squared	0.037395	S.D. dependent var	0.509529
S.E. of regression	0.499911	Akaike info criterion	1.474475
Sum squared resid	103.7131	Schwarz criterion	1.569818
Log likelihood	-303.3260	Hannan-Quinn criter.	1.512141
F-statistic	2.830140	Durbin-Watson stat	1.523141
Prob(F-statistic)	0.003053		

Y.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/24/16 Time: 11:05
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 93
Total panel (unbalanced) observations: 425
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.024619	0.025332	0.971849	0.3317
WIN_CHANGE_DIVIDENDS	0.008413	0.034490	0.243931	0.8074
WIN_DFE	-0.001968	0.002036	-0.966709	0.3343
WIN_DFE*NDFED	-0.005258	0.005108	-1.029232	0.3040
NDFED*WIN_DFE*WIN_DFE	-0.000119	5.60E-05	-2.118469	0.0347
PDFED*WIN_DFE*WIN_DFE	2.97E-05	2.44E-05	1.220046	0.2231
WIN_CHANGE_EARNINGS	-0.123097	0.188612	-0.652647	0.5143
NCED*WIN_CHANGE_EARNINGS	-0.224906	0.343192	-0.655335	0.5126
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.206343	0.213061	-0.968470	0.3334
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.008163	0.093602	-0.087210	0.9305

R-squared	0.050346	Mean dependent var	0.037553
Adjusted R-squared	0.029752	S.D. dependent var	0.383567
S.E. of regression	0.377818	Akaike info criterion	0.914438
Sum squared resid	59.23965	Schwarz criterion	1.009781
Log likelihood	-184.3180	Hannan-Quinn criter.	0.952104
F-statistic	2.444608	Durbin-Watson stat	2.343270
Prob(F-statistic)	0.010173		

Benartzi et al T=1 dividend increase and decrease

Z.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA1_SPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.376413	(95,399)	0.0191
Cross-section Chi-square	144.848657	95	0.0008
Period F	2.774296	(6,399)	0.0118
Period Chi-square	20.885580	6	0.0019
Cross-Section/Period F	1.463733	(101,399)	0.0056
Cross-Section/Period Chi-square	161.061773	101	0.0001

Z.2 Hausman Test

Correlated Random Effects - Hausman Test
Equation: FAMA1_SPLITT
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	58.695422	10	0.0000

Z.3 BPG Test

Dependent Variable: FAMA1_SPLITT_RESIDSQUARE
Method: Panel Least Squares
Date: 05/20/16 Time: 17:02
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 511

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015218	0.020275	0.750574	0.4533
DI*WIN_CHANGE_DIVIDENDS	-0.005014	0.026852	-0.186721	0.8520
DD*WIN_CHANGE_DIVIDENDS	0.028615	0.039453	0.725297	0.4686
WIN_DFE	-0.000262	0.001395	-0.187799	0.8511
WIN_DFE*NDFED	0.000287	0.002568	0.111887	0.9110
NDFED*WIN_DFE*WIN_DFE	6.63E-05	2.08E-05	3.185420	0.0015
PDFED*WIN_DFE*WIN_DFE	1.41E-05	1.64E-05	0.862648	0.3887
WIN_CHANGE_EARNINGS	0.226473	0.087001	2.603114	0.0095
NCED*WIN_CHANGE_EARNINGS	-0.739946	0.165286	-4.476775	0.0000
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.291772	0.107975	-2.702210	0.0071
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.074842	0.047751	-1.567345	0.1177

R-squared	0.237434	Mean dependent var	0.092818
Adjusted R-squared	0.222183	S.D. dependent var	0.247949
S.E. of regression	0.218676	Akaike info criterion	-0.181159
Sum squared resid	23.90962	Schwarz criterion	-0.089965
Log likelihood	57.28606	Hannan-Quinn criter.	-0.145408
F-statistic	15.56810	Durbin-Watson stat	1.734587
Prob(F-statistic)	0.000000		

Z.4 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 12:29
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 96
Total panel (unbalanced) observations: 511
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022874	0.048242	-0.474142	0.6357
DI*WIN_CHANGE_DIVIDENDS	0.085543	0.049037	1.744435	0.0819
DD*WIN_CHANGE_DIVIDENDS	0.038696	0.071333	0.542470	0.5878
WIN_DFE	-0.002559	0.003186	-0.803351	0.4223
WIN_DFE*NDFED	-0.002958	0.006701	-0.441482	0.6591
NDFED*WIN_DFE*WIN_DFE	7.23E-05	6.73E-05	1.074792	0.2831
PDFED*WIN_DFE*WIN_DFE	2.37E-06	4.30E-05	0.055192	0.9560
WIN_CHANGE_EARNINGS	-0.449260	0.238068	-1.887108	0.0599
NCED*WIN_CHANGE_EARNINGS	-0.120019	0.479382	-0.250362	0.8024
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.431044	0.327179	-1.317458	0.1884
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.224349	0.123747	1.812966	0.0706

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.454955	Mean dependent var	0.033579
Adjusted R-squared	0.303326	S.D. dependent var	0.413072
S.E. of regression	0.344778	Akaike info criterion	0.899118
Sum squared resid	47.42999	Schwarz criterion	1.827638
Log likelihood	-117.7248	Hannan-Quinn criter.	1.263129
F-statistic	3.000449	Durbin-Watson stat	2.415363
Prob(F-statistic)	0.000000		

Benartzi et al 2 dividend increase and decrease

AA.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA2_SPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.068979	(92,317)	0.3333
Cross-section Chi-square	114.839368	92	0.0537
Period F	1.553100	(5,317)	0.1731
Period Chi-square	10.285686	5	0.0675
Cross-Section/Period F	1.105104	(97,317)	0.2602
Cross-Section/Period Chi-square	123.799004	97	0.0346

AA.2 BPG Test

Dependent Variable: FAMA2_SPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 14:31
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 93
Total panel (unbalanced) observations: 425

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.013167	0.050769	0.259360	0.7955
DI*WIN_CHANGE_DIVIDENDS	-0.037666	0.062754	-0.600214	0.5487
DD*WIN_CHANGE_DIVIDENDS	0.111115	0.088827	1.250914	0.2117
WIN_DFE	0.003600	0.003375	1.066618	0.2868
WIN_DFE*NDFED	-0.017610	0.006521	-2.700492	0.0072
NDFED*WIN_DFE*WIN_DFE	-0.000174	6.39E-05	-2.725015	0.0067
PDFED*WIN_DFE*WIN_DFE	-4.34E-05	3.77E-05	-1.152926	0.2496
WIN_CHANGE_EARNINGS	0.325827	0.201589	1.616292	0.1068
NCED*WIN_CHANGE_EARNINGS	-0.869256	0.398375	-2.182007	0.0297
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.334052	0.267804	-1.247376	0.2130
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.070047	0.107102	-0.654027	0.5135

R-squared	0.060995	Mean dependent var	0.137974
Adjusted R-squared	0.038314	S.D. dependent var	0.499291

AA.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/24/16 Time: 11:08
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 93
Total panel (unbalanced) observations: 425
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045581	0.029985	1.520097	0.1292
DI*WIN_CHANGE_DIVIDENDS	-0.055510	0.043826	-1.266605	0.2060
DD*WIN_CHANGE_DIVIDENDS	0.126674	0.059284	2.136739	0.0332
WIN_DFE	-0.002117	0.002040	-1.038127	0.2998
WIN_DFE*NDFED	-0.004454	0.005161	-0.862954	0.3887
NDFED*WIN_DFE*WIN_DFE	-0.000111	5.69E-05	-1.954390	0.0513
PDFED*WIN_DFE*WIN_DFE	3.06E-05	2.43E-05	1.256746	0.2096
WIN_CHANGE_EARNINGS	-0.101995	0.181218	-0.562828	0.5739
NCED*WIN_CHANGE_EARNINGS	-0.310397	0.338113	-0.918027	0.3591
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.242803	0.219152	-1.107919	0.2685
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.013028	0.088241	-0.147644	0.8827

R-squared	0.059973	Mean dependent var	0.037553
Adjusted R-squared	0.037267	S.D. dependent var	0.383567
S.E. of regression	0.376352	Akaike info criterion	0.908955
Sum squared resid	58.63915	Schwarz criterion	1.013833
Log likelihood	-182.1530	Hannan-Quinn criter.	0.950388
F-statistic	2.641280	Durbin-Watson stat	2.333594
Prob(F-statistic)	0.003947		

Low Disclosure

Nissim and Ziv ROE T=1

AB.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROE1
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.819406	(98,407)	0.0000
Cross-section Chi-square	187.470270	98	0.0000
Period F	1.527445	(6,407)	0.1676
Period Chi-square	11.490203	6	0.0744
Cross-Section/Period F	1.825889	(104,407)	0.0000
Cross-Section/Period Chi-square	197.588628	104	0.0000

AB.2 Hausman test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROE1
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	138.127235	4	0.0000

AB.3 BPG test

Dependent Variable: NISSIM1_ROE_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 15:07
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 516

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.418300	0.081444	5.136022	0.0000
DI*WIN_CHANGE_DIVIDENDS	-0.023513	0.163643	-0.143684	0.8858
DD*WIN_CHANGE_DIVIDEND...	0.134924	0.307997	0.438067	0.6615
WIN_ROE_LASTYEAR	-0.897417	0.111353	-8.059194	0.0000
WIN_CHANGE_EARNINGS	-0.944349	0.144716	-6.525540	0.0000

R-squared	0.117885	Mean dependent var	0.414873
Adjusted R-squared	0.110980	S.D. dependent var	1.732865
S.E. of regression	1.633881	Akaike info criterion	3.829437
Sum squared resid	1364.150	Schwarz criterion	3.870581
Log likelihood	-982.9947	Hannan-Quinn criter.	3.845560
F-statistic	17.07235	Durbin-Watson stat	1.825720
Prob(F-statistic)	0.000000		

AB.4 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/24/16 Time: 12:43
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 516
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.116179	0.039186	2.964786	0.0032
DI*WIN_CHANGE_DIVIDENDS	0.096156	0.023827	4.035616	0.0001
DD*WIN_CHANGE_DIVIDEND...	-0.119051	0.103392	-1.151460	0.2502
WIN_ROE_LASTYEAR	-0.852457	0.133385	-6.390936	0.0000
WIN_CHANGE_EARNINGS	-1.022199	0.190373	-5.369449	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.403604	Mean dependent var	0.135090
Adjusted R-squared	0.256310	S.D. dependent var	0.834856
S.E. of regression	0.719958	Akaike info criterion	2.357319
Sum squared resid	214.0745	Schwarz criterion	3.204895
Log likelihood	-505.1884	Hannan-Quinn criter.	2.689458
F-statistic	2.740125	Durbin-Watson stat	2.691728
Prob(F-statistic)	0.000000		

Nissim and Ziv ROE2

Redundant Fixed Effects Tests
Equation: NISSIM_ROE2
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.114917	(93,325)	0.2450
Cross-section Chi-square	118.514282	93	0.0383
Period F	0.728041	(5,325)	0.6028
Period Chi-square	4.767223	5	0.4449
Cross-Section/Period F	1.125262	(98,325)	0.2237
Cross-Section/Period Chi-square	125.042072	98	0.0340

AC.1 Fixed effects test

Dependent Variable: NISSIM_ROE2_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 15:10
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 94
Total panel (unbalanced) observations: 428

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.765478	0.203027	3.770322	0.0002
DI*WIN_CHANGE_DIVIDENDS	-0.280456	0.433675	-0.646696	0.5182
DD*WIN_CHANGE_DIVIDEND...	-0.640981	0.773989	-0.828153	0.4081
WIN_ROE_LASTYEAR	-0.699541	0.286257	-2.443746	0.0149
WIN_CHANGE_EARNINGS	-0.621691	0.377590	-1.646471	0.1004

R-squared	0.018732	Mean dependent var	0.794747
Adjusted R-squared	0.009453	S.D. dependent var	3.738462
S.E. of regression	3.720750	Akaike info criterion	5.477341
Sum squared resid	5856.003	Schwarz criterion	5.524761
Log likelihood	-1167.151	Hannan-Quinn criter.	5.496069
F-statistic	2.018732	Durbin-Watson stat	1.577454
Prob(F-statistic)	0.090933		

AC.2 BPG test

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/21/16 Time: 15:45
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 94
Total panel (unbalanced) observations: 428

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.163901	0.048932	3.349599	0.0009
DI*WIN_CHANGE_DIVIDENDS	-0.086241	0.104520	-0.825108	0.4098
DD*WIN_CHANGE_DIVIDEND...	-0.121785	0.186539	-0.652867	0.5142
WIN_ROE_LASTYEAR	-0.122409	0.068991	-1.774271	0.0767
WIN_CHANGE_EARNINGS	-0.099965	0.091003	-1.098475	0.2726

R-squared	0.012167	Mean dependent var	0.166110
Adjusted R-squared	0.002826	S.D. dependent var	0.898009
S.E. of regression	0.896739	Akaike info criterion	2.631510
Sum squared resid	340.1515	Schwarz criterion	2.678929
Log likelihood	-558.1431	Hannan-Quinn criter.	2.650238
F-statistic	1.302537	Durbin-Watson stat	1.983474
Prob(F-statistic)	0.268300		

AC.3 Regression

Nissim and Ziv ROA T=1

AD.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: NISSIM_ROA1
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.645136	(98,406)	0.0000
Cross-section Chi-square	254.291372	98	0.0000
Period F	0.416041	(6,406)	0.8684
Period Chi-square	3.156728	6	0.7889
Cross-Section/Period F	2.575508	(104,406)	0.0000
Cross-Section/Period Chi-square	260.929155	104	0.0000

AD.2 Hausman test

Correlated Random Effects - Hausman Test
Equation: NISSIM_ROA1
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	242.762240	4	0.0000

AD.3 BPG Test

Dependent Variable: NISSIM_ROA1_RESIDSQ
Method: Panel Least Squares
Date: 05/23/16 Time: 19:10
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 515

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	226.0251	33.19254	6.809516	0.0000
DI*WIN_CHANGE_DIVIDENDS	-72.41769	65.34415	-1.108251	0.2683
DD*WIN_CHANGE_DIVIDENDS	185.1543	122.5332	1.511054	0.1314
WIN_ROA_LASTYEAR	-6.466479	1.201406	-5.382427	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-1.670045	1.407351	-1.186658	0.2359

R-squared	0.073631	Mean dependent var	235.0290
Adjusted R-squared	0.066365	S.D. dependent var	669.2729
S.E. of regression	646.6835	Akaike info criterion	15.79125
Sum squared resid	2.13E+08	Schwarz criterion	15.83246
Log likelihood	-4061.247	Hannan-Quinn criter.	15.80740
F-statistic	10.13412	Durbin-Watson stat	1.773548
Prob(F-statistic)	0.000000		

AD.4 Regression

Dependent Variable: WIN_ROA_TODAY(1)-WIN_ROA_TODAY
Method: Panel Least Squares
Date: 05/24/16 Time: 12:45
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 515
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.080730	0.629754	-9.655726	0.0000
DI*WIN_CHANGE_DIVIDENDS	0.316134	0.678077	0.466222	0.6413
DD*WIN_CHANGE_DIVIDENDS	2.679185	2.398614	1.116972	0.2647
WIN_ROA_LASTYEAR	-1.097896	0.123616	-8.881498	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-1.026408	0.077941	-13.16904	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.554546	Mean dependent var	-0.038217
Adjusted R-squared	0.444264	S.D. dependent var	22.99224
S.E. of regression	17.14019	Akaike info criterion	8.697586
Sum squared resid	121039.9	Schwarz criterion	9.546419
Log likelihood	-2136.628	Hannan-Quinn criter.	9.030245
F-statistic	5.028420	Durbin-Watson stat	2.245610
Prob(F-statistic)	0.000000		

Nissim and Ziv ROA T=2

AE.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.229818	(90,303)	1.0000
Cross-section Chi-square	26.611554	90	1.0000
Period F	0.327169	(5,303)	0.8964
Period Chi-square	2.169877	5	0.8252
Cross-Section/Period F	0.236249	(95,303)	1.0000
Cross-Section/Period Chi-square	28.796995	95	1.0000

AE.2 BPG test

Dependent Variable: NISSIM_ROA2_RESIDSQ
Method: Panel Least Squares
Date: 05/23/16 Time: 18:58
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 91
Total panel (unbalanced) observations: 403

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	497.1492	78.09560	6.365906	0.0000
DI*WIN_CHANGE_DIVIDENDS	-129.1021	157.7274	-0.818514	0.4136
DD*WIN_CHANGE_DIVIDENDS	436.0034	310.5640	1.403908	0.1611
WIN_ROA_LASTYEAR	-14.95592	2.732625	-5.473097	0.0000
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-9.467020	3.234823	-2.926596	0.0036

R-squared	0.086516	Mean dependent var	541.1824
Adjusted R-squared	0.077336	S.D. dependent var	1394.648
S.E. of regression	1339.635	Akaike info criterion	17.25051
Sum squared resid	7.14E+08	Schwarz criterion	17.30013
Log likelihood	-3470.978	Hannan-Quinn criter.	17.27015
F-statistic	9.423686	Durbin-Watson stat	1.173651
Prob(F-statistic)	0.000000		

AE.3 Regression

Dependent Variable: WIN_ROA_TODAY(2)-WIN_ROA_TODAY(1)
Method: Panel Least Squares
Date: 05/23/16 Time: 19:05
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 91
Total panel (unbalanced) observations: 403
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.832871	0.766957	1.085941	0.2782
DI*WIN_CHANGE_DIVIDENDS	-1.240992	0.799860	-1.551512	0.1216
DD*WIN_CHANGE_DIVIDENDS	0.992317	3.673615	0.270120	0.7872
WIN_ROA_LASTYEAR	0.009751	0.046986	0.207532	0.8357
WIN_ROA_TODAY-WIN_ROA_LASTYEA...	-0.108724	0.061449	-1.769339	0.0776

R-squared	0.013434	Mean dependent var	0.521877
Adjusted R-squared	0.003518	S.D. dependent var	23.45029
S.E. of regression	23.40900	Akaike info criterion	9.156447
Sum squared resid	218096.5	Schwarz criterion	9.206062
Log likelihood	-1840.024	Hannan-Quinn criter.	9.176090
F-statistic	1.354847	Durbin-Watson stat	2.987934
Prob(F-statistic)	0.248995		

Benartzi et al. 1 Dividend change

AF.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA1_UNSPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.044822	(98,402)	0.3789
Cross-section Chi-square	117.081839	98	0.0917
Period F	1.429847	(6,402)	0.2017
Period Chi-square	10.896101	6	0.0916
Cross-Section/Period F	1.078260	(104,402)	0.3023
Cross-Section/Period Chi-square	126.957488	104	0.0626

AF.2 BPG test

Dependent Variable: FAMA1_UNSPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 15:53
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 516

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017115	0.104134	-0.164351	0.8695
WIN_CHANGE_DIVIDENDS	-0.009860	0.108026	-0.091273	0.9273
WIN_DFE	-0.009545	0.006822	-1.399099	0.1624
WIN_DFE*NDFED	0.014452	0.009899	1.459941	0.1449
NDFED*WIN_DFE*WIN_DFE	0.000193	3.24E-05	5.950657	0.0000
PDFED*WIN_DFE*WIN_DFE	0.000125	5.95E-05	2.094955	0.0367
WIN_CHANGE_EARNINGS	0.867497	0.258744	3.352727	0.0009
NCED*WIN_CHANGE_EARNINGS	-3.273917	0.889477	-3.680722	0.0003
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-2.179252	0.886312	-2.458787	0.0143
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.137740	0.056952	-2.418531	0.0159

R-squared	0.354942	Mean dependent var	0.407940
Adjusted R-squared	0.343469	S.D. dependent var	1.568892
S.E. of regression	1.271220	Akaike info criterion	3.337021
Sum squared resid	817.6963	Schwarz criterion	3.419310
Log likelihood	-850.9514	Hannan-Quinn criter.	3.369267
F-statistic	30.93623	Durbin-Watson stat	2.467088
Prob(F-statistic)	0.000000		

AF.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/21/16 Time: 15:54
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 516
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.060862	0.049329	-1.233810	0.2178
WIN_CHANGE_DIVIDENDS	0.057165	0.033075	1.728341	0.0845
WIN_DFE	-0.004333	0.003201	-1.353825	0.1764
WIN_DFE*NDFED	0.010873	0.006524	1.666669	0.0962
NDFED*WIN_DFE*WIN_DFE	0.000116	3.75E-05	3.100483	0.0020
PDFED*WIN_DFE*WIN_DFE	2.22E-05	2.92E-05	0.759331	0.4480
WIN_CHANGE_EARNINGS	0.114911	0.164037	0.700516	0.4839
NCED*WIN_CHANGE_EARNINGS	-1.653677	0.607212	-2.723393	0.0067
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.413658	0.840813	-0.491974	0.6230
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.003710	0.034878	0.106376	0.9153

R-squared	0.413570	Mean dependent var	0.135090
Adjusted R-squared	0.403140	S.D. dependent var	0.834856
S.E. of regression	0.644982	Akaike info criterion	1.980002
Sum squared resid	210.4971	Schwarz criterion	2.062291
Log likelihood	-500.8405	Hannan-Quinn criter.	2.012248
F-statistic	39.64984	Durbin-Watson stat	2.307617
Prob(F-statistic)	0.000000		

Benartzi et al. T=2 Dividend change

AG.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA2_SPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.080396	(93,319)	0.3096
Cross-section Chi-square	117.193760	93	0.0457
Period F	0.587127	(5,319)	0.7099
Period Chi-square	3.920707	5	0.5609
Cross-Section/Period F	1.082726	(98,319)	0.3022
Cross-Section/Period Chi-square	122.900234	98	0.0452

AG.1 BPG test

Dependent Variable: FAMA2_SPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 15:19
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 94
Total panel (unbalanced) observations: 428

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.159812	0.309972	0.515569	0.6064
DI*WIN_CHANGE_DIVIDENDS	-0.189104	0.381768	-0.495336	0.6206
DD*WIN_CHANGE_DIVIDENDS	-0.420581	0.692109	-0.607680	0.5437
WIN_DFE	-0.016272	0.019065	-0.853486	0.3939
WIN_DFE*NDFED	0.004439	0.027857	0.159353	0.8735
NDFED*WIN_DFE*WIN_DFE	6.66E-05	9.38E-05	0.710209	0.4780
PDFED*WIN_DFE*WIN_DFE	0.000177	0.000162	1.092333	0.2753
WIN_CHANGE_EARNINGS	1.754733	0.732265	2.396308	0.0170
NCED*WIN_CHANGE_EARNINGS	-6.191908	2.548662	-2.429474	0.0155
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-4.612418	2.558057	-1.803094	0.0721
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.343212	0.158197	-2.169523	0.0306

R-squared	0.075072	Mean dependent var	0.754928
Adjusted R-squared	0.052892	S.D. dependent var	3.368533
S.E. of regression	3.278238	Akaike info criterion	5.237854
Sum squared resid	4481.435	Schwarz criterion	5.342178
Log likelihood	-1109.901	Hannan-Quinn criter.	5.279056
F-statistic	3.384610	Durbin-Watson stat	1.757860
Prob(F-statistic)	0.000288		

AG.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/21/16 Time: 15:44
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 94
Total panel (unbalanced) observations: 428
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036810	0.081841	0.449768	0.6531
DI*WIN_CHANGE_DIVIDENDS	-0.052899	0.031183	-1.696388	0.0906
DD*WIN_CHANGE_DIVIDENDS	-0.127954	0.228452	-0.560089	0.5757
WIN_DFE	-0.003937	0.004332	-0.908703	0.3640
WIN_DFE*NDFED	8.13E-05	0.009581	0.008486	0.9932
NDFED*WIN_DFE*WIN_DFE	1.07E-05	5.37E-05	0.200246	0.8414
PDFED*WIN_DFE*WIN_DFE	3.97E-05	4.11E-05	0.966608	0.3343
WIN_CHANGE_EARNINGS	0.299467	0.247089	1.211978	0.2262
NCED*WIN_CHANGE_EARNINGS	-1.102918	0.692296	-1.593132	0.1119
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.885860	0.799345	-1.108232	0.2684
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.055005	0.055827	-0.985266	0.3251

R-squared	0.061660	Mean dependent var	0.166110
Adjusted R-squared	0.039158	S.D. dependent var	0.898009
S.E. of regression	0.880251	Akaike info criterion	2.608146
Sum squared resid	323.1091	Schwarz criterion	2.712469
Log likelihood	-547.1432	Hannan-Quinn criter.	2.649348
F-statistic	2.740191	Durbin-Watson stat	2.177629
Prob(F-statistic)	0.002809		

Benartzi et al T=1 dividend increase and decrease

AH.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA1_SPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.080396	(93,319)	0.3096
Cross-section Chi-square	117.193760	93	0.0457
Period F	0.587127	(5,319)	0.7099
Period Chi-square	3.920707	5	0.5609
Cross-Section/Period F	1.082726	(98,319)	0.3022
Cross-Section/Period Chi-square	122.900234	98	0.0452

AH.2 BPG Test

Dependent Variable: FAMA1_SPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 16:04
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 516

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.032429	0.107263	-0.302336	0.7625
DI*WIN_CHANGE_DIVIDENDS	0.027232	0.127416	0.213727	0.8308
DD*WIN_CHANGE_DIVIDENDS	-0.116370	0.241474	-0.481915	0.6301
WIN_DFE	-0.009805	0.006801	-1.441706	0.1500
WIN_DFE*NDFED	0.014638	0.009860	1.484573	0.1383
NDFED*WIN_DFE*WIN_DFE	0.000193	3.23E-05	5.984040	0.0000
PDFED*WIN_DFE*WIN_DFE	0.000127	5.94E-05	2.143543	0.0325
WIN_CHANGE_EARNINGS	0.880993	0.257715	3.418479	0.0007
NCED*WIN_CHANGE_EARNINGS	-3.336567	0.887550	-3.759300	0.0002
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-2.294571	0.883274	-2.597801	0.0097
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.140232	0.056725	-2.472142	0.0138

R-squared	0.357100	Mean dependent var	0.407008
Adjusted R-squared	0.344369	S.D. dependent var	1.563706
S.E. of regression	1.266149	Akaike info criterion	3.330924
Sum squared resid	809.5822	Schwarz criterion	3.421442
Log likelihood	-848.3785	Hannan-Quinn criter.	3.366395
F-statistic	28.05033	Durbin-Watson stat	2.483522
Prob(F-statistic)	0.000000		

AH.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(1)
Method: Panel Least Squares
Date: 05/21/16 Time: 16:05
Sample (adjusted): 2007 2013
Periods included: 7
Cross-sections included: 99
Total panel (unbalanced) observations: 516
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.075838	0.046316	-1.637404	0.1022
DI*WIN_CHANGE_DIVIDENDS	0.094541	0.028901	3.271160	0.0011
DD*WIN_CHANGE_DIVIDENDS	-0.061222	0.127396	-0.480561	0.6310
WIN_DFE	-0.004489	0.003297	-1.361795	0.1739
WIN_DFE*NDFED	0.010817	0.006553	1.650531	0.0995
NDFED*WIN_DFE*WIN_DFE	0.000115	3.77E-05	3.059425	0.0023
PDFED*WIN_DFE*WIN_DFE	2.39E-05	3.01E-05	0.793307	0.4280
WIN_CHANGE_EARNINGS	0.115653	0.167282	0.691363	0.4897
NCED*WIN_CHANGE_EARNINGS	-1.624309	0.616134	-2.636290	0.0086
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.397411	0.838823	-0.473772	0.6359
PCED*WIN_CHANGE_EARNINGS*WIN_C...	0.003750	0.035325	0.106154	0.9155

R-squared	0.414910	Mean dependent var	0.135090
Adjusted R-squared	0.403324	S.D. dependent var	0.834856
S.E. of regression	0.644883	Akaike info criterion	1.981591
Sum squared resid	210.0163	Schwarz criterion	2.072109
Log likelihood	-500.2505	Hannan-Quinn criter.	2.017062
F-statistic	35.81147	Durbin-Watson stat	2.315051
Prob(F-statistic)	0.000000		

Benartzi et al T=2 dividend increase and decrease

AI.1 Fixed effects test

Redundant Fixed Effects Tests
Equation: FAMA2_SPLITT
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.080396	(93,319)	0.3096
Cross-section Chi-square	117.193760	93	0.0457
Period F	0.587127	(5,319)	0.7099
Period Chi-square	3.920707	5	0.5609
Cross-Section/Period F	1.082726	(98,319)	0.3022
Cross-Section/Period Chi-square	122.900234	98	0.0452

AI.2 BPG Test

Dependent Variable: FAMA2_SPLITT_RESID_SQ
Method: Panel Least Squares
Date: 05/21/16 Time: 15:19
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 94
Total panel (unbalanced) observations: 428

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.159812	0.309972	0.515569	0.6064
DI*WIN_CHANGE_DIVIDENDS	-0.189104	0.381768	-0.495336	0.6206
DD*WIN_CHANGE_DIVIDENDS	-0.420581	0.692109	-0.607680	0.5437
WIN_DFE	-0.016272	0.019065	-0.853486	0.3939
WIN_DFE*NDFED	0.004439	0.027857	0.159353	0.8735
NDFED*WIN_DFE*WIN_DFE	6.66E-05	9.38E-05	0.710209	0.4780
PDFED*WIN_DFE*WIN_DFE	0.000177	0.000162	1.092333	0.2753
WIN_CHANGE_EARNINGS	1.754733	0.732265	2.396308	0.0170
NCED*WIN_CHANGE_EARNINGS	-6.191908	2.548662	-2.429474	0.0155
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-4.612418	2.558057	-1.803094	0.0721
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.343212	0.158197	-2.169523	0.0306

R-squared	0.075072	Mean dependent var	0.754928
Adjusted R-squared	0.052892	S.D. dependent var	3.368533
S.E. of regression	3.278238	Akaike info criterion	5.237854
Sum squared resid	4481.435	Schwarz criterion	5.342178
Log likelihood	-1109.901	Hannan-Quinn criter.	5.279056
F-statistic	3.384610	Durbin-Watson stat	1.757860
Prob(F-statistic)	0.000288		

AI.3 Regression

Dependent Variable: WIN_CHANGE_EARNINGS(2)
Method: Panel Least Squares
Date: 05/21/16 Time: 15:44
Sample (adjusted): 2007 2012
Periods included: 6
Cross-sections included: 94
Total panel (unbalanced) observations: 428
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036810	0.081841	0.449768	0.6531
DI*WIN_CHANGE_DIVIDENDS	-0.052899	0.031183	-1.696388	0.0906
DD*WIN_CHANGE_DIVIDENDS	-0.127954	0.228452	-0.560089	0.5757
WIN_DFE	-0.003937	0.004332	-0.908703	0.3640
WIN_DFE*NDFED	8.13E-05	0.009581	0.008486	0.9932
NDFED*WIN_DFE*WIN_DFE	1.07E-05	5.37E-05	0.200246	0.8414
PDFED*WIN_DFE*WIN_DFE	3.97E-05	4.11E-05	0.966608	0.3343
WIN_CHANGE_EARNINGS	0.299467	0.247089	1.211978	0.2262
NCED*WIN_CHANGE_EARNINGS	-1.102918	0.692296	-1.593132	0.1119
NCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.885860	0.799345	-1.108232	0.2684
PCED*WIN_CHANGE_EARNINGS*WIN_C...	-0.055005	0.055827	-0.985266	0.3251

R-squared	0.061660	Mean dependent var	0.166110
Adjusted R-squared	0.039158	S.D. dependent var	0.898009
S.E. of regression	0.880251	Akaike info criterion	2.608146
Sum squared resid	323.1091	Schwarz criterion	2.712469
Log likelihood	-547.1432	Hannan-Quinn criter.	2.649348
F-statistic	2.740191	Durbin-Watson stat	2.177629
Prob(F-statistic)	0.002809		