"Essays in Financial Economics: Dividend Policy"

Giorgos Theodoulou

PhD Dissertation

Nicosia
April, 2008

University of Cyprus
Department of Public and Business Administration

"Essays in Financial Economics: Dividend Policy"

Giorgos Theodoulou

A dissertation submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Finance

Advisor:
Professor Andreas Charitou

Nicosia
April, 2008

UNIVERSITY OF CYPRUS
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We hereby recommend to the Senate of the University of Cyprus that the aforementioned dissertation be accepted in partial fulfilment of the requirements for the degree of Doctor of Philosophy (PhD).

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Date: January 10, 2008

Ευχαριστίες

Εν πρώτοις, θα ήθελα να ευχαριστήσω ειλικρινώς τον Ερευνητικό μου Σύμβουλο, καθηγητή Ανδρέα Χαρίτου, για την παρότρυνσή του να ενταχθώ στο πρόγραμμα Διδακτορικών Σπουδών στη Χρηματοοικονομική, για τα δημιουργικά επιστημονικά ερεθίσματα που μου παρέσχε, αλλά και για την υπομονή που υπέδειξε σε δύσκολες περιστάσεις. Η εμπιστοσύνη του στις ικανότητές μου αποτελούσε για μένα το ισχυρότερο κίνητρο στην όλη μου πορεία.

Δεν θα μπορούσα παρά να εκφράσω την μεγάλη μου ευγνωμοσύνη στην επίκουρο καθηγήτρια Ειρήνη Καραμάνου για την καλοπροαίρετη μέριμνα και την ανιδιοτελή βοήθεια που μου παρέσχε. Η εξαιρετική της αρωγή, και πρωτίστως η ολόθερμή της ενθάρρυνση, συνέτειναν τα μέγιστα στο να περατωθεί αυτή η προσπάθεια.

Χρεωστώ επίσης ένα μεγάλο ευχαριστώ στον επίκουρο καθηγητή Σπύρο Μαρτζούκο, για το ειλικρινές του ενδιαφέρον και για τις πολύτιμές του νουθεσίες καθ' όλη την διάρκεια των μεταπτυχιακών μου σπουδών.

Οι θερμές μου ευχαριστίες επίσης επεκτείνονται στους: επίκουρο καθηγητή Γιώργο Νησιώτη και ειδικότερα στον καθηγητή Philip Joos, για τη συμμετοχή τους στην Εξεταστική Επιτροπή της διδακτορικής μου διατριβής, αλλά και για τα δημιουργικά τους σχόλια και εισηγήσεις.

Ευχαριστώ εκ βάθους καρδίας τους συμφοιτητές μου και ειδικότερα τους Νεόφυτο Λαμπερτίδη, Παναγιώτη Ανδρέου, Νίκο Κουσσιή, Ιφιγένεια Γεωργίου, Πάνο Βλάμη και Χριστόδουλο Λουκά, για την πολύτιμη φιλία και συμπαράστασή τους.

Εκφράζω επίσης τη μεγάλη μου ευγνωμοσύνη στους γονείς μου, αλλά και στις μοναχικές αδελφότητες των Ιερών Μονών Τιμίου Προδρόμου Μέσα Ποταμού και Παναγίας του Μαχαιρά για τις υπερπολύτιμες προσευχές τους και τη γενναιόδωρή τους φιλοξενία.

Η πορεία των διδακτορικών μου σπουδών ήταν ένα απαιτητικός και πολύμοχθος αγώνας, αλλά προπάντων μια κατ' εξοχήν παιδαγωγία. Η ολοκλήρωσή τους δεν θα ήταν δυνατή χωρίς την αμέριστη πατρική στήριξη του πνευματικού μου πατέρα, Μητροπολίτη Λεμεσού κ.κ. Αθανασίου. Υπέρ πάντων τον ευχαριστώ, γιατί υπάρχει ως πρότυπο υπομονής, ταπείνωσης και πίστης στο Θεό.

«ἀκούσας δὲ ὁ νεανίσκος τὸν λόγον ἀπῆλθε λυπούμενος·
ἦν γὰρ ἔχων κτήματα πολλά.»
(Ματθ. ιθ΄, 22)

«Ἰδοὺ ἄνθρωπος, ὃς οὐκ ἔθετο τὸν Θεὸν βοηθὸν αὐτοῦ, ἀλλ' ἐπήλπισεν ἐπὶ τὸ πλῆθος
τοῦ πλούτου αὐτοῦ καὶ ἐνεδυναμώθη ἐπὶ τῇ ματαιότητι αὐτοῦ.
ἐγὼ δὲ ὡσεὶ ἐλαία κατάκαρπος ἐν τῷ οἴκῳ τοῦ Θεοῦ·
ἤλπισα ἐπὶ τὸ ἔλεος τοῦ Θεοῦ εἰς τὸν αἰῶνα καὶ εἰς τὸν αἰῶνα τοῦ αἰῶνος.»
(Τὸ Ψαλτήριον τοῦ Προφήτου καὶ Βασιλέως Δαυΐδ, ψαλμ. να΄, 9-10)

Acknowledgements

Firstly, I would like to convey my sincere thanks to my supervisor, Professor Andreas Charitou, for urging me to enter the PhD in Finance programme and for his stimulus and patience during hard times. His confidence in me had been my driving motivation.

I could not but express my immense gratitude to Assistant Professor Irene Karamanou for her kind-hearted concern and her selfless support all the way. I would not have been able to cope without her excellent guidance and, above all, her ardent encouragement.

I am also greatly indebted to Assistant Professor Spyros Martzoukos for his genuine interest and his valuable piece of advice for the whole duration of my post-graduate studies.

My warmest thanks go as well to Assistant Professor George Nishiotis, and especially Professor Philip Joos, for participating in my PhD committee and for their insightful comments and suggestions on my work.

I am deeply thankful to my fellow PhD students, and particularly Neophytos Lambertides, Panayiotis Andreou, Nicos Koussis, Ifigenia Georgiou, Panos Vlamis, and Christodoulos Louca for their dear friendship and support.

My warm-hearted gratitude also goes to my parents, and to the monastic brotherhoods of the Holy Monasteries of St. John the Baptist (Mesa Potamos) and of the Most Holy Theotokos of Machairas for their precious prayers and their generous hospitality.

Striving to complete my PhD studies has been a demanding contest, but mostly, a sheer pedagogy. Reaching the end would not come to reality without the unreserved paternal support of my spiritual father, Most Reverend Metropolitan of Limassol Athanasios. Above all, I thank him for being a role model of patience, humbleness and faith in God.

«But when the young man heard the saying, he went away sad,
for he was one who had great possessions.»
(Matthew, 19, 22)

«Lo, this is the man that made not God his helper,
but trusted in the abundance of his riches, and strengthened himself in his vanity.
But as for me, I am like a fruitful olive tree in the house of the Lord;
I have hoped in the mercy of God for ever, and unto the ages and ages.»
(The Psalter of St. David, The Prophet and King, psalm 51, 9-10)

To the Most Holy Theotokos
& to her Son,
Our Lord and Savior Jesus Christ

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Περίληψη

Η παρούσα διδακτορική διατριβή εστιάζεται στη μελέτη της μερισματικής πολιτικής των δημοσίων εταιρειών (το δείγμα υπό μελέτη αφορά εταιρείες εισηγμένες στα κυριότερα χρηματιστήρια των Η.Π.Α.). Ειδικότερα εξετάζονται οι παράγοντες οι οποίοι επηρεάζουν την απόφαση αλλαγής μιας ήδη υπάρχουσας μερισματικής πολ., ή την απόφαση έναρξης ή αναστολής καταβολής μερισμάτων, καθώς και το κατά πόσον οι εν λόγω αποφάσεις αποτιμώνται από την αγορά κατά τρόπο που να καθίστανται ως μια σημαντική πηγή πληροφόρησης. Η επιστημονική συμβολή της παρούσας διδακτορικής διατριβής έγκειται στο ότι, πέραν από την ήδη υπάρχουσα επιστημονική βιβλιογραφία, παρέχει πρωτότυπα αποτελέσματα, τα οποία καταδεικνύουν ως σημαντικές συνιστώσες μερισματικής πολιτ. τις ακόλουθες παραμέτρους: (1) την επικινδυνότητα της εταιρείας, όπως αυτή καταμετρείται από τον κίνδυνο παράλειψης αποπληρωμής των δανειστικών της υποχρεώσεων (Default Risk), (2) τη δανειστική πολ. της εταιρείας και (3) την ιστορική συνέπεια της εταιρείας, όσον αφορά την πραγμάτωση κερδών και την καταβολή σταθερού μερίσματος. Περαιτέρω, παρέχονται πρωτότυπα εμπειρικά στοιχεία, τα οποία συνδέουν τη μερισματική πολ. με την κεφαλαιουχική δομή της εταιρείας και εξηγούν τις δανειστικές αποφάσεις των ωρίμων εταιρειών με ψηλές χρηματορροές. Πιο συγκεκριμένα, στο πρώτο κεφάλαιο εξετάζεται η σχέση μεταξύ των αποφάσεων αύξησης ή έναρξης καταβολής μερισμάτων, αλλαγής στο Default Risk και της σχετικής αναπροσαρμογής της δανειο-κεφαλαιουχικής δομής της εταιρείας. Τα αποτελέσματα καταδεικνύουν ότι θετικές αλλαγές στη μερισματική πολ. επηρεάζονται σημαντικά από μια στατιστικά σημαντική μείωση στο default risk, πέραν των άλλων παραγόντων οι οποίοι επηρεάζουν τη μερισματική πολ., όπως διαφαίνονται από τα μέχρι τώρα επιστημονικά ευρήματα. Η αναφερθείσα μείωση στο default risk (1) αποτιμάται από την αγορά και εξηγεί σημαντικά τη θετική αντίδραση της αγοράς κατά την ανακοίνωση της αύξησης ή της έναρξης καταβολής μερισμάτων και (2) οδηγεί σε αύξηση των δανείων της εταιρείας, προκειμένου να αποκομισθούν σχετικά φορολογικά οφέλη. Στοιχειοθετείται επίσης μια μακροπρόθεσμη διατήρηση του default risk σε χαμηλά επίπεδα, η οποία οδηγεί σε περαιτέρω αύξηση στα συνολικά δάνεια ως προς το μετοχικό κεφάλαιο. Οι δύο αυτές δυναμικές συμπεριφορές εξηγούν τη μακροχρόνια τάση των αποδόσεων των εταιριών, οι οποίες αναλαμβάνουν θετικές αλλαγές στη μερισματική τους πολ., να κυμαίνονται σε ύψη πέραν του μέσου όρου των αποδόσεων δημοσίων εταιρειών (π.χ. Charest (1978), Michaely, Thaler and Womack (1995), Benartzi, Michaely, and Thaler (1997), Grullon et al. (2002)). Το δεύτερο και το τρίτο κεφάλαιο εστιάζονται στη μελέτη της σχέσης μεταξύ αρνητικών αλλαγών στη μερισματική πολ. (δηλ. μείωση ή αναστολής καταβολής μερίσματος) και της ιστορικής συνέπειας της εταιρείας στην καταβολή σταθερού μερίσματος και την πραγμάτωση κερδών. Τα σχετικά εμπειρικά αποτελέσματα υποστηρίζουν ότι στις περιπτώσεις που εταιρείες οι οποίες ακολουθούν σταθερή μερισματική πολ. πραγματοποιήσουν μείωση στα κέρδη, η ιστορική συνέπεια της εταιρείας, ως προς την κερδοφορία και τη μερισματική πολ. επηρεάζει σημαντικά: (1) την αντίδραση της αγοράς, (2) τη σχέση μεταξύ παρούσας μερισματικής πολ. και μελλοντικής κερδοφορίας, και (3) την απόφαση συνέχισης ή μη της μερισματικής πολ. Εν κατακλείδι, τα ευρήματα της παρούσας διατριβής μπορούν να αξιοποιηθούν τόσο από επενδυτές, όσο και από εταιρικά στελέχη και χρηματοοικονομικούς αναλυτές, αλλά και γενικότερα από οικονομικούς ερευνητές οι οποίοι αποβλέπουν σε λεπτομερέστερη κατανόηση και αξιολόγηση των πληροφοριών που απορρέουν από αλλαγές στη μερισματική πολ. των δημοσίων εταιρειών. Λόγου χάριν, η εμπεριστατωμένη γνώση περί του ότι θετικές αλλαγές στη μερισματική πολ. σηματοδοτούν μια υφιστάμενη μείωση στον κίνδυνο παράλειψης αποπληρωμής των δανειστικών υποχρεώσεων, βελτιώνει την ακρίβεια με την οποία αποτιμάται η επικινδυνότητα μιας εταιρείας. Συνεπώς, καλύτερες εκτιμήσεις περί του κόστους κεφαλαίου έχουν ως αποτέλεσμα την αποδοτικότερη κατανομή του επενδυόμενου οικονομικού πλούτου, αλλά και την αρτιότερη μορφοποίηση των εταιρικών κεφαλαιουχικών δομών. Επιπλέον, η καταδειχθείσα σχέση μεταξύ της ιστορικής συνέπειας στην καταβολή μερίσματος και της πληροφόρησης η οποία παρέχεται εν όψει μιας ενδεχόμενης αλλαγής στη μερισματική πολ., μπορεί να αξιοποιηθεί από επενδυτές και χρηματοοικονομικούς αναλυτές κατά την αξιολόγηση εταιρειών που παρουσιάζουν προβλήματα κερδοφορίας, αλλά και από εταιρικά στελέχη, εφόσον τα παρόντα ευρήματα καθιστούν τη μερισματική πολ. ως ένα αποτελεσματικό μέσο πληροφόρησης της αγοράς σε περιπτώσεις που η παρούσα κερδοφορία δεν κρίνεται ως αντιπροσωπευτική, όσον αφορά τις μελλοντικές προοπτικές μιας εταιρείας.

Abstract

The scientific research conducted in this PhD Thesis is concentrated on the study of dividend policy of public companies (the samples under study refer to U.S. listed firms) and particularly, it examines the determinants of dividend payout decisions and the information conveyed by dividend policy changes to market participants. Overall, this PhD Thesis contributes in the existing literature by providing evidence to support that changes in firm's (1) default risk, (2) leverage, and (3) historic consistency in paying dividend payouts and in generating persistent earnings, constitute significant factors that underlie dividend policy decisions and explain investors' reaction to dividend policy changes. Moreover, this PhD Thesis presents new evidence on the association between dividend policy and capital structure, and thus, offers an explanation of the leverage decisions of mature, free-cash flow generating firms. Specifically, Chapter 1 examines the dividend policy decisions and the related market reaction when dividend payouts are either increased or initiated, and the relationship of such policy actions with changes in firm's default risk and subsequent adjustments in debt-to-equity ratio. Principally, evidence supports that dividend initiations and increases are associated with reductions in firm's default risk (DR) which explain the dividend payment decision beyond the main financial and risk measures identified in extant literature. Additionally, results show that the reduction in DR is a priced risk factor. Specifically, it is illustrated that, a) dividend initiation and increase firms exhibit a decrease in the DR factor loading by augmenting the Fama and French (1993) three-factor model, and b) the reduction in DR significantly explains the positive market reaction around dividend increases and initiations. Chapter's 1 results also suggest that managers, utilising on the reduced default risk, increase total debt and thus increase tax shield benefits. Finally, further analysis reveals that changes in default risk and changes in debt to equity ratio are significant factors in explaining the three year excess returns following dividend increases and initiations (Michaely et al., 1995; Benartzi et al., 1997; Grullon et al., 2002). In Chapter 2 and Chapter 3 the focus shifts on the association between dividend reductions or omissions with prior patterns of positive earnings and dividend payouts in the event of an earnings reduction. Accordingly, empirical evidence supports that, among earnings reducing firms, past earnings persistency along with the historic consistency in distributing regular cash dividends constitute prominent factors that: (1) significantly explain the market reaction when dividends are either reduced or suspended, (2) enhance the information content of dividends with respect to firm's future profitability, and (3) have an important bearing upon dividend policy decisions. On the whole, the findings of this PhD thesis are intended to offer insight and guidance to investors planning portfolios, to managers who must formulate corporate policy, and to financial analysts and economists in general, seeking to assess the information conveyed by changes in dividend policy. For instance, knowledge that dividend increases are associated with reductions in default risk improves the precision of financial risk measurement for dividend increasing firms. In turn, better cost of capital estimates lead in more accurate assessments by financial analysts and in more efficient funds-capital allocation decisions by investors and managers alike. Moreover, awareness regarding the association between past records establishment and the information content of dividend policy can be utilized by investors and financial analysts when assessing firms that face profitability problems. Managers may also benefit from such knowledge as they may confront the need to use dividend policy when earnings are less informative about the future performance of the firm.

Chapter 1

1. Dividend Increases and Initiations, Debt Policy and Default Risk in Equity Returns.

1.1. Abstract.

Chapter 1 provides evidence to support that dividend initiations and increases are associated with reductions in default risk (DR). Using a sample of 6,336 U.S. firm-year observations that either increased or initiated cash dividend payments during the 20-year period 1986-2005, it is documented that DR is significantly reduced the year prior to the dividend increase and initiation announcements, and that this reduction explains the dividend payment decision beyond profitability and the Fama and French (1993) risk measures. Additionally, results presented herein support that the reduction in DR is a priced risk factor. Specifically, it is shown that a) dividend initiation and increase firms exhibit a decrease in the DR factor loading by augmenting the Fama-French three-factor model, and b) the reduction in DR significantly explains the positive market reaction around dividend increases and initiations. Chapter's 1 results also suggest that managers, utilising on the reduced default risk, increase total debt and thus increase tax shield benefits. Finally, further analysis reveals that changes in default risk and changes in debt to equity ratio are significant factors in explaining the three year excess returns following dividend increases and initiations (Michaely et al., 1995; Benartzi et al., 1997; Grullon et al., 2002). This chapter's results are robust to further controls for profitability, retained earnings, liquidity, growth, size, special items, and systematic risk.

1.2. Introduction.

The objective of this chapter is to study the association between changes in payout policy and default risk. Specifically, the analysis centres on two samples: dividend increases and dividend initiations. Unlike prior studies, following a stream of recent literature (Vassalou and Xing (2004), Hillegeist et al. (2004), Bharath and Shumway (2006), Campbell, Hilscher and Szilagyi (2008), Garlappi, Shu, and Yan (2008), amongst others) default risk's measurement method is derived from Merton's (1974) option pricing model.[1] Further to prior literature on dividend changes from a risk perspective (Grullon, Michaely and Swaminathan

[1] Several of prior studies, among these Dichev (1998), Griffin and Lemmon (2002), Franzen, Rodgers, and Simin (2007), relied on accounting variables to measure default risk.

(2002), Nissim (2004), Chen, Shevlin, and Tong (2007)), Chapter 1 aims to examine the role of default risk in explaining dividend increases and initiations. The principal idea is that firms by commencing or rising their existing cash payouts, convey information about a reduction in the risk to default on their debt obligations, which is priced by the market. Subsequently, firms utilise on their reduced distress risk by increasing their leverage and thus maximising the present value of their tax shields.[2] Finally, Chapter 1 conjectures that the proposed reduction in default risk along with the increase in debt to equity ratio, explain (at least partially) the documented long-run positive excess returns drift following dividend increases and initiations (Charest (1978), Michaely, Thaler and Womack (1995), Benartzi, Michaely, and Thaler (1997), Grullon, Michaely, and Swaminathan (2002)).

The choice to study firms that undertake dividend increases and initiations is mainly influenced by the following reasons. Firstly, prior research strongly supports that managers aim at sustaining a smooth dividend stream, and thus, dividend increases and initiations take place only when management is confident that higher payout ratios will be maintained in the future (Lintner (1956), Skinner (2004), Brav, Graham, Harvey and Michaely (2005), De Angelo, De Angelo, and Stulz (2006), DeAngelo and De Angelo (2006)).[3] Thus, dividend increases and initiations are a strong indication that a firm will continue to generate a consistent stream of cash in the long run in order to preserve its dividend payout ratio.[4]

Secondly, Grullon, Michaely, and Swaminathan (2002) associate dividend increases with changes in firm's life cycle, arguing that as firms become more mature (i.e. transit to a lower growth face) their investment opportunity set becomes smaller. This is evident by the declining return on investment and growth rates. The life cycle explanation for dividend payments is also in line with Fama and French (2001), DeAngelo and DeAngelo (2006), and DeAngelo, DeAngelo and Stulz (2006). These studies support that paying dividends becomes increasingly desirable as firms mature, that is, exhibit high current profitability, low growth

[2] The tax shield is the tax benefit of debt, i.e. the tax savings that result from deducting interest from taxable earnings. Assuming that a firm refinances its debt obligations when they mature and keeps "rolling over" its debt indefinitely, then the tax shield can be seen as a perpetuity of a permanent stream of cash flows. Consequently, a tax shield is a valuable asset, and rises the after-tax value of the firm (i.e. the sum of its debt and equity values) by the present value (PV) of the stream of cash flows which are saved, i.e. that would have otherwise been paid as taxes.

[3] Brav et al. (2005) report that 84.1% of the 166 financial executives surveyed, agree or strongly agree that the most important factor for dividend policy is maintaining consistency with a historic payout policy.

[4] Whether changes in dividend have information content about future earnings is a debatable issue in finance literature. It is, nonetheless, established that consistent with Lintner's model (1956), firms that increase (or initiate) dividends are less likely than non-changing (non-dividend paying) firms to experience a drop in future earnings (Healy and Palepu (1988), Kormendi and Zarowin (1996), Benartzi et al. (1997), Allen and Michaely (2003), Koch and Sun (2004), Brav et al. (2005), Chen et al. (2007)).

rates, declining investment opportunities, and increasing rates of retained earnings accumulation.

Thus, because dividend increasing and initiating firms (1) exhibit cash flow stability which is expected to continue, and (2) face diminishing investment opportunities and higher retained earnings, then, ceteris paribus, the risk to default on their debt covenants should also decrease. Following the initial dividend increases and initiations, as dividend payout ratios are maintained, market participants (both debt and equity holders) are reassured that default risks will be maintained at their lowered levels. As a result, this chapter conjectures that firms utilising on their reduced default risks, increase total debt (and thus debt to equity ratios) in order to increase their tax shields.[5] Accordingly, lower default risk and increasing debt to equity ratios may also explain the positive long-term drift in stock prices observed after dividend increases and initiations.

The dataset consists 6,336 U.S. firm-years that either increased or commenced cash dividend payments during the 20 year period 1986-2005. I use the Merton's (1974) option pricing model to compute default measures and assess the effect of default risk on equity returns on the year when the dividend increase or initiation takes place (i.e. the event year). [6]

Evidence provided herein support that default risk is reduced significantly the year prior to dividend increases and initiations. It is also shown that the reduction in default risk has

[5] Brealey, Myers and Allen (2006) argue that firms can't use interest tax shields unless there will be future profits to shield, and no firm can be absolutely sure of that. However, given that managers are reluctant to proceed with dividend increases unless they project that firm's performance will be sufficient enough in order to enable the maintenance of the increased payout ratios, dividend increasing (and initiating) firms seem to be the ideal case of utilising on interest tax shields in order to maximise firm's value. Moreover, given diminishing investment opportunity sets, an effective way that managers could employ in order to maximise firm's value would be to increase the present value of their tax shields. As Graham (2000) specifically points out: "paradoxically, large, liquid, profitable firms, with low distress costs use debt conservatively". A finding that is described as a "paradox" because firms satisfying these criteria are able to achieve multiple tax benefits by issuing debt. My sample offers an opportunity to test whether this paradox holds, as firms that either commence or rise existing dividend payments fit well the characteristics outlined by Graham, i.e. they are large, liquid, profitable, (e.g. Fama and French (2001), De Angelo and De Angelo et al. (2004), De Angelo et. al (2006)) and, in accord with my findings, exhibit a significant fall in their default risk.

[6] As Vassalou and Xing (2004) argue, because Merton's (1974) model uses the market value of a firm's debt and equity in calculating its default risk, calculating default probabilities using option variables, enables the construction of a measure of default risk that contains forward looking information (because market prices reflect investors' expectations about a firm's future performance). Consequently, this measure is better suited for calculating the likelihood that a firm may fail to service its debt covenants in the future. The comparison is made with reference to previous research that used either accounting models (as for example Altman (1968), Ohlson (1980), Dichev (1998), Griffin and Lemmon (2002), Franzen, Rodgers, and Simin (2007)), or bond market information (i.e. the default spread between bonds) to estimate a firm's default risk (e.g., Leland (1994), Longstaff and Schwartz (1995), and Leland and Toft (1996)). As Elton (2001) and Vassalou and Xing (2004) argue, much of the information in the default spread is unrelated to default risk, and the same seems to hold for the SMB and HML factors of the Fama and French (1993) model. Measuring default risk using the Merton's (1974) model, Vassalou and Xing show that default risk is a variable that contains incremental information for equity pricing, beyond proxies of size and market to book.

incremental explanatory power beyond profitability and other risk measures in explaining dividend increases and initiations. To test whether changes in default risk around dividend increases and initiations, are priced in equity returns, I augment the Fama and French (1993) three-factor model with my default risk measure. Hence, I examine the factor loadings on my default risk (DR) factor before and after the dividend increase and initiation announcements.

Evidence provided herein documents a statistically significant decrease in the DR factor, indicating that: (1) following dividend initiations and increases, DR is reduced, and (2) the reduction in DR is priced by the market, beyond the Fama and French (1993) measures of systematic risk. Additionally, regression analysis involving cumulative abnormal returns around the dividend announcement period, supports that investors realise that dividend increases and initiations convey information about a reduction in DR. Chapter's 1 results indicate that the greater the decline in default risk, the more positive is the market reaction to the announced dividend increase or initiation.

The documented negative relationship between dividend increases (and initiations), and reductions in default risk, provided the motivation to further examine whether firms take advantage of their reduced default risk, by rising their total debt, and thus increasing their tax shields. Examining default risk and debt to equity ratios three years before and after the dividend increase and initiation announcements it is shown that, on average, prior to the event year both default risk and debt to equity are reduced, reach their bottom low on the year of the dividend announcement, and start increasing thereafter. My findings document that the sample firms change their target debt to equity ratios before and after dividends are increased or initiated. The posited association between the decline in default risk, dividend increases and dividend initiations, and subsequent upward adjustments in leverage, is also supported by multivariate regression tests. The intuition is that managers issue debt at the time when they can best persuade both lenders and stock holders that firms are able to repay their loans, and that earnings will be sufficiently high in order to cover the associated interest payments (Brealey, Myers and Allen, 2006). Given the existing evidence on the association between rising dividends, earnings permanence (Healy and Palepu (1988), Kormendi and Zarowin (1996), Benartzi et al. (1997), Allen and Michaely (2003), Koch and Sun (2004), Brav et al. (2005)), and reductions in default risk (provided in this chapter), accordingly, dividend increases (or initiations) should constitute an effective policy instrument for managers, in order to convey: (1) that firms have sufficient expected incoming funds to finance a rise in firm's leverage, and (2) that the firms' risk of default is reduced.

Finally, evidence provided herein supports that the decline in the option based risk of default along with the documented increase in debt to equity ratio explain to a great extent the long-term drift in stock prices that has been observed after dividend increases and initiations. Chapter's 1 multivariate regression results indicate that the larger the decline in default risk the more positive is the excess return drift. This result is consistent with Vassalou and Xing (2004) where they document that default risk is systematic and priced in equity returns, and with Garlappi, Shu, and Yan (2008) who provide evidence that default risk is negatively associated with stock returns for large firms with high liquidity. Additionally, the post-event long-term drift in stock prices is found to be positively related with increases in debt to equity ratio. That is, following the initial price reaction, stock prices of dividend increasing and initiating firms continue to increase with rising debt to equity ratios reflecting the associated benefits from enhanced tax shields.

The evidence presented in this chapter contributes to the dividends policy literature in the following respects: Firstly, documenting that dividend initiations and increases are associated with decreases in the pricing of default risk, beyond other systematic risk changes, strengthens the overall understanding on the information content of dividends. Given the existing debate over whether dividends convey information about future earnings (see for example Benartzi et al. (1997), De Angelo et al. (2004), Lie (2005), and Grullon et al. (2005), versus Nissim and Ziv (2001), Akbar and Stark (2003), Hand and Landsman (2005), Hanlon, Myers, and Shevlin (2007)), this chapter's findings complement and extent those of Grullon et al. (2002). Evidence provided herein supports that firms that increase or initiate dividends experience systematic changes in their default risk which are statistically significant beyond changes in other measures of systematic risk. Furthermore, conveying information about a reduction in default risk via dividend increases and initiations it seems to be useful information to investors, as controlling for other measures of systematic risk and profitability, the reduction in the DR factor has incremental explanatory power in explaining the positive market reaction to dividend increase or initiation announcements.[7] To the best of my knowledge, no research to date has examined whether dividend increases or initiations convey information regarding a reduction in default risk, if this decline in DR is priced by the market, and whether the reduction in DR explains the positive stock price reaction due to the positive dividend change announcements.

[7] In fact, in the multivariate regression analysis carried out, I incorporate control variables for systematic risk, profitability, retained earnings, liquidity, growth, size, and special items.

Moreover, by firstly establishing a negative relationship between dividend increases (or initiations) and default risk, it is further documented that firms take advantage of their reduced risk of default, by rising total debt. in order to increase their tax shields. This impending interconnection between dividend increases or initiations, reductions in default risk, and firm's leverage policy, has not been considered in prior literature. In a recent study DeAngelo and DeAngelo (2006) impart the lack of a rigorous theory in corporate finance that adequately explains the interdependence between leverage and payout policy. Specifically, they note that since Miller and Modigliani (1958, 1961), the theoretical literature has treated debt to equity mix as the primary financial decision, with payout policy at best a minor detail of the equity portion of that mix. Challenging this approach, they argue that the unfortunate consequence of subordinating payout to debt policy is to prevent the development of an empirically viable theory that adequately explains both leverage and payout policies as jointly determined by firm's underlying fundamentals. Although presenting a formal model that relates leverage and payout policies is beyond my scope, this chapter contributes to this line of research by empirically documenting that when payout policy changes, the resulting information that is conveyed, is associated with adjustments in firm's leverage. My evidence supports that the reduction in firm's risk of default that is manifested via dividend increases or initiations, constitutes an important "missing" factor that explains the link between leverage and payout policies.

Finally, Chapter's 1 findings suggest that the fall in the option based risk of default and the increase in debt to equity ratio, account (at least to some extent) for the long term drift in stock prices. Grullon et al. (2002) documented that the long term drift is positively associated with future changes in profitability, while negatively associated with future changes in firm's systematic risk as measured by the Fama and French (1993) three-factor model. Extending their findings, evidence herein supports that beyond the same measures of profitability and systematic risk, the long run excess returns drift is: (1) negatively associated with the option based risk of default measure, and (2) positively associated with the documented increasing debt to equity ratios.

Chapter 1 proceeds as follows. Section 1.3 provides a review of the relevant literature and the development of the research hypotheses. Section 1.4 illustrates the research design, and Section 1.5 describes the data and the measurement of variables. Section 1.6 discusses the empirical results, and finally, section 1.7 concludes.

1.3. Background and Hypotheses Development.

In a comprehensive study on the information content of dividends, Benartzi, Michaely, and Thaler (1997) document a strong lagged and contemporaneous relationship between dividend changes and earnings, i.e. when dividends are increased, earnings have gone up. Nevertheless, they find no positive relationship between dividend changes and future earnings changes. Unsurprisingly, firms that increase dividends, experience positive excess returns around the announcement (the average three-day excess returns for the increases are 0.81%). However, what is puzzling is that these returns continue to be over and above the average market returns for three more years: for the dividend increasing firms, the three-year excess return is a significant 8.0%. Thus, returns exhibit a long term drift in the same direction as the initial stock price reaction to the dividends increase announcement.

The aforementioned drift in stock returns is even more acute in the case of dividend initiations. Michaely, Thaler, and Womack (1995) find that the initial 3.4% (3-day) positive reaction to dividend initiations is followed by additional long term excess returns in the same direction. Over the next three years, firms that initiate dividends have market adjusted returns of 15.6%.[8]

Thus, as Benartzi et al. (1997) argue, if dividend increases are sending a signal, then: (a) it is not a signal about future earnings growth, and (b) the market does not "get it", as returns are found to drift significantly long after the dividend announcements (i.e. meaning that during the immediate time period following the dividend increase announcement, the supposed signal is not incorporated in prices).

However, fundamental news about a firm has to be either about its cash flows or about its discount rates. Accordingly, if dividend increases are not followed by subsequent earnings increases then they may indicate changes in firm's systematic risk as measured by the traditional Fama and French (1993) three-factor model (henceforth Fama-French model). This was shown by Grullon, Michaely, and Swaminathan (2002) (henceforth GMS), where their

[8] A similar drift in the long term returns is found to exist in the case when firms omit dividend payments. Michaely et al. (1995) report that the immediate three-day market excess returns to dividend omissions are -7.0%, while the three-year excess returns underperform the market by 15.3%. However in the case of dividend decreases, there are no significant excess returns, beyond the first year following the dividend reduction announcements. Benartzi et al. (1997) argue that this is because decreases are much less dramatic events than omissions. Hence the immediate price reactions are also smaller, and consequently, the drift is also significantly reduced. The average three-day excess returns for the decreases are -2.53%, and although there is an observable significant negative drift in the excess returns of -28.1%, this holds only for the first year after the dividend decreases. In the three years following the dividend reductions there are no significant excess returns.

main findings support that dividend increases are associated with subsequent decreases in market risk and that the initial market reaction to the dividend increase is strongly associated with the decline in market risk. They interpret their results as being indicative of a change in a firm's life cycle. Specifically, they argue that as firms transit from a higher growth phase to a lower growth phase (what they call as the "*maturity*" phase) their investment opportunity set becomes smaller. This is evident by the declining rates of reinvestment and return on investment, lower growth rates and declining risk. Shrinking investment needs lead in turn to the realisation of excess cash, part of which is subsequently paid out in the form of dividends.

Nevertheless, the central question that arises is why should the market react positively when dividends are increased? Two plausible explanations may be the following: firstly the market does not realize that excess cash realisations that lead to dividend increases also result to changes in risk. Thus, the immediate positive market reaction manifests a positive surprise regarding news about lower risk. Secondly, investors may react positively to the news that the firm is less likely to waste excess cash (Jensen (1986), Stulz (1990)).Yet, even if these compelling explanations indeed hold, they do not quite explain the fact that subsequent returns drift upwards for a considerable future period (e.g. three years, Charest (1978), Michaely et al. (1995), Benartzi et al. (1997), Grullon et al. (2002)).

By extending prior literature, this chapter proposes that a possible reason for the positive market reaction to dividend increases and the drift in subsequent returns, is the decline in firm's default risk, i.e. the probability that a firm will fail to service its debt obligations. Based on prior literature, I assert that the link between a reduction in firm's default risk and a subsequent favourable change in payout policy stems from mainly two stylized features that characterize firms that either commence dividend payouts or rise existing cash payouts. Firstly, favourable dividend changes follow shifts in long–run sustainable earnings. That is, managers "smooth" dividends, in the sense that transitory earnings changes are unlikely to affect dividend payouts (Lintner (1956), Miller and Modigliani (1961), Fama and Babiak (1968), Kormendi and Zarowin (1996), Allen and Michaely (2003), Brav et al., (2005), Brealey, Myers and Allen (2006)). Hence, because firms increase dividends when earnings have permanently gone up (Benartzi et al., 1997), this lasting increase in earnings is expected to also be manifested in a corresponding decline in the firm's risk of default. Secondly, firms increase or initiate cash payouts in anticipation of declining investment opportunity sets which are manifested by increasing rates of earnings retention, declining returns on investment and growth rates (Grullon et al. (2002), Fama and French (2001), DeAngelo, De Angelo, Stulz

(2006), DeAngelo and DeAngelo (2006)). Subsequently, lower investment needs give rise to excess cash, which ultimately reduce the likelihood of default on existing debt obligations. For these reasons, I conjecture that the decision to increase or commence dividend payments is associated with management's assessment of the firm's (reduced) default risk. Hence, Chapter's 1 first hypothesis states that:

Hypothesis 1.1: Default risk is negatively related with cash dividend payment increases or initiations.

Proposing a relationship between default risk and dividend increases/initiations induces the investigation of whether the reduction in default risk is priced in the cross section of equity returns. In line with a cluster of recent studies (Vassalou and Xing (2004), Hillegeist et al. (2004), Bharath and Shumway (2006), Campbell, Hilscher and Szilagyi (2008), Garlappi, Shu, and Yan (2008)), I estimate the probability of default for individual firms using the contingent claims methodology of Black and Scholes (1973) and Merton (1974). Although Fama and French (1996) argue that the SMB and HML factors of the Fama and French (1993) model proxy for financial distress, Vassalou and Xing (2004) show that while SMB and HML contain default-related information, also appear to possess important priced information unrelated to default risk. Moreover, Vassalou and Xing (2004) document that when default risk is estimated using the Merton's (1974) model, it contains incremental information for equity pricing, beyond the size and book-to-market proxies.

Based on the aforementioned findings, Chapter 1 investigates the relation between default risk and stock returns for my sample of dividend increasing and initiating firms, employing the Fama-French three-factor asset-pricing model (as in GMS), but extending it to include my measure of default risk derived from option theory. Since it is conjectured that declines in default risk are manifested by initiating or rising dividend payments, then given such payout policy changes, the decline in default risk is expected to be priced in equity returns beyond the Fama-French risk factors. These arguments point to Chapter's 1 second hypothesis:

Hypothesis 1.2: For dividend increasing and initiating firms, the default risk has information content in explaining equity returns beyond the risk factors of the Fama and French (1993) three-factor model.

Potential validity of Chapter's 1 second hypothesis would entail that market participants acknowledge that growing (and initiated) dividend payouts convey information about a reduction in default risk. Accordingly, this knowledge should be reflected in the initial market reaction. To this end, Garlappi, Shu and Yan (2008) show that for large firms (i.e. firms with large asset base) with high asset tangibility, the probability of default is negatively associated with expected stock returns. Given that dividend increasing and initiating firms are fairly large, profitable, established, and liquid firms (Grullon et al. (2002), Li and Lie (2006), Officer (2007)), the fall in default risk is expected to be positively associated with the initial market reaction (Garlappi, Shu, and Yan, 2008).[9] These arguments lead to Chapter's 1 third hypothesis:

Hypothesis 1.3: *For firms that increase or initiate dividend payments, the reduction in their default risk explains the positive market reaction around the corresponding dividend policy announcements.*

Proposing that dividend increases and initiations inform the market about a reduction in firm's risk of defaulting on its debt obligations, it is further examined whether this decline in default risk affects firm's leverage. Moreover, if Chapter's 1 second and third hypotheses hold (i.e. that the market realises that increased or initiated dividend payments convey information about a decline in default risk), then firm's management may as well utilise on the reduced DR in order to maximise firm's value. As dividend increases and initiations are undertaken by mature firms, with fewer attractive investment opportunities, a complementary way to enhance firm's value (besides funding new investment projects), is to elevate the value of their tax shields by increasing firm's total debt.[10] Yet, as Brealey, Myers and Allen (2006) argue, firms can't use interest tax shields unless there will be future profits to shield, and no firm can be absolutely sure of that. Nonetheless, given that managers are reluctant to proceed with dividend increases, unless they anticipate that firm's performance will be sufficient enough in order facilitate the conservation of the increased payout ratios, dividend increasing (and initiating)

[9] A negative association between the probability of default and expected returns is also supported by Da and Gao (2006) and Campbell, Hilscher, and Szilagyi (2008). An economically meaningful explanation for this pattern is the change in shareholder clientele. In line with Da and Gao (2006), a reduction in the default risk may attract institutional investors who are often restricted to invest in stocks that are liquid, with considerable market capitalizations and stable dividend payouts. A stock is more likely to satisfy these requirements when its default likelihood declines, a fact that will trigger buying by institutional investors, and thus, result in a positive market reaction.

[10] The value of the firm is given as:

Value of firm = Value if all equity financed + PV tax shield – PV costs of financial distress

where PV costs of financial distress = *f* (Probability of distress, Magnitude of costs if distress occurs). Thus, the lower the probability of distress, the lower are the PV costs of financial distress, and the higher is the value of the firm. The optimal debt to equity ratio is determined by the trade off between the tax benefits and the costs of distress. The PV tax shield initially increases as the firm borrows more. At moderate debt levels the probability of financial distress is trivial, so the PV costs of financial distress is small and tax advantages dominate. However, at some point in time additional borrowing is bound to increase the risk to default, and thus, the PV costs of financial distress. The theoretical optimum is reached when the present value of tax savings due to additional borrowing is just offset by increases in the present value of costs of distress (Brealey, Myers and Allen, 2006).

firms seem to be the ideal case of making the most of interest tax shields by increasing their leverage.[11] Thus, these arguments point to Chapter's 1 fourth hypothesis:

Hypothesis 1.4: Firms that initiate or increase existing dividends exhibit an increase in their Debt to Equity ratio.

Examining the relationship between leverage and payout policy changes is further motivated by the limited existing research that considers the association between changes in payout policy with changes in default risk and simultaneous adjustments in firm's leverage. In a recent study DeAngelo and DeAngelo (2006) point out that although conventional wisdom in finance has been reasonably successful in explaining why growth firms tend to have low debt, it has not succeeded in providing an explanation for the leverage decisions of mature, free cash flow generating firms. Specifically, they note that because mature and profitable firms typically pay dividends, existing theories have not succeeded thus far to provide a proficient theory that sufficiently explains the interconnection between payout and leverage policies. This failure is depicted to be the artifact of the commonly made assumption, that debt to equity mix is the primary policy decision that subordinates the subsequent determination of dividend policy. Although DeAngelo and DeAngelo (2006) support that capital structure is subordinated to dividend policy, my objective is not to examine this issue per se. I rather seek to test whether there exists an association between the two, under a particular setting where cash dividend payouts are either initiated or increased from a previous lower level. The assertion made here is that the linking component between payout and leverage policy changes is the downward adjustment in default risk as firms become more mature, retain a larger bulk of their earnings and face a narrower investment opportunity set. This downward adjustment in DR is in turn conveyed to the market via initiations or increases in existing dividends. Accordingly, assuming that firms issue debt at the time when they can best persuade lenders on their ability to service debt obligations (Brealey, Myers, and Allen, 2006), then following dividend initiations and omissions, should constitute the right time to move forward with debt issuance.

Graham (2000) reports that large, liquid, profitable firms with low expected distress costs issue debt conservatively, a phenomenon that he characterises as a "paradox", as these firms could have benefited from multiple tax benefits via debt issuance. However, the reason that this holds may as well be that managers just wait for the "appropriate" time to issue debt.

[11] It is the common consensus in recent (as well as in earlier) literature that following dividend initiations and increases, firms exhibit earnings stability, a reduction in analyst forecast dispersion and stock return volatility (see for example Healy and Palepu (1988), Venkatesh (1989), Jagannathan, Stephens, and Weisbach (2000), Salas (2006), Sinha, Sunder, and Swaminathan (2006), and Chen, Shevlin, and Tong (2007)).

As management would surely want to avoid, (1) adverse stock price reactions, and (2) failure to persuade potential debt holders about firm's competence in repaying additional debt covenants, then time appropriateness should be a function of whether market participants (both stock and debt holders) realise both the potential benefits and firm's ability to service its additional debt obligations. Given the conjecture that dividend increases or initiations convey information about a reduction in default risk, then the informational asymmetry between management and market participants is expected to be resolved (at least to some extent), following a favourable change in payout policy.

Furthermore, hypothesising that the reduction in default risk triggers an upward leverage in firm's debt to equity ratio, which increases firm's value, then stock prices should be further adjusting upwards along with increasing leverage. Thus, following the initial price reaction, prices should continue to drift upward reflecting the corresponding changes in firm's leverage policy and the consequent benefits from enhanced tax shields.

Hence, on the one hand it is argued that the long term drift documented by earlier studies (Michaely et al. (1995), Benartzi et al. (1997), Grullon et al. (2002)) should be positively associated with reductions in default risk and increases in debt to equity ratio. That is, I expect that in the long run, prices should increase along with decreasing default risk and rising leverage. On the other hand, even though rising leverage increases the value of tax shields, it should result in increasing default risk. Consequently, when default risk starts rising, stock returns should adjust downwards until the market reaches the new equilibrium rate of firm's risk. In view of these arguments, the last hypothesis of Chapter 1 is formalised as follows:

<u>Hypothesis 1.5</u>: *The long-run positive excess returns drift observed after dividend increases and initiations is explained by contemporaneous changes in default risk and debt to equity ratio.*

1.4. Research Methodology.

This section discusses the method employed for calculating default risk. It also presents the augmented Fama-French factor model that incorporates my default risk factor which is used for testing whether changes in default risk significantly explain equity returns beyond the Fama-French risk factors (i.e. *hypothesis 1.2*).

1.4.1. Calculating Default Risk: Merton's Option Pricing Model versus Bond Ratings and Accounting Data Based Default Probability Measures.

The notion that the market assesses the effect of default risk on equity returns following excess cash realisations and dividend increases is consistent with preliminary evidence in Grullon et al. (2002), where they examine the subsequent changes in bond ratings. In fact, GMS show that bond ratings of dividend increasing firms improve significantly in the years following the upward change in dividends. Nevertheless, the approach developed in this chapter differs from Grullon et al. Firstly, instead of measuring bond ratings after dividend increases, i.e. "exogenously", this chapter proposes that changes in default risk are determined directly by an appropriate asset pricing model adjusted to incorporate my option based default risk measure. This methodology is in line with Vassalou and Xing (2004), where they document that default risk is systematic and therefore priced in the cross section of equity returns (GMS approach examines only bond ratings descriptives before and after the dividend increase announcements). Secondly, there are several differences between bond ratings and default risk. Elton et al. (2001) argue that information derived from bond ratings upgrades or downgrades (i.e. the default spread) is mostly unrelated to default risk. Thus, successive bond ratings cannot provide sufficient information on the association between default risk and equity returns. Additionally, when researchers use bond downgrades and upgrades as a measure of default risk, they assume that all assets within a rating category, share the same default risk, and that this default risk is equal to the historical average default risk. Moreover, they assume that firms do not to experience changes in their default probability, without experiencing a rating change (Kealhofer et al., 1998). Nevertheless, as Vassalou and Xing (2004) argue, a firm experiences a substantial change in its default risk prior to its rating change. This change in its probability of default is observed only with a lag, and measured coarsely through the rating change. Finally, bond ratings may also represent a relatively noisy estimate of a firm's probability of default, because stocks and bond markets may not be perfectly integrated, and because corporate bond markets are much less liquid than the equity markets (Hotchkiss and Ronen, 2001).

Another alternative is to employ the Fama and French (1993) model and use the size (i.e. Small minus Big-SMB) and book-to-market (i.e. High minus Low-HML) factors as an approximation of default risk (Fama and French, 1996). However, since the SMB and the HML factors are empirically motivated, there exists the possibility that the three-factor model is not a full parameterization of the state variables that drive default risk. Indeed, Vassalou and Xing (2004) show that although SMB and HML contain default-related information, it appears that they possess important priced information unrelated to default risk.

Prior research has also used accounting models to estimate a firm's default risk (e.g. Dichev (1998), Griffin and Lemmon (2002), Franzen, Rodgers, and Simin (2007)). However, the effectiveness of accounting data based default probability measures is being questioned for a number of reasons (see for example Begley, Ming and Watts (1996), and Hillegeist et al. (2004)). Not only are financial statements designed to measure past performance and may therefore not be very informative about the future status of the firm, but they are also formulated under the going concern principle, which consequently limits, by design, the precision of the default probability assessment. Additionally, the accounting-based default probability models fail to incorporate any asset volatility measure which may result in a substantial reduction of their accuracy and reliability, as firms exhibit a considerable cross sectional variation in volatility. In their study, Hillegeist, Keating, Cram, and Lundstedt (2004) argue that accounting based models do not have any incremental information beyond that provided by the Black-Scholes-Merton models. Apparently, in comparing the performance of the accounting based models with that of the option pricing models, they conclude that researchers should rather use the latter as a proxy of the risk to default.

In line with a stream of recent literature (Vassalou and Xing (2004), Hillegeist et al. (2004), Bharath and Shumway (2006), Da and Gao (2006), Campbell et al. (2008), Garlappi et al. (2008)) I use Merton's (1974) option pricing model to compute default measures for individual firms.[12] The main advantage of using option pricing models in calculating default risk is that they propound insight on the theoretical determinants of default likelihood and they provide the necessary structure to estimate the default related information from market prices. Hence, option pricing models are not restricted by any assumptions that relate the bond and

[12] See Appendix C.1 for a detailed description of the model.

equity markets or their efficiencies, whereas, they enable the construction of a measure of default risk that contains forward looking information (because market prices reflect investors' expectations about a firm's future performance) which is more appropriate for estimating the likelihood that a firm may default in the future. Lastly, unlike accounting based models, asset volatility is a key input in the option pricing models.

Bharath and Shumway (2006) examined the accuracy and contribution of the default forecasting model based on Merton's (1974) pricing model, developed by the KMV Corporation. Comparing the KMV-Merton model to a similar but much simpler alternative, they find that the former performs slightly worse as a predictor in hazard models and in out of sample forecasts. Specifically, they conclude that the KMV-Merton model does not produce a sufficient statistic for the probability of default, and it appears to be possible to construct such a sufficient statistic without solving the nonlinear equations required by the KMV-Merton model.[13] In this thesis, I use the alternative approach proposed by Bharath and Shumway (2006).

Consistent with GMS, I estimate a time-series firm specific Fama-French three-factor model. To the extent that the three factors do not fully capture changes in default risk conveyed to the market following dividend increases or initiations, such changes could also be reflected in the returns on a constructed default risk factor-mimicking portfolio. Therefore, extending GMS approach, the Fama-French three-factor model is augmented by adding my default risk-mimicking portfolio return, based on Merton's (1974) model.[14]

1.4.2. The Fama and French (1993) Three-Factor Model and the Grullon, Michaely and Swaminathan (2002) Approach Augmented with the Default Risk Measure.

The following Fama and French three-factor model is estimated after incorporating my default risk (DR) factor-mimicking portfolio as follows:

[13] Also, Campbell et al. (2008) estimate a dynamic panel model using a logit specification, following Shumway (2001), Chava and Jarrow (2004), and others. Beyond previous literature, they consider a wide range of explanatory variables, including both accounting and equity-market variables, and they also examine how the optimal specification varies with the horizon of the forecast. Comparing their reduced-form model to the KMV-Merton-based measure, they conclude that the latter adds relatively little explanatory power to the reduced-form variables already included in their alternative model.

[14] To obtain the DR factor-mimicking returns I follow a similar approach with Fama and French (1993): firms are ranked each month into two portfolios based on their most recent default risk (DR) value and then I calculate the average monthly excess returns for each portfolio and for each month. Finally, the DR factor-mimicking returns is formed by taking the difference between the monthly excess returns of the high DR portfolio minus the returns of the low DR portfolio.

$$r_{it} - r_{ft} = a_i + a_{\Delta i} D_t + b_i (r_{mt} - r_{ft}) + b_{\Delta i} D(r_{mt} - r_{ft})_t + s_i SMB_t + s_{\Delta i} DSMB_t + h_i HML_t + h_{\Delta i} DHML_t + c_i DR_t + c_{\Delta i} DDR_t + \varepsilon_t \quad [1.1]$$

The model is estimated from month t^*-36 to month t^*+36 (73 monthly observations), where t^* is the month of the dividend increase or initiation. D is a dummy variable that is equal to one for $t \geq t^*$, and zero otherwise. r_{it} is the monthly stock return for firm i, r_{mt} is the monthly return on the corresponding value-weighted NYSE/AMEX/NASDAQ market portfolio, and r_{ft} is the monthly return on the corresponding 1-month government notes. Small minus big (*SMB*) is the difference between the return on a portfolio of small stocks and a portfolio of large stocks; high minus low (*HML*) is the difference between the returns on a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks.[15] *DR* is the default risk factor. Variables b_i, s_i, h_i, and c_i are the factor loadings (betas) of firm i with respect to (r_{mt} - r_{ft}), *SMB*, *HML*, and *DR*, during the years prior to the dividend increase. Variables $b_{\Delta i}$, $s_{\Delta i}$, $h_{\Delta i}$ and $c_{\Delta i}$ are changes in factor loadings and represent the change in systematic risk after the dividend increase or the dividend initiation was announced. Variable α_i represents the risk-adjusted abnormal return, or alpha, of firm i before the dividend increase, and $\alpha_{\Delta i}$ is the change in abnormal returns after the dividend increase month.

The results based on model [1.1] are expected to provide evidence on whether default risk is priced in equity returns. In line with *hypothesis 1.2*, I expect the overall factor loadings regarding *DR* (i.e. $c_i + c_{\Delta i}$) to be statistically significant indicating that default risk has information content in explaining equity returns beyond the Fama-French risk factors. Furthermore, $c_{\Delta i}$ is expected to be negative and statistically significant showing that the reduction in DR, conveyed via dividend increases or initiations, is inversely related with subsequent stock returns.

1.5. Data Set and Measurement of Variables.

1.5.1. Data Set.

The sample is collected from all dividend announcements of firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ between 1986 and 2005. For the sake of comparability, Chapter's 1 sampling procedure in forming the dividend increase sample parallels that used by GMS and Chen et al. (2006). Accordingly, the dividend increase sample firms suffice the following requirements:

[15] For details on how the risk factors are constructed, see Fama and French (1993). Both r_{mt} and r_{ft} were obtained from CRSP. The other variables were obtained from Compustat.

a) The dividend payout refers to quarterly cash dividends in U.S. dollars.

b) The firm's financial data are available on CRSP and Compustat.

c) The stocks on which the dividends are paid are ordinary common shares. Thus, shares of American Trust components, closed-end funds or real estate investment trusts, are excluded.

d) The previous cash dividend payment was paid within a window of 20-90 trading days prior to the current dividend announcement.

e) The percentage increase in dividends is between 12.5 % and 500%. This criterion ensures the inclusion of economically significant dividend increases at the lower bound and the exclusion of outliers at the upper bound.

f) The dividend announcement is not a decrease, an omission, or an initiation.

This sample selection process yields 5,999 cash dividend increase events.

To be included in the initiation sample, firms that announce dividend initiations must exhibit at least a second dividend announcement (i.e. another one following the initial dividend payment). This criterion is imposed in order to exclude one-off dividend initiations as these may not constitute a change in financial policy, i.e. a signal of managerial commitment to return cash to stockholders.[16] Dividend initiation is defined as the first quarterly cash dividend payment on ordinary common shares reported in CRSP. Reinstitution of a cash dividend is not considered as a dividend initiation. As with the dividend increase sample, I require financial data availability on CRSP and Compustat. The resulting sample contains 337 cash dividend initiation events.

1.5.2. Measurement of Variables.

The following data items are obtained from Compustat for the sample years 1986-2005:

a) total assets (annual data item # 6)

b) operating income before depreciation and amortization (annual data item # 13)

c) net income before extraordinary items (annual data item # 18)

d) common dividends (annual data item # 21)

e) retained earnings (annual data item # 36)

f) book value of common equity (annual data item # 60)

[16] One-off dividend payments are more likely to be associated with the distribution of cash flows that are transient. Consequently, firms undertaking one-off cash distributions in the form of dividends are less likely to possess the characteristics implied by the maturity hypothesis, i.e. exhibit cash flow permanence, increasing retained earnings, shrinking investment opportunities, and thus, lower risk. Given that the scope of the first chapter of this thesis is to associate dividend initiations (and increases) with changes in firm's life cycle and risk, I choose to include in my sample only those firms which were able to sustain their cash dividend payouts.

g) long term debt (annual data item # 9)

h) debt in current liabilities (annual data item # 34)

i) capital expenditures (annual data item # 128)

j) total sales (annual data item # 12)

Consistent with prior literature (e.g. Barber and Lyon (1996), and Grullon et al. (2002)), profitability is measured by the return on assets (ROA) based on operating income before depreciation. The return on assets at year *t* is defined as:

$$\text{ROA}_t = \frac{\text{Operating Income}_t}{\text{Total Assets}_t}$$

The debt to equity ratio is defined as the ratio of long term debt plus debt in current liabilities all divided by the book value of total common equity:

$$\text{DEBTEQ}_t = \frac{\text{Long Term Debt}_t + \text{Debt in Current Liabilities}_t}{\text{Total Common Equity}_t}$$

In line with DeAngelo, DeAngelo, and Stulz (2006), I use firm's sales growth rate (SALEGR_t) as a proxy for growth, and retained earnings scaled by total assets (RETA_t) as this variable is found to significantly influence the decision to pay dividends. Accordingly, the following definitions are used:

$$\text{SALEGR}_t = \frac{\text{SALEGR}_t - \text{SALEGR}_{t\text{-}1}}{\text{SALEGR}_{t\text{-}1}}$$

and,

$$\text{RETA}_t = \frac{\text{Retained Earnings}_t}{\text{Total Assets}_t}$$

Capital expenditure ratio is calculated by capital expenditures to total assets (CETA_t). Thus:

$$\text{CETA}_t = \frac{\text{Capital Expenditures}_t}{\text{Total Assets}_t}$$

The annual dividend payout ratio for year *t* is defined as the ratio of total annual common cash dividend payout reported in Compustat divided by net income before extraordinary items:

$$\text{Payout Ratio}_t = \frac{\text{Div}_t}{\text{NI}_t}$$

Below, I also define the main explanatory variables that are used later on in the multivariate regression analysis sub-section. Using CRSP database, stock returns and

NYSE/AMEX/NASDAQ value-weighted market returns are collected for a 3-day window (-1 to +1) around the dividend announcement and for a 36-month period before and after the dividend announcement. The event year, i.e. year 0, is defined as the dividend announcement year. Correspondingly, month 0 is the dividend announcement month.

The percentage change in quarterly cash dividends for firm *i*, is defined as the percentage difference between the quarterly cash dividend payout reported in CRSP on the event quarter ($\mathrm{DIV}_{i,0}$) minus the corresponding dividend payment of the previous quarter ($\mathrm{DIV}_{i,-1}$):

$$\Delta\mathrm{DIV}_{i,0} = \frac{\mathrm{DIV}_{i,0} - \mathrm{DIV}_{i,-1}}{\mathrm{DIV}_{i,-1}}$$

Consistent with GMS, the 3-day cumulative abnormal stock price reaction to the dividend announcement for firm *i* (CAR_i) is measured as the sum of the difference between the stock return ($r_{i,j}$) and the return of a value weighted market portfolio ($r_{m,j}$). As the sample is drawn from dividend announcements of firms listed on NYSE, AMEX and NASDAQ, I consider the value-weighted NYSE/AMEX/NASDAQ market return. Hence:

$$\mathrm{CAR}_i = \sum_{j=-1}^{1} (r_{i.j} - r_{m,j})$$

Moreover, in line with GMS the following explanatory variables are employed:

$\Delta ROA = ROA_{0} - ROA_{-1}$, i.e. the change in the return on assets from year -1 to year 0.

$\Delta ROA_{(+3,-3)} = (ROA_3 + ROA_2 + ROA_1)/3 - (ROA_{-3} + ROA_{-2} + ROA_{-1})/3$, i.e. the difference between the average ROA for years +1 to +3 with the average ROA for years -3 to -1.

Δ(Mkt-Risk) = the change in firm's risk premium after the dividend increase or the dividend initiation announcements. This is computed by multiplying the change in betas as estimated from the augmented Fama-French model [1.1] with the corresponding risk premium.

Finally, beyond GMS, I make use of the following explanatory variables:

$\Delta DR_{(-1,-2)} = DR_{-1} - DR_{-2}$, i.e. the change in default risk from year -2 to year -1.

$\Delta DEBTEQ_{(+3,-3)} = (DEBTEQ_3 + DEBTEQ_2 + DEBTEQ_1)/3 - (DEBTEQ_{-3} + DEBTEQ_{-2} + DEBTEQ_{-1})/3$, i.e. the difference in the average DBTEQ for years +1 to +3 with the average DEBTEQ for years -3 to -1.

1.6. Empirical Results.

1.6.1. Univariate Analysis.

This section presents the results of the univariate analysis concerning the level of default risk and the level of the main ratios employed in order to test Chapter's 1 hypotheses. Since hypotheses 1.2, 1.3, and 1.5 can only be tested via multivariate regression analysis, results in this section can only be utilized to partly assess hypotheses 1.1 and 1.4. Thus, this section begins by examining the pattern of default risk prior and after dividend increases and initiations, and then analyses the corresponding pattern of the debt to equity ratio.

1.6.1.a) Default Risk During the Years Around Dividend Increases and Initiations.

Table 1.1 presents means and medians of Chapter's 1 DR measure and of the main ratios employed in the empirical analysis, for the three years prior and after the dividend increase and initiation announcements. Table 1.2, column (1), reports means and medians of the 3-year averages following the dividend change (i.e. the average values for years +3, +2, and +1). Likewise, table 1.2, column (2), reports means and medians of the 3-year averages before the dividend change (i.e. the average values for years -3, -2, and -1). Finally, table 1.2, column (3), presents the difference between the average values of the 3 years after the dividend change minus the respective averages for the 3 years prior to the dividend change.[17]

The DR factor is measured using Merton's (1974) model and represents the probability that a firm will fail to service its debt obligations.[18] The first hypothesis states that firms commencing or rising cash dividend payouts experience a decline in their default risk. Accordingly, evidence consistent with *hypothesis 1.1* would point to a reduction in the yearly default risk measures around the dividend increase and initiation years.

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[17] All variables exclude outliers at the first and ninety-ninth percentiles. The sample is not divided into dividend increases and dividend initiations, because the sample's dividend initiation events are very few (337) compared to the dividend increase events (5,999). Essentially, all relevant tests have verified that the inclusion or not of the initiation sample does not alter the substance of the results. However, given that (1) in the long-term stock prices drift following dividend increases (e.g. Benartzi et al. (1997), Grullon et al.(2002)) as well as dividend initiation announcements (e.g. Michaely, Thaler, and Womack, 1995), and (2) one of the main objectives of the first chapter of this thesis is to examine the association between the documented price drift and reductions in DR along with increases in leverage, accordingly, I present the results of the empirical analysis conducted using the pooled sample (i.e. the sample that includes both dividend increase and dividend initiation events). Lastly, results regarding the estimated median values are not discussed, as reported medians are qualitatively similar to the estimated means.

[18] Default risk (DR) is calculated on an annual basis to count for the default likelihood of the following year (see Appendix C.1). DR remains unaffected by intermediate market fluctuations and it is considered as being a highly steady variable. Moreover, variables such as debt in current liabilities and/or long term debt are available from Compustat only on an annual basis. Lastly, as shown in table 1.5, lack of available data to estimate default risk results in reducing this chapter's sample size by 2,922 firm-year observations.

Results in table 1.1 show a reduction in default risk during the three year period before the event year (i.e. year 0). The pattern of change in DR levels from year -3 to +3 can be seen more clearly in the top graph of figure 1.1, which plots the results of table 1.1. The mean DR declines from 2.2% in year -3, to 1% in year -1, it is further reduced to 0.7% in year 0, and then it slightly increases to 0.9% in year +1. So, DR declines the year before dividends are initiated or increased. Moreover, results in table 1.2 show that the 3-year average DR after the dividend change announcement ($DR_{(+3,+1)}$) is lower than the pre-dividend change 3-year average ($DR_{(-1,-3)}$) .This difference (i.e. $\Delta DR_{(+3,-3)}$ which equals -0.008) is statistically significant at the 1% level. Thus, univariate evidence supports that firms that commence or rise existing cash dividend payouts, experience a reduction in their default risk. In fact, this decline in DR is for the most part observed the year prior to the dividend increase or initiation announcements.

1.6.1.b) Debt to Equity Ratio During the Years Around Dividend Increases and Initiations.

According to the *hypothesis 1.4*, the decline in default risk around dividend increases or initiations should be also manifested by increases in firm's leverage. The prediction is that managers, utilising on the reduced default risk, seize the opportunity to increase firm's total debt and thus maximise tax shield benefits.

Table 1.1 presents means and medians of the debt to equity ($DEBTEQ_t$) ratio for the sample firms for the three years prior and after the event year. Prior to year 0, $DEBTEQ_t$ is almost unchanged in years -3 and -2, being around 1.43. Furthermore, despite the large decline in DR observed from year -2 to year -1, debt to equity not only it does not increase, but it slightly drops by 2%, reaching 1.41 in year -1. The observed pattern of DR vis-à-vis that of $DEBTEQ_t$ before the event year, supports the proposition that firms do not proceed with additional leverage increases unless market participants gain knowledge of the reduction in default risk, and that this information is conveyed following dividend increases or initiations.

Consistent with my expectations, following year 0, $DEBTEQ_t$ exhibits an increasing trend which is further highlighted in the middle graph of figure 1.1. Starting from 1.41 in year -1, it rises by 14% in year 0, while in the next three years $DEBTEQ_t$ exhibits an average annual increase of 7%, finally reaching 1.76 in year +3. Moreover, evidence in table 1.2 shows that the 3-year average $DEBTEQ_t$ after the dividend change event ($DEBTEQ_{(+3,+1)}$) is significantly higher than the 3-year average $DEBTEQ_t$ before year 0 ($DEBTEQ_{(-1,-3)}$). $\Delta DEBTEQ_{(+3,-3)}$ is 12.7% and statistically significant at the 1% level, corroborating the rising trend in debt to equity for the three years following dividend increases and initiations.

1.6.1.c) Capital Expenditures, Growth, and Retained Earnings During the Years Around Dividend Increases and Initiations.

This sub-section examines whether firms that commence or increase existing dividend payments, experience declining patterns of capital expenditure and growth manifested by increasing rates of earning retentions.

In line with Grullon et al. (2002) and DeAngelo et al. (2006), results in tables 1.1 and 1.2 support that the sample firms face diminishing investment opportunity sets, fewer growth opportunities (proxied by the declining mean and median capital expenditure ratios ($CETA_t$) and sales growth rates ($SALEGR_t$)), and higher retained earnings ($RETA_t$). Table 1 shows that the mean capital expenditure to total assets starts from 6.2% in year -3, declines to 5.9% on the event year and drops to 5.7% in year +3. Evidence provided in table 1.2 corroborates the diminishing trend of $CETA_t$, as the difference between the post and pre-event 3-year average levels of $CETA_t$ (i.e. $\Delta CETA_{(+3,-3)}$) is negative (-0.004) and statistically significant at the 1% level. In table 1.1, the mean percentage change in total sales rises from 12.7% in year -3, to 15.3% in year 0, pointing out that the sample firms face increasing sales growth rates up to the year when dividend payments are initiated or increased. However, following year 0, sales growth rates steadily decline, starting from 13.1% in year +1 and ending at 10.3% in year +3. Results in table 1.2 confirm the declining trend of $SALEGR_t$ for the 3-years after the dividend increase and initiation announcements, as the mean of $\Delta SALEGR_{(+3,-3)}$ is negative (-0.022) and significant at the 1% level. Finally, table 1.1 shows that the mean of retained earnings to total assets rises up to year 0 by almost 1% each year. Starting from 22.1% in year -3, it increases constantly reaching 24.9% in year 0, and then approximately remains constant as at year +3. The fact that the mean of $\Delta RETA_{(+3,-3)}$ is positive (0.016) and statistically significant, corroborates that the average retained earnings for the 3 years following the dividend change announcement has been higher than the 3-year average retained earnings before year 0. These results support that firms that commence or increase cash dividend payouts face rising retained earnings prior to the dividend change, yet more importantly, retained earnings remain higher following dividend increases and initiations.

1.6.1.d) Return on Assets and Dividend Payout Ratios During the Years Around Dividend Increases and Initiations.

The documented trend regarding return on assets is consistent with earlier empirical findings (e.g. those of Benartzi et al.(1997), Grullon et al. (2002), Allen and Michaely (2003), De Angelo et al. (2004) Benartzi et al.(2005), and Lie (2005)). As reported in table 1.1, although ROA_t exhibits an increasing pattern prior to the event year, this trend does not persist. At the outset, results in table 1.1 seem to be consistent with GMS, showing that dividend increases are followed by reductions in profitability. Yet, table 1.2 reveals that the marginal difference between the post and pre-event 3-year average levels of ROA (i.e. $ROA_{(+3,-3)}$ = -0.001) lacks statistical significance. Nonetheless, what is important for the scope of my research is that dividend increases or initiations do not seem to signal an increase in future profitability.

However, in line with GMS, evidence reveals that dividend payout ratios do increase permanently. Results in table 1.1, show that the mean payout ratio starts from 31% in year -3 and rises up to 38.4% on the event year, and then climbs up to nearly 43% in years +2 and +3. Figure 1.1 (bottom graph) provides the visual representation of the results in table 1.1. Clearly, the pattern of increasing payout ratios during the 3 years prior to the dividend change ends up in a more stable trend that is maintained up to year +3. This is also supported by the evidence provided in table 1.2: the post-dividend change 3-year average dividend payout ratio (Dividend $Payout_{(+3,+1)}$) is 42.7% whereas the respective pre-dividend change 3-year average is lower by almost 10% (Dividend $Payout_{(-1,-3)}$= 33%). The positive difference between the post and pre-event averages (ΔDividend $Payout_{(+3,-3)}$) is statistically significant at all conventional levels. Hence, the evidence provided hitherto supports that firms that commence or rise existing cash dividend payouts, are able to maintain their higher dividends, consistent with Linter's (1956) theory of dividend smoothing (reconfirmed by Brav, Graham, Harvey, and Michaely (2005) using up to date data). Thus, firms seem to have long term target payout ratios which are set around the positive dividend changes and are maintained in the longer term.

On the whole, the observed pattern in payout ratios ties well with the rest of the univariate findings on the declining patterns of default risk, capital expenditures, return on investments and growth, along with the increasing trends of debt to equity ratio, and retained earnings. Specifically, higher dividend payout ratios seem to be an associated feature of the whole process during which firms after reaching a certain potential on their profitability and growth, they consequently face a standstill (or, as GMS suggest, they enter their mature phase).

During this face, firms' investment opportunity set diminishes, and thus their growth begins to slow, and start generating higher retained earnings (DeAngelo et al., 2006). As a result, managers distribute the excess retained earnings in the form of dividends (in line with Jensen's (1986) free cash flow hypothesis). Moreover, lower investments and higher cash balances and earnings retentions induce a reduction in the risk to default on firm's existing debt obligations. Thus, the same reasons that lead to an increase in the dividend payout ratio, drive also the observed reduction in default risk. Likewise, as mature firms settle to their new state of lower investments and growth, and increased free cash flows, then higher dividend payout ratios are maintained, and so do the lower default risk levels.

Nevertheless, lower growth opportunities should induce managers to seek alternative feasible policies in order to increase firm's value. For instance, firm value consists of two components: (1) the value from assets in place, and (2) the value from future growth opportunities. Thus, in the face of diminishing investment opportunities, increasing the value of assets in place is the only alternative option in order to enhance firm's total value. For this purpose, a straightforward, at hand and manageable way would be to wider the benefits of tax shields by increasing firm's leverage.[19] Yet, managers planning such a change in firm's capital structure should be able to convey to lenders and stock holders that the firm is less likely to default on its debt obligations. According to the story provided herein, the way to convey this information to market participants is by initiating or increasing existing cash dividend payouts.

Thus, the conjecture is that rising dividends convey information about a reduction in default risk, which is recognised by the market, and subsequently leads to higher leverage. Moreover, as dividend payout ratios are maintained, the market is reassured that default risk is also sustained at its lower levels. As a result, firm's ability to increase its debt to total capital over time is strengthened. Subsequently, firm's leverage is further increased and consequently default risk climbs up (as shown in figure 1.1 in years +2 and +3 default risk exhibits a notable increase along with debt to equity).[20] In order to substantiate the univariate evidence provided

[19] Untabulated results confirm that for the three-year period following the dividend increase and initiation announcements, the sample firms' total income tax payments (as a percentage of total assets or net income) decline along with increasing debt to equity ratios.

[20] The fact that debt to equity ratio is on average lower during the three-year period prior to the dividend change event (compared to the three-year average debt to equity following the dividend change) offers more validity to my story. That is, at the time when investment opportunities start diminishing, it is logical to expect firm's leverage also to diminish along (i.e. during the time period that precedes the dividend change). This may also be a factor that contributes to the reduction in default risk the years prior to the dividend increase or initiation announcements. However, following the dividend change event, although capital expenditures continue to trend downwards (indicating a continuation in the deterioration of investment opportunities), debt to equity changes its

in this section, the validity of my conjectures is further tested using multivariate regression analysis in the section that follows.

1.6.2. Multivariate Regression Analysis.

This section continues the empirical analysis by firstly presenting in table 1.3 the results related to *hypothesis 1.2*, i.e. whether the reduction in default risk is a priced factor in the cross section of stock returns. Table 1.4 shortly outlines summary statistics for the dependent and the main explanatory variables. Table 1.5 reports the data elimination procedure that yields the final most restricted sample that it is used throughout the rest of the multivariate regression analysis section. Table 1.5 also presents the distribution of the sample's dividend increase and initiation announcements by year. Subsequently, I present and discuss the results of the multivariate regression models employed in order to examine whether my option based default risk measure explains: (1) the dividend paying decision (tables 1.6 and 1.7), and (2) the positive market reaction around the dividend announcements under investigation (i.e. *hypothesis 1.3*-results are shown in table 1.8). Tables 1.9 and 1.10 present regression analysis results by testing the association between upward adjustments in debt to equity and reductions in default risk (*hypothesis 1.4*). Finally I outline and assess multivariate regression evidence regarding Chapter's 1 final hypothesis on the relationship between changes in default risk and debt to equity with the long-term positive excess return drift (table 1.11).

1.6.2.a) Changes in Risk Characteristics: Incorporating the Default Risk Measure into the Fama and French (2003) Three-Factor Model.

Table 1.3 reports the results when testing the second hypothesis using the augmented Fama-French equation [1.1]. I tabulate the cross-sectional mean coefficients of the firm specific estimations. As indicated in the last row of table 1.3, changes in the default risk factor loadings ($c_{\Delta i}$) are significantly negative, showing that following the dividend change event, firms that either commence or rise existing cash dividend payouts experience a significant decrease in their exposure to default risk (the 3-year post-dividend monthly decrease is -9.6 %).

Additionally, results in table 1.3 reveal that dividend increasing and dividend initiating firms earned significant positive alphas during the 3-year period prior to the dividend change

pattern and starts increasing along with stable dividend payout ratios and lower default risk levels (compared to the three-year period before the dividend increase or initiation event).

announcements. These results are in line with earlier findings by Michaely et al. (1995) and Benartzi et al. (1997). Also, table 1.3 shows that changes in the market and in the market to book factor loadings (i.e. $b_{\Delta i}$ and $h_{\Delta i}$) are statistically significant. The decline in the market risk (mean decrease of 3.7% per month) signifies the overall reduction in systematic risk that dividend increasing and dividend initiating firms experience following the dividend change events. Nevertheless, the post event increase in the market to book factor loading (mean increase of 8.1% a month) is in line with the positive drift that is observed following the dividend change event. The change in the size factor does not seem to exhibit statistical significance.

On the whole, the evidence provided in this section corroborates the univariate results and it supports hypotheses 1.1 and 1.2. Specifically, results in table 1.3 show that firms that commence or rise existing cash dividend payments experience a significant decline in their default risk, which is priced by the market beyond market risk and the Fama-French risk factors.

1.6.2.b) Summary Statistics of the Main Multivariate Regression Variables.

Before analyzing the multivariate results, table 1.4 presents descriptive evidence (means, medians and standard deviations) for the variables used in the basic regression models (see models [1.3]-[1.8] in the following sub-sections). The said statistics concern the exact number of firm-year observations used in the multivariate regressions, i.e. the total number of observations available to estimate my default risk measure and survive the inclusion of the control variables. As shown in panel A of table 1.5, starting from the initial sample of 6,336 observations, 2,922 are eliminated in the process of estimating my option based default probability measure. Also, 1,584 observations are removed due to unavailable data regarding the control variables utilised in the multivariate regressions. Lastly, the exclusion of 1% and 99% outliers results in the additional loss of 262 observations. For the sake of consistency and comparability between the regression results, all the regressions are estimated using the final most restricted sample of 1,568 observations.[21] Moreover, panel B of table 1.5 reports the time trends in the sample dividend increase/initiation events, a well as the yearly mean change in

[21] The univariate tests described in section *1.6.1* have been repeated employing the most restricted sample of 1,568 observations. The results are qualitatively similar, and thus, have not been reported.

default risk the year prior to the dividend change event ($\Delta DR_{(-1,-2)}$).[22] The reported statistics do not reveal any significant clustering of events over the sample period.

Results in panel A of table 1.4, show that the 3-day mean and median cumulative abnormal returns around the dividend increase and initiation announcements (CAR) are positive and statistically significant at the 1% level. Moreover, the mean and median ex-post alpha (α_i) indicate that following the initial price increase around the positive dividend change announcement, stock prices continue to be in excess of the market averages for a 3-year period. The ex-post alpha is the ex-post intercept from the augmented Fama-French three-factor model (i.e. model [1.1]) multiplied by 36.[23] The results (mean and median ex-post alpha are 0.126 and 0.139, respectively) illustrate that there is a statistically significant positive drift following dividend increases and initiations (both the mean and the median are significant at the 1% level). These findings confirm those of earlier studies: the so called long-run price drift has been documented to be fairly significant both after dividend increases (Benartzi, Michaely and Thaler (1997), Grullon, Michaely and Swaminathan (2002)), and after dividend initiations (Michaely, Thaler, and Womack, 1995).

Descriptive evidence on $\Delta ROA_{(+3,-3)}$, $\Delta DR_{(+3,-3)}$, and $\Delta DBTEQ_{(+3,-3)}$ is qualitatively similar to the evidence reported in table 1.2 (and discussed in section *1.6.1*, yet are tabulated for the sake of uniformity). The annual change in ROA on the event year is positive and statistically significant at the 5% level ($\Delta ROA_{(0,-1)}$ = 0.002). Also, in line with GMS, the change in market systematic risk (Δ(Mkt-Risk) around the dividend increase and initiation announcements is negative (-0.121) and significant at the 5% level (yet the median Δ(Mkt-Risk) is not statistically significant).

Finally, the change in default risk the year prior to the dividend change event ($\Delta DR_{(-1,-2)}$) is negative (-0.007) and statistically significant at all conventional levels. As shown in figure 1.1, the sample firms experience the largest decline in default risk from year -2 to year -1, and thereafter DR remains low for the following three years. Thus, $\Delta DR_{(-1,-2)}$ constitutes the key explanatory variable in order to test the incremental significance of the portrayed

[22] Note that the final most restricted sample of 1,568 observations concerns the yearly period from 1989 up to 2002. This is due to the fact that Chapter's 1 primary tests require 73 months of return data centred on the dividend increase or initiation announcements. Subsequently, this chapter's analysis and inferences are not influenced by the *Jobs and Growth Tax Relief Reconciliation Act* of 2003 that reduces the top investor tax rates for dividends and long-term capital gains to 15%.
[23] The ex-post period refers to the 36 months (3 years) following the dividend increase or initiation announcements.

reduction in default risk in explaining: (1) the decision to increase (or initiate) dividends, (2) the associated market reaction, and (3) the subsequent increase in debt to equity ratio.

1.6.2.c) The Association of Dividend Increases and Initiations with Reductions in Default Risk in a Multivariate Regression Set Up.

The evidence provided thus far supports an association between default risk and dividend increases and initiations. However, GMS associate such dividend policy changes with future changes in profitability, and the Fama-French measures of systematic risk. To examine whether my option based default measure significantly explains positive dividend changes beyond the profitability and systematic risk measures of GMS, I estimate the following multivariate regression:[24]

$$\Delta DIV_i = \alpha + \beta_1 \Delta ROA_{(0,-1),\, i} + \beta_2 \Delta ROA_{(+3,-3),\, i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),\, i} + \varepsilon_i \qquad [1.2]$$

Based on the evidence provided in the univariate analysis (tables 1.1 and 1.2), default risk reductions take place the year before dividends are risen or initiated. Accordingly, it is expected that dividend increases and initiations are associated with the annual change in default risk in year -1 ($\Delta DR_{(-1,-2)}$).

Nonetheless, I acknowledge that dividend changes may vary cross sectionally with other firm-specific factors. To ensure that the regression results are not due to model misspecification (that would occur if relevant variables that affect dividend policy decisions were omitted), the following additional control variables are also incorporated:[25]

a) $\Delta CATA_{(0,-1)}$ = Change in cash and cash equivalents (annual Compustat data item #4) from year -1 to year 0, scaled by total assets.

b) $SIZE_t$ = The natural logarithm of the firm's total assets.

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[24] Similar to Grullon et al. (2002), throughout the multivariate regression analysis section, both $\Delta ROA_{(0,-1)}$ and $\Delta ROA_{(+3,-3)}$ are considered in a single regression model. As a sensitivity test, all my regression models have been re-run incorporating either the former or the latter of the 2 profitability measures under focus. The corresponding results do not change the substance of my inferences regarding Chapter's 1 central predictions, and thus, have not been tabulated.

[25] Changes in cash flows is incorporated as a control variable in accordance with extant literature that suggests that cash flows have information content in explaining dividend changes (e.g. DeAngelo et al. (1992), Charitou and Vafeas (1998), Charitou (2000), Joos and Plesko (2004)). Chapter's 1 regressions have been also re-run using changes in cash flow from operating activities (Compustat data item #308) scaled by TA_t. Although, the substance of the corresponding results remains unchanged, I report the results obtained when using the change in cash and cash equivalents due to substantially higher data availability. Firm size is a commonly used proxy for the firm's information environment as larger firms institute better mechanisms for periodic information releases (Zeghal (1983), Atiase (1985), Donnelly and Walker (1995), Fama and French (2001)). Size is also proxied by the natural logarithm of the firm's market value, however, no matter which of the two variables is used, results are qualitatively similar. The change in market to book is considered as an additional proxy (i.e. beyond $CETA_t$) for firm's investment opportunity set (Fama and French, (2001), Joos and Plesko (2004)).

c) $\Delta MTB_{(0,-1)}$ = Change in the market value of equity (i.e. the closing price-annual Compustat data item #199- times shares outstanding at fiscal year end-annual Compustat data item #25) from year -1 to year 0, scaled by book value of equity (annual Compustat data item #60).
d) SPI_t = Special Items (annual Compustat data item #17) scaled by total assets.[26]
e) Lag_DIV_t = Dividend payments of the immediately prior quarter.[27]

Additionally, I control for the change in debt to equity ratio from year 0 to year +1 ($\Delta DEBTEQ_{(+1,0)}$), for the sales growth rate ($SALEGR_t$), and the change in retained earnings to total assets from year -1 to year 0 ($\Delta RETA_{(0,-1)}$) as defined in section *1.5.2* above.[28] The extended version of model [1.2] is thus:

$$\Delta DIV_i = \alpha + \beta_1 \Delta ROA_{(0,-1),\, i} + \beta_2 \Delta ROA_{(+3,-3),\, i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,\,-2),\, i} + \beta_5 \Delta DEBTEQ_{(+1,0),\, i} + \beta_6 \Delta RETA_{(0,-1),\, i} + \beta_7 \Delta CATA_{(0,-1),\, i} + \beta_8 SALEGR_i + \beta_9 \Delta MTB_{(0,-1),\, i} + \beta_{10} SIZE_i + \beta_{11} Lag\_DIV_i + \beta_{12} SPI_i + \varepsilon_i \quad [1.3]$$

OLS regression results are presented in table 1.6. Column (1), presents the results when the same model as GMS is considered. This model is used as a benchmark in order to assess the importance of the reduction in default risk in explaining dividend increases or initiations over and above the profitability and risk measures of GMS.[29] Results regarding the models depicted by equations [1.2] and [1.3] are presented in columns (2) and (3), respectively.

The estimated OLS coefficient of $\Delta DR_{(-1,-2)}$ is negative (-0.922 in column (2) and -0.874 in column (3)) and highly significant. The negative slope coefficient corresponding to annual default risk changes indicates that the larger the reduction in default risk, the more positive is the dividend change. The estimated coefficient of the systematic risk measure captured by Δ(Mkt-Risk) fails to exhibit statistical significance in both model specifications.[30]

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[26] Previous research depicts special items as a specific component of earnings related to the dividend–paying decision of the firm (Skinner, 2004).
[27] In line with DeAngelo et al. (2006), one period lag dividend payments is included in order to control for firm's dividend history.
[28] As it was argued in section 1.3 and in line with the univariate analysis results, firms proceed with additional leverage increases only after the reduction in default risk is conveyed to market participants via dividend increases or initiations. Accordingly, I posit that as far as firm's leverage is concerned, the appropriate control variable is the change in debt to equity from year 0 to year +1 (i.e. $\Delta DEBTEQ_{(+1,0)}$).
[29] Chapter's 1 sample differs from GMS, since GMS consider both dividend increase and dividend decrease firm-year observations in a single regression. Moreover, they do not incorporate any additional control variables apart from the 2 profitability measures and the Fama-French risk measure. As a result, their sample consists of more than twice the number of event years than I have managed to attain. Although, my smaller sample yields lower adjusted R^2, I believe that results can be more clearly interpreted when I include only dividend increases along with initiations in a single regression. Nevertheless, despite the lower adjusted R^2, this chapter's models exhibit significant explanatory power as indicated by the corresponding F-tests (the F-statistic starts from 2.85 and increases to 7.18 for the model presented in column (3)).
[30] In order to identify whether the observed lack of significance is due to the exclusion of firms that incur reductions in dividends, a same model as in column (2) is run using a pooled sample that includes both firms that

The inclusion of the additional control variables in column (3) leads in a significantly higher adjusted R^2 (4.8% compared to 0.3% in column (1)) whereas some of the control variables' estimated coefficients exhibit statistical significance at the 1% and 5% levels (i.e. those of $\Delta ROA_{(0,-1)}$, $\Delta DEBTEQ_{(+1,0)}$, $\Delta RETA_{(0,-1)}$. SIZE, and Lag_DIV). However, for this chapter, the important implication is that controlling for systematic risk, profitability, leverage, retained earnings, liquidity, growth, size, lagged dividend status, firm's investment opportunity set, and special items, the association between dividend increases and initiations with the change in default risk in year -1 remains statistically significantly.

Overall, the findings presented in table 1.6 corroborate the univariate results reported in tables 1.1 and 1.2, signifying the role of default risk in explaining positive dividend changes. The change in my option based default risk variable ($\Delta DR_{(-1,-2)}$) has information content in explaining dividend increases and initiations, beyond the alternative control variables employed. Hence, in line with *hypothesis 1.1*, initiations and increases in cash dividend payouts seem to be significantly associated with prior year's reduction in default risk.

1.6.2.d) Robustness Tests: The Association Between the Decision to Increase or Initiate Dividends and Changes in Default Risk Controlling for Risk, Profitability, and Industry Effects.

Essentially the results reported in table 1.6 provide evidence to support that the magnitude of a positive dividend change is associated with a reduction in default risk the year before the dividend change announcement.[31] However, if dividend increases or initiations follow a reduction in DR consistent with *hypothesis 1.1*, then the dividend payment decision (and not the magnitude of the total cash dividend change) is expected to be associated with the lag reduction in DR. Accordingly, the method to test this proposition would be to regress the choice to increase (or initiate) dividends on $\Delta DR_{(-1,-2)}$, controlling for the variables included in model [1.3]. This, obviously, commands the formation of a matching sample of firms that did not increase or commence dividend payments. To this end the following matching samples have been constructed:

announce dividend increases and dividend decreases. As far as this sample is concerned, untabulated results revealed that the change in risk coefficient has statistical significance beyond the profitability measures.

[31] In the case of dividend initiations the magnitude of dividend changes is 100%.

1) Matching Sample 1: $\Delta DR_{(-1,-2)}$ and SIC.

The first matching sample consists of nondividend-increasing (or nondividend-initiating) firms that experienced the closest change in default risk in year -1 ($\Delta DR_{(-1,-2)}$, i.e. the main control variable of the regression models) to the dividend-increasing (or initiating) firms, and belong in the same two-digit SIC code. This matching procedure controls for any systematic changes in default risk unrelated to dividend increases or initiations across similar firms (i.e. firms that belong in the same industry).

2) Matching Sample 2: Size, Market-to-Book and Return.

In forming the second matching sample, I apply the same matching criteria as in Grullon et al. (2002). Accordingly the matching firm is a nondividend-increasing (or nondividend-initiating) firm with size and market to book between 90% and 110% of the size and market to book ratio of the dividend-increasing (or initiating) firm at the end of year -1, and stock returns closest to the dividend-increasing (or initiating) firm during the year prior to the announcement of dividends. This matching strategy controls for any systematic changes in the Fama-French factor loadings unrelated to dividend increases or initiations.[32]

3) Matching Sample 3: ROA and SIC.

The third matching sample is based on ROA and SIC. That is the matching firm is a nondividend-increasing (or nondividend-initiating) firm in the same two-digit SIC code as the dividend-increasing (or initiating) firm, and exhibits the closest average change in ROA during the 3-year period prior to year 0. This matching procedure controls for any systematic changes in profitability across similar firms unrelated to dividend increases or initiations.

Using the aforementioned control samples, the following logit model is estimated:

$$\begin{aligned} \text{SAMPLE} = \alpha &+ \beta_1\,\Delta \text{ROA}_{(0,-1),\,i} + \beta_2\,\Delta \text{ROA}_{(+3,-3),\,i} + \beta_3\,\Delta(\text{Mkt-Risk})_i \\ &+ \beta_4\,\Delta \text{DR}_{(-1,-2),\,i} + \beta_5\,\Delta \text{DEBTEQ}_{(+1,0),\,i} + \beta_6\,\Delta \text{RETA}_{(0,-1),\,i} \\ &+ \beta_7\,\Delta \text{CATA}_{(0,-1),\,i} + \beta_8\,\text{SALEGR}_i + \beta_9\,\Delta \text{MTB}_{(0,-1),\,i} \\ &+ \beta_{10}\,\text{SIZE}_i + \beta_{11}\,\text{Lag\_DIV}_i + \beta_{12}\,\text{SPI}_i + \varepsilon_i \qquad [\,1.4] \end{aligned}$$

where SAMPLE is an indicator variable equal to 1 for firms that increase or initiate dividends and 0 for the corresponding matching firms. The logistic regression results are reported in table

[32] Recognising that dividend paying firms have different risk characteristics than nondividend-paying firms and that these underlying differences could have a potential effect or drive Chapter's 1 results, I match risk using two different risk specifications, i.e. default risk changes (*Matching Sample 1*) and the Fama-French three-factor model risk measurements (*Matching Sample 2*) .

1.7.[33] Consistent with *hypothesis 1.1*, the main variable of interest ($\Delta DR_{(-1,-2)}$) is negative and highly significant suggesting that dividend increases or initiations are more likely the higher the prior year's reduction in firm's risk of default. This result is robust regardless of which of the three matching samples is employed.

1.6.2.e) The Market Reaction Around Dividend Increases and Initiations Announcements and Changes in Default Risk.

In *hypothesis 1.3* it is posited that dividend increases or dividend initiation announcements convey information about a reduction in default risk. Accordingly, the immediate price reaction to positive dividend changes should be contributed, at least partially, to the fact that investors recognize the association between current dividend changes and recent reductions in default risk. To examine this, the 3-day cumulative abnormal stock price reaction (CAR) is regressed on the change in my option based default risk measure the year prior to the dividend change event ($\Delta DR_{(-1,-2)}$). Furthermore, as in model [1.3], I incorporate controls for profitability, leverage, retained earnings, cash balances, growth, size, and special items. Hence, the following regression model is considered:

$$\begin{aligned} CAR_i = \alpha &+ \beta_1 \Delta ROA_{(0,-1),\,i} + \beta_2 \Delta ROA_{(+3,-3),\,i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),\,i} \\ &+ \beta_5 \Delta DEBTEQ_{(+1,0),\,i} + \beta_6 \Delta RETA_{(0,-1),\,i} + \beta_7 \Delta CATA_{(0,-1),\,i} \\ &+ \beta_8 SALEGR_i + \beta_9 \Delta MTB_{(0,-1),\,i} + \beta_{10} SIZE_i + \beta_{11} SPI_i + \varepsilon_i \end{aligned} \qquad [1.5]$$

Table 1.8 reports results from this regression. Similar to table 1.6, three different model specifications are considered for comparison purposes. Column (1) presents the OLS regression results incorporating the two profitability measures (i.e. ΔROA_i and $\Delta ROA_{(+3,-3),\,i}$) and the Fama-French measure of systematic risk (ΔMkt-Risk$_i$).[34] Then, I add the change in my option based default risk variable from year -1 to year -2 ($\Delta DR_{(-1,-2)}$), and the corresponding

[33] Table 1.5 shows that the sample of dividend increasing or initiating firms before the exclusion of the 1% and 99% outliers consists of 1,830 firm-year observations (i.e. 6,336 initial sample observations minus 2,922 observations with unavailable data to estimate DR and 1,584 observations with unavailable data with respect to the control variables). Accordingly, I managed to gather 1,830 matching firms. Thus, the initial pooled sample of 3,660 firms includes 1,830 dividend increasing/initiating firms plus 1,830 matching firms. Yet, a number of observations is lost due to: (1) non-available data with respect to the control variables as far as the matching sample is concerned, and (2) the exclusion of outliers at the first and ninety-ninth percentiles from the pooled sample of dividend increasing/initiating and matching firms . In the case of *Matching Sample* 1, I am left with 1,461 matching firms and 1,727 dividend increasing/initiating firms. As far as *Matching Sample* 2 is concerned, I am left with 1,051 matching firms and 1,707 dividend increasing/initiating firms. Lastly, *Matching Sample* 3 consists of 1,095 matching firms and 1,705 dividend increasing/initiating firms.

[34] See footnote 24.

estimated coefficients are shown in column (2). Finally, results with respect to model [1.5] are presented in column (3).

Consistent with my predictions, beyond the profitability and risk measures employed by GMS, my option based default risk measure contains incremental information in explaining the 3-day positive market reaction observed around the announcement of a positive dividend change. Column (2) of table 1.8 shows that the OLS estimated coefficient of $\Delta DR_{(-1,-2)}$ is -0.059 and significant at all conventional levels. The negative sign indicates that, the higher the decline in firm's risk of default, the more positive is the market reaction. This result is in line with Garlappi, Shu and Yan (2008) where they provide evidence to support that for large and liquid firms, the probability of default is negatively associated with stock returns.

Results concerning regression model [1.5] show that the change in my default risk measure remains statistically significant at the 1% level with the correct sign (the estimated coefficient is -0.058), in spite of the broad variety of control variables employed. The adjusted R^2 also increases from 1.3% in column (2) to 3.0%. Similar to $\Delta ROA_{(+3,-3)}$, in all three model specifications the estimated coefficients corresponding to the GMS measure of systematic risk are highly statistically significant, but with the wrong sign. In line with GMS, the estimated sign on Δ(Mkt-Risk) should have been negative in order to coincide with the notion that greater reductions in systematic risk, lead to more positive price reactions. However, the ambiguity of the coefficients regarding the profitability and the Fama and French risk measures has no bearing on the main inference. Rather, the important bottom line is that the stock price reaction to dividend increases or initiations is negatively related with my option based default risk measure, and this association is statistically significant beyond the alternative control variables I consider.

On the whole, the findings presented in table 1.8 support *hypothesis 1.3*. Extending Grullon, Michaely and Swaminathan (2002), I show that reductions in default risk significantly explain the positive market reaction to positive dividend changes implying that market participants recognize that dividend increases or initiations convey information about a reduction in firm's default risk.

1.6.2.f) The Association Between Dividend Increases and Initiations, Changes in Default Risk and Subsequent Changes in Debt to Equity.

As discussed in section *1.6.1*, this chapter's findings on default risk and debt to equity presented in tables 1.1 and 1.2 support *hypothesis 1.4*, indicating that the decline in default risk around dividend increases or initiations is followed by increases in firm's leverage. My intuition is that managers, utilising on the reduced default risk, seize the opportunity to increase total debt and thus maximise firm's tax shield benefits. Yet, it is essential to examine whether the portrayed relationship between positive dividend changes, reductions in default risk, and increases in debt to equity holds up after incorporating the main control variables employed in models [1.3]-[1.5]. Consistent with the notion that firms proceed with additional leverage increases only after the reduction in default risk is conveyed to market participants via dividend increases or initiations, the appropriate dependent variable is the change in debt to equity from year 0 to year +1 (i.e. $\Delta DEBTEQ_{(+1,0)}$). Accordingly, the following multivariate regression model is tested:

$$\Delta DEBTEQ_{(+1,0),\,i} = \alpha + \beta_1\,\Delta ROA_{(0,-1),\,i} + \beta_2\,\Delta ROA_{(+3,-3),\,i} + \beta_3\,\Delta(\text{Mkt-Risk})_i + \beta_4\,\Delta DR_{(-1,-2),\,i} + \beta_5\,\Delta RETA_{(0,-1),\,i} + \beta_6\,\Delta CATA_{(0,-1),\,I} + \beta_7\,SALEGR_i + \beta_8\,\Delta MTB_{(0,-1),\,i} + \beta_9\,SIZE_i + \beta_{10}\,SPI_i + \varepsilon_i \quad [\,1.6]$$

Results in table 1.9 are in line with the univariate findings, confirming that there is a negative and significant relationship between the reduction in default risk and the post-dividend increase in debt to equity. Nonetheless, it is recognised that because Chapter's 1 sample is constrained to firms that increased or initiated dividends, results in table 1.9 are not conclusive as to whether leverage increases due to a known reduction in default risk or due to an upward dividend change. In other words, since firms that increased or initiated dividends are the ones which also experienced a reduction in DR, the question that emanates is whether the increase in debt to equity results from the change in dividends or the reduction in default risk.[35] Consequently, I investigate this endogeneity issue by employing again the control samples of matching firms as described in section *1.6.2.d)*. In line with *hypothesis 1.4*, the sample dividend increasing/initiating firms are expected to proceed with larger increases in debt to equity as opposed to their nondividend-changing counterparts. The relevant regression model is as follows:

$$\Delta DEBTEQ_{(+1,0),\,i} = \alpha + \beta_1\,SAMPLE + \beta_2\,\Delta DR_{(-1,-2),\,i} + \beta_3\,SAMPLE * \Delta DR_{(-1,-2),\,i} + \beta_4\,\Delta ROA_{(0,-1),\,i} + \beta_5\,\Delta ROA_{(+3,-3),\,i} + \beta_6\,\Delta(\text{Mkt-Risk})_i + \beta_7\,\Delta RETA_{(0,-1),\,i} + \beta_8\,\Delta CATA_{(0,-1),\,i} + \beta_9\,SALEGR_i + \beta_{10}\,\Delta MTB_{(0,-1),\,i} + \beta_{11}\,SIZE_i + \beta_{12}\,SPI_i + \varepsilon_i \quad [\,1.7]$$

[35] I am particularly grateful to Irene Karamanou for her insightful comments on this issue.

ΔDEBTEQ$_{(+1,0)}$ is regressed on ΔDR$_{(-1,-2)}$ and on the indicator variable SAMPLE (which equals 1 for the dividend increase or initiating firms and 0 otherwise). So, the interaction variable SAMPLE * ΔDR$_{(-1,-2)}$ is utilised in order to test whether debt to equity increases more when firms experience a decrease in DR and announce a positive dividend change. Accordingly, regression analysis is expected to yield a negative and significant coefficient on SAMPLE * ΔDR$_{(-1,-2)}$.

Regression results are provided in table 1.10. Employing any of the three matching samples yields qualitatively similar results with respect to the interaction variable of interest. That is, the estimated OLS coefficient SAMPLE * ΔDR$_{(-1,-2)}$ is in all cases negative and highly significant beyond the cluster of the control variables under focus. Accordingly, these robustness regression tests corroborate that firms that rise or initiate dividends experience a higher increase in debt to equity versus nondividend-changing firms, substantiating the predicted association between reductions in default risk, rising dividends and subsequent upward adjustments in leverage.

1.6.2.g) The Post-Dividend Announcement Drift, Changes in Default Risk and Debt to Equity.

As already discussed, the positive and highly significant ex-post alpha (α_i) (reported in table 1.4 and estimated from the augmented Fama-French model [1.1]) accords with earlier findings by Michaely et al.(1995), Benartzi et al. (1997), and Grullon et al. (2002), where it is shown that for the 3 year period following dividend increases and initiations stock returns continue to be in excess of the market averages.

Moreover, evidence presented hitherto, supports that: (1) firms commence or rise existing cash dividend payouts following significant declines in the risk of defaulting on their existing debt covenants, (2) that the risk of default is significantly related with the dividend paying decision, and (3) that market participants realise that the positive dividend changes convey information about a reduction in default risk. These findings give substance to this chapter's argument, that the time span following dividend increases or initiations, constitutes a fitting opportunity for managers to rise their firms' leverage: knowledge about a reduction in default risk (which is conveyed to both lenders and stockholders via dividend increases or initiations) signifies firm's ability to service its additional debt obligations. Apparently, both the univariate and multivariate analyses presented herein, verify that following dividend increases or initiations, Chapter's 1 sample firms increase their leverage (e.g. see figure 1.1 and tables 1.9 and 1.10).

Furthermore, increases in firm's leverage, increase tax shields and thus firm value. Thus, as firms continue to (1) increase their debt to equity ratio, (2) maintain a constant dividend payout ratio, and (3) sustain lower default risk compared to the period prior to the dividend change, then prices are expected to continue their upward drift. Accordingly, *hypothesis 1.5* posits that the observed three-year price drift in stock prices following dividend increases or initiations is related with same time period's adjustments in default risk and debt to equity ratio.

Hypothesis 1.5 is tested by employing the following multivariate regression model:

$$\alpha_i = \alpha + \beta_1 \Delta ROA_i + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(+3,-3),i} + \beta_5 \Delta DBTEQ_{(+3,-3),i} + \beta_6 \Delta RETA_{(0,-1),i} + \beta_7 \Delta CATA_{(0,-1),i} + \beta_8 SALEGR_i + \beta_9 \Delta MTB_{(0,-1),i} + \beta_{10} SIZE_i + \beta_{11} SPI_i + \varepsilon_i \quad [1.8]$$

where $\Delta DR_{(+3,-3),i}$ is the arithmetic average of the annual default risk for the 3-year period after the dividend change (+1 to +3) minus the respective pre-dividend mean default risk for years -3 to -1. Similarly $\Delta DBTEQ_{(+3,-3),i}$ represents the difference between the debt to equity averages of the pre-dividend change minus the post-dividend change 3-year period. I make use of the difference in the ex-ante and ex-post 3-year averages since the dependent variable is the mean ex-post alpha for years +1 to +3.[36]

Model [1.8] extends Benartzi, Michaely and Thaler (1997) and Grullon, Michaely, and Swaminathan (2002), by examining the relation between declining default risk and increasing debt to equity ratio, and the post-dividend announcement drift, beyond profitability and the Fama-French risk measures. Consistent with this chapter's predictions, regression analysis is expected to provide evidence in favour of a negative association between declines in default risk and the long term drift: the larger the decline in default risk, the more positive should be the subsequent positive drift in stock prices. Accordingly, the average change in default risk ($\Delta DR_{(+3,-3)}$) is expected to bear a negative slope coefficient.

However, the sign of the slope coefficient regarding the change in debt to equity ($\Delta DBTEQ_{(+3,-3)}$) still remains an empirical question. On the one hand, the rise in debt increases firm's tax shield and subsequently boosts firm's value. Accordingly, a positive sign would be a

[36] Instead of using the difference in the three-year averages after and prior to the dividend change, I have also run regressions using only the average default risk and the average debt-to-equity ratio for the post-dividend period, i.e. the mean levels for years +1 to +3. I have also used the difference in average changes (instead of levels) for the three years before and after the event year. Regardless of the measure used, results are qualitatively similar. I choose to report those corresponding to the explanatory variables described in equation [1.8] above, as differences in three-year averages are more appropriate in order to control for any systematic drifts in ROA, DR, and DEBTEQ unrelated to dividend changes.

reasonable expectation. On the other hand, as total leverage increases, default risk should also start rising (as shown in figure 1.1), leading to an increase in firm's risk (and thus to an increase in the cost of capital). Hence, a negative sign would also be justifiable.

Table 1.11, column (3), presents the results of the regression model [1.8]. Evidence from this regression supports that both the three-year average default risk and debt to equity ratio have incremental explanatory power in explaining the ex-post drift in stock prices, beyond the risk and profitability measures employed in prior literature and all the other alternative control variables that are incorporated. As expected, the estimated slope coefficient for the change in default risk ($\Delta DR_{(+3,-3)}$) is negative (-1.225) and highly significant. The negative sign suggests that the larger the decline in default risk (i.e. the lower the average post-dividend 3-year period default risk compared to the average pre-dividend 3-year period), the more positive are the post-dividend abnormal returns.

Moreover, the slope coefficient corresponding to changes in debt to equity ratio ($\Delta DBTEQ_{(+3,-3)}$) is positive (0.027) and statistically significant at the 1% level. The positive slope suggests that, beyond the control variables under focus, the larger the increase in leverage the higher the post-dividend announcement drift. A potential explanation for this result emanates from the notion that rising total debt drives up the tax shield benefits and thus increases firm's value. However, it is shown that as debt to equity moves upwards in years +2 and +3, default risk also starts rising (see for example figure 1.1). Yet, the positive sign on $\Delta DBTEQ_{(+3,-3)}$ implies that the positive tax-shield effect from rising leverage dominates the increasing default risk effect.

1.7. Conclusions.

Chapter 1 provides evidence that default risk is a factor explaining firm's returns and the post dividend long-run excess returns drift, beyond the Fama-French risk factors. Using Merton's (1974) option pricing model to compute default measures, it is shown that default risk declines the year before dividends are increased or initiated, and it is further reduced on the event year. These findings contribute to the literature on the information content of dividends using risk explanations, and to the debate regarding the relationship between capital structure and payout policy changes. Specifically, the main results firstly support that dividend increases and initiations are associated with earlier reductions in default risk. Controlling for measures of profitability, retained earnings, liquidity, growth, size, special items and systematic risk employed by prior studies (Benartzi, Michaely and Thaler (1997), Grullon, Michaely, and Thaler (2002), Skinner (2004), DeAngelo, DeAngelo and Stulz (2006)), evidence supports that prior year's reduction in default risk significantly explains the decision to commence or rise existing dividend payments. Secondly, constructing an augmented Fama-French three-factor model to include my default risk measure, it is shown that around positive dividend changes, the decline in default risk is priced in equity returns, beyond the Fama-French risk factors. Further regression analysis also reveals that this reduction in default risk accounts for the positive price reactions to the dividend increase or initiation announcements.

Thirdly, Chapter 1 documents that following dividend increases or initiations, firm's debt to equity ratio increases, and this increase is significantly explained by the reduction in default risk. Lastly, evidence provided in this chapter illustrates that the patterns in default risk and debt to equity ratio significantly explain the post dividend abnormal returns drift beyond profitability and systematic risk measures employed in Grullon et al. (2002).

The proposed justification for Chapter's 1 findings stems firstly, from the supposition that was initially documented by Lintner (1956) and since then has been consistently verified in the dividends literature, i.e. that firms commence or rise existing dividend payments, only when they are confident on their ability to generate enough earnings in order to maintain the initiated or increased dividend payout ratios in the future (e.g. Healey and Palepu (1988), Benartzi et al. (1997), Skinner (2004), Brav et al. (2005), DeAngelo and Angelo (2006), Chen et al.(2007)). Secondly, the explanation provided herein lies within the context of the so called maturity hypothesis firstly posed by Grullon et al. (2002). That is, dividend increases are undertaken by firms that undergo their maturity face, i.e. exhibit diminishing investment opportunities and return on investments, slowing growth opportunities, high earnings retentions rates, and a decline in systematic risk. Hence, because dividend increasing and initiating firms (1) exhibit cash flow stability which is expected to continue, and (2) are mature firms with lower investment needs and thus lower systematic risk, then other things being equal, their risk to default on their debt obligations also declines.

Yet, lower growth opportunities result in assigning assets in place a bigger role in the determination of firm's value. That is, because the market value of the firm is composed of (1) the value from assets in place, and (2) the value from future growth opportunities, then as growth firms become mature, increasing firm's value commands the additional utilisation of the assets in place. This could be achieved by adding more debt and thus increasing the present value of tax shields. Nonetheless, managers would undertake such a change in firm's capital at a time when they can best persuade lenders and stock holders that the firm is less likely to default on its debt obligations. Evidence provided herein supports that this information is conveyed via dividend increases or initiations: rising dividends convey information about a reduction in default risk, which is recognised by the market. As dividend payout ratios are maintained, market participants are reassured that the lower default risk levels are sustained, and as a result firm's ability to increase its debt to total capital over time is enhanced. Accordingly, the economic story accommodated herein, explains the documented increasing pattern of debt to equity ratios following dividend increases or initiations. The predicted association between reductions in default risk, dividend increases (or initiations), and subsequent upward adjustments in debt to equity ratio, is supported by Chapter's 1 multivariate regression tests. Finally, in line with this chapter's predictions, results provided herein show a positive association between the decline in default risk and the excess return drift: as default risk declines, prices increase and expected required returns decline. However, as leverage starts rising, default risk and expected required returns adjust upwards, and this process continues until an equilibrium level of leverage, default risk and returns is reached.

On the whole, the central prediction documented in this chapter, that dividend increases and initiations are associated with decreases in default risk beyond other systematic risk changes, adds to the literature on the information content of dividend payments. Additionally, focusing on firms that undertake dividend increases or initiations, offers a suitable framework to test the effect of reductions in default risk on firm's capital structure. However, the conjecture that the downward adjustment in default risk constitutes a substantial component that links payout and leverage policy changes is not supported by a rigorous theoretical model. In fact, it is asserted that corporate finance lacks a formal theory that adequately explains the leverage decisions of mature, free cash flow generating firms that pay dividends (Graham (2000), DeAngelo and DeAngelo (2006)). Thus, more theoretical research is necessary before researchers in finance are able to thoroughly assess the link between default risk changes and adjustments in capital structure and dividend policy. Finally, since to the best of my knowledge, no other work thus far has examined the effect of default risk on the information content of dividends, and the combined effect of default risk and leverage changes on stock prices following dividend increases or initiations, Chapter's 1 results encourage further theoretical and empirical research on this area to strengthen our confidence in the evidence provided thus far.

Appendix C.1

Calculating Default Risk

The default risk (DR) is measured by the option-based probability of default at debt's maturity. The basic intuition behind the option model (e.g., Merton, 1973, 1974) is that the equity of a levered firm can be viewed as a call option to acquire the value of the firm's assets (V) by paying off (i.e., having as exercise price) the face value of the debt (D) at the debt's maturity (T).[37] From this perspective, a firm will be insolvent if the value of the firm's assets falls below what the firm owes its creditors at debt maturity (i.e., when $V_T < D$). The total market value of the firm's assets at time t, V_t, is assumed to follow a standard diffusion process of the form:

$$dV_t/V_t = (\gamma - \delta)\,dt + \sigma\,dz \qquad [A.1]$$

where γ denotes the (instantaneous) total expected rate of return on firm value, δ is the total payout by the firm (including dividends and coupon payments to debtholders) expressed as a % of V, σ is the (instantaneous) standard deviation of the firm's returns (% asset value changes), and dz is an increment of a standard Wiener process.

The value of equity of such a levered firm, being analogous to a call option on the value of the firm's assets, V, is given by the Black-Scholes-Merton formula for a European call option (adjusted for a payout δ on firm value):

$$E(V, \tau) = V\,e^{-\delta\tau}\,N(d_1) - D\,e^{-r\tau}\,N(d_2) \qquad [A.2]$$

where

$d_2 = \{\ln(V/D) + (r - \delta - 1/2\sigma^2)\,\tau\}/\,\sigma\sqrt{\tau}$; $d_1 = d_2 + \sigma\sqrt{\tau}$

$N(d_2)$ = (univariate) cumulative standard normal distribution function (from $-\infty$ to d_2)

D = face value (principal) of the debt

V = value of firm's assets

σ = standard deviation of firm value changes (returns in V)

δ = constant payout on firm value

r = risk-free interest rate

τ ($\equiv$ T - t) = time to debt's maturity

The first term in eq. [*A.2*] above is the discounted expected value of the firm if it is solvent. $N(d_2)$ in the second term of eq. [*A.2*] is the (risk-neutral) probability the firm will be solvent at maturity, i.e., $\text{Prob}(V_T > D)$, in which case it will pay off the debt principal B (with a

[37] Essentially, from an economic perspective it is the creditors who are considered to be the owners of the firm (rather than the equityholders, who are the legal owners), with equityholders having the right to acquire the firm after paying off what they owe.

present value cost of D $e^{-r\tau}$). The (risk-neutral) probability of default at the debt's maturity is given by:

Prob. default (on principal D at maturity T) = Prob($V_T < D$) = 1 - $N(d_2) = N(-d_2)$

where,

$$d_2 = \{\ln(V/D) + (r - \delta - 1/2\sigma^2)\,\tau\}/\,\sigma\sqrt{\tau} \qquad [A.3]$$

It is worth noting that while the value of the option depends on the risk-neutral probability of default (where d_2 depends on the value of the risk-free rate, r), the actual probability of default at the debt's maturity depends on the future value of the firm's assets and hence on the expected asset return, μ. This is obtained simply by substituting the expected return on assets, μ, for the risk-free rate, r, in the above equation for d_2, i.e.,

Actual prob. of default (on principal D at maturity T) = Prob($V_T < D$) = $N(-d_2)$

where,

$$-d_2(\mu) = -\{\ln(V/D) + [(\mu - \delta) - \tfrac{1}{2}\sigma^2]\tau\}/\,\sigma\sqrt{\tau} \qquad [A.3']$$

In this thesis, I follow an alternative method to calculate the five components in equation [*A.3*] proposed by Bharath and Shumway (2006). Bharath and Shumway suggest that firms that are close to default have very risky debt, and the risk of their debt is correlated with their equity risk, they approximate the volatility of each firm's debt as

$$\sigma(D) = 0.05 + 0.25 * \sigma(E). \qquad [A.4]$$

The five percentage points in this term represents the term structure volatility, and the twenty-five percent times equity volatility allows the volatility to be associated with default risk. This gives an approximation to the total volatility of the firm of

$$\sigma(V) = \frac{E}{V}\sigma(E) + \frac{D}{V}\sigma(D)\,. \qquad [A.5]$$

σ(*E*) is the annualized percent standard deviation of returns and is estimated from the prior year stock return data for each month. *E*, the market value of each firm's equity (in millions of dollars), is calculated from the CRSP database.[38] Following Vassalou and Xing (2004), I take *D*, the face value of debt, to be debt in current liabilities (Compustat item #A45) plus one half of long term debt (Compustat item #A51). The market value of the firm (V) is the sum of the market equity (E) and book value of total liabilities (D). δ is the total payout by the firm (including dividends and coupon payments to debtholders) calculated from (XINT+DV) expressed as a % of V, where XINT is interest expense (Compustat item #A15), DV is cash

[38] E is the product of share price at the end of the month and the number of shares outstanding.

dividends (Compustat item #A127). The expected return on assets μ was calculated (as in Hillegeist et al, 2004) from:

$$\mu_t = \max\left[\frac{V_t + \delta_t - V_{t-1}}{V_{t-1}}, r\right] \qquad [A.6]$$

where the risk free rate, r, is the one-year Treasury Constant Maturity Rate obtained from the Board of Governors of the Federal Reserve System.[39] In this thesis, default risk is considered the probability of default at the debt's maturity given by $N(-d_2)$.

[39] Hillegeist et al (2004) and Vassalou and Xing (2004) used as the firm payout rate (δ) only the stock dividends, whereas I also include the amount of interest paid to the debtholders. These assumptions may lead to somewhat different estimations of the probability of default.

Table 1.1

Default Risk and Ratio Analysis for the Three Years Before and After Dividend Increases and Initiations

This table reports the means and medians of the default risk factor (DR_t) and of the main ratios employed in Chapter's 1 empirical analysis, for the three years prior (i.e. years -3,-2, -1) and after (i.e years +3, +2, +1) the event of a dividends increase or a dividends initiation (i.e. year 0). Chapter's1 sample consists of 5,999 cash dividend increase events and 337 cash dividend initiation events for the sample period 1986-2005.

DR_t represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $DEBTEQ_t$ is the debt-equity ratio defined as long term debt plus debt in current liabilities (annual Compustat data item #9 + annual Compustat data item #34) divided by total common equity (Compustat data item # 60). Payout $Ratio_t$ is defined as as the ratio of total annual common cash dividend payout (Compustat annual data item # 21) divided by net income before extraordinary items (annual data item # 18). ROA_t is the return on assets where $ROA_t = OI_t / TA_t$, OI_t is operating income before depreciation and amortization (Compustat annual data item # 13), TA_t is total assets or annual Compustat data item #6. $CETA_t$ is defined as capital expenditures (Compustat annual data item # 128) plus cash and short-term investments (Compustat annual data item # 1) all divided by TA_t. $SALEGR_t$ is the sales growth rate defined as $SALES_t$ (annual Compustat data item #12) - $SALES_{t-1}$ all scaled by $SALES_{t-1}$.

$RETA_t$ is retained earnings (annual Compustat data item# 36) divided by TA_t. *N* represents the number of observations. The data exclude outliers at the first and ninenty-ninth percentiles.The significance levels of the means (medians) are based on a two tailed *t-test* (two tailed *Wilcoxon rank test*).*, **, ***, indicate statistical significance at the 0.10, 0.05, 0.01 levels of significance, respectively.

	Year:	-3	-2	-1	0	+1	+2	+3
DR_t								
	Mean	0.022***	0.020***	0.010***	0.007***	0.009***	0.014***	0.013***
	Median	0.167***	0.010***	0.001***	0.001***	0.001***	0.002***	0.002***
	N	*3,037*	*3,497*	*3,914*	*4,087*	*3,670*	*3,259*	*2,870*
$DEBTEQ_t$								
	Mean	1.430***	1.433***	1.409***	1.548***	1.577***	1.625***	1.755***
	Median	0.525***	0.509***	0.506***	0.612***	0.634***	0.685***	0.730***
	N	*4,776*	*5,220*	*5,608*	*5,067*	*4,585*	*4,059*	*3,612*
$CETA_t$								
	Mean	0.062***	0.059***	0.058***	0.059***	0.061***	0.060***	0.057***
	Median	0.050***	0.049***	0.048***	0.050***	0.052***	0.051***	0.048***
	N	*3,578*	*3,856*	*4,052*	*3,967*	*3,445*	*2,979*	*2,632*
$SALEGR_t$								
	Mean	0.127***	0.132***	0.150***	0.153***	0.131***	0.114***	0.103***
	Median	0.093***	0.098***	0.111***	0.112***	0.101***	0.091***	0.077***
	N	*4,309*	*4,802*	*5,277*	*5,562*	*5,117*	*4,608*	*4,063*
$RETA_t$								
	Mean	0.221***	0.223***	0.240***	0.249***	0.253***	0.249***	0.248***
	Median	0.140***	0.144***	0.158***	0.169***	0.174***	0.166***	0.160***
	N	*4,584*	*5,030*	*5,422*	*5,451*	*4,907*	*4,324*	*3,845*

Table 1.1 (continued)

Year:	-3	-2	-1	0	+1	+2	+3
ROA_t							
Mean	0.132***	0.133***	0.139***	0.142***	0.136***	0.131***	0.127***
Median	0.123***	0.124***	0.132***	0.135***	0.127***	0.118***	0.110***
N	*4,858*	*5,265*	*5,559*	*5,507*	*4,875*	*4,296*	*3,816*
Payout $Ratio_t$							
Mean	0.309***	0.313***	0.326***	0.384***	0.413***	0.427***	0.426***
Median	0.205***	0.215***	0.231***	0.275***	0.305***	0.328***	0.333***
N	*5,018*	*5,441*	*5,787*	*5,698*	*5,036*	*4,433*	*3,952*

Table 1.2

Changes in Default Risk, Debt to Equity, Capital Expendintures, Sales, Retained Earnings, Profitability, and Dividend Payout Ratios, for the Three Years Before and After Dividend Increases and Initiations

This table reports the means and medians of the 3-year averages after (first column) and prior (second column) the dividend initiation and increase announcement. The third column reports the change between the 3-year average value after the dividend change event minus the 3-year average value prior to the dividend change event. Accordingly, in column (1), $DR_{(+3,\ +1)}$ is defined as $(DR_3+DR_2+DR_1)/3$. Similarly in column (2), $DR_{(-1,\ -3)}$ is defined as $(DR_{-3}+DR_{-2}+DR_{-1})/3$, and in column (3), $\Delta DR_{(+3,\ -3)}$ is defined as $(DR_3 + DR_2 + DR_1)/3 - (DR_{-3} + DR_{-2} + DR_{-1})/3$. The year during which the dividend initiation or increase announcement took place (the event year) is year 0.

DR_t represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $DEBTEQ_t$ is the debt-equity ratio defined as long term debt plus debt in current liabilities (annual Compustat data item #9 + annual Compustat data item #34) divided by total common equity (Compustat data item # 60). Payout $Ratio_t$ is defined as as the ratio of total annual common cash dividend payout (Compustat annual data item # 21) divided by net income before extraordinary items (annual data item # 18). ROA_t is the return on assets where $ROA_t = OI_t / TA_t$, OI_t is operating income before depreciation and amortization (Compustat annual data item # 13), TA_t is total assets or annual Compustat data item #6. $CETA_t$ is defined as capital expenditures (Compustat annual data item # 128) plus cash and short-term investments (Compustat annual data item # 1) all divided by TA_t. $SALEGR_t$ is the sales growth rate defined as $SALES_t$ (annual Compustat data item #12) - $SALES_{t-1}$ all scaled by $SALES_{t-1}$.

$RETA_t$ is retained earnings (annual Compustat data item# 36) divided by TA_t. N represents the number of observations. Chapter's 1 sample consists of 5,999 cash dividend increase events and 337 cash dividend initiation events for the sample period 1986-2005. The data exclude outliers at the first and ninenty-ninth percentiles. The significance levels of the means (medians) are based on a two tailed *t-test* (two tailed *Wilcoxon rank test*). *, **, ***, indicate statistical significance at the 0.10, 0.05, 0.01 levels of significance, respectively.

	(1)	(2)	(3)
Default Risk	$DR_{(+3,\ +1)}$	$DR_{(-1,\ -3)}$	$\Delta DR_{(+3,\ -3)}$
Mean	0.013***	0.019***	-0.008***
Median	0.001***	0.002***	-0.001***
N	*3,843*	*4,084*	*3,252*
Debt-to-Equity	$DEBTEQ_{(+3,\ +1)}$	$DEBTEQ_{(-1,\ -3)}$	$DEBTEQ_{(+3,\ -3)}$
Mean	1.608***	1.420***	0.127***
Median	0.670***	0.521***	0.020***
N	*4,723*	*5,626*	*4,259*
Capital Expendintures	$CETA_{(+3,\ +1)}$	$CETA_{(-1,\ -3)}$	$CETA_{(+3,\ -3)}$
Mean	0.059***	0.061***	-0.004***
Median	0.051***	0.052***	-0.002***
N	*3,504*	*4,110*	*3,307*
Sales Growth Rates	$SALEGR_{(+3,\ +1)}$	$SALEGR_{(-1,\ -3)}$	$\Delta SALEGR_{(+3,\ -3)}$
Mean	0.126***	0.148***	-0.022***
Median	0.099***	0.111***	-0.015***
N	*5,299*	*5,237*	*4,412*

Table 1.2 (continued)

	(1)	(2)	(3)
Reatained Earnings	$RETA_{(+3, +1)}$	$RETA_{(-1, -3)}$	$\Delta RETA_{(+3, -3)}$
Mean	0.250***	0.232***	0.016***
Median	0.169***	0.145***	0.007***
N	*4,976*	*5,435*	*4,478*
Return on Assets	$ROA_{(+3, +1)}$	$ROA_{(-1, -3)}$	$\Delta ROA_{(+3, -3)}$
Mean	0.132***	0.133***	-0.001
Median	0.121***	0.125***	-0.001
N	*4,950*	*5,614*	*4,588*
Divdend Payout Ratio	Dividend $Payout_{(+3, +1)}$	Dividend $Payout_{(-1, -3)}$	Δ Dividend $Payout_{(+3, -3)}$
Mean	0.427***	0.330***	0.093***
Median	0.328***	0.232***	0.052***
N	*5,128*	*5,825*	*4,736*

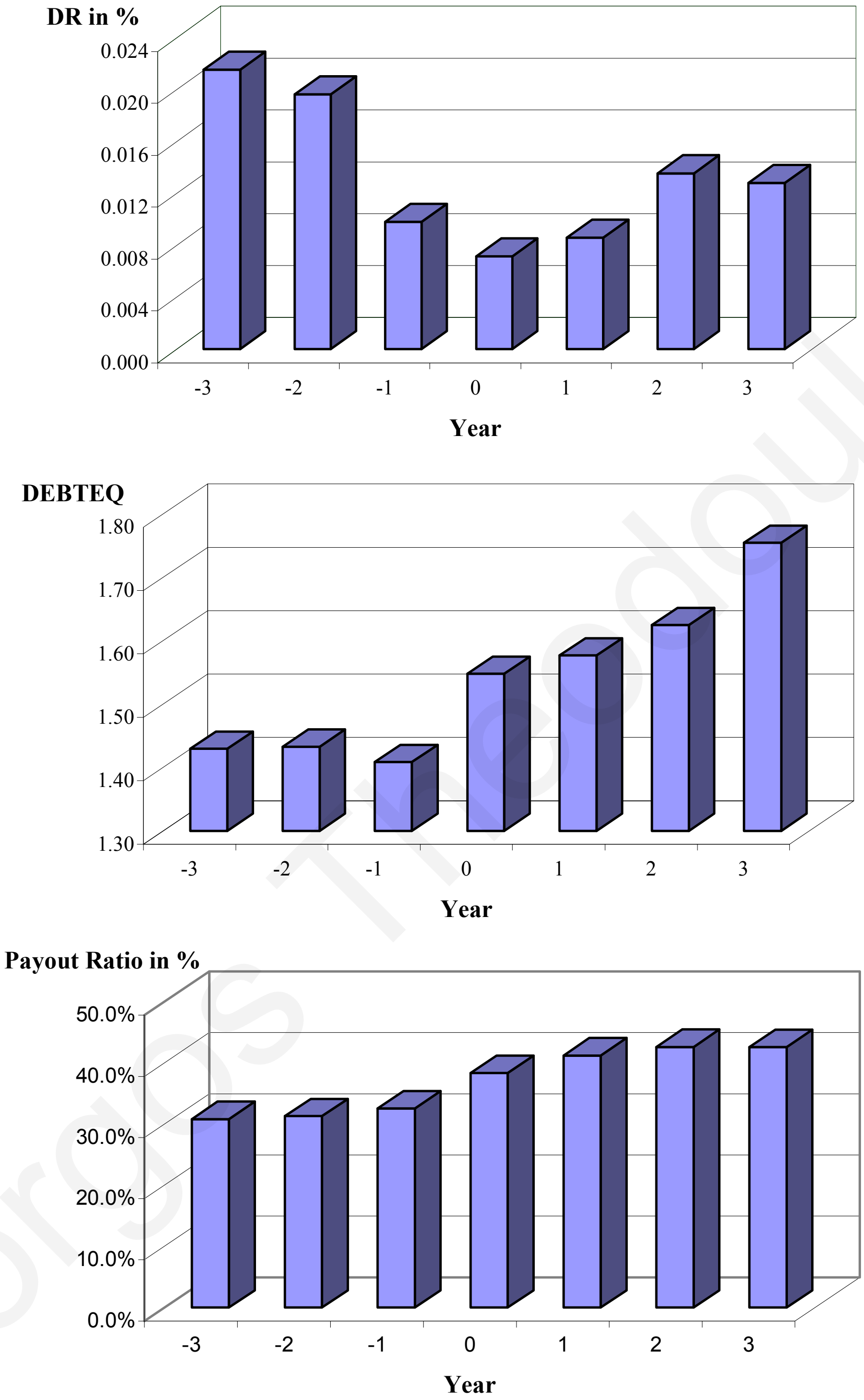

Figure 1.1. The probability to default (Top), the debt to equity ratio (Middle), and the dividend payout ratio (Bottom). This figure presents the mean default risk (DR_t), the mean debt-equity ratio ($DEBTEQ_t$), and the mean dividend payout ratio (Payout Ratio), for the 3 years prior and after dividend increase or dividend initiation announcements. Year 0 is the year during which the announcement took place. Chapter's 1 sample consists of 5,999 cash dividend increase events and 337 cash dividend initiation events for the sample period 1986-2005. DR_t represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $DEBTEQ_t$ and Payout $Ratio_t$ are as defined in table 1 or in section *4.2*. The data exclude outliers at the first and ninenty-ninth percentiles.

Table 1.3

Changes in Factor Loadings Surrounding Dividend Increases and Initiations

This table presents the cross-sectional mean and median values of the estimated coefficients using the following firm-specific Fama-french three factor model augmented to incorporate the option based default risk measure:

$$r_{i,t} - r_{f,t} = \alpha_i + \alpha_{\Delta,i} D_i + b_i (r_{mt} - r_{ft}) + b_{\Delta i} D_t (r_{mt} - r_{ft}) + s_i SMB_t + s_{\Delta i} D_t SMB_t + h_i HML_t + h_{\Delta i} D_t HML_t + c_i DR_t + c_{\Delta i} D_t DR_t + \varepsilon_i \quad [1.1]$$

The above model is estimated from month t^*-36 to month t^*+36 (73 monthly observations), where t^* is the month when the dividend increase or initiation announcement took place. D is a dummy variable that is equal to one for $t \geq t^*$, and zero otherwise. r_{it} is the monthly return on stock i, r_{ft} is the monthly return on 1-month U.S. Treasury bills, r_{mt} is the monhtly return on the corresponding value-weighted NYSE/AMEX/NASDAQ market portfolio. Small minus big (SMB) is the difference between the return on a portfolio of small stocks and a portfolio of large stocks; high minus low (HML) is the difference between the returns on a portfolio of high market to book stocks and a portfolio of low market to book stocks i. DR is the default risk measure. Variables b_i, s_i, h_i, and c_i are the factor loadings (betas) of firm i with respect to (r_{mt} - r_{ft}), SMB, HML, and DR, during the years prior to the dividend increase. Variables $b_{\Delta i}$, $s_{\Delta i}$, $h_{\Delta i}$ and $c_{\Delta i}$ are changes in factor loadings and represent the change in systematic risk after the increase in dividends was announced.
Variable α_i represents the risk-adjusted abnormal return (or Jensen's alpha), or alpha, of firm i before the dividend increase, and $\alpha_{\Delta i}$ is the change in the abnormal return after the dividend increase or initiation announcement month. Each cross sectional sample of regression coefficients excludes outliers at the first and ninety-ninth percentiles. The significance levels of the means (and medians) are based on a two tailed *t-test* (and on a two tailed *Wilcoxon rank test*). *, **, ***, indicate statistical significance at the 0.10, 0.05, 0.01 levels of significance, respectively.

	Mean	Median	*N*
Alpha			
α_i *(alpha)*	0.006***	0.006***	*3272*
$\alpha_{\Delta i}$ *(Δ in alpha)*	-0.002***	-0.001***	*3272*
Market Risk			
b_i *(market beta)*	0.845***	0.824***	*3272*
$b_{\Delta i}$ *(Δ in market beta)*	-0.037***	-0.037***	*3272*
Size Factor			
s_i *(small firm beta)*	0.312***	0.302***	*3272*
$s_{\Delta i}$ *(Δ in small firm beta)*	-0.004	-0.006	*3272*
Market-to-Book Factor			
h_i *(B/M beta)*	0.349***	0.360***	*3272*
$h_{\Delta i}$ *(Δ in B/M beta)*	0.081***	0.057***	*3272*
Defaut Risk Factor			
c_i *(default risk beta)*	0.112***	0.05***	*3272*
$c_{\Delta i}$ *(Δ in default risk beta)*	-0.096***	-0.103***	*3272*

Table 1.4

Descriptive Statistics for the Variables used in the Multivariate Regression Analysis

This table reports the means, medians, and standard deviations of the main variables used in the following multivarite regression models:

$\Delta Div_i = \alpha + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),i} + \text{Control Variables} + \varepsilon_i$ [1.3]

$CAR_i = \alpha + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),i} + \text{Control Variables} + \varepsilon_i$ [1.5]

$\Delta DEBTEQ_{(+1,0)i} = \alpha + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),i} + \text{Control Variables} + \varepsilon_i$ [1.6]

$\alpha_i = \alpha + \beta_1 \Delta ROA_i + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(+3,-3),i} + \beta_5 \Delta DEBTEQ_{(+3,-3),i} + \text{Control Variables} + \varepsilon_i$ [1.8]

ΔDiv_i is the percentage change in the cash dividend payment for firm observation i. CAR is the 3-day cummulative NYSE/AMEX/NASDAQ value weighted abnormal return around the dividend announcement. $DEBTEQ_i$ is the debt to equity ratio defined as long term debt plus debt in current liabilities (annual Compustat data item #9 + annual Compustat data item #34) divided by total common equity (Compustat data item # 60). $\Delta DEBTEQ_{(+1,0)}$ is defined as $DEBTEQ_{+1}$-$DEBTEQ_0$. α_i is the ex-post alpha, that is the 3-year post-dividend risk-adjusted abnormal return for the three years after the dividend increase or initiation announcement (the regression intercept multiplied by 36), and is etimated from the Fama-French 3 factor model augmented to incorporate the option based default risk measure as a fourth factor (see model [1.1] and table 1.3 for a full description).

ROA_i is the return on assets where $ROA_i = OI_i/TA_i$, OI_i is operating income before depreciation and amortization (Compustat annual data item # 13), TA_i is total assets or annual Compustat data item #6. $\Delta ROA_{(0,-1)}$ is defined as ROA_0-ROA_{-1}. Δ(Mkt-Risk) is the change in risk premium of the firm after the dividend increase or the dividend initiation announcements. This is computed by multiplying the change in betas as estimated from the augmented Fama-French model [1.1] with the corresponding risk premium. Default risk (DR) is the probability of default as in the Black and Scholes model, where DR= $N(-d_2)$, and $N(d_2)$ is defined as the (univariate) cumulative standard normal distribution (from $-\infty$ to d_2), $d_2 = \{\ln(V/D)+[(r-\delta)-1/2\sigma^2]\tau\}/\sigma$, V = value of firm's assets, σ standard deviation of firm value changes (returns in V), τ (= T - t) = time to debt's maturity, r = risk-free interest rate, δ = constant payout on firm value, D = face value (principal) of the debt. $\Delta DR_{(-1,-2)}$ is defined as DR_{-1}-DR_{-2}.

The rest explanatory variables are as described in table 1.1 and table 1.2 or section *1.5.2*. The significance levels of the means (and medians) are based on a two tailed *t-test* (and a two tailed *Wilcoxon rank test*). *, **, ***, indicate statistical significance at the 0.10, 0.05, 0.01 levels of significance, respectively.

Panel A: Descriptives for the Dependent Variables

	Mean	Median	Std. Deviation	*N*
Dividend Change ΔDiv_i	0.438***	0.217***	0.538	1,568
Cum. Abnormal Returns CAR	0.005***	0.004***	0.030	1,568
Lead Change in Debt to Equity $\Delta DEBTEQ_{(+1,0)}$	0.060**	0.000***	1.213	1,568
Post-dividend drift α_i	0.126***	0.139***	0.497	1,568

Panel B: Descriptives for the Explanatory Variables

	Mean	Median	Std. Deviation	*N*
$\Delta ROA_{(-1,0)}$	0.002**	0.001***	0.028	1,568
$\Delta ROA_{(+3,-3)}$	-0.003**	-0.001	0.047	1,568
Δ(Mkt-Risk)	-0.121*	0.013	2.780	1,568
$\Delta DR_{(-1,-2)}$	-0.007***	-0.001***	0.046	1,568
$\Delta DR_{(+3,-3)}$	-0.002*	-0.001**	0.082	1,568
$\Delta DEBTEQ_{(+3,-3)}$	0.191***	0.020***	4.173	1,568

Table 1.5

Data Elimination, Yearly Distribution of Dividend Increases and Dividend Initiations Events and Yearly Mean Changes in Default Risk

This table reports the data elimination procedure that yields the final most restricted sample used in the multivariate regression analyses (*Panel A*), the yearly distribution of the dividend increase and the dividend initiation event years, and the yearly mean changes in default risk for the year before the dividend increase or the dividend initiation event (*Panel B*).
The initial sample is collected from all dividend announcements of firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ between 1986 and 2005. The dividend increase sample firms satisfy the following requirements: (1) the dividend payout refers to quarterly cash dividends in U.S. dollars; (2) the firm's financial data are available on CRSP and Compustat; (3) the stocks on which the dividends are paid are ordinary common shares; (4) the previous cash dividend payment was paid within a window of 20-90 trading days prior to the current dividend announcement; (5) the percentage increase in dividends is between 12.5 % and 500%; (6) the dividend announcement is not a decrease, an omission, or an initiation. This sample selection process yields 5,999 cash dividend increase events.
The dividend initiation sample consists of firms that announced dividend initiations and exhibit at least a second dividend announcement (i.e. another one following the initial dividend payment). A dividend initiation is defined as the first quarterly cash dividend payment on ordinary common shares reported in CRSP. Reinstitution of a cash dividend is not considered as a dividend initiation. As with the dividend increase sample, financial data availability on CRSP (Center of Research in Security Prices) and Compustat is required. The resulting sample consists of 337 dividend initiation events.
The most restricted sample of 1,568 observations represents the sample used in the multivariate regression analysis (see models [1.3]-[1.8]). The sample size drops due to: (1) data availability in estimating default risk, (2) data availability regarding the control variables under focus, and (3) exclusion of outliers at the first and ninety-ninth percentiles. Default risk (DR) represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). ΔDR(-1, -2) is defined as DR_{-1}-DR_{-2}.

Panel A: Data elimination from the initial sample to the most restricted sample

Total Number of dividend increases	5,999
Total Number of dividend initiations	337
Initial Sample	6,336
Less:	
Firm-year observations with non-available data to estimate default risk	2,922
Firm-year observations with non-available data with respect to the control variables included in the multivariate regression analyses models	1,584
Eliminated observations due to 1% and 99% outliers exclusion	262
Final Most Restricted Sample	1,568

Panel B: Distribution of the event years and yearly mean changes of $\Delta DR_{(-1,-2)}$

Year (t)	*Number of Initiations*	*Number of Increases*	*Mean* $\Delta DR_{(-1,-2),\,t}$
1989	*5*	*125*	0.004
1990	*5*	*90*	-0.011
1991	*3*	*71*	0.003
1992	*3*	*62*	0.007
1993	*2*	*70*	-0.064
1994	*3*	*102*	-0.003
1995	*3*	*134*	-0.006
1996	*8*	*134*	0.013
1997	*2*	*119*	-0.019
1998	*1*	*119*	-0.002
1999	*7*	*124*	0.010
2000	*3*	*104*	0.028
2001	*5*	*94*	-0.054
2002	*9*	*161*	-0.042
Total N	*59*	*1,509*	

Table 1.6
Regression Analysis of the Magnitude of Dividend Changes

	Dependent Variable: ΔDiv_i		
	(1)	(2)	(3)
$\Delta ROA_{(0,-1)}$	-1.079**	-1.011**	-1.050**
	0.010	*0.016*	*0.012*
$\Delta ROA_{(+3,-3)}$	-0.023	-0.035	0.181
	0.934	*0.902*	*0.511*
Δ(Mkt-Risk)	-0.001	-0.001	-0.002
	0.905	*0.963*	*0.576*
$\Delta DR_{(-1,-2)}$		-0.922***	-0.874***
		0.000	*0.000*
$\Delta DEBTEQ_{(+1,0)}$			0.002**
			0.040
$\Delta RETA_{(0,-1)}$			0.229***
			0.000
$\Delta CATA_{(0,-1)}$			-0.299
			0.233
SALEGR			0.017
			0.669
$\Delta MTB_{(0,-1)}$			0.000
			0.808
SIZE			-0.031***
			0.000
Lag_Div			0.217***
			0.000
SPI			1.129
			0.118
Intercept	0.439***	0.435***	0.601***
	0.000	*0.000*	*0.000*
Adjusted R^2	0.3%	1.3%	4.8%
F-statistic	2.853**	5.489***	7.183***
p-value	*0.036*	*0.000*	*0.000*
Number of observations	*1,568*	*1,568*	*1,568*

Column (3) of this table reports the estimated coefficients of the following OLS regression model:

$$\Delta Div_i = \alpha + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),i} + \text{Control Variables} + \varepsilon_i \quad [1.3]$$

ΔDiv_i is the percentage change in the quartely cash dividend payment for firm *i*. DR represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $\Delta DR_{(-1,-2)}$ is defined as DR_{-1}-DR_{-2}. $\Delta ROA_{(0,-1)}$, $\Delta ROA_{(+3,-3)}$, Δ(Mkt-Risk), and $\Delta DEBTEQ_{(+1,0)}$ are defined in table 1.4. $RETA_i$, $CATA_i$, and $SALEGR_i$ are defined in table 1.1. $\Delta RETA_{(0,-1)} = RETA_0 - RETA_{-1}$ and $\Delta CATA_{(0,-1)} = CATA_0 - CATA_{-1}$. MTB_i is the market to book ratio defined as market value scaled by annual Compustat data item #60 (i.e. total common equity), where market value is the closing price (annual Compustat data item #199) times shares outstanding (annual Compustat data item #25) at fiscal year end. $\Delta MTB_{(0,-1)} = MTB_0 - MTB_{-1}$. $SIZE_i$ is ln(total assets), i.e. $\ln(TA_i)$. Lag_Div is the dividends per share paid by firm *i* during year -1. SPI_i is special items (annual Compustat data item #17) scaled by TA_i.

The most restricted sample consists of 1,568 firm-year observations for the period 1989-2002. The event year, is the year during which the first quarterly cash dividend increase or initiation took place. The significance levels of the estimated coefficients are based on a two tailed *t-test*. The corresponding *p-values* are reported below the estimated coefficients. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Table 1.7
Logistic Regression Analysis of the Decision to Increase or Initiate Dividends

	Dependent Variable: SAMPLE		
	Matching Sample 1: ΔDR and SIC	Matching Sample 2: SIZE, MTB and Return	Matching Sample 3: ROA and SIC
$\Delta ROA_{(0,-1)}$	1.842***	2.860***	2.436*
	0.006	*0.000*	*0.060*
$\Delta ROA_{(+3,-3)}$	0.179	-0.399	-1.491*
	0.714	*0.408*	*0.076*
Δ(Mkt-Risk)	-0.014***	-0.008*	0.007
	0.002	*0.064*	*0.560*
$\Delta DR_{(-1,-2)}$	-0.702**	-1.618***	-0.833***
	0.025	*0.009*	*0.008*
$\Delta DEBTEQ_{(+1,0)}$	0.068*	0.185**	0.140***
	0.086	*0.017*	*0.008*
$\Delta RETA_{(0,-1)}$	0.289**	-0.576**	-0.300
	0.037	*0.034*	*0.594*
$\Delta CATA_{(0,-1)}$	-0.538	-0.456	0.101
	0.297	*0.388*	*0.897*
SALEGR	-0.367***	-0.953***	-0.791***
	0.001	*0.000*	*0.000*
$\Delta MTB_{(0,-1)}$	0.036*	0.064***	0.047**
	0.061	*0.000*	*0.013*
SIZE	0.315***	0.332***	0.270***
	0.000	*0.000*	*0.000*
SPI	2.100**	5.206***	5.886**
	0.027	*0.000*	*0.017*
Intercept	-1.884***	-1.634***	-1.225***
	0.000	*0.000*	*0.000*
Adjusted Mc Fadden's PseudoR²	9.13%	10.02%	6.28%
Negelkerke's PseudoR²	15.49%	16.65%	10.46%
χ^2	420.934***	379.878**	227.342***
p-value	*0.000*	*0.000*	*0.000*
Number of observations	*3,188*	*2,758*	*2,800*

This table reports the estimated coefficients of the following logistic regression model:

$$SAMPLE = \alpha + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),i} + \text{Control Variables} + \varepsilon_i \quad [1.4]$$

SAMPLE is a qualitative variable that equals 1 for dividend-increasing and dividend initiating firms and 0 for those firms that belong to one of the following three matching samples: (1) *Matching Sample* 1: consists of non-dividend increasing (or initiating) firms in the same two-digit SIC code as the dividend-increasing (or initiating) firms that experienced the closest change in default risk ($\Delta DR_{(-1,-2)}$) in year -1; (2) *Matching Sample* 2: consists of nondividend-increasing (or initiating) firms with size and market to book between 90% and 110% of the size and market to book ratio of the dividend-increasing (or initiating) firms at the end of year -1 and stock returns closest to the dividend-increasing (or initiating) firms during the year prior to the announcement of dividends; (3) *Matching Sample* 3: consists of nondividend-increasing (or initiating) firms in the same two-digit SIC code as the dividend-increasing (or initiating) firms that exhibit the closest average change in ROA during the 3 years prior to year 0. All control variables are as defined in table 1.6.

The sample period is 1989-2002. The event year, is the year during which the first quarterly cash dividend increase or initiation took place. The significance levels of the estimated coefficients are based on a two tailed *t-test*. The corresponding *p-values* are reported below the estimated coefficients. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Table 1.8

Regression Analysis of the Cumulative Abnormal Returns

	Dependent Variable: $CAR_{(-1,+1)}$		
	(1)	(2)	(3)
$\Delta ROA_{(0, -1)}$	0.016	0.022	0.030
	0.608	*0.480*	*0.369*
$\Delta ROA_{(+3,-3)}$	-0.042**	-0.047**	-0.053***
	0.022	*0.0011*	*0.004*
Δ(Mkt-Risk)	0.001***	0.001***	0.001***
	0.007	*0.005*	*0.004*
$\Delta DR_{(-1, -2)}$		-0.059***	-0.058***
		0.000	*0.001*
ΔDiv			0.004***
			0.005
$\Delta DEBTEQ_{(+1, 0)}$			0.003**
			0.022
$\Delta RETA_{(0, -1)}$			0.000
			0.989
$\Delta CATA_{(0, -1)}$			-0.023
			0.238
SALEGR			-0.004
			0.431
$\Delta MTB_{(0,-1)}$			0.001*
			0.092
SIZE			0.001***
			0.008
SPI			3.369***
			0.000
Intercept	0.005***	0.004***	-0.005
	0.000	*0.000*	*0.138*
Adjusted R^2	0.6%	1.3%	3.0%
F-statistic	4.204***	6.338***	4.989***
p-value	*0.006*	*0.000*	*0.000*
Number of observations	*1,568*	*1,568*	*1,568*

Column (3) of this table reports the estimated coefficients of the following OLS regression model:

$$CAR_i = \alpha + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),i} + \text{Control Variables} + \varepsilon_i \quad [1.5]$$

CAR_i is the three day cumulative abnormal return in percent with respect to the NYSE/AMEX/NASDAQ value-weighted index around the dividend announcement. ΔDiv_i is the percentage change in the quartely cash dividend payment for firm *i*. DR represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $\Delta DR_{(-1,-2)}$ is defined as DR_{-1}-DR_{-2}.

$\Delta ROA_{(0,-1)}$, $\Delta ROA_{(+3,-3)}$, Δ(Mkt-Risk), and $\Delta DEBTEQ_{(+1,0)}$ are defined in table 1.4. $RETA_i$, $CATA_i$, and $SALEGR_i$ are defined in table 1.1. $\Delta RETA_{(0,-1)} = RETA_0 - RETA_{-1}$ and $\Delta CATA_{(0,-1)} = CATA_0 - CATA_{-1}$. MTB_i is the market-to-book ratio defined as market value scaled by annual Compustat data item #60 (i.e. total common equity), where market value is the closing price (annual Compustat data item #199) times shares outstanding (annual Compustat data item #25) at fiscal year end. $\Delta MTB_{(0,-1)} = MTB_0 - MTB_{-1}$. $SIZE_i$ is ln(total assets), i.e. $\ln(TA_i)$. SPI_i is special items (annual Compustat data item #17) scaled by TA_i.

The most restricted sample consists of 1,568 firm-year observations for the period 1989-2002. The event year, is the year during which the first quarterly cash dividend increase or initiation took place. The significance levels of the estimated coefficients are based on a two tailed *t-test*. The corresponding *p-values* are reported below the estimated coefficients. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Table 1.9
Regression Analysis of the Change in Debt to Equity

	Dependent Variable: $\Delta DEBTEQ_{(+1, 0)}$		
	(1)	(2)	(3)
$\Delta ROA_{(0,-1)}$	-0.272	-0.251	-0.317
	0.594	*0.622*	*0.524*
$\Delta ROA_{(+3,-3)}$	-0.811***	-0.840***	-0.945***
	0.015	*0.012*	*0.003*
Δ(Mkt-Risk)	-0.001	-0.001	-0.002
	0.761	*0.841*	*0.746*
$\Delta DR_{(-1, -2)}$		-0.599***	-0.599***
		0.000	*0.000*
$\Delta RETA_{(0,-1)}$			0.255*
			0.0093
$\Delta CATA_{(0,-1)}$			-0.582**
			0.048
SALEGR			0.105**
			0.021
$\Delta MTB_{(0,-1)}$			0.046***
			0.000
SIZE			-0.006
			0.408
SPI			3.369***
			0.000
Intercept	0.030*	0.027*	0.069
	0.051	*0.081*	*0.236*
Adjusted R^2	0.4%	1.1%	8.8%
F-statistic	3.283**	5.830***	17.779***
p-value	*0.020*	*0.000*	*0.000*
Number of observations	*1,568*	*1,568*	*1,568*

Column (3) of this table reports the estimated coefficients of the following OLS regression model:

$$\Delta DEBTEQ_{(+1,0)\,i} = \alpha + \beta_1 \Delta ROA_{(0,-1),\,i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(-1,-2),\,i} + \text{Control Variables} + \varepsilon_i \quad [1.6]$$

$DEBTEQ_i$ is the debt-equity ratio defined as (annual Compustat data item #9 + annual Compustat data item #34) scaled by annual Compustat data item #60. $\Delta DEBTEQ_{(+1,\ 0)} = DEBTEQ_{+1} - DEBTEQ_0$. DR represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $\Delta DR_{(-1,-2)}$ is defined as $DR_{-1}-DR_{-2}$. $\Delta ROA_{(0,-1)}$, $\Delta ROA_{(+3,-3)}$, Δ(Mkt-Risk) are defined in table 1.4. $RETA_i$, $CATA_i$, and $SALEGR_i$ are defined in table 1.1. $\Delta RETA_{(0,-1)} = RETA_0 - RETA_{-1}$ and $\Delta CATA_{(0,-1)} = CATA_0 - CATA_{-1}$. MTB_i is the market-to-book ratio defined as market value scaled by annual Compustat data item #60 (i.e. total common equity), where market value is the closing price (annual Compustat data item #199) times shares outstanding (annual Compustat data item #25) at fiscal year end. $\Delta MTB_{(0,-1)} = MTB_0 - MTB_{-1}$. $SIZE_i$ is ln(total assets), i.e. $\ln(TA_i)$. SPI_i is special items (annual Compustat data item #17) scaled by TA_i.

The most restricted sample consists of 1,568 firm-year observations for the period 1989-2002. The event year, is the year during which the first quarterly cash dividend increase or initiation took place. The significance levels of the estimated coefficients are based on a two tailed *t-test*. The corresponding *p-values* are reported below the estimated coefficients. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Table 1.10
Regression Analysis of the Change in Debt to Equity for Dividend Increasing and Dividend Initiating Firms Versus Nondividend-Changing Firms

	Dependent Variable: $\Delta DEBTEQ_{(+1,\,0)}$		
	Matching Sample 1: ΔDR and SIC	Matching Sample 2: SIZE, MTB and Return	Matching Sample 3: ROA and SIC
SAMPLE	0.007	0.073**	0.083***
	0.885	*0.012*	*0.006*
$\Delta DR_{(-1,\,-2)}$	1.543***	0.819***	0.107
	0.000	*0.002*	*0.446*
SAMPLE * $\Delta DR_{(-1,\,-2)}$	-1.953***	-1.179***	-0.590***
	0.000	*0.000*	*0.006*
$\Delta ROA_{(0,-1)}$	0.341	-0.131	0.096
	0.249	*0.576*	*0.818*
$\Delta ROA_{(+3,-3)}$	0.163	0.004	-1.023***
	0.477	*0.978*	*0.000*
Δ(Mkt-Risk)	-0.001	-0.002	-0.009**
	0.757	*0.250*	*0.044*
$\Delta RETA_{(0,-1)}$	-0.098	0.037	-0.076
	0.113	*0.456*	*0.678*
$\Delta CATA_{(0,-1)}$	0.419	-0.082	0.362
	0.156	*0.634*	*0.193*
SALEGR	-0.077***	-0.098	0.067
	0.006	*0.518*	*0.140*
$\Delta MTB_{(0,-1)}$	0.014	-0.016***	0.011
	0.108	*0.000*	*0.260*
SIZE	-0.008	-0.012*	-0.003
	0.476	*0.065*	*0.669*
SPI	2.137***	-0.553*	1.921**
	0.000	*0.086*	*0.045*
Intercept	0.113	0.081*	-0.006
	0.120	*0.082*	*0.905*
Adjusted R^2	1.9%	1.6%	1.2%
F-statistic	6.480***	5.033***	3.921***
p-value	*0.000*	*0.000*	*0.000*
Number of observations	*3,188*	*2,758*	*2,800*

This table reports the estimated coefficients of the following OLS regression model:

$$\Delta DEBTEQ_{(+1,\,0)} = \alpha + \beta_1 \, SAMPLE + \beta_2 \, \Delta DR_{(-1,\,-2),\,i} + \beta_3 \, SAMPLE{*}\Delta DR_{(-1,\,-2),\,i} + \text{Control Variables} + \varepsilon_i \qquad [1.7]$$

$DEBTEQ_i$ is the debt-equity ratio and is defined in table 1.1. $\Delta DEBTEQ_{(+1,\,0)} = DEBTEQ_{+1} - DEBTEQ_0$. SAMPLE is a qualitative variable that equals 1 for dividend-increasing and dividend initiating firms and 0 for those firms that belong to either of the following three matching samples: (1) *Matching Sample* 1: consists of non-dividend increasing (or initiating) firms in the same two-digit SIC code as the dividend-increasing (or initiating) firms that experienced the closest change in default risk ($\Delta DR_{(-1,-2)}$) in year -1; (2) *Matching Sample* 2: consists of nondividend-increasing (or initiating) firms with size and book to market between 90% and 110% of the size and book-to-market ratio of the dividend-increasing (or initiating) firms at the end of year -1 and stock returns closest to the dividend-increasing (or initiating) firms during the year prior to the announcement of dividends; (3) *Matching Sample* 3: consists of nondividend-increasing (or initiating) firms in the same two-digit SIC code as the dividend-increasing (or initiating) firms that exhibit the closest average change in ROA during the 3 years prior to year 0.

$\Delta DR_{(-1,\,-2)}$, $\Delta ROA_{(+3,-3)}$, Δ(Mkt-Risk), and $\Delta DEBTEQ_{(+1,\,0)}$ are defined in table 1.4. $RETA_i$, $CATA_i$ and $SALEGR_i$ are defined in table 1.1. $\Delta RETA_{(0,\,-1)}$, $\Delta CATA_{(0,\,-1)}$, $\Delta MTB_{(0,\,-1)}$, $SIZE_i$, and SPI_i are defined in table 1.9. The sample period is 1989-2002. The event year, is the year during which the first quarterly cash dividend increase or initiation took place. The significance levels of the estimated coefficients are based on a two tailed *t-test*. The corresponding *p-values* are reported below the estimated coefficients. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Table 1.11
Regression Analysis of the Ex Post 3-Year Alpha (Abnormal Return)

	Dependent Variable: α_i		
	(1)	(2)	(3)
$\Delta ROA_{(0,-1)}$	-0.602*	-0.567*	-0.727**
	0.084	*0.094*	*0.036*
$\Delta ROA_{(+3,-3)}$	2.625***	2.523***	2.567***
	0.000	*0.000*	*0.000*
Δ(Mkt-Risk)	0.004	0.004	0.003
	0.231	*0.239*	*0.279*
$\Delta DR_{(+3, -3)}$		-1.236***	-1.225***
		0.000	*0.000*
$\Delta DEBTEQ_{(+3, -3)}$		0.030***	0.027***
		0.001	*0.001*
$\Delta RETA_{(0,-1)}$			0.215**
			0.019
$\Delta CATA_{(0,-1)}$			0.101
			0.695
SALEGR			0.049
			0.124
$\Delta MTB_{(0,-1)}$			0.005
			0.419
SIZE			-0.004
			0.441
SPI			-0.071
			0.777
Intercept	0.140***	0.134***	0.155***
	0.000	*0.000*	*0.000*
Adjusted R^2	6.7%	11.6%	11.7%
F-statistic	48.583***	52.795***	24.857***
p-value	*0.000*	*0.000*	*0.000*
N	*1,568*	*1,568*	*1,568*

This table reports the estimated coefficients of the following OLS regression model:

$$\alpha_i = \beta_0 + \beta_1 \Delta ROA_{(0,-1),i} + \beta_2 \Delta ROA_{(+3,-3),i} + \beta_3 \Delta(\text{Mkt-Risk})_i + \beta_4 \Delta DR_{(+3,-3),i} + \beta_5 \Delta DBTEQ_{(+3,-3),i} + \text{Control Variables} + \varepsilon_i \quad [1.8]$$

where α_i is the risk-adjusted abnormal return, or alpha (that is the 3-year post-dividend risk-adjusted abnormal return for the three years after the dividend increase or initiation announcement-the estimated regression coefficient multiplied by 36) and is etimated from the Fama-French 3 factor model augmented to incorporate the option based default risk measure as a fourth factor (see model [1.1] and table 1.3 for a full description).

$\Delta ROA_{(0,-1)}$, $\Delta ROA_{(+3,-3)}$, and Δ(Mkt-Risk) are defined in table 1.4. DR represents the probability to default and is constructed using Merton's (1974) model (see Appendix C.1 for a detailed description). $\Delta DR_{(+3,-3)} = (DR_3 + DR_2 + DR_1)/3 - (DR_{-3} + DR_{-2} + DR_{-1})/3$. $DEBTEQ_i$ is the debt-equity ratio and is defined in table 1.1. $\Delta DEBTEQ_{(+3,-3)} = (DEBTEQ_3 + DEBTEQ_2 + DEBTEQ_1)/3 - (DEBTEQ_{-3} + DEBTEQ_{-2} + DEBTEQ_{-1})/3$. $RETA_i$, $CATA_i$, and $SALES_i$ are defined in table 1.1. $\Delta RETA_{(0,-1)} = RETA_0 - RETA_{-1}$ and $\Delta CATA_{(0,-1)} = CATA_0 - CATA_{-1}$.

MTB_i is the market to book ratio defined as market value scaled by annual Compustat data item #60 (i.e. total common equity), where market value is the closing price (annual Compustat data item #199) times shares outstanding (annual Compustat data item #25) at fiscal year end. $\Delta MTB_{(0,-1)} = MTB_0 - MTB_{-1}$. $SIZE_i$ is ln(total assets), i.e. $\ln(TA_i)$. SPI_i is special items (annual Compustat data item #17) scaled by TA_i.The most restricted sample consists of 1,568 firm-year observations for the period 1989-2002. The event year, is the year during which the first quarterly cash dividend increase or initiation took place. The significance levels of the estimated coefficients are based on a two tailed *t-test*. The corresponding *p-values* are reported below the estimated coefficients. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Chapter 2

2. Losses, Dividend Reductions, and Market Reaction Associated with Past Earnings and Dividends Patterns.

2.1. Abstract.

Chapter 2 examines investor reaction to dividend reductions or omissions conditional on past earnings and dividends patterns for a sample of 133 U.S. firms that incurred an annual loss during the period 1986-2003. Evidence documents that the market reaction for firms with long patterns of past earnings and dividend payouts is significantly more negative than other firms with less-established past earnings and dividends records. These results stem from the stylized fact that managers aim at maintaining consistency with a historic payout policy, being reluctant to proceed with dividend cuts, and that this reluctance is higher the more established the historic payout policy is (Lintner, 1956; Brav et al. 2005). Consequently, in the face of a loss, the longer the stream of prior earnings and dividend payments are, the more reliably dividend cuts are perceived as an indication that earnings difficulties will persist in the future. Evidence supports that past earnings and dividends patterns are significantly negatively associated with the market reaction to dividend reductions or omissions, even after controlling for industry effects, the magnitude of the dividend cut, the timing of the dividend announcement relative to the loss announcement, the firm's information environment and investment opportunity set, the depth of the firm's loss, and the effect of the negative earnings surprise.

2.2. Introduction.

This chapter examines investor reaction to dividend reductions or omissions for loss firms, conditional on their previous patterns of earnings and dividend payouts.[40] Although there is much evidence that the market treats dividend changes as newsworthy, no research to date has examined the market reaction to dividend reductions or omissions conditional on past earnings and dividends records. In this chapter, I hypothesize that share price reactions associated with unfavourable changes in regular cash dividends given a loss, are more

[40] Consistent with DeAngelo et al (1992), "Established firms" are those firms with a relatively long stream of positive earnings and dividend payments prior to their first annual loss. Specifically, I define "Established firms" those firms with at least seven years of positive earnings and dividend payments prior to their first annual loss. For robustness purposes, I also use alternative sub-samples of "Established firms".

negative, the more established earnings and dividend payouts have been prior to the firm's first annual loss. It is thus conjectured that patterns of past earnings and dividends play an important role in affecting investors' assessments of the persistence of earnings difficulties.

Similar to De Angelo, De Angelo, and Skinner (1992), Charitou (2000), and Joos and Plesko (2004), I choose to study loss firms, because dividend payments are more informative when the cost of paying dividends is higher. As De Angelo, De Angelo, and Skinner (1992) argue, dividends have significant information content when current earnings are extreme or otherwise unusual and thus, constitute an unreliable indicator of future profitability.[41] Similarly, Mikhail, Walther, and Willis (2003) find that the market reaction is more pronounced when dividend policy changes are coupled with low earnings quality, supporting that dividend changes are a substitute source of information regarding future cash flows when earnings quality is low.[42] In the same manner, Skinner (2004) supports that the existence of dividends is more informative for the quality of earnings for loss firms than for non-loss firms.[43] Moreover, Hand and Landsman (2005) report that firms that incur a loss exhibit a much higher positive relation between stock prices and dividends compared to those that exhibit positive earnings. This issue gains more interest given on the one hand, the increasing tilt of publicly traded firms towards lower earnings and the substantial increase in the frequency of reported losses (e.g., Givoly and Hayn (2000), Fama and French (2001), Skinner (2004), DeAngelo, DeAngelo, and Skinner (2004)), and on the other hand, the increasing evidence that corporate earnings have become more concentrated and more variable in the past three decades (De Angelo, De Angelo, and Skinner (2004), Fama and French (2004)).

In an attempt to extend the aforementioned studies, I focus on market participants' reaction when dividends are reduced or suspended in the face of a loss, examining whether this reaction is associated with patterns of past earnings and dividend payouts. The argument made here is that the historic consistency in generating earnings and distributing them in the form of regular cash dividends is an important determinant of the market response to dividend reductions or omissions, because it significantly affects investors' assessments of the persistence of earnings difficulties (Koch and Sun, 2004). Firms that exhibit a commitment to pay dividends for a long period of time, build a long-term "reputation" for truthfulness in

[41] Hayn (1995) confirms that losses are less informative than profits about the firm's future prospects.
[42] Mikhail, Walther, and Willis (2003) measure earnings quality as the adjusted R^2 from regressions of future cash flows on current earnings.
[43] Skinner (2004) interpretation of earnings quality focuses on the relationship between earnings and dividend changes. Accordingly, high quality earnings imply a strong positive relationship between reported earnings and dividend changes.

revealing private information about earnings, which is especially strong if dividends have been stable or increasing and have been accompanied by positive earnings (Brucato and Smith (1997), Barth, Elliot, and Finn (1999)). The stronger the firm's commitment to pay dividends, the more credible the information it reveals regarding its prospects and the higher managers' reluctance will be to break this ongoing commitment (Lintner (1956), Skinner (2004), Brav, Graham, Harvey, and Michaely, (2005)).[44] Thus, in the face of a loss, an adverse shift in dividend policy will be more reliably considered as an indication that earnings difficulties will persist in the future, the longer the stream of prior earnings and dividend payments is. This will in turn result in a more negative market reaction.

Consistent with my expectations, evidence supports that the market reacts more negatively when losses are accompanied with unfavorable changes in dividend policy the longer and the more established prior earnings and dividends are. Using an event study methodology (e.g., Brown and Warner (1985), Lasfer (1995)), I compare the immediate (three-day) market reaction to dividend omissions or reductions announcements for firms that had at least seven years of positive earnings and stable (or increasing) dividend payments prior to their first annual loss (the sample of "Established" firms) with those that exhibited positive earnings and stable (or increasing dividends) for at most three years prior to their first annual loss (the sample of "Less-established" firms). Results hold even after controlling for industry effects, the magnitude of the dividend changes, the timing of the dividend announcement relative to the loss declaration, the firm's information environment and investment opportunity set, the depth of the firm's loss and the effect of the negative earning's surprise.

Chapter 2 proceeds as follows: section 2.3 reviews the related literature and provides the motivation and the development of this chapter's main hypothesis. Section 2.4 discusses the research design. Section 2.5 provides an evaluation of the empirical results, and finally section 2.6 concludes this chapter.

[44] In their recent study, Brav et al. (2005) report that 84.1% of the 166 financial executives surveyed, agree or strongly agree that the most important factor for dividend policy is maintaining consistency with a historic payout policy.

2.3. Background, Motivation, and Hypothesis Development.

It has been well documented in previous studies that dividend decreases are associated with negative share price reactions (see, for example, Charest (1978), Aharony and Swary (1980), Ofer and Siegel (1987), Healy and Palepu (1988), Michaely, Thaler, and Womack (1995), Benartzi, Michaely, and Thaler (1997), Grullon, Michaely, and Swaminathan (2002), Lie (2005), and Chen, Shevlin, and Tong (2007)). Dividend decreasing firms earn negative abnormal returns, and this finding is rather strong and robust.

However, despite the large volume of research that has been produced over the years, it is not yet clear whether changes in dividend policy signal future earnings prospects or not. Recent studies have been contradictory on this issue. For example Nissim and Ziv (2001) provide evidence that dividend decreases (increases) signal future earnings, but in a later study Grullon, Michaely, Benartzi, and Thaler (2005) document that the dividend signaling hypothesis does not hold.[45] Lie (2005) also finds no evidence that dividend changes are an informative signal of future earnings.[46] On the other hand, Akbar and Stark (2003), Hand and Landsman (2005), and more recently, Hanlon, Myers, and Shevlin (2007) provide opposite results.[47]

Beyond the aforementioned studies which relate to the association of dividends with earnings, other studies shed light on the dividend signaling issue by examining the information content of dividend policy changes in the event of a loss (De Angelo, De Angelo, and Skinner (1992), Charitou (2000), Joos and Plesko (2004)) or more generally, they associate dividend policy with earnings quality (Mikhail, Walther, and Willis (2003), Skinner (2004), Caskey and Hanlon (2005)). Specifically, De Angelo, De Angelo, and Skinner (1992) (henceforth DDS) argue that because current earnings and dividend policy are likely substitute means of forecasting future earnings, the less reliable current earnings are, the more useful dividend payouts are in forecasting future earnings. According to DDS earnings are characterized as "less reliable" when they are extreme or otherwise unusual, and thus do not convey any information regarding firm's future performance. They contend that their sample meets this earnings criterion, as it consists of firms that incurred an annual loss, after having an established record of positive earnings and dividends for a ten year period.

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[45] Unlike Nissim and Ziv (2001), Grullon et al (2005) use an earnings expectation model that controls for the non-linear patterns in earnings and this results in the disappearance of the relationship between dividend changes and future earnings.

[46] Crawford et. al (2005), also find that stock dividends do not provide superior signalling than non-cash stock distributions.

[47] Akbar and Stark (2003) use a UK sample, confirming the results of Hand and Landsman (2005) for the USA.

Chapter 2 concentrates on two issues which are based on DDS line of reasoning and are central to the research question that is hereby examined: (1) DDS imply that an annual loss is less reliable the more established the preceded earnings and dividends patterns are. "Loss-reliability" is thus associated with patterns of past earnings and dividends: longer patterns of past earnings and dividends mean lower "loss-reliability"; (2) lower loss-reliability leads in turn in strengthening the usefulness of dividend policy as a predictor of future earnings: the less reliable a loss is, the more dividends dominate earnings in predicting future earnings. In other words, the information content of dividends is a negative function of loss-reliability and a positive function of past earnings and dividends patterns.

Chapter 2 extends DDS by investigating whether market participants price loss firms' past earnings and dividends patterns, when dividends are reduced or omitted.[48] I argue, that in the event of a loss, market participants should react more negatively when dividends are cut or omitted for established profit-making dividend-paying firms, than for less-established firms because: (1) longer patterns of past earnings and dividends induce lower loss reliability, and (2) lower loss reliability strengthens the information content of dividend policy regarding firm's future performance (as in DeAngelo, DeAngelo, and Skinner (1992), Charitou (2000), Joos and Plesko (2004), Skinner (2004), Landsman and Hand (2005)). Subsequently, given a loss, a dividend reduction constitutes a stronger indication regarding the loss-persistence for established vis-à-vis less-established firms. This conjecture is also in line with a stream of research on behavioral finance. For example, Barberis, Shleifer, and Vishny (1998) built a theoretical model which predicts investor overreaction to a series of shocks. Accordingly, it is expected to observe an asymmetry in the returns of established relative to the returns of less-established firms.[49] Following a string of positive earnings and dividends, investors expect this trend to persist. Thus, a negative shock is more of a surprise, the longer the past trend of earnings and dividend payouts. This will in turn result in a more negative stock reaction the longer the patterns of past earnings and dividends.[50]

[48] In their study, DeAngelo, DeAngelo, and Skinner (1992) examine the dividend policy decision for a sample of 167 firms that incurred a loss after having positive earnings and dividend payouts for a period of ten years. Their main finding is that dividend reductions are more likely given greater current losses, less negative unusual items, and more persistent earnings difficulties. The work presented in this chapter differs from theirs in two major aspects: (1) I examine the associated market reaction to dividend reductions or omissions (and not the management decision of whether to continue paying dividends or not), and (2) I examine the association of the market reaction to dividend policy changes relative to varying degrees of past earnings and dividends patterns.

[49] The same line of reasoning is used by Landsman et al. (2002), when applying Barberis et al. (1998) and Daniel et al. (1998) models' implications in the case of value versus glamour stock returns.

[50] Lasfer et al. (2003) provide empirical evidence consistent with a market overreaction hypothesis.

These arguments point to Chapter's 2 main hypothesis:

In a sample of loss firms, the market reaction to dividend reductions or omissions is more negative, the longer the patterns of earnings and dividend payments preceding the loss.

2.4. Research Design.

2.4.1. Data Set.

The data are collected from the COMPUSTAT data base. I identify New York Stock Exchange, NASDAQ, and American Stock Exchange-listed industrial companies that meet the following criteria for the sample period 1985-2003: (a) industrial firms,[51] (b) availability of data to calculate the level of earnings per share,[52] (c) availability of quarterly dividends per share, and (d) occurrence of at least one annual loss, preceded by positive annual earnings and an annual dividend payment (see Table 2.1 for a detailed description). Consistent with prior studies I initially use annual data.[53] A total of 708 industrial firms that met the above criteria are included in the initial sample, called the "primary sample", and subsequently are filtered and categorized as being in the "Established" or in the "Less-established" sample.

From the aforementioned sample of 708 firms, 157 firms were classified as "less-established firms" since they exhibited positive annual earnings for at most three consecutive years and have been paying stable or increasing annual dividends from year to year, incurred a loss, and on the loss year reduced or suspended their dividends. On the other hand, 59 of those 708 firms were classified as "established firms" since they exhibited positive annual earnings for at least seven consecutive years and had been paying stable or increasing annual dividends from year to year, on the 8th year incurred a loss, and on the loss year reduced or cut their dividends.[54]

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[51] The initial sample includes industrial firms distributed by industry as follows: manufacturing firms (SIC 1000-4299, 4400-4799), retailing firms (SIC 5000-5999) and firms in the services industry (SIC 7000-7999). Consistent with previous studies financial institutions and utilities were excluded from the sample (DeAngelo et al. (1992), Charitou (2000), De Angelo at al. (2004), Grullon et al. (2005)).

[52] Consistent with De Angelo et al. (1992) I use basic annual earnings before extraordinary items and discontinued operations (Compustat annual data item #58).

[53] See for example Fama and Babiak (1968), Watts (1973), De Angelo et al. (1992), Charitou (2000), Lee and Yan, (2003), Joos and Plesko (2004), Skinner (2004) among others. In line with prior studies I use annual data in order to: (1) avoid possible seasonality effects contained in earnings, and (2) account for the fact that dividends are not uniformly distributed across the four quarters (Lee and Yan, 2003). As De Angelo et al. (1992) argue, annual data are in line with Lintner's (1956) finding that dividends are uniformly considered in terms of annual periods. Consistent with De Angelo et al. (1992) annual dividends are used with the 'overlap' definition: a dividend is allocated to a particular year if it occurs in the second, third, or fourth quarter of that fiscal year, or in the first quarter of the following fiscal year.

[54] The sampling criteria exclude firms that had 4, 5, or 6 years of earnings and stable or increasing dividends prior to their first annual loss, in order to have a clear, sharp and distinct separation of those firms that exhibit an

Dividend reduction or suspension announcement dates for the firms included in the two sub-samples are identified using *CRSP*, *Lexis-Nexis* and *Factiva* databases.[55] Using the CRSP database, I identify the daily stock returns that correspond to the quarter that the relative dividend announcement was made. I identify dividend reduction or omission announcements and the corresponding stock returns (1) for 83 "Less-established" firms, and (2) for 50 "Established" firms.[56]

Table 2.2 reports the percentage of dividend reduction relative to dividend omission announcements for the two sub-samples. Forty seven (56.63%) of the 83 firms in the "Less-established" sample of firms announced reductions during the loss year, whereas the remaining 43.37% (36 firms) announced dividend omissions. For the "Established" sample of firms, twenty six (52%) of the 50 dividend reductions were cuts to a positive level, while the remaining 24 (48%) were complete omissions of dividend payments.

Table 2.3 describes the distribution of the *"Time"* samples. A firm belongs in sample *"Time i"*(where i=1, 2, 3 for the Less-established sample and i=7, 8, 9, 10 for the Established sample), if it reports: (1) a loss, and (2) a dividend reduction or an omission in year t (where t is the event year), after having: (1) positive earnings for i years prior to the loss, and (2) stable or increasing dividends for $i+1$ years prior to the loss. For example in year t, *Time 2* firms (1) incurred a loss, and (2) reduced or suspended dividend payouts. Also, (1) had positive earnings for years $t-1$ and $t-2$, and (2) dividends paid on year $t-2$ were greater or equal than those of year $t-3$, and dividends paid on year $t-2$ were greater or equal than those of year $t-1$.

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established pattern of dividend payments and positive earnings versus those with a less-established pattern. Moreover, different combinations of prior annual earnings and dividends patterns have been considered. That is, I construct "Established" firms samples considering companies with at least eight or at least nine years of positive earnings and stable or increasing dividends prior to the first annual loss. Similarly, I create "Less-established" firms samples, collecting firms with maximum one year or two years of positive earnings and stable or increasing dividends prior to the first annual loss. Untabulated results are qualitatively similar, and thus are not discussed for brevity.

[55] Unlike reductions, omissions of dividend payments are not recorded in *CRSP* tapes. Thus the dividend omission dates are retrieved by finding the relevant announcements using the *Lexis-Nexis* and *Factiva* databases. For some Canadian and European firms listed in the US, announcements came from sources as the Canadian Corporate Newswire, Canada Newswire, and PR Newswire Europe. Other sources were the New York Times and the Financial Times.

[56] The size of the sample is unfavourably affected by non-availability of dividend omission announcements, as unlike in the case of earnings releases, firms are not obliged by law to publicly release any announcements related to their dividend policy decisions. Furthermore, the sample-size is restricted by the fact that I consider firms (and not firm-years), i.e. a particular firm is allowed to be included in the sample only once. This allows me to gather independent observations and thus avoid potential clustering of regression errors (i.e. heteroskedasticity) that would affect the statistical validity of the *t-tests*. Yet, the sample size of 133 firms is comparable with other major studies. For instance, DeAngelo, DeAngelo and Skinner (1992) use a sample of 167 firms, and similarly Brav, Graham, Harvey, and Michaely (2005) employ a sample of 166 dividend-paying firms.

Table 2.4 shows the distribution of the event years for the two sub-samples. For example in 1993, one firm reported a loss and a dividend reduction or an omission after having 2 years of positive earnings and stable or increasing dividends prior to that loss (i.e. one *Time 2* firm), and one firm reported a loss and a dividend reduction or an omission after having 3 years of positive earnings and stable or increasing dividends prior to that loss (i.e. one *Time 3* firm). Similarly, in the same year, three firms reported a loss and a dividend decrease or suspension after having 7 years of positive earnings, and stable or increasing dividends (i.e. three *Time 7* firms).[57]

The selection of firms that exhibit stable or increasing dividend payments (and not only positive dividends) is made in order to construct samples with dividend payment patterns that are distinctively more established than those with just prior positive dividends. In this way the strongest form of dividend payout patterns is considered. This restriction is not imposed in prior earnings, i.e. the past earnings criterion that a firm must fulfil is just to exhibit positive earnings (i.e. not stable or increasing earnings) prior to the loss year. These selection criteria seem to be more appropriate (i.e. as opposed to imposing the same selection criteria with respect to past earnings and dividends) as, unlike in the case of earnings, the level of dividend payments is more of a policy decision rather than the outcome of firms' operations. As dividend policy constitutes a vehicle for long term commitments by managers to shareholders (Faccio et al, 2001), managers choose to smooth dividends over earnings. This is supported in extant literature, as dividend smoothing is a stylised empirical observation (Lintner (1956), Garrett and Priestley (2000), Allen and Michaely (2003), Brav et al. (2005), Aivazian, Booth, and Cleary (2006)).

Table 2.5 describes the industry classification (2-digit SIC) for the firms included in the two sub-samples. Sample firms span all major industry groups (1-digit SIC).

2.4.2. Event Study.

An event study procedure (Brown and Warner, 1985) is used to measure changes in share value around the dividend reductions or omissions announcements. To measure abnormal returns, a market model is estimated for each firm using CRSP's daily returns. As a proxy of

[57] Although, in both samples, the highest number of loss years is concentrated in year 2001 (19 out of 83 firms for the Less-established sample, and 15 out of 50 for the Established sample reported a loss in 2001) this does not affect the essence of the reported analysis because: (a) the September 11th adverse shock affected the U.S. economy as a whole, and thus all my sample firms were subject to the same negative effect, (b) I compare the market reaction of the one sample versus the other, and (c) for the year 2001, both samples consist of almost equal number of loss firms.

the market return I use the CRSP's NYSE-NASDAQ-AMEX-value weighted market index. The announcement day is denoted as day 0 and the pre-announcement period is taken to be day –150 to day –25.[58] The market model coefficients are estimated in the preannouncement period using OLS. Daily abnormal returns are estimated as the difference between the actual return and the expected return (estimated by the market model). Abnormal returns are averaged to form the mean abnormal return (MAR). Median abnormal returns are also estimated. The null hypothesis of no abnormal returns is tested using the *t-test* and the *Wilcoxon test* for the mean and median returns, respectively. Cumulative abnormal returns (CAR) are estimated for the 3-day period: day –1 to day +1, where day 0 is the dividend announcement day. A three day CAR is used in order to capture the entire impact of the dividend announcement, as in some cases the dividend is announced after the market closes, and thus, the market response takes place the day after (i.e. day +1). Moreover, it may be the case that the relevant information is disclosed unofficially the day before (i.e. day -1). A short event window is used, as this alleviates the possibility that a firm characteristic or an event, which is not related to the dividend reduction or suspension announcement, affects the stock price reaction.

2.4.3. Cross-Sectional Variation Analysis.

A price reaction to dividend changes in the event of a loss may vary cross sectionally with other firm-specific factors. To ensure that the univariate results are not due to model misspecification (that would occur if relevant variables that affect the market reaction to the dividend change announcement were omitted), I control for the magnitude of the quarterly dividend change, and the timing of the dividend announcement relative to the loss announcement. I also include explanatory variables that proxy for the firm's information environment and investment opportunity set. Moreover, I control for the depth of reported losses, and the level of unexpected earnings. Lastly, dummies for the 1-digit SIC codes (i.e. code-numbers 1, 2, 3, 4, 5 and 7) are incorporated in order to capture potential industry effects. The first control variable I consider is the percentage dividend change (DIV_CHG), calculated as follows:

$$\text{DIV\_CHG} = \frac{\text{DIV}_{i,t} - \text{DIV}_{i,t-1}}{\text{DIV}_{i,t-1}}$$

[58] The methodology employed in Chapter 2 is strongly influenced by the event study methodologies applied by previous studies when examining issues related to dividend policy (e.g. Lasfer (1995), or other economic events (e.g. international dual listings, Miller (1999), adoption of International Accounting Standards, Karamanou and Nishiotis (2005)).

where $DIV_{i,t}$ and $DIV_{i,t-1}$ are current and last quarterly dividends for firm *i*, respectively (current quarter is defined as the quarter during which the dividend reduction or omission announcement took place).[59] Consistent with prior studies, it is expected to find a positive relationship between dividend changes and CAR.

Furthermore, a dummy variable (ANN_DUMMY) is included, which takes the value of one if the dividend announcement takes place before the loss announcement, and 0 otherwise.[60] I control for this timing effect, as dividend reductions or omissions can be perceived as an indication for a future loss. If this holds, then ANN_DUMMY should be negatively related with market returns. On the other hand, the market reaction to an early dividend cut announcement may not be negative as it may be the case that the market waits for the subsequent earnings release in order to confirm the bad news.[61] Under this scenario ANN_DUMMY is expected to exhibit a positive coefficient. Hence, the sign for ANN_DUMMY is an empirical question.

The natural logarithm of firm's total assets (ln(TA)), is the third control variable which is used as a measure of firm size. As an alternative measure I also use the natural logarithm of firm's market value (ln(MKTVL)). Firm size is a commonly used proxy for the firm's information environment as larger firms institute better mechanisms for periodic information releases (Zeghal (1983), Atiase (1985), Donnelly and Walker (1995)). Eddy and Seifert (1988) report a negative relationship between abnormal returns and firm size for a sample of firms that increase their dividends.[62] Firm size is also expected to be inversely related to CAR for the sample of dividend omitting or reducing firms, as the greater the availability of information the smoother should be the stock price reaction on the announcement day.

The next control variable is the market price to book value ratio (PRICE/BOOK), a commonly used proxy for the firm's investment opportunity set.[63] The association between abnormal returns, dividends, and firm's investment opportunity set, is established by the free

[59] Obviously, in the case of dividend omissions, this variable is equal to –1.
[60] Although all event years regard annual losses (i.e. the overall sum of the 4 quarter's earnings and/or losses result in a negative earnings figure), within the event years, some of the quarterly declarations refer to quarterly earnings (not losses).
[61] The quarterly dividend cut or reduction announcement precedes the quarterly loss announcement (and thus the annual loss) for 27 firms (out of 83) for the Less-established sample, and for 15 firms (out of 50) for the Established sample. The remaining sample firms declared losses and dividend reductions or omissions either on the same day or dividends were declared on a subsequent date.
[62] See also Bajaj and Vijh (1990), Haw and Kim (1991), Mitra and Owers (1995), Jin (2000), and Mikhail et al. (2003).
[63] Price/Book is defined as the price at the beginning of the fiscal quarter that the dividend announcement took place, divided by the same quarter shareholders' equity per share.

cash flow hypothesis (Jensen, 1986) according to which managers, serving the best interests of their shareholders, should distribute any excess cash in the form of dividends so as to reduce any agency costs. Hence, firms with fewer investment opportunities and thus higher excess cash should pay higher dividends instead of misusing funds by submitting extraordinary managerial compensations, or by investing in unprofitable projects. Consequently, the market reaction to a dividend cut should be lower for firms with more investment opportunities than for firms with fewer growth prospects. Thus, the coefficient on PRICE/BOOK is expected to be negative.

Furthermore, I also control for the level of earnings (losses) per share (E), and unexpected earnings (or "earnings surprise") per share (E_SUPR) that were realized on the same quarter for which the dividend reduction or suspension announcement refers to (i.e. the event-quarter). Unexpected earnings are considered because when a firm announces a loss, it is expected that the market will react negatively (unless the loss is anticipated). Because of the time proximity of the loss with the dividend reduction or omission announcement date, I need to control for the depth of the loss or the earnings surprise, so as to isolate the negative stock price reaction effect that is solely due to the dividend policy change.

Additionally, two different measures that proxy for unexpected earnings are used. As a first proxy, I take the difference of the event-quarter's earnings (losses) per share with the mean of all analysts' earnings forecasts 60 days before the event-quarter's earnings are announced, for each of the sample firms. All available analysts' earnings forecasts during this 60-day window were collected using the *IBES* database. For analysts with multiple forecasts I kept the most recent forecast issued. The second proxy for unexpected earnings is the difference of the event-quarter's earnings (losses) per share with the corresponding quarterly earnings (losses) per share of the year before.[64] The sign for both E and E_SUPR is expected to be positive as the larger the loss magnitude (i.e. more negative E) or the higher the E_SUPR, the more negative will be the market reaction.

Finally, the potential for industry effects beyond the aforementioned control variables is addressed by adding industry dummies based on the 1-digit SIC codes. To ensure sufficient industry representation for the sample period, I require at least five firms in each industry as captured by the 1-digit SIC code (Dempsey, Laber, and Rozeff, 1993). Table 2.5, shows that

[64] I consider the event-quarter's earnings per share minus the earnings per share of the corresponding previous year's quarter (and not the event-quarter's earnings per share minus the previous quarter's earnings per share of the same year) in order to eliminate any possible seasonality effects.

only 4 firms are clustered in the 1-digit SIC number 4, thus I consider one dummy variable for the 1-digit SIC codes 4 and 5. Accordingly, 4 industry dummies are incorporated.

Hence, the following cross-sectional are estimated models using OLS:[65]

$$CAR = \alpha + \beta_1 \text{SAMPLE} + \beta_2 \text{ANN\_DUMMY} + \beta_3 \text{DIV\_CHG} + \beta_4 \text{E} + \beta_5 \ln(\text{TA}) + \beta_6 \text{PRICE/BOOK} + \beta_7 \text{SIC\_DUMMY\_1} + \beta_8 \text{SIC\_DUMMY\_2} + \beta_9 \text{SIC\_DUMMY\_3} + \beta_{10} \text{SIC\_DUMMY\_4\&5} \quad [2.1]$$

$$CAR = \alpha + \beta_1 \text{SAMPLE} + \beta_2 \text{ANN\_DUMMY} + \beta_3 \text{DIV\_CHG} + \beta_4 \text{E\_SUPR} + \beta_5 \ln(\text{TA}) + \beta_6 \text{PRICE/BOOK} + \beta_7 \text{SIC\_DUMMY\_1} + \beta_8 \text{SIC\_DUMMY\_2} + \beta_9 \text{SIC\_DUMMY\_3} + \beta_{10} \text{SIC\_DUMMY\_4\&5} \quad [2.2]$$

where:

SAMPLE = one if the firm belongs in the established sample, and zero otherwise;

DIV_CHG = the event-quarter's dividends minus the prior quarter's dividends, divided by the event-quarter's dividends;

ANN_DUMMY = one if the dividend announcement takes place before the first annual quarterly loss announcement, and zero otherwise;

ln(TA) = the natural logarithm of the firm's total assets on the event-quarter;

PRICE/BOOK= the ratio of the stock's price at the beginning of the quarter that the dividend announcement is made, divided by the same quarter shareholders' equity per share;

E = the level of earnings (losses) per share on the event-quarter, deflated by the stock price at the beginning of the event-quarter;

E_SUPR = the event-quarter's earnings (losses) per share minus the mean of all available analysts' earnings forecasts 60 days before the event-quarter's earnings are announced, deflated by the stock price at the beginning of the event-quarter;[66]

SIC_DUMMY_*i* = one if the firm belongs in the 1-digit SIC industry *i* (where *i* = 1, 2, 3, 4&5), and zero otherwise.

In line with Chapter's 2 hypothesis, the coefficient on SAMPLE is expected to be negative and statistically significant, indicating a more severe negative market reaction when

[65] I avoid incorporating both E and E_SUPR in a single regression model, as these two variables are highly correlated (have a correlation coefficient of 0.986-see Table 2.7).

[66] As it was noted, a second proxy for unexpected earnings is used. Regression results were qualitatively similar regardless of which of the two variables was used. Thus, I present results in the empirical section of this chapter using the first measure of E_SUPR (i.e. actual earning minus mean analysts' earnings forecasts).

unfavorable dividend policy changes take place following an established pattern of earnings and dividend payments.

2.4.4. Descriptive Statistics and Correlations.

Panels A and B in Table 2.6 present descriptive statistics of the variables used in equation [2.1], for the Less-established and the Established samples, respectively. Mean and Median ln(MKTVL) and ln(TA) are greater for the Established versus the Less-established sample (e.g. mean ln(TA) is 6.624 for the Established versus 5.816 for the Less-established). The mean difference between the size variables for the two samples is also statistically significant (e.g. panel C of table 2.6 shows that the mean difference *t-te*st with respect to ln(TA) results in a t-statistic of -2.355). These results are line with the conventional finding that established dividend payers are larger firms, as size is one of the most important characteristics that affects the decision to pay dividends (Fama and French (2001), DeAngelo, DeAngelo, and Skinner (2004), De Angelo, De Angelo, and Stulz (2006)).

The mean and median E (loss) is negative. Losses are greater and exhibit a higher variability for the Established versus the Less-established sample of firms. The same holds for the E_SUPR. Yet, the parametric *t-tests* and the non–parametric *Mann-Whitney* tests shown in panel C indicate that the mean and median differences of E and E_SUPR with respect to the two samples are not statistically significant. The same holds for DIV_CHG, where the percentage dividend decreases appear to be approximately the same for the two samples and the mean and median differences do not appear to be statistically significant.

Table 2.7 presents correlations among the variables used in equations [2.1] and [2.2]. As abnormal returns are measured around the dividend reduction or omission announcement day, CAR(-1,+1) and CAR (-2,+2) exhibit a positive correlation with the percentage dividend change (correlation coefficient=0.277 and p-value=0.012 for CAR(-1,+1), and correlation coefficient=0.238 and p-value= 0.006 for CAR(-2,+2)). Beyond that, abnormal returns are not significantly related with the rest of the control variables. The earnings measures, E and E_SUPR, are highly correlated (have a correlation coefficient of 0.986 which is statistically significant at all levels). For this reason, E and E_SUPR are not jointly considered in a single regression.

2.5. Empirical Results.

2.5.1. Event Study.

Chapter's 2 hypothesis is that investors' reaction to dividend reductions or omissions for loss firms is more negative the longer the patterns of past earnings and dividend payouts. To examine whether prior patterns of earnings and dividend payments are assessed by the market, I analyze the stock price reaction around dividend decreases and omission announcements. Table 2.8 presents mean daily abnormal returns (MARs) and cumulative mean abnormal returns (CMARs) for the 21-day period surrounding the dividend reduction or omission announcements. Figures 2.1 and 2.2 summarize the evidence by plotting the MARs and CMARs, respectively.

Consistent with this chapter's hypothesis, abnormal returns are more negative for the sample of established firms around the announcement period. Panel B of table 2.8 shows that on day 0 the established firms' MAR is –2.5% and statistically significant at the 10% level, whereas on day +1 it becomes more negative (-2.7%) and statistically significant at the 1% level. On the other hand, day's 0 MAR for the less-established firms is –1% and becomes -0.4% on day +1, but both values are statistically insignificant. The pattern of change in MARs can also be seen in figure 2.1, which plots the results of table 2.8. Clearly, on day 0 the MAR with respect to the established firms is distinctively lower compared to those occurred on the preceding days. This is not the case for the Less-established sample, where day's 0 MAR does not seem to be significantly different from past values. What is more, while on day +1, the established firms' MAR becomes more negative, the less-established firms' MAR starts to recover. Lastly, figure 2.2 shows that the established firms' CMARs are distinctively more negative as opposed to those of the less-established firms.

Table 2.9 presents further statistical evidence on the market reaction to dividend reduction or suspension declarations. In line with both the graphic evidence and the mean abnormal returns analysis, tests of the market reaction around the dividend cuts declarations using average cumulative abnormal returns (CARs) for various event windows, reveal more negative returns for the established sample firms versus the less-established sample firms. For all day-windows, CARs appear to be more pronounced and statistically significant for the established sample firms: average cumulative abnormal returns range from -7.59% (for day –1 to day +1) to –7.03% (for day –5 to day +5). For all the event windows under focus, the statistical significance is below the 5% level. On the other hand, the less-established firms' CARs span from -1.10% (for day –1 to day +1) to -1.90% (for day –5 to day +5), while only the five-day event window exhibits statistical significance below the 10% level. Furthermore, in panel C, the hypothesis that the CARs of the two samples are equal is rejected for (-1,+1) and (-2,+2) windows, using both parametric and non parametric tests: the hypothesis of equality of means (medians) is rejected at the 2.2% (1.9%) level for CAR(-1,+1), and at the 3.8% (1.4%) level for CAR(-2,+2).

Overall, the aforementioned results support Chapter's 2 hypothesis. Evidently, with respect to the two samples under focus, the market reaction to dividend reductions or omissions is negatively related with past earnings and dividends patterns. Yet, in order to substantiate the univariate evidence provided in this section, the validity of Chapter's 2 hypothesis is further tested using multivariate regression analysis in the section that follows.

2.5.2. Cross-Sectional Analysis.

OLS regression results are presented in Table 2.10. The dependent variable is CAR(-1,+1).[67] The models as described in equations [2.1] and [2.2] are presented in columns (4) and (5), respectively. In order to evaluate the overall goodness of fit when some of the dependent variables are excluded, I run different versions of the basic model, which are presented in columns (1)-(3). Table 2.10 presents coefficient estimates with the corresponding p-values along with the *F-statistics* and adjusted R^2. All models exhibit significant explanatory power as indicated by the *F-test* and have adjusted R^2s up to 11.4%. All tests of statistical significance are based on White's (1980) standard errors.

Overall, the OLS regression results provide evidence supporting that the market reacts more negative when firms experience a loss and reduce dividends after an established pattern of earnings and dividend payments. Consistent with Chapter's 2 hypothesis, the coefficient on SAMPLE dummy is always negative, ranging from –0.054 to –0.062, and with p-values of 0.042 and below (with the exception of the model specification presented in column (5) where E_SUP is incorporated instead of E and the resulting p-value rises to 0.071).[68]

[67] Panel A of table 2.9 shows that while CAR(-1,+1) lacks statistical significance for the Less-established sample, CAR(-2,+2) for the same sample is statistically significant at the 10% level. This may suggest that in the case of the Less-established sample, the market anticipated the dividend cut announcement. This is also evident by the negative and statistically significant average abnormal return on day –2 shown in panel A of table 2.8. This evidence led me run OLS regressions using CAR(-2,+2) as the dependent variable. Untabulated results were qualitatively similar.

[68] When E_SUP is included there is a significant reduction in the number of observations (from 124 to 81), due to unavailability of analysts' earnings forecasts from *IBES*. As expected, the reduction in the sample size results in lower p-values, adjusted R^2, and F-statistics, for the model presented in column (5).

As expected, the estimated coefficient on DIV_CHG is positive and statistically significant in all models tested, indicating that the market reaction to the dividend change is significantly related to the magnitude of the change. The coefficient ranges from 0.086 to 0.133. The highest p-value is 0.062 in column (5). In all other versions the statistical significance is below the 5% level.

With the exception of AN_DUMMY, the rest of the explanatory variables do not appear to explain the price movements following the dividend change declaration. Neither ln(TA) nor Price/Book exhibit statistical significance at conventional levels.[69] Likewise, the magnitude of reported earnings and the level of unexpected earnings lack statistical significance for all variations of the model. These findings, however, are in line with Hayn (1995) where the magnitude of reported losses is shown to be uncorrelated with contemporaneous price movements.[70] In the sample under focus, both E and E_SUPR are in most cases negative. E captures quarterly losses for 79 firms out of the 123 firms included in the repression analysis. The E_SUPR is even more profoundly negative, as 64 firms out of the 80 firms included in the regression analysis have negative earnings changes. Thus, the lack of statistical significance with respect to E and E_SUPR can be explained by the weak return-losses relationship documented in prior literature (Hayn (1995), Joos and Plesko (2005)).

The estimated slope coefficient on ANN_DUMMY ranges from 0.055 to 0.072 and (unlike the aforementioned control variables) is in all model specifications statistically significant below the 5% level. The positive sign indicates that the CAR(-1,+1) has a positive (upward) effect from an "early" dividend announcement. So, evidence supports that firms that announce dividend cuts before their earnings release experience less negative cumulative abnormal returns around their dividend announcement. A plausible explanation is that an early dividend cut announcement triggers a less negative price reaction because the earnings release (later) will need to confirm the bad news.[71] Yet, for the current chapter the important question is whether the market reaction upon the dividend cut announcements differs with respect to the two sub-samples. That is, in case the market reaction is more negative (or less positive) for the sample of established firms that "pre-announce" dividend reductions or omissions, the central supposition would still hold, i.e. that investors significantly assess patterns of past earnings and

[69] When ln(MKTVL) is considered instead of ln(TA), results are qualitatively unchanged.
[70] As Hayn (1995) argues, this finding stems from the fact that because shareholders have a liquidation option, losses are not expected to perpetuate. Losses are thus less informative than profits about the firm's future prospects.
[71] I am particularly grateful to Philip Joos for his insightful comments on this issue.

dividend payouts when firms reduce or suspend their dividends. Therefore, this issue is investigated in greater detail in the section that follows.

2.5.3. Analyzing the Market Reaction for Firms that Declare Dividend Reductions or Omissions Before the Loss Announcement.

Panel A of table 2.11 presents cumulative abnormal returns surrounding the dividend reduction or omission declarations for the sub-sample of 42 firms that announced dividend cuts ahead of the loss declaration. Twenty-seven firms belong to the Less-established sample and fifteen are part of the Established sample. Overall, the evidence reported in this table suggests that the sub-sample of established firms that pre-announce dividends experience considerably more negative abnormal returns compared to the less-established firms. Actually, between days -1 and +1 the mean cumulative abnormal returns for the two sub-samples appear to almost match each other in magnitude, but with an opposite sign. Specifically, the CAR(-1,+1) for the established firms is -0.027 versus 0.026 for the less-established "pre-announcing" sample firms. The 3-day CARs for both samples are statistically significant at the 10% level.[72] The cumulative abnormal returns for the (-2,+2) and (-3,+3) windows are positive for the established sample and negative for the less-established sample, albeit not statistically significant at conventional levels. However, the hypothesis that the mean CARs of the two samples are equal is rejected for (-1,+1) and (-2,+2) windows at the 5% and 10% levels, respectively.

Results presented hitherto, clearly suggest that the 3-day market reaction around dividend cuts is significantly more negative in the case of firms with established patterns of past earnings and dividends versus those with less-established patterns. However, the positive abnormal returns upon dividend cut declarations, observed in the case of the less-established sample firms that pre-announce dividends ahead of the loss release, are in contrast with the conventional notion that the market reacts negatively upon adverse dividend changes. As it was previously argued, a plausible explanation may be that investors wait for the earnings release in order to verify whether the early dividend cut announcement constitutes a signal for an upcoming loss. This issue is further explored by examining abnormal returns for these "early" dividend cut announcements around the subsequent loss release.

[72] Untabulated median values are qualitatively similar.

Panel B of table 2.11 shows that the 27 less-established firms that pre-announce dividend cuts exhibit much more negative abnormal returns around the subsequent loss announcement. The CAR(-1,+1) is -0.048 and statistically significant at the 10% level, and more importantly, it is significantly different from the seemingly positive CAR(-1,+1) that is found in the case of the established sample firms. Thus, as far as the less-established sample is concerned, the market does not seem to treat dividend cut declarations as a sign of an imminent loss release, whereas the negative price reaction occurs afterwards, i.e. upon the loss declaration. On the contrary, the initial market reaction to bad news about dividends seems to be much more pronounced in the case of the established sample, whereas upon the subsequent loss release the associate market response is relatively weak. On the whole, the evidence presented in table 2.11 corroborates my earlier findings, showing that investors assign much more importance to unfavorable dividend declarations the higher the string of past earnings and dividend payments. As a result, the associated price response upon dividend cuts is negatively associated with past earnings and dividends patterns, regardless of whether the dividend reduction is declared ahead of the loss release or not.

As a further sensitivity test, model specification [2.1] is estimated by adding an interaction term between the dummy variables SAMPLE and ANN_DUMMY, i.e. AD_x_SAMPLE. This interaction variable is intended to capture the "early announcement effect" with respect to the Established sub-sample. Based on table's 2.11 findings, when both ANN_DUMMY and AD_x_SAMPLE are considered in a single regression, then AD_x_SAMPLE should not exhibit any statistical significance, attesting the irrelevance of the timing of the dividend cut declaration as far as the established sample firms are concerned. This assertion is confirmed by the regression results reported in table 2.12: in all model specifications the high p-values of the estimated coefficients on AD_x_SAMPLE demonstrate that in the case of the established sample firms, the timing of the dividend cut announcement has no significant bearing on the negative market reaction.

To sum up, the empirical evidence provided thus-far supports Chapter's 2 hypothesis. Both the event-study and the cross-sectional regression results indicate that the market reaction is significantly more negative for loss firms that cut their dividends after an established record of earnings and dividend payments versus those that exhibit a less-established record. Evidently, investors attribute more importance to unfavorable changes in regular dividend payouts the longer the historical patterns of earnings and dividends preceding the first dividend slash.

2.6. Conclusions.

Chapter 2 provides empirical evidence to support that patterns of past earnings and dividend payments matter when loss firms reduce or cut their dividends. Consistent with prior literature, this chapter's results portray negative average stock returns around dividend reductions or omissions. By extending prior literature, I find that the market appears to value the patterns of firms' past earnings and dividend records. Specifically, evidence supports that the market reaction is more negative for this chapter's sample of firms that incur a loss, and reduce or omit their dividends following an established pattern of positive earnings and dividend payments versus those with a less-established track record. It is conjectured that the driving mechanism of this asymmetry in the market returns is due to the following interconnected effects. First, the enhanced information content of dividends in the occurrence of earnings difficulties, i.e. in the presence of losses (or low quality earnings in general) investors form their expectations regarding future earnings relying more on dividends (DeAngelo, DeAngelo, and Skinner (1992), Charitou, (2000), Joos and Plesko (2004), Skinner (2004)). Second, the association between dividends and earnings patterns with loss reliability as perceived by the market. Established patterns deteriorate loss reliability, in the sense that investors form their expectations regarding future earnings relying less on firm's current loss and more on dividend payments (DeAngelo, DeAngelo, and Skinner, 1992). Thus, given a loss, more established patterns of past earnings and dividends lead in strengthening the importance of dividends in revealing management's perceptions regarding firm's future prospects. In return, dividend reductions or omissions result in more negative stock returns the more established past earnings and dividend payouts are.

In support of the above, this chapter documents significantly more negative abnormal returns around the announcement of a dividend cut for established versus less-established firms. Moreover, conducting a cross-sectional analysis, it is shown that the historical patterns of earnings and dividends remain an important determinant of the market response to an adverse dividend change declaration, even after controlling for industry effects, the size of the dividend decrease, the timing of the dividend announcement day relative to the loss declaration day, the firm's information environment and growth prospects, and the magnitude of the unexpected loss.

Lastly, it is acknowledged that Chapter's 2 findings refer to a small sample spanning 18 years of U.S. data and thus cannot be generalised so as to represent the population of U.S. firms. Yet, it must be noted that lack of additional data is, to a considerable extent, due to the fact that firms are not obliged by law to publicly release any announcements related to their dividend policy decisions (as opposed to earnings releases). For this reason, and given the effort to gather the maximum amount of available data, the results presented in Chapter 2 constitute, to the best of my knowledge, a fair representation of the population of U.S. firms that incurred losses following patterns of past earnings and dividends, and chose to announce unfavourable changes in their dividend policy during the 18 year period under examination. To this end, results documented in Chapter 2 encourage further international research in this area to reinforce the confidence in the evidence provided herein.

Table 2.1
Sample Selection

This table reports the sample selection procedure for the 83 Less-established and the 50 Established firms. The final primary sample shown in panel A includes all industrial firms that have available annual earnings and dividend figures for the sample period 1986-2003, and reported at least one annual loss, prior to which had at least one year of positive earnings and dividend payments. Panels B and C present the selection criteria applied to the Less-established and to the Established samples of firms, respectively.

Sample ´Time 1` consists of those firms that incurred their first annual loss during the period 1986-2003 after having one year of positive earnings and dividends, dividend payments at the year before the event of the loss are the same or higher than those paid the year before. Sample ´Time 2` consists of those firms that incurred their first annual loss during the period 1986-2003 after having two years of positive earnings and dividends. Dividend payments at the year before the event of the loss are the same or higher than those paid two years before, which are higher or the same than those paid three years before the loss (and so forth for the rest subsamples till Time 10). The initial loss year, is the year of the first annual loss.

The Less-established sample consists of those firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before the loss occurrence (i.e. 'Time 1' firms, and /or 'Time 2' firms, and/or 'Time 3' firms), and on the year of the loss reduced or suspended dividend payments. The Established sample consists of those firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for at least seven consecutive years (i.e. 'Time 7' firms or above) before the first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

Panel A: Primary sample selection	
Total number of Compustat firms	9,318
Less:	
Financial and utility firms	
(i.e. SIC codes between 4300-4399, 4800-4999, 6000-6999)	3,208
Firms with unavailable dividends for years 1985-2003	4,277
Firms with unavailable earnings for years 1985-2003	161
Firms without at least one annual loss preceded by positive earnings and dividends	964
Final primary sample	708
Panel B: Less-established sample selection	
Final primary sample	708
Less:	
Firms that are not Time 1, Time 2, or Time 3 (i.e. Time 4 and above)	426
Firms that did not reduce or suspend dividends on the loss year	125
Firms with unavailable dividend suspension or reduction announcement date	72
Firms with unavailable stock price return on the dividend reduction or suspension announcement date	2
Final Less-established sample	83
Panel C: Established sample selection	
Final primary sample	708
Less:	
Firms that are not Time 7 and above	477
Firms that did not reduce or suspend dividends on the loss year	172
Firms with unavailable dividend suspension or reduction announcement date	9
Final Established sample	50

Table 2.2

Number of Announcements of Dividend Reductions and Dividend Omissions

Panels A and B in this table present the number of announcements of dividend reductions and dividend omissions for the Less-established sample and for the Established sample, respectively. The Less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before the loss occurrence, and on the year of the loss reduced or suspended dividend payments. The Established sample consists of 50 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for at least seven consecutive years before the first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

Panel A: Announcements of Dividend Reductions and Omissions for the Less-established sample

	Number of firms	Percentage
Dividend Reductions	47	56.63%
Dividend Omissions	36	43.37%
Total	83	

Panel B: Announcements of Dividend Reductions and Omissions for the Established sample

	Number of firms	Percentage
Dividend Reductions	26	52.00%
Dividend Omissions	24	48.00%
Total	50	

Table 2.3

Distribution of Sample Firms According to Patterns of Past Annual Earnings and Dividend Payments

This table reports the distribution of sample firms according to patterns of past annual earnings and dividend payments. For example, sample ´Time 1` consists of those firms that incurred their first annual loss during the period 1986-2003 after having one year of positive earnings and dividends, dividend payments at the year before the event of the loss are the same or higher than those paid paid the year before. Sample ´Time 2` consists of those firms that incurred their first annual loss during the period 1986-2003 after having two years of positive earnings and dividends. Dividend payments at the year before the event of the loss are the same or higher than those paid two years before, which are the same or higher than those paid three years before the loss (and so forth for the rest subsamples till Time 10).

The initial loss year is the year of the first annual loss. Panel A presents descriptive statistics for the 83 firms of the Less-established sample, and panel B presents the descriptive statistics for the 50 firms of the Established sample. The Less-established sample consists of those firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before the loss occurrence (i.e. 'Time 1' firms, and /or 'Time 2' firms, and/or 'Time 3' firms), and on the year of the loss reduced or suspended dividend payments. The Established sample consists of those firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for at least seven consecutive years before the first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

Panel A: Sample distribution for the Less-established sample

Sample	Number of firms
Time1	35
Time2	33
Time3	15
Total	83

Panel B: Sample distribution for the Established sample

Sample	Number of firms
Time7	12
Time8	5
Time9	11
Time10	22
Total	50

Table 2.4
Distribution of Loss Years According to Patterns of Past Annual Earnings and Dividend Payments

This table reports the sample firms loss years distribution according to patterns of past annual earnings and dividend payments. For example, for the 'Time 1' firms, one firm incurred its first annual loss in 1987, one firm in 1988, two firms in 1989,etc. The Less-Established sample consists of 'Time 1', 'Time 2', and 'Time 3' firms, and the Established sample consists of Time 7', 'Time 8', 'Time 9', and 'Time 10' firms.
´Time 1` firms are those that incurred their first annual loss during the period 1986-2003, after having one year of positive earnings and dividends, and dividend payments at the year before the event of the loss are the same or higher than those paid the year before. Sample ´Time 2` consists of firms that incurred their first annual loss during the period 1986-2003 after having two years of positive earnings and dividends. Dividend payments, at the year before the event of the loss, are the same or higher than those paid two years before, which are the same or higher than those paid three years before the loss (and so forth for all subsamples till Time 10). The initial loss year, i.e. the event year, is the year of the first annual loss.

	Less-established sample			*Established sample*			
Year	Time1	Time2	Time3	Time7	Time8	Time9	Time10
1986	-	-	-	-	-	-	-
1987	1	-	-	-	-	-	-
1988	1	2	-	-	1	-	-
1989	2	-	1	-	-	-	-
1990	3	1	-	-	-	-	-
1991	3	5	3	-	-	-	-
1992	1	4	2	-	-	-	-
1993	-	1	1	3	-	-	-
1994	-	1	-	-	-	-	-
1995	2	3	-	-	2	4	-
1996	1	1	-	-	-	1	3
1997	1	3	2	1	-	-	2
1998	1	-	2	-	1	-	-
1999	4	2	-	-	-	1	4
2000	1	2	3	1	1	-	6
2001	12	6	1	6	-	3	6
2002	2	2	-	1	-	2	1
2003	-	-	-	-	-	-	-
Total	35	33	15	12	5	11	22

Table 2.5
Industry Classification

This table reports industry classification for all firms according to the 2 digit SIC codes. "LE" stands for Less-established, "E" stands for Established. The "LE Sample" and "E Sample" columns describe the number of less-established firms and established firms, in each 2 digit SIC code category. The less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments. The established sample consists of 50 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for at least seven consecutive years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

Industry Group	2-digit SIC	LE Sample	E Sample
Metal Mining	10	5	
Coal Mining	12	1	1
Oil and Gas Extraction	13	-	1
Management, Quarry Nonmaterial Minerals	14	-	1
General Building Contractors	15	-	1
Food and Kindred Products	20	4	2
Textile Mill Products	22	-	2
Apparel and Other Finished Products	23	3	
Lumber and Wood Products	24	-	1
Furniture and Fixtures	25	1	1
Printing, Publishing and Allied	27	2	2
Chemicals and Allied Products	28	9	2
Rubber and Misc Plastics Prods	30	2	1
Leather and Leather Products	31	-	2
Stone, Clay, Glass, Concrete Pd	32	2	
Primary Metal Industries	33	8	1
Fabr Metal,Ex Machy, Trans Eq	34	2	1
Indl,Comml Machy,Computer Eq	35	7	7
Electrical and Electronic Equipment	36	11	4
Transportation Equipment	37	4	3
Measurement Instruments; Photo Goods; Watches	38	4	4
Miscellaneous Manufacturing Industries	39	3	1
Motor Freight Transportation, Warehouses	42	-	1
Water Transportation	44	1	1
Transportation by Air	45	1	
Durable Goods-Wholesale	50	2	2
Nondurable Goods-Wholesale	51	2	1
Apparel and Accessory Stores	56	-	1
Miscellaneous Retail	59	2	3
Business Services	73	5	3
Auto Repair Services, Parking	75	1	
Motion Pictures	78	1	
Total		83	50

Table 2.6

Descriptive Statistics

This table reports descriptive statistics (mean, median, standard deviation, minimum, and maximum) for all the variables used in the cross sectional analysis. Panels A and B present descriptive statistics for the Less-established sample and the Established sample, respectively. Panel C presents a parametric *t-test* and a non-parametric *Mann-Whitney test* carried out to test whether the variables used in the Less-established sample are statistically different from those of the Established sample. The Less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments. The established sample consists of 50 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for at least seven consecutive years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

ln(TA) is the natural logarithm of the total value of assets on the event quarter. ln(MKTVL) is the natural logarithm of the market value of the common shares outstanding on the event quarter. E is the level of earnings (losses) per share on the event-quarter, deflated by the stock price at the beginning of the quarter. E_SUPR is the mean of all analysts' earnings per share forecasts for a two-month period prior to the loss/earnings announcement that immediately precedes the first dividend reduction/omission announcement, minus the event quarter's earnings or loss per share, and deflated by the stock price at the beginning of the event quarter. Price/Book is the price to book ratio at the beginning of the event quarter. DIV_CHG is the event-quarter's dividend payment minus the prior quarter's dividend payment, divided by the event-quarter's dividend payment. CAR(-1,+1) is the mean cumulative abnormal returns for day -1 to day +1, and CAR(-2,+2) is the mean cumulative abnormal returns for day -2 to day +2. *N* is the number of observations.

The event quarter, is the quarter during which the dividend reduction/omission announcement took place. For panel C, *, **, ***, significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

PANEL A: Less-established sample

	N	Mean	Median	Std. Deviation	Minimum	Maximum
ln(TA)	*74*	5.816	5.775	1.950	1.881	11.411
ln(MKTVL)	*74*	4.905	4.767	2.068	-0.602	11.292
E	*74*	-0.027	-0.007	0.076	-0.481	0.178
E_SUPR	*40*	-0.040	-0.017	0.094	-0.529	0.082
Price/Book	*74*	2.560	1.257	5.950	-2.638	47.357
DIV_CHG	*83*	-0.704	-0.770	0.307	-1.000	-0.050
CAR(-1,+1)	*83*	-0.011	-0.005	0.089	-0.377	0.179
CAR(-2,+2)	*83*	-0.019	-0.012	0.097	-0.431	0.173

PANEL B: Established sample

	N	Mean	Median	Std. Deviation	Minimum	Maximum
ln(TA)	*50*	6.624	6.566	1.647	3.603	9.636
ln(MKTVL)	*50*	5.900	5.907	1.712	2.672	9.272
E	*50*	-0.052	-0.010	0.164	-1.137	0.038
E_SUPR	*41*	-0.062	-0.012	0.179	-1.139	0.008
Price/Book	*50*	2.313	1.355	8.282	-24.728	52.301
DIV_CHG	*50*	-0.773	-0.855	0.253	-1.000	-0.140
CAR(-1,+1)	*50*	-0.076	-0.037	0.183	-0.999	0.217
CAR(-2,+2)	*50*	-0.083	-0.040	0.196	-1.008	0.268

PANEL C: Independent samples test for equality of means and medians

	N Less-established	*N* Established	*t-test*	*p-value*	*z-value*	*p-value*
ln(TA)	*74*	*50*	-2.355**	0.020	-2.372**	0.018
ln(MKTVL)	*74*	*50*	-2.772***	0.006	-3.061***	0.002
E	*74*	*50*	1.140	0.257	-1.128	0.259
E_SUPR	*40*	*41*	0.670	0.505	-0.463	0.643
Price/Book	*74*	*50*	0.194	0.847	-0.672	0.501
DIV_CHG	*83*	*50*	1.387	0.168	-1.136	0.256
CAR(-1,+1)	*83*	*50*	2.344**	0.022	-2.332**	0.020
CAR(-2,+2)	*83*	*50*	2.125**	0.038	-2.457**	0.014

Table 2.7
Correlations

This table reports the correlation coefficients for all variables that are used in the cross sectional analysis. Corresponding p-values appear below the correlation coefficients in italics. ln(MKTVL) is the natural logarithm of the market value of the common shares outstanding on the event quarter. ln(TA) is the natural logarithm of the total value of assets on the event quarter. E is the level of earnings (losses) per share on the event-quarter, deflated by the stock price at the beginning of the quarter. E_SUPR is the mean of all analysts' earnings per share forecasts for a two-month period prior to the loss/earnings announcement that immediately proceeds the first dividend reduction/omission announcement, minus the event quarter's earnings or loss per share, and deflated by the stock price at the beginning of the event quarter. Price/Book is the price to book ratio on the beginning of the event quarter. DIV_CHG is the event-quarter's dividend payment minus the prior quarter's dividend payment, divided by the event-quarter's dividend payment.
CAR(-1,+1) is the mean cumulative abnormal returns for day -1 to day +1, and CAR(-2,+2) is the mean cumulative abnormal returns for day -2 to day +2. The event quarter, is the quarter during which the dividend reduction/omission announcement took place.*, **, ***, correlation is significant at the 0.10, 0.05, 0.01 levels of significance respectively.

	ln(MKTVL)	ln(TA)	E	E_SUPR	Price/Book	DIV_CHG	CAR(-1,+1)	CAR(-2,+2)
ln(MKTVL)	1	0.809***	0.101	0.149	0.270***	0.092	-0.067	-0.037
		0.000	*0.270*	*0.189*	*0.003*	*0.312*	*0.462*	*0.688*
ln(TA)		1	-0.020	0.009	0.215**	-0.003	-0.092	-0.052
			0.831	*0.938*	*0.018*	*0.974*	*0.317*	*0.569*
E			1	0.986***	0.039	0.179**	0.061	0.041
				0.000	*0.668*	*0.046*	*0.501*	*0.648*
E_SUPR				1	0.056	0.137	0.036	0.027
					0.618	*0.224*	*0.749*	*0.809*
Price/Book					1	0.024	-0.039	-0.028
						0.794	*0.670*	*0.757*
DIV_CHG						1	0.217**	0.238***
							0.012	*0.006*
CAR(-1,+1)							1	0.946***
								0.000
CAR(-2,+2)								1

Table 2.8

Mean Abnormal Returns Around The Announcement of Dividend Reductions or Omissions

Abnormal returns are market model adjusted using parameters estimated over a 125 pre-event period, from day -150 to -26 relative to the event date. The event date is the date on which dividend reductions or omissions were announced, following the first loss after a series of positive annual earnings and stable or increasing annual dividends. CRSP's NYSE/AMEX/NASDAQ value-weighted market index is used as a proxy for the market portfolio. The sample period is 1986-2003. Panel A and panel B report mean, median, and cumulative abnormal returns for the Less-established and the Established samples, respectively. The Less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

The Established sample consists of 50 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for at least seven consecutive years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments. *, **, and ***, indicate significance of the *t-statistics* (for the means) and the *z-statistics* (for the medians) at the 0.10, 0.05, and 0.01 levels, respectively.

Panel A: Mean, median and cumulative abnormal returns for the Less-established sample.

Event Day	Mean Abnormal Return	Significance (p-value)	Median Abnormal Return	Significance (p-value)	Cumulative Mean Abnormal Return	*N*
-10	-0.005	0.209	-0.006	0.002	-0.005	*83*
-9	0.009**	0.042	0.004*	0.077	0.003	*83*
-8	-0.005	0.139	-0.002	0.109	-0.002	*83*
-7	0.000	0.984	0.002	0.888	-0.002	*83*
-6	-0.004	0.272	-0.003	0.268	-0.006	*83*
-5	0.002	0.790	0.001	0.476	-0.005	*83*
-4	-0.008	0.101	-0.004**	0.046	-0.013	*83*
-3	0.002	0.675	-0.001	0.902	-0.011	*83*
-2	-0.007*	0.080	-0.007**	0.048	-0.019	*83*
-1	0.004	0.520	-0.001	0.813	-0.015	*83*
0	-0.010	0.105	-0.003	0.134	-0.025	*83*
1	-0.005	0.503	-0.003	0.534	-0.030	*83*
2	-0.001	0.840	-0.003	0.292	-0.031	*83*
3	0.001	0.785	-0.001	0.810	-0.029	*83*
4	-0.003	0.533	0.000	0.617	-0.032	*83*
5	0.007	0.188	0.007*	0.096	-0.025	*83*
6	-0.005	0.258	0.000	0.338	-0.031	*83*
7	-0.004	0.387	-0.004*	0.065	-0.034	*83*
8	-0.007	0.130	-0.006**	0.034	-0.042	*83*
9	0.005	0.356	0.000	0.398	-0.036	*83*
10	-0.004	0.369	-0.005*	0.058	-0.040	*83*

Table 2.8 (continued).

Panel B: Mean, median and cumulative abnormal returns for the Established sample.						
Event Day	Mean Abnormal Return	Significance (p-value)	Median Abnormal Return	Significance (p-value)	Cumulative Mean Abnormal Return	*N*
-10	0.006	0.354	0.000	0.768	0.006	50
-9	-0.001	0.891	-0.004	0.184	0.005	50
-8	-0.02***	0.009	-0.009***	0.006	-0.011	50
-7	0.001	0.806	0.001	0.725	-0.009	50
-6	0.004	0.525	-0.001	0.710	-0.006	50
-5	-0.003	0.614	-0.001	0.460	-0.009	50
-4	-0.001	0.936	-0.001	0.866	-0.009	50
-3	0.007	0.242	0.002	0.409	-0.002	50
-2	-0.001	0.753	-0.003	0.313	-0.003	50
-1	-0.024	0.104	-0.001*	0.076	-0.028	50
0	-0.025*	0.075	-0.001	0.295	-0.053	50
1	-0.027***	0.007	-0.009**	0.019	-0.079	50
2	-0.006	0.269	-0.004	0.245	-0.085	50
3	0.014	0.101	0.002	0.318	-0.071	50
4	-0.004	0.627	-0.004	0.367	-0.074	50
5	-0.002	0.810	-0.001	0.534	-0.076	50
6	-0.002	0.757	-0.003	0.566	-0.078	50
7	-0.007	0.262	0.005	0.988	-0.085	50
8	-0.007	0.208	-0.005	0.124	-0.092	50
9	-0.003	0.534	-0.003	0.318	-0.094	50
10	-0.016*	0.065	-0.010**	0.031	-0.111	50

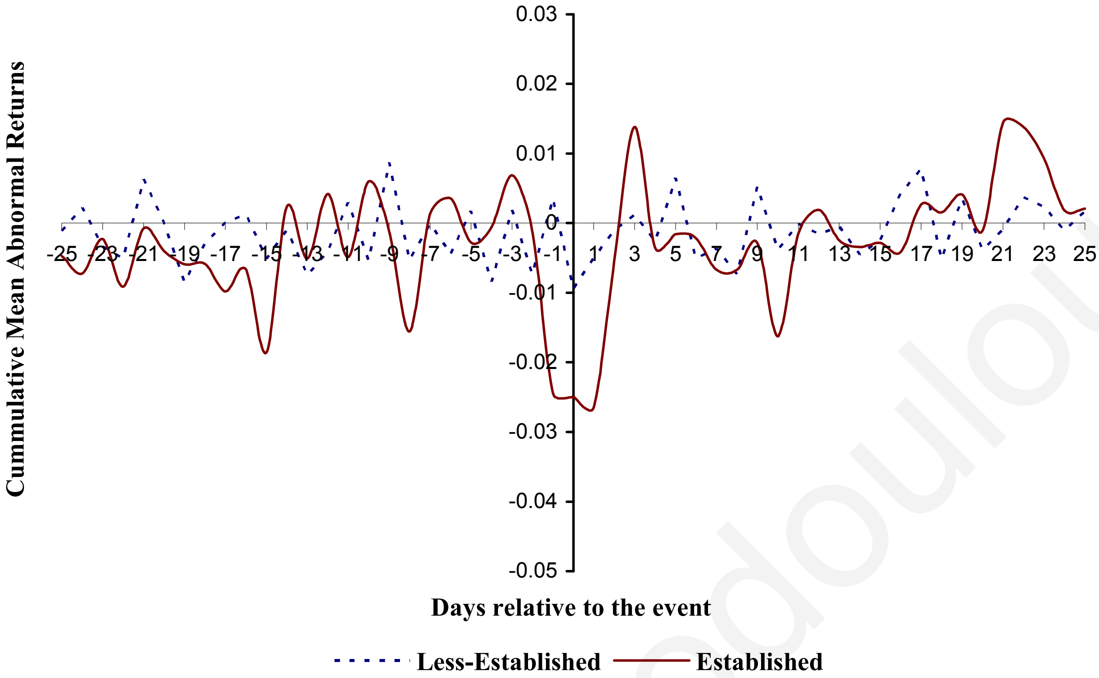

Figure 2.1. Mean abnormal returns (MAR) from day -25 to day +25 after the announcement of a dividend reduction or omission. The daily abnormal returns are market model adjusted for each security. The daily abnormal returns are averaged across firms. The sample period is 1986-2003. The dashed line represents the MAR for the Less-established sample, and the continuous line represents the MAR for the Established sample. The Less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments. The Established sample consists of 50 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for at least seven consecutive years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

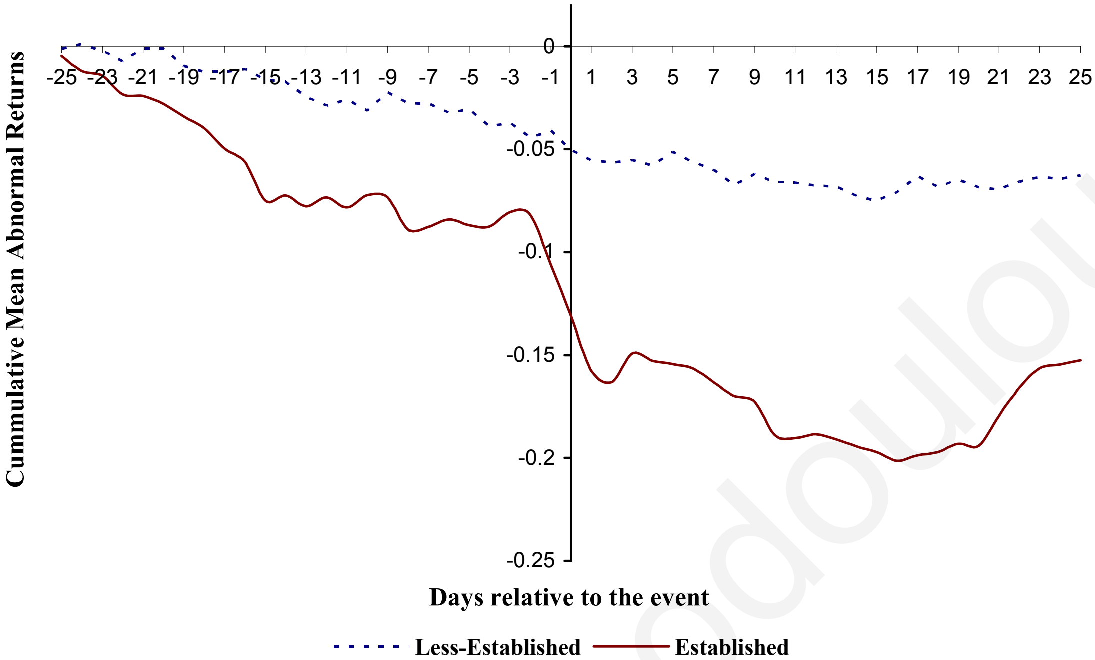

Figure 2.2. Cumulative mean abnormal returns (CMAR) from day -25 to day +25 after the announcement of a dividend reduction or omission. The daily abnormal returns are market model adjusted for each security. The daily abnormal returns are averaged across firms then cumulated. The sample period is 1986-2003. The dashed line represents the CMAR for the Less-established sample, and the continuous line represents the CMAR for the Established sample. The Less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments. The Established sample consists of 50 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for at least seven consecutive years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments.

Table 2.9
Cumulative Abnormal Returns Around the Announcement of Dividend Reductions or Omissions

This table reports the average cumulative abnormal returns, AVG{CAR (t_1, t_2)}, for the period day t_1 to day t_2. The daily abnormal returns: (1) are market model adjusted for each security; (2) are averaged across firms and then cumulated. The sample period is 1986-2003. Panel A reports the average cumulative abnormal returns for the Less-established sample, and panel B reports the average cumulative abnormal returns for the Established sample. The Less-established sample consists of 83 firms that incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments. The Established sample consists of 50 firms that incurred an annual loss after having positive annual earnings, and stable or increasing annual dividend payments for at least seven consecutive years before their first loss occurrence, and on the year of the loss reduced or suspended dividend payments.
In Panel A and panel B, *p-values* appear below the average cumulative abnormal return estimates, and the last column shows the number of events that are used in each case. In panel C, the third and fourth columns show a parametric independent samples *t-test* and a non parametric independent sample *Mann-Whitney test* carried out to test whether the average cumulative abnormal returns of the Less-established sample are statistically different from those of the Established sample. *p-values* appear below the test statistics. *, **, and ***, indicate significance of the *t-statistics* (for the means) and the *z-statistics* (for the medians), at the 0.10, 0.05, and 0.01 levels, respectively.

Panel A: CAR for the Less-established sample

Period	AVG{CAR (t1, t2)}	*N*
CAR (-1,+1)	-0.011	*83*
	0.262	
CAR (-2,+2)	-0.019*	*83*
	0.073	
CAR (-3,+3)	-0.016	*83*
	0.164	
CAR (-5,+5)	-0.019	*83*
	0.195	

Panel B: CAR for the Established sample

Period	AVG{CAR (t1, t2)}	*N*
CAR (-1,+1)	-0.076***	*50*
	0.005	
CAR (-2,+2)	-0.083***	*50*
	0.005	
CAR (-3,+3)	-0.062**	*50*
	0.032	
CAR (-5,+5)	-0.070**	*50*
	0.026	

Panel C: Independent samples test for equality of means and medians

Less-established sample	Established sample	*t* -statistic	*z* -value	*N*
CAR (-1,+1)	CAR (-1,+1)	2.344**	-2.332**	*133*
		0.022	*0.019*	
CAR (-2,+2)	CAR (-2,+2)	2.125**	-2.457**	*133*
		0.038	*0.014*	
CAR (-3,+3)	CAR (-3,+3)	1.506	-1.700*	*133*
		0.137	*0.089*	
CAR (-5,+5)	CAR (-5,+5)	1.508	-1.082	*133*
		0.136	*0.279*	

Table 2.10
Cross-sectional tests

This table presents OLS regression coefficient estimates. *p-values* are presented below the coefficient estimates in italics. The dependent variable is the average cumulative abnormal return for the event window day -1 to day +1 (i.e. CAR (-1,+1)).The independent variables are SAMPLE, ANN_DUMMY, DIV_CHG, E, ln(TA), Price/Book, SIC_DUMMY_*i* for *i*= 1, 2, 3, and 4&5. SAMPLE is a qualitative variable that takes the value of one if the firm belongs in the Established sample and 0 if it belongs in the Less-established sample. ANN_DUMMY is a qualitative variable that takes the value of one if the dividend reduction/omission announcement takes place before the first quarterly loss announcement, and zero otherwise. DIV_CHG is the event-quarter's dividend payment minus the prior quarter's dividend payment, divided by the event-quarter's dividend payment.
ln(TA) is the natural logarithm of the value of total assets on the event quarter. E is the level of earnings (losses) per share on the event-quarter, deflated by the stock price at the beginning of the quarter. Price/Book is the price to book ratio at the beginning of the event quarter. SIC_DUMMY_*i* is a qualitative variable that takes the value of 1 if the firm's 1-digit SIC code is *i* for *i*=1, 2, 3, 4 and 5. The event quarter, is the quarter during which the dividend reduction/omission announcement took place. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively. The regression standard errors are computed using White's heteroskedasticity-consistent covariance matrix.

	Dependent Variable CAR(-1,+1)				
	(1)	(2)	(3)	(4)	(5)
SAMPLE	-0.057**	-0.055**	-0.056**	-0.054**	-0.062*
	0.031	*0.042*	*0.041*	*0.041*	*0.071*
ANN_DUMMY	0.055***	0.056***	0.063***	0.062***	0.072**
	0.004	*0.004*	*0.004*	*0.004*	*0.014*
DIV_CHANGE	0.088**	0.086**	0.089**	0.089**	0.133*
	0.017	*0.019*	*0.018*	*0.018*	*0.062*
E			-0.086	-0.083	
			0.110	*0.130*	
E_SUPR					-0.075
					0.227
ln(TA)				-0.003	-0.016
				0.663	*0.182*
Price/Book				0.001	0.001
				0.806	*0.787*
SIC_DUMMY_1		0.049	0.046	0.048	0.017
		0.197	*0.233*	*0.231*	*0.761*
SIC_DUMMY_2		0.001	0.001	-0.002	-0.056
		0.967	*0.981*	*0.961*	*0.320*
SIC_DUMMY_3		0.011	0.001	0.006	-0.047
		0.709	*0.770*	*0.832*	*0.410*
SIC_DUMMY_4&5		-0.030	-0.037	-0.035	-0.072
		0.458	*0.390*	*0.472*	*0.295*
Intercept		0.024	0.024	0.039	0.214
		0.521	*0.525*	*0.506*	*0.116*
Adjusted R^2	11.4%	10.1%	9.8%	8.3%	5.9%
F-statistic	6.260***	2.970***	2.700**	2.124**	1.506
p-value	*0.001*	*0.007*	*0.010*	*0.028*	*0.156*
Number of observations	*124*	*124*	*124*	*124*	*81*

Table 2.11

Cumulative Abnormal Returns Around the Dividend Reduction or Omission Announcements and Around the Loss Announcements for the Sub-Sample of Firms that Announced Dividend Reductions or Omissions Prior to the Loss Announcement

This table shows the average cumulative abnormal returns, AVG{CAR (t1, t2)}, for the period day t_1 to day t_2 around the dividend reductions or omissions announcements (*panel A*) and around the quarterly loss announcements (*panel B*). The daily abnormal returns: (1) are market model adjusted for each security; (2) are averaged across firms and then cumulated. The Less-established-pre-announcers sub-sample consists of 27 firms that: (1) incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for one, and/or two, and /or three years before their first annual loss, (2) on the year of the loss reduced or suspended dividend payments, and (3) the quarterly dividend reduction or suspension announcements were made prior to the loss announcements.
The Established-pre-announcers sub-sample consists of 15 firms that: (1) incurred an annual loss after having positive annual earnings and stable or increasing annual dividend payments for at least seven consecutive years before their first annual loss, (2) on the year of the loss reduced or suspended dividend payments, and (3) the quarterly dividend reduction or suspension announcements were made prior to the loss announcements. The fourth column in both panels reports the results of the independent samples *t-tests*, of the Established sample versus the Less-established sample. The last column shows the total number of the Established-pre-announcers sub-sample firms plus the Less-established-pre-announcers sub-sample firms that are used in the independent sample *t-tests* for the equality of means. The sample period is 1986-2003. *p-values* appear below the test statistics in italics. *, **, and ***, indicate significance of the *t-statistics* at the 0.10, 0.05, and 0.01 levels, respectively.

Panel A: CAR Around the Dividend Reduction or Omission Announcements for the Sub-Sample of Firms that Announced Dividend Reductions or Omissions Prior to the Loss Announcement

AVG{CAR (t1, t2)}	Less-established Sample	Established Sample	*Test for the equality of means: t-statistc*	*N*
CAR (-1,+1)	0.026*	-0.027*	2.408**	*42*
	0.091	*0.089*	*0.023*	
CAR (-2,+2)	0.466	-0.040	1.837*	*42*
	0.136	*0.113*	*0.075*	
CAR (-3,+3)	0.002	-0.040	1.184	*42*
	0.921	*0.295*	*0.244*	

Panel B: CAR Around the Loss Announcements for the Sub-Sample of Firms that Announced Dividend Reductions or Omissions Prior to the Loss Announcement

AVG{CAR (t1, t2)}	Less-established Sample	Established Sample	*Test for the equality of means: t-statistc*	*N*
CAR (-1,+1)	-0.048*	0.023	-1.799*	*42*
	0.090	*0.365*	*0.081*	
CAR (-2,+2)	-0.057	0.023	-1.655	*42*
	0.136	*0.330*	*0.107*	
CAR (-3,+3)	-0.013	0.017	-0.942	*42*
	0.196	*0.491*	*0.355*	

Table 2.12
Cross-sectional tests

This table presents OLS regression coefficient estimates. *p-values* are presented below the coefficient estimates in italics. The dependent variable is the average cumulative abnormal return for the event window day -1 to day +1 (i.e. CAR (-1,+1)).The independent variables are SAMPLE, ANN_DUMMY, AD_x_SAMPLE, DIV_CHG, E, ln(TA), Price/Book, SIC_DUMMY_*i* for *i*= 1, 2, 3, and 4&5. SAMPLE is a qualitative variable that takes the value of one if the firm belongs in the Established sample and 0 if it belongs in the Less-established sample. ANN_DUMMY is a qualitative variable that takes the value of one if the dividend reduction/omission announcement takes place before the first quarterly loss announcement, and zero otherwise. AD_x_SAMPLE is the interaction between SAMPLE and ANN_DUMMY. DIV_CHG is the event-quarter's dividend payment minus the prior quarter's dividend payment, divided by the event-quarter's dividend payment.

ln(TA) is the natural logarithm of the value of total assets on the event quarter. E is the level of earnings (losses) per share on the event-quarter, deflated by the stock price at the beginning of the quarter. Price/Book is the price to book ratio at the beginning of the event quarter. SIC_DUMMY_*i* is a qualitative variable that takes the value of 1 if the firm's 1-digit SIC code is *i* for *i*=1, 2, 3, 4 and 5. The event quarter, is the quarter during which the dividend reduction/omission announcement took place. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively. The regression standard errors are computed using White's heteroskedasticity-consistent covariance matrix.

Dependent Variable CAR(-1,+1)			
	(1)	(2)	(3)
SAMPLE	-0.071*	-0.068*	-0.068*
	0.063	*0.076*	*0.076*
ANN_DUMMY	0.039*	0.041*	0.047**
	0.074	*0.071*	*0.047*
AD_x_SAMPLE	0.035	0.032	0.032
	0.445	*0.504*	*0.506*
DIV_CHANGE	0.087**	0.082**	0.086**
	0.023	*0.038*	*0.037*
E			-0.086
			0.141
ln(TA)			-0.003
			0.697
Price/Book			0.001
			0.823
SIC_DUMMY_1		0.046	0.045
		0.223	*0.258*
SIC_DUMMY_2		-0.002	-0.002
		0.938	*0.944*
SIC_DUMMY_3		0.006	0.005
		0.841	*0.883*
SIC_DUMMY_4 & 5		-0.034	-0.038
		0.412	*0.445*
Intercept	0.038	0.032	0.046
	0.232	*0.457*	*0.465*
Adjusted R^2	10.4%	8.9%	7.1%
F-statistic	4.445***	2.452**	1.821*
p-value	0.002	0.018	0.059
Number of observations	*124*	*124*	*124*

Chapter 3

3. Effect of Past Earnings and Dividends Patterns on the Information Content of Dividends When Earnings Are Reduced.

3.1. Abstract.

The objectives of Chapter 3 are twofold. Firstly, to provide evidence on the information content of dividend policy conditional on past earnings and dividends patterns prior to an annual earnings decline. Secondly, to examine the effect of the magnitude of low earnings realisations on dividend policy when firms have more or less-established dividend payouts. Prior studies examined the information content of dividend policy for firms that incurred earnings reductions following long patterns of positive earnings and dividends (DeAngelo et al, 1992, 1996; Charitou, 2000). As far as the impact of historic earnings and dividends patterns is concerned, no research to date has examined the association between the informativeness of dividend policy changes in the event of an earnings drop, relative to varying patterns of past earnings and dividends. The dataset consists of 3,674 U.S. firm-year observations over the period 1987-2004. In line with this chapter's hypotheses, evidence supports that, among earnings reducing or loss firms, longer patterns of past earnings and dividends: (1) strengthen the information conveyed by dividends regarding future earnings, and (2) enhance the role of the magnitude of low earnings realisations in explaining dividend policy decisions, in that earnings have more information content in explaining the likelihood of dividend cuts the longer the past earnings and dividends patterns. Both results stem from the stylized fact that managers aim at maintaining consistency with a historic payout policy, being reluctant to proceed with dividend reductions, and that this reluctance is higher the more established the historic payout policy is (Lintner, 1956; Brav et al. 2005).

3.2. Introduction.

The third and final chapter of the current PhD Thesis examines whether dividend policy decisions convey incremental information about future earnings, when earnings drops are preceded by patterns of positive earnings and dividend payouts. Evidence provided herein supports that dividend changes entail higher information content the longer and more established prior earnings and dividends are.[73]

The motivation to investigate the effects of past earnings and dividends records on the information content of dividends, stems from the fact that dividends and earnings patterns capture value relevant firm characteristics that are priced by the market, and thus affect management policy decisions especially when these patterns are broken, i.e. when earnings and (or) dividends are reduced. This is supported by prior literature, where it is shown that increasing patterns of earnings and dividends are associated with higher market rewards (Barth, Elliot, and Finn, 1999). Hence, managers focus on maintaining stable or increasing earnings, avoid earnings surprises (Walther and Willis, 2004), aim at sustaining a smooth dividend stream being hesitant to deviate from a long-established dividend policy (Lintner (1956), Skinner (2004), Brav, Graham, Harvey, and Michaely (2005), De Angelo, DeAngelo, and Stulz (2006)).[74] Since managers are reluctant to break an on-going commitment to distribute regular dividend payouts, a dividend reduction following a drop in earnings offers a reliable signal that managers expect the decline in firm's profitability to persist (De Angelo, DeAngelo, and Skinner (1992), Koch and Sun (2004)). Additionally, if managers are keener to avoid dividend cuts, the longer the history of past earnings and dividends records, then: (1) a dividend reduction conveys more information regarding future earnings the longer the string of prior earnings and dividends, and (2) dividend cuts will be undertaken only when low earnings reductions are severe, in the sense that earnings difficulties are expected to be continuing, rather than temporary (Joos and Plesko, 2005).

The information content of dividends for firms that experience reductions in earnings is examined for two reasons.[75] Firstly, low earnings realisations (either losses or depleted earnings) are a source of informational asymmetry (Hayn, 1995), which strengthens the role of dividends in explaining firm's future earnings (De Angelo et al. (1992), Charitou, (2000)). Secondly, dividend policy changes are more informative when the cost of paying dividends is

[73] Consistent with DeAngelo et al. (1992), I define "Established firms" those firms with a relatively long stream of positive earnings and dividend payments prior to their first annual earnings reduction. Specifically, I define "Established firms" those firms with at least seven years of positive earnings and dividend payments prior to their first annual earnings reduction. For robustness purposes, I also use alternative sub-samples of "Established firms".
[74] Brav, Graham, Harvey, and Michaely (2005) confirm Lintner's (1956) findings using a larger and an up-to-date sample. Among other, they report that 84.1% of the 166 financial executives surveyed, agree or strongly agree that the most important factor for dividend policy is maintaining consistency with a historic payout policy.
[75] The "information content of dividends" is the term typically used for the hypothesis that dividends convey information, above that conveyed by current earnings (Miller and Modigliani (1961), Watts (1973), De Angelo et al. (1992)).

higher (Spence (1973), Joos and Plesko (2004)).[76] As it is supported by previous literature, dividend policy conveys more information regarding future earnings for firms that exhibit low earnings realisations, as dividend payments are more costly for such firms (Skinner (2004), Joos and Plesko (2004), Hand and Landsman (2005)).

Prior studies examined the association between dividends and losses, viewing sample firms that exhibit established patterns of earnings and dividends prior to an annual loss (De Angelo et al. (1992), Charitou (2000)). They do so, since the primary emphasis is to document the effect of negative earnings, (1) on the decision to pay dividends, and (2) on the incremental information conveyed by dividend reductions about future earnings. Accordingly, they characterise established patterns of past earnings and dividends as an attribute that strengthens their assessment on the importance of poor earnings in determining dividend reductions.[77] Nevertheless, the aforementioned studies do not address the issue of whether past earnings and dividends patterns per se play a role on the information conveyed by changes in dividend policy (i.e. over and above the information conveyed by low earnings realisations). As far as the impact of past earnings and dividends patterns is concerned, no research to date has examined the association between the informativeness of dividend policy changes in the event of an earnings drop, relative to varying degrees of past earnings and dividends records.

Further to the aforementioned studies, the information content of dividends is assessed vis-à-vis diverse patterns of historic earnings and dividends. Thus, a distinction is made between two separate effects on the decision to pay dividends: (1) the "earnings reduction" or "loss effect" (henceforth earnings reduction effect), and (2) "the historic patterns effect".[78] Hence, it is firstly hypothesized that in the face of an earnings reduction, the ability of current earnings to signal future earnings does not only depend on earnings quality, but it is also a function: (1) of dividend policy, and (2) of firm's consistency in generating positive earnings and distributing them in the form of dividend payouts. Secondly, I argue that since managers are more reluctant to cut dividends the longer the string of prior earnings and dividends, then the probability of dividend reductions is more likely to be associated with earnings difficulties that are expected to persist. That is, the magnitude of "sustainable" earnings reductions (i.e.

[76] Spence (1973) argues that the cost of sending an economic signal determines its informativeness.
[77] According to De Angelo et al. (1992), the focus on firms with established track records of positive earnings and dividends, stems from the fact that dividend changes for such firms are more reliably viewed as deliberate policy shifts undertaken by management, and because a loss for such firms constitutes a substantial shift in profitability. They argue that because of the aforementioned attributes, their sample is appropriate in order to assess the importance of losses in determining dividend reductions.
[78] De Angelo et al. (1992, 1996) and Charitou (2000), consider only the "earnings reduction" or "loss effect" on the information content of dividends.

earnings excluding extraordinary and special items) is expected to have more information content in explaining the likelihood of dividend cuts the longer the patterns of earnings and dividend payments preceding the reduction in earnings.

Using OLS regressions, I compare the ability of current earnings to predict future earnings for firms that had at least seven years of positive earnings and dividend payments prior to their first annual earnings reduction (my sample of "Established firms") with those firms that exhibited positive earnings and dividends for at most three years prior to their first annual earnings reduction (my sample of "Less-established firms").[79] This chapter's empirical results support that dividend policy has information content in explaining future earnings, regardless of prior earnings and dividends patterns. However, the incremental information conveyed by dividends is significantly higher in the case of established firms, revealing that changes in dividend policy enhance the ability of current earnings to predict future earnings the longer the historic patterns of earnings and dividends.

Moreover, using logistic analysis it is shown that earnings reductions have more information content for reducing or omitting dividend payments for established than for less-established firms. That is, the longer the string of past earnings and dividends records, the more a dividend reduction reveals that low earnings realisations are related with continuing as opposed to transitory financial difficulties, which in turn make dividend cuts more likely. Consequently, when an earnings reduction constitutes a break in a consistent pattern of stable earnings, then the effect on dividend policy decisions is more pronounced the longer the patterns of past earnings and dividends.

The rest of Chapter 3 proceeds as follows. Section 3.3 reviews the related literature and provides the motivation and the development of hypotheses. Section 3.4 discusses the research design. Section 3.5, describes the empirical models and provides an evaluation of the main results, and finally section 3.6 concludes.

[79] For those firms that experience an earnings reduction, when earnings, albeit positive, represent reductions from a previous earnings level, the prerequisite is to have stable or increasing earnings and positive dividends prior to the earnings drop. The filtering criterion for earnings differs when I consider firms that incur losses, where the requirement is that earnings realisations prior to the loss are only positive (i.e. not stable or increasing). Both cases are considered (i.e. earnings reductions and losses) as they constitute a break in an established pattern, that is, an earnings reduction following stable or increasing earnings, or a loss following positive earnings. I also consider different combinations of prior annual earnings and dividends patterns. That is, I construct "Established" sub-samples consisting of firms that had at least eight or at least nine years of stable or increasing earnings and positive dividends prior to their first annual earnings reduction (or positive earnings and dividends prior to the first annual loss). Similarly, I create "Less-established" sub-samples, containing those firms that had maximum one year or maximum two years of stable or increasing earnings and positive dividends prior to their first annual earnings reduction (or positive earnings and dividends prior to their first annual loss). Results are qualitatively similar to those presented in this chapter.

3.3. Background, Motivation, and Development of Hypotheses.

Despite the large volume of research that has been produced over the years, it is not yet clear whether changes in dividend policy signal future earnings prospects. At the heart of this debate lies the fundamental distinction that is made between dividend signaling and information conveyance. According to Brav et al. (2005), signaling exists when firms deliberately undertake costs in order to reveal firm's private information about its ability. On the other hand, information conveyance describes "any form of information sharing with outsiders".[80] Thus, signaling presupposes information conveyance, but the opposite does not hold. Although it is generally accepted that dividend policy conveys information to investors, recent studies have been contradictory on whether this information conveyance is consistent with signaling models (Allen and Michaely (2003), Skinner (2004), Brav et al. (2005)). For example Nissim and Ziv (2001) provide evidence that dividend decreases (increases) signal future earnings, but in a later study Grullon et al. (2005) document that the dividend signaling hypothesis does not hold.[81] Allen and Michaely (2003), De Angelo, DeAngelo, and Skinner (2004) and Lie (2005) also find no evidence that dividend changes are an informative signal of future earnings. Yet, Hand and Landsman (2005), and more recently, Hanlon, Myers, and Shevlin (2007) provide opposite results.

However, other studies shed light on the dividend signaling issue by examining the information content of dividend policy changes in the event of a loss or an earnings reduction (De Angelo, DeAngelo, and Skinner (1992, 1996), Charitou (2000), Joos and Plesko (2004)), or more generally, they associate dividend policy with earnings quality (Mikhail, Walther, and Willis (2003), Skinner (2004), Caskey and Hanlon (2005)).[82] Dividend payments are more costly when firms incur losses or earnings reductions, thus examining dividend-paying behavior for such firms may reveal evidence in favor of dividend signaling behavior (Joos and Plesko, 2004).

[80] Brav et al. (2005, page 511).
[81] Unlike Nissim and Ziv (2001), Grullon et al. (2005) use an earnings expectation model that controls for the non-linear patterns in earnings and this results in the disappearance of the relationship between dividend changes and future earnings.
[82] Mikhail, Walther, and Willis (2003) measure earnings quality as the adjusted R^2 from regressions of future cash flows on current earnings. Skinner (2004) interpretation of earnings quality focuses on the relationship between earnings and dividend changes. Accordingly, high quality earnings imply a strong positive relationship between reported earnings and dividend changes. Lastly, Caskey and Hanlon (2005) provide evidence to support that dividends provide information about earnings quality as measured by an association of fraud in a *Securities and Exchange Commission Accounting and Auditing Enforcement Release*.

Specifically, De Angelo et al. (1992) (henceforth DDS) argue that because current earnings and dividends are likely substitute means of forecasting future earnings, the more unusual current earnings are, the more informative dividend policy is about firm's future performance.[83] Their sample consists of firms that incurred an annual loss, after having an established record of positive earnings and dividends for a ten-year period. Their choice of sample firms with established track records is justified for two reasons. Firstly, by focusing on firms with a long history of positive earnings, they can better separate a substantial change in profitability, e.g. a loss following a long string of earnings, which in turn, renders negative earnings as unusual. Secondly, the choice of firms with established dividend payouts is based on Miller and Modigliani's (1961) argument that if a firm has been implementing a long-established dividend policy, investors are likely (and have a good reason to) interpret a change in the dividend rate as a change in management's beliefs regarding firm's future performance. Accordingly, DDS argue that when established profit-making dividend-paying firms report earnings reductions, then "dividend changes are more reliably viewed (by the market) as a deliberate policy shift undertaken by management (rather than a continuation of a previously established policy to preserve stable dividends)".[84] As a result, dividend changes convey incremental information regarding future earnings prospects over and above that conveyed by current earnings. If one can extrapolate this argument, it implies that dividend changes will be less reliably viewed (by investors) as an intended structural change in firm's payout policy if earnings decreases are realized following a less-established earnings and dividends record. Hence, the immediate question that arises is whether changes in dividend policy for such "less-established" firms will still convey incremental information for their future performance, beyond that conveyed by current earnings. Although DDS imply a positive relationship between the information content of dividends and past earnings and dividends patterns, this is not explicitly shown since their sample is consisted of 167 firms that incurred an annual loss after having positive earnings and dividend payouts for a fixed yearly period of ten years.

In this chapter, I extend DDS by investigating whether dividend policy conveys incremental information regarding firm's future performance for varying degrees of past earnings and dividends patterns. Thus, unlike DDS, I aim to assess the effect of firm's

[83] According to De Angelo et al. (1992, page 1857) "…current earnings and dividend policy are likely substitute means of forecasting future earnings. Dividends should therefore have significant information content when current earnings are extreme or otherwise unusual, i.e. when current earnings represent an especially unreliable indicator of probable future earnings…".
[84] De Angelo et al. (1992), page 1838.

consistency in generating positive earnings and paying out regular dividends on the information content of dividend policy (what I define as the “historic patterns effect”- which is expected to act beyond the earnings reduction effect).[85] The motivation to document such a “historic patterns effect” stems from the belief that consistency is assessed both by management and investors, i.e. it affects both policy decisions and investors’ perceptions. For example, prior literature supports that long and established patterns of increasing earnings and dividends are associated with higher market rewards (Barth et al. (1999), Koch and Sun (2004)). This is because such patterns reflect the path of growth over time, and thus, capture firm characteristics, such as growth and risk, which are not captured by relevant proxies (growth or risk proxies capture total growth and not growth over time).[86]

Furthermore, Brav et al. (2005) document that financial executives consider maintaining consistency with a historic dividend policy as one of the most important factors for paying dividends. Thus, managers are more reluctant to cut dividends the more established the historic payout policy is. Notably enough, in the aforementioned survey, executives stated that dividend cuts would only be considered if adequate cash could not be collected via other methods, such as selling assets, laying off large number of employees, borrowing heavily, or bypassing positive NPV projects.[87] Hence, maintaining an established regime of dividend payouts is more of essence the longer the historic patterns of earnings and dividends.

Moreover, beyond negative earnings, I study firms that incur earnings reductions, when earnings, albeit positive, represent reductions compared to an ongoing pattern of stable or increasing earnings. These firms are also considered, as losses represent only a specific case of a more general situation where earnings signal low future earnings. In addition to losses, reduced current earnings (while positive) constitute signals of lower future performance (Hayn (1995), Degeorge et al. (1999)). This especially holds when earnings reductions constitute a break in a pattern of stable or increasing prior earnings (Barth et al., 1999).

The conjecture is that in the event of an earnings reduction, dividend policy should explain better future profitability for established profit-making, dividend-paying firms, than for less-established firms. This is because: (1) established patterns of past earnings records render an earnings reduction as an extreme or an unusual situation (i.e. a loss following a sequence of

[85] De Angelo et al. (1992, page 1838), specifically state that they focus on firms with established patterns of earnings and dividends, because in this way they can better isolate a material shift in profitability. This chapter extends the DeAngelo et al. study since my aim is to study the effect of historic patterns per se (beyond the effect of (material) losses) on dividend policy decision.

[86] Barth, Elliot, and Finn (1999), page 412.

[87] Brav, Graham, Harvey, and Michaely (2005), page 500.

positive earnings, or an earnings reduction, following a string of increasing or stable earnings), and (2) given an earnings reduction, knowledge that a firm has reduced its dividends improves the ability of current earnings to predict future earnings (De Angelo et al, 1992).[88] Accordingly, given an earnings reduction, dividend policy should enhance the ability of current earnings to predict future earnings the longer the history of past earnings and dividends patterns. These arguments point to Chapter's 3 first hypothesis:

Hypothesis 3.1: In a sample of firms that incurred a loss (or an earnings reduction), dividend policy changes strengthen the ability of current earnings to forecast future earnings, the longer the patterns of positive earnings and dividend payouts preceding the first annual reduction in earnings.

According to *hypothesis 3.1*, dividend reductions constitute "worse" signals regarding firm's future performance for established than less-established firms. This stems from the stylized fact that managers are more reluctant to undertake dividend cuts the more established past earnings and dividends patterns have been (Lintner, (1956), Skinner (2004), Koch and Sun (2004), Brav et al. (2005), De Angelo et al., (2006)). Thus, given a loss, a dividend reduction should constitute a stronger indication regarding the persistence of earnings difficulties for established vis-à-vis less-established firms.

The posited association between dividend reductions, continuing earnings difficulties, and past earnings and dividends patterns, should also be reflected in the relationship between current earnings reductions and the likelihood of dividend cuts. That is, in case low earnings realisations are not the outcome of transitory unusual items but they result from structural inefficiencies that systematically diminish revenues, then "sustainable" earnings (as captured by earnings before extraordinary and special items) will decline and thus make dividend cuts more likely. Additionally, given that management reluctance to cut dividends is higher the longer the history of past earnings and dividends, then established firms' "sustainable" earnings (either reduced earnings or losses) should have more information content for reducing or omitting dividend payments compared to those of less-established firms. In other words, among earnings reducing or loss firms, the magnitude of earnings should have a greater effect on the likelihood of dividend cuts the stronger the historic patterns of earnings and dividend payouts. Thus, Chapter's 3 second hypothesis is formalized as follows:

[88] Benartzi et al. (1997) find strong evidence to support that dividends are reacting to current and past earnings changes as opposed to acting as direct predictors to future earnings per se. Accordingly, I conjecture that because of the strong relationship between dividends and concurrent earnings, dividends serve as an "indirect" predictor of future earnings, by enhancing the ability of current earnings to predict future earnings.

Hypothesis 3.2: In a sample of firms that incurred a loss or an earnings reduction, the magnitude of earnings has a greater impact on the likelihood of dividend reductions the longer the patterns of earnings and dividend payments preceding the first annual reduction in earnings.

The validity of hypotheses 3.1 and 3.2 is tested by considering: (1) firms that reported an annual earnings reduction (or an annual loss) for the first time after one, two, or three years of positive earnings and dividend payouts (henceforth referred to as the "Less-established firms" sample), and (2) firms that reported their first annual earnings reduction (or loss) following at least seven consecutive years of positive earnings and dividend payouts (henceforth referred to as the "Established firms" sample). Using firstly OLS analysis, I aim to show that dividend policy changes better explain future earnings for the "Established" sample as opposed to the "Less-established" sample of firms. Secondly, using logit analysis, I evaluate the impact of the magnitude of firm's current earnings problems on the likelihood of dividend cuts vis-à-vis past earnings and dividends patterns.

3.4. Research Design.

3.4.1. Data Set.

The sample comprises all firms on Compustat for the sample period 1987-2004 that meet the following criteria: (a) industrial firms, (b) non-missing values for dividends and earnings before extraordinary items, and (c) availability of at least one annual loss or an earnings reduction, proceeded by positive annual earnings and an annual dividend payment.[89] Additionally, the sample is confined to include only those firm-year observations that have available data regarding the explanatory variables incorporated in this chapter's multivariate regressions (see models [3.1] and [3.2] in sections *3.5.1*, *3.5.2* and *3.5.3* below). In this manner, I achieve consistency with respect to the number of observations employed throughout my empirical tests, in that the reported descriptive statistics (i.e. tables 3.1-3.3) refer to the exact number of firm-year observations that are subsequently used in this chapter's regressions (i.e. tables 3.4-3.7). Lastly, consistent with prior studies I use annual data.[90]

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[89] Consistent with previous studies financial institutions and utilities are excluded from the sample (DeAngelo et al. (1992), Charitou (2000), Fama and French (2001), Grullon et al. (2005), De Angelo et al. (2006)). Specifically the samples are restricted to industrial firms in Compustat files, defined as firms with *Standard Industrial Classification* (*SIC*) codes outside the intervals 4900-4949 and 6000-6999.

[90] See for example Fama and Babiak (1968), De Angelo et al. (1992), Charitou (2000), Fama and French (2001), Lee and Yan (2003), Joos and Plesko (2004), Skinner (2004), and DeAngelo et al. (2006). Annual data are also employed in order to: (1) avoid possible seasonality effects contained in earnings, and (2) account for the fact that

The resulting 3,674 firm-year observations were classified into two sub-samples according to the number of annual earnings and dividend payments prior to their first annual loss. The first sub-sample includes 2,291 "less-established firms", which are those firms that had positive annual earnings and dividends for at most three consecutive years, and then incurred a loss or a reduction in earnings. The second sub-sample includes 1,383 "established firms" as they had been producing positive annual earnings and dividends for at least seven consecutive years and on the subsequent year reported a loss or an earnings reduction.[91]

Out of the 2,291 firms of the "Less-established" sub-sample, 926 firms (40%) announced dividend reductions or omissions. For the "Established" sub-sample, 434 firms (31%) reduced or suspended dividend payments, while the remaining 949 firms (69%) sustained or increased their dividends. Table 3.1 reports the percentage of dividend reduction relative to dividend omission announcements for the two sub-samples. Six hundred fifty seven (71%) of the 926 dividend reductions in the "Less-established" sample of firms are cuts to a still positive level, whereas the remaining 269 reductions are suspensions of dividend payments. For the "Established" sample of firms, 408 (94%) of the 434 dividend reductions represent dividend decreases, while only the remaining 26 firms (6%) proceeded with complete omissions of dividend payments, indicating that managers of established dividend paying firms are more reluctant to suspend dividend payments.

Panel A and panel B of table 3.2 describe the distribution of the "Time" sub-samples. A firm belongs in sample "Time i"(where i=1,2,3 for the "Less-established" sample and i=7,8,9,10 for the "Established" sample), if it reports a loss or an earnings reduction in year *t* (where *t* is the event year), after having positive earnings and dividends for i years prior to the first annual loss or earnings reduction. For example in year *t*, Time 2 firms incurred a loss or an earnings reduction and had positive earnings and dividends for years *t-1* and *t-2*.

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dividends are not uniformly distributed across the four quarters (Lee and Yan, 2003). As De Angelo et al. (1992) argue, annual data are in line with Lintner (1956) finding that dividends are uniformly considered in terms of annual periods. Consistent with De Angelo et al. (1992) I use basic earnings before extraordinary items and discontinued operations (Compustat annual data item #58). Consistent with Joos and Plesko (2004) I use cash dividends paid (Compustat annual data item #21).

[91] The sampling criteria excludes firms that had 4, 5, or 6 years of earnings and dividends prior to their first annual loss or earnings reduction, in order to have a clear, sharp and distinct separation of those firms that exhibit an established pattern of dividend payments and positive earnings versus those with a less-established pattern. Different combinations of prior annual earnings and dividends patterns are also considered. That is, I construct "Established firms" samples considering companies with at least eight, or at least nine years of stable or increasing earnings and positive dividends prior to the first annual earnings reduction (or positive earnings and dividends prior to the first annual loss). Similarly, "Less-established firms" samples are created, collecting firms with maximum one year, or two years, of stable or increasing earnings and positive dividends prior to the first annual earnings reduction (or positive earnings and dividends prior to the first annual loss). Results are qualitatively the same, and thus, are not discussed for brevity.

Lastly, panel C of table 3.2 reports the yearly distribution of the sample's event years which represent either loss or earning reduction events. Results indicate that there is a clustering of events in year 2001, mostly in the case of the sample firms that incurred a loss.[92] Other than that, table 3.2 does not reveal any significant clustering of events over the sample period 1987-2004.

3.4.2. Descriptive Statistics.

Table 3.3 reports descriptive evidence for the main variables used in the regression analysis described further-below in section 3.5. By and large extant empirical literature proxies profitability via return on assets, $ROA_t = IB_t / TA_{t-1}$ where IB_t is income before extraordinary items (annual Compustat data item #18) and TA_{t-1} is lag total asset (annual Compustat data item #6).[93] IB_t includes special items which in most cases comprise negative expenses related to restructuring charges, write offs, impairments and so forth (Collins, Maydew, and Weiss (1997), Bradshaw and Sloan (2002)). Hence, low earnings realizations due principally to special items are more likely to be transitory (Burgstalher, Jimblano and Shevlin, 2002). However, future earnings and dividend payouts are predominately affected by the permanent component of earnings, and thus, special items by their nature would be expected to have little or no impact both on future earnings and on dividend decisions (e.g. DeAngelo et al. (1992), Kormendi and Zarowin (1996), Penman and Sougiannis (1997), Skinner (2004)). Accordingly, it is posited that in examining managers' adjustments of dividends to information about low earnings realisations, the empirical analysis should be rather based on earnings excluding special items. Therefore, "sustainable" earnings are proxied as return on assets net of special items, i.e. $ROA_t = (IB_t - SPI_t) / TA_{t-1}$ where SPI_t is special items (annual Compustat data item #17).[94]

Additionally, analysis includes net cash flows from operating activities (CFO_t), scaled by lag total assets (annual Compustat data item #308 divided by TA_{t-1}), since prior literature suggests that cash flows from operations have information content in explaining dividend changes (Charitou and Vafeas (1998), Charitou (2000), Joos and Plesko (2004)).[95] Following

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[92] As a robustness test, all the regression tests (that are later described in section 3.5) were carried out excluding the 2001 events but the corresponding results are qualitatively similar to those reported in this chapter.
[93] For example see Fama and French (2001), Skinner (2004), Joos and Plesko (2004), DeAngelo, DeAngelo and Stulz (2006).
[94] I am particularly grateful to Philip Joos for his insightful comments on this issue.
[95] CFO_t is also measured using 2 different ways: (1) Net income (annual Compustat data item #172) – accruals (where accruals are defined as ΔCurrent Assets (data item #4) - ΔCash (data item #1) - ΔCurrent Liabilities (data

Fama and French (2001), I control for firm size ($SIZE_t$), and market-to-book (MTB_t) ratio. Firm size is a commonly used proxy for the firm's information environment as larger firms institute better mechanisms for periodic information releases (Zeghal (1983), Atiase (1985), Walker and Donnelly (1995)). $SIZE_t$ is proxied by the natural logarithm of the firm's total assets.[96] MTB_t is defined as the market value of equity (i.e. the closing price - annual Compustat data item #199 - times shares outstanding at fiscal year end - annual Compustat data item #25) scaled by the book value of equity (annual Compustat data item #60), and it is used as a proxy of firm's investment opportunity. Consistent with DeAngelo et al. (2006), I employ firm's sales growth rate ($SALEGR_t$) as a proxy for growth, and retained earnings to total common equity ($RETTE_t$).[97] Finally, I include the debt to equity ratio, $DEBTEQ_t$, to control for the possibility that the firm is close to its covenant restrictions, which may influence its dividend-paying behavior (Duke and Hunt (1990), Press and Weintrop (1990), Aivazian, Booth, and Cleary (2006)). $DEBTEQ_t$ is defined as long term debt plus debt in current liabilities (annual Compustat data item #9 plus annual Compustat data item #34) all scaled by total equity (annual Compustat data item #60).

Results in table 3.3 show that the mean and median ROA_t, ROA_{t+1}, CFO_t, $SIZE_t$, and $RETTE_t$ are greater for the "Established" sub-sample (Panel B) versus the "Less-established" sub-sample (Panel A). These results are in line with the conventional finding that established dividend payers are larger and more profitable firms (Fama and French (2001), De Angelo et al. (2004), De Angelo et al. (2006)). Furthermore, MTB_t, $SALEGR_t$ and $DEBTEQ_t$ are greater for the "Less-established" sample of firms, showing that firms with greater investment opportunities and growth rates have higher debt covenants and a stronger incentive to retain cash and thus, exhibit less-established patterns of past dividend payments.

Finally, results in panel C of table 3.3 indicate that the mean and median differences between the variables under investigation are statistically significant, except for the mean differences that concern MTB_t and SPI_t, and the mean and median differences with respect to $DEBTEQ_t$. In summary, descriptive evidence supports that established firms are significantly different across most firm characteristics compared to less-established firms, potentially

item #5) + ΔDebt in Current Liabilities (data item #34) + Depreciation and Amortizations (data item #14)), all scaled by TA_{t-1}; and, (2) Cash and cash equivalents (annual Compustat data item #4) scaled by TA_{t-1}. Nevertheless, the substance of the corresponding results remains unchanged regardless of which definition is employed.

[96] Size is also proxied by the natural logarithm of the firm's market value of equity. However, no matter which of the two variables is used, results are qualitatively similar.

[97] $SALEGR_t$ is defined as $SALES_t$ (annual Compustat data item #12) - $SALES_{t-1}$ all scaled by $SALES_{t-1}$. $RETTE_t$ is retained earnings (annual Compustat data item# 36) divided by total common equity (Compustat data item # 60).

emphasizing the diverse role of dividends in signaling earnings prospects with respect to the two sub-samples under investigation. However, the relationship between past earnings and dividends patterns and the information content of dividends, controlling for different firm characteristics, is formally tested by employing multivariate regression analysis in the section that follows.

3.5. Empirical Models and Results.

3.5.1. The Information Content of Dividend Changes in Explaining Future Earnings.

Hypothesis 3.1 posits that, in the event of an earnings reduction, dividend policy changes have more information content in explaining future earnings, the longer the past earnings and dividends patterns. The information content of dividends relates to the predictive ability of current earnings with respect to future earnings. That is, the conjecture is that knowledge that a firm has reduced its dividends, improves the ability of current earnings to predict future earnings the stronger the historic patterns effect.

To formally test *hypothesis 3.1*, the following OLS model is employed:

$$\begin{aligned} \mathrm{ROA}_{t+1} = {} & \alpha + \beta_1 \mathrm{ROA}_t + \beta_2 \mathit{DIV\_REDUCTION} + \beta_3 \mathrm{ROA}_t{*}\mathit{DIV\_REDUCTION} \\ & + \beta_4 \mathit{ES}\mathrm{TA}\mathit{B} + \beta_5 \mathrm{ROA}_t{*}\,\mathit{ES}\mathrm{TA}\mathit{B} + \beta_6 \mathit{ES}\mathrm{TA}\mathit{B}{*}\mathrm{ROA}_t{*}\mathit{DIV\_REDUCTION} \\ & + \beta_7 \mathit{NON\text{-}LOSS} + \beta_8 \mathrm{ROA}_t{*}\,\mathit{NON\text{-}LOSS} + \beta_9 \mathrm{SPI}_t + \beta_{10} \mathrm{CFO}_t \\ & + \beta_{11} \mathrm{SIZE}_t + \beta_{12} \mathrm{SALEGR}_t + \beta_{13} \mathrm{MTB}_t + \beta_{14} \mathrm{DEBTEQ}_t + \beta_{15} \mathrm{RETTE}_t \qquad [3.1] \end{aligned}$$

where,

DIV_REDUCTION = one, if dividend payments are reduced or omitted, and zero if dividend payments are either increased or sustained.

*ES*TA*B* = one, if the firm belongs in the “Established” sample of firms, and zero if it belongs in the “Less-established” sample of firms.

NON-LOSS = one, if on the event year the firm incurred an earnings reduction, and zero if it incurred a loss.

All the remaining variables in the model are either defined as before, or represent interactions between the variables already described (e.g. ROA_t**DIV_REDUCTION* is the interaction between ROA_t and *DIV_REDUCTION*).

Table 3.4 reports the OLS regression results for model [3.1]. Column (1), exhibits results for a variation of model [3.1] that excludes some of the control variables, while column (2) presents the full model. All tests of statistical significance are based on White’s (1980) heteroscedasticity-consistent standard errors.

Regression results with respect to model specification [3.1] yield a higher adjusted R^2 (46.45%) compared to the model presented in column (1) (R^2=29.77%). In fact, the adjusted R^2 reported in column (2) is much higher compared to similar model specifications reported in prior studies. For example DeAngelo, DeAngelo, and Skinner (1992) in their OLS regressions of future earnings on current earnings report an adjusted R^2 of at most 29.7%, whereas Charitou (2000) reports an adjusted R^2 of 17.43%. The difference in the adjusted R^2 may be attributed to the following factors. On the one hand, these studies consider only loss firms with established track records. In contrast my sample contains both loss and earnings reducing firms with varying degrees of past earnings/dividends records. Moreover, the OLS regression models employed in the aforementioned studies fail to incorporate the alternative control variables that are herein considered. However, controlling for a broad variety of firm characteristics that may influence dividend policy decisions (i.e. beyond earnings and cash flows) is crucial since extant theories in dividends literature offer only rough guidelines about the key determinants of the decision to pay dividends and of the best ways to capture those determinants empirically (DeAngelo, DeAngelo, and Stulz 2006). Thus, employing explanatory variables that potentially affect dividend policy decisions results in a better specified model that yields a substantially higher adjusted R^2, and consequently, the relevant regression coefficients allow more reliable inferences.

In both model specifications, ROA_t is positive and statistically significant underlining the importance of current earnings as a predictor of subsequent earnings. *DIV_REDUCTION* is negative and statistically significant, revealing that dividend policy has information content in explaining subsequent earnings, regardless of past earnings and dividends patterns. The negative sign denotes that firms that reduce or eliminate their dividend payments during the event year have lower earnings in the subsequent year. Moreover, using the interaction variable ROA_t**DIV_REDUCTION*, I look into whether dividend policy changes improve the ability of current earnings to predict future earnings. The positive and statistically significant coefficient indicates that the predictive ability of ROA_t is significantly enhanced when losses or earnings reductions are coupled with dividend reductions or omissions and this holds regardless of whether firms exhibit established or less-established past earnings and dividends patterns.

The interaction variable ROA_t* *ES*TA*B* is included to test whether patterns of prior earnings and dividends improve the predictive ability of current earnings with respect to future earnings. The positive coefficient on ROA_t* *ES*TA*B* (0.417 and significant at the 1% level) illustrates that among earnings reducing or loss firms, the magnitude of earnings conveys incrementally more information about earnings prospects the longer the historic earnings/dividends patterns.

Nonetheless, the main variable of interest in testing whether past earnings and dividends patterns along with dividend reductions are significantly associated with the predictive ability of ROA_t, is the interaction variable *ES*TA*B**ROA_t* *DIV_REDUCTION*. In accord with *hypothesis 3.1*, the estimated coefficient on *ES*TA*B**ROA_t* *DIV_REDUCTION* is negative and statistically significant at the 5% level (-0.187 with p-value=0.035), beyond ROA_t**ES*TA*B* and ROA_t**DIV_REDUCTION*. The negative sign denotes that dividend cuts significantly burden the overall positive relationship between ROA_t and ROA_{t+1} the longer the string of prior earnings and dividends. In other words, established firms that proceed with dividend cuts have lower earnings in the subsequent year vis-à-vis less-established firms. Thus, evidence herein supports that dividend reductions are more informative that low earnings will persist in the future the stronger the historic patterns effect.[98]

The *NON-LOSS* dummy and the interaction variable ROA_t* *NON-LOSS* are used to assess the informativeness of losses vis-à-vis earnings reductions regarding future profitability. Beyond De Angelo et al. (1992) and Charitou (2000), the lack of statistical significance on ROA_t* *NON-LOSS* illustrates that among earnings reducing or loss firms, dividend reductions significantly improve the ability of current sustainable earnings to predict future earnings, regardless of whether current earnings constitute positive (while reduced) earnings or losses.[99]

Most of the remaining control variables exhibit statistical significance below the 10% level (with the exception of MTB_t and $SIZE_t$). Unsurprisingly, cash flows (CFO_t) and retained earnings ($RETTE_t$) are positively related to future earnings. Special items (SPI_t), sales growth rate ($SALEGR_t$), and debt-to-equity ($DEBTEQ_t$), exhibit a negative coefficient, indicating that greater special items, sales growth, and debt, lead in lower earnings in the following year. The negative sign on SPI_t seems reasonable given that evidence in table 3.3 shows that, on average, sample firms incur negative special items. With respect to $SALEGR_t$ and $DEBTEQ_t$, the

[98] Alternatively, as a robustness test, the dividend reduction variable was re-defined as *DIV_REDUCTION*= one, if dividend payments are either increased or sustained, and zero if dividends are reduced or omitted. Using this definition I rerun regression model [3.1], where untabulated results show that the estimated coefficient of *ESTAB**ROA_t**DIV_REDUCTION* is positive and statistically significant beyond ROA_t**ESTAB* and ROA_t**DIV_REDUCTION*, indicating that established firms that sustain or increase dividend payouts exhibit a stronger positive relationship between current and future earnings. On the whole, using any of the two dividend dummy definitions, the OLS regression results support that dividend policy strengthens the ability of current earnings to predict subsequent earnings, the longer the historic patterns preceding the first annual earnings reduction.

[99] De Angelo et al. (1992) and Charitou (2000) restrict their samples to include only loss firms.

estimated negative sign is justifiable to the extent that these variables proxy for future growth prospects that impair short run profitability.

In summary, the important implication of the regression analysis provided in this section, is that beyond the aforementioned control variables, the coefficient on the interaction variable $ESTAB*ROA_t*DIV\_REDUCTION$ remains negative and statistically significant. Thus, in line with *hypothesis 3.1*, the information content of dividends is significantly associated with past earnings and dividends patterns, as dividend changes strengthen the ability of current sustainable earnings to predict subsequent earnings the more established past earnings and dividends patterns have been prior to the first annual earnings reduction.

3.5.2. The Information Content of "more-severe" versus "less-severe" Dividend Reductions in Explaining Future Earnings

As a robustness test, this chapter examines the effect of dividend reductions on the predictive ability of earnings, by distinguishing between "less severe" versus "more severe" dividend cuts. To this end, *DIV_REDUCTION* is modified as follows:

DIV_OMISSION = one, if dividends have been omitted or reduced by 50% and below, and zero otherwise.

The rationale for employing this specification is that given management reluctance to deviate from an ongoing commitment to pay regular dividends, complete omissions of dividend payments should constitute much more dramatic changes in corporate policy as opposed to dividend reductions. Extant evidence in dividends literature is generally consistent with this reasoning (Allen and Michaely, 2003). For example prior studies document that firms that suspend dividends experience significantly lower negative abnormal returns than firms that announce dividend reductions (e.g. Charest (1978), Healey and Palepu (1988), Christie (1990), Michaely, Womack, and Thaler (1995), Benartzi, Michaely, and Thaler (1997)). More importantly, Michaely, Womack, and Thaler (1995) find that firms that omit dividends continue to underperform the market for the next three years. Conversely, Benartzi, Michaely, and Thaler (1997) show that firms that reduce dividends exhibit a negative excess returns drift only for the first year following the dividend reduction event.[100] Thus, contrary to dividend

[100] Specifically, Michaely et al. (1995) studying a sample of U.S. firms for the period 1964-1988 report that the immediate three-day market excess returns to dividend omissions are -7.0%, while the three-year excess returns underperform the market by 15.3%. Benartzi et al. (1997) study a sample of U.S. firms for the period 1979-1991. They find that the three-day excess returns for the dividend decreases are -2.53% and although there is an observable significant negative drift in the excess returns of -28.1%, this holds only for the first year following the

omissions, dividend reductions are not related with significant long-run excess returns, and as Benartzi et al. (1997) argue, this is because dividend decreases are much less dramatic events than dividend omissions.

However, in this chapter, a distinction is made between slashing the annual dividend payment by more or less than a half, mainly because prior research supports that at least over the last 3 decades the mean reduction in dividends for U.S. listed firms has been approximately 50%. Namely, Grullon, Michaely, and Swaminathan (2002) studying dividend changes of firms listed in the NYSE and AMEX for the sample period 1967-1993 report a mean dividend decrease of -44.8%. More recently, Chen, Shevlin, and Tong (2007) examine dividend changes of firms listed on NYSE, AMEX, and NASDAQ for the sample period 1974-1999 and document mean and median dividend decreases of -46.07% and -50%, respectively. With respect to the sample period 1987-2004, untabulated results reveal mean and median dividend decreases of -48.9% and -50%, respectively. Thus, the critical threshold of -50% seems to be appropriate for classifying dividend decreases as less or more "severe".

Accordingly, in light of the results reported in table 3.4 (and discussed in section *3.5.1* above) on the information content of dividends for established versus less-established firms, dividend omissions (or reductions by more than 50%) coupled with earnings reductions should act as a much more powerful signal about future performance, especially for established firms. This supposition is tested by employing regression model [3.1] but incorporating the *DIV_OMISSION* variable as described above. As conjectured, results reported in table 3.5, show that $ESTAB*ROA_t*DIV\_OMISSION$ exhibits a much more negative and statistically significant coefficient compared to that reported in table 3.4 (the estimated coefficient on $ESTAB*ROA_t*DIV\_REDUCTION$ is -0.187 with p-value=0.035 whereas the coefficient on $ESTAB*ROA_t*DIV\_OMISSION$ is -0.720 with p-value=0.004). Thus, more severe dividend reductions entail higher information content, as dividend suspensions or significant reductions in dividends are more reliable signals that managers expect firm's profitability problems to persist as opposed to dividend reductions of smaller magnitude. Yet more importantly, results hitherto document that beyond the "severe dividends reduction effect", a dividend cut will be sending out a more reliable signal about the persistence of earnings difficulties the more established past earnings and dividends patterns are.

dividend decrease events. In the three years following the dividend reductions there are no significant excess returns.

3.5.3. The Association Between Earnings Reductions and Dividend Policy Decisions Conditional on Past Earnings and Dividends Patterns.

Results up to now support that among earnings reducing or loss firms, past earnings and dividends patterns strengthen the information content of dividends. In particular, it is shown that dividend reductions or omissions enhance the ability of current earnings to predict future earnings the more established past earnings and dividends records have been prior to the first annual loss or earnings reduction. Essentially, results up to now describe the effect of historic earnings/dividends patterns and dividend reductions in signaling the persistence of low earnings realisations. In this respect, dividend cuts are a stronger signal that current low sustainable-earnings realisations will persist in the future for established as opposed to less-established firms.

Thus, two inferences can be drawn. Firstly, current sustainable earnings significantly affect the dividend payment decision. For instance prior literature supports that losses or low earnings realisations of dividend paying firms are often short lived and reflect the capitalized effect of future negative cash flows (e.g., Basu (1997), Burgstalher et al. (2002), Skinner (2004), Joos and Plesko (2005)). So, given management conservatism with respect to dividend policy decisions, if losses or reductions in earnings are transitory, then dividends should not be cut (Brav et al., 2005). However, if losses or earnings reductions are the outcome of a fundamentally "bad" performance (such as lower revenues or structural inefficiencies, etc), then sustainable earnings (i.e. earnings before extraordinary and special items) will make dividend cuts more likely. Secondly, given that managers are keener to avoid dividend cuts the more established past earnings/dividends patterns are, dividend reductions or omissions for established firms are more likely to be the outcome of sufficiently serious earnings difficulties with persisting effects. Under this rationale, losses or earnings reductions should have more information content for reducing or omitting dividends for established than for less-established firms. Accordingly, the importance of sustainable earnings in generating dividend reductions should be higher the longer the past earnings/dividends patterns.

To formally test the relationship between past earnings/dividends patterns, earnings magnitude and the likelihood of dividend reductions, I estimate logistic regressions controlling for other firm characteristics that may influence dividend policy decisions. Therefore, the following model specification is estimated:

$$DIV\_REDUCTION = \alpha + \beta_1 \text{ROA}_t + \beta_2 ES\text{TA}B + \beta_3 ES\text{TA}B{*}\text{ROA}_t + \beta_4 NON\text{-}LOSS + \beta_5 NON\text{-}LOSS * \text{ROA}_t + \beta_6 \text{SPI}_t + \beta_7 \text{CFO}_t + \beta_8 \text{SIZE}_t + \beta_9 \text{SALEGR}_t + \beta_{10} \text{MTB}_t + \beta_{11} \text{DEBTEQ}_t + \beta_{12} \text{RETTE}_t \quad [3.2]$$

According to *hypothesis 3.2*, among earning reducing or loss firms, the magnitude of sustainable earnings (as captured by earnings excluding extraordinary and special items) must have a greater impact on the likelihood of dividend reductions for established versus less-established firms.

The logit analysis results are reported in table 3.6. Column (1) presents regression results when incorporating only the main variables of interest. Column (2) presents the full model. The coefficient on ROA_t is negative and statistically significant in both model specifications, implying that the magnitude of firm's current earnings problems significantly affects the probability of a dividend reduction. Thus, beyond De Angelo et al. (1992) and Charitou (2000), evidence hitherto supports that dividend reductions are more likely given lower earnings realisations, regardless of past earnings and dividends records.

More importantly, the estimated logistic regression coefficient of the variable of interest, i.e. $ES\text{TA}B{*}\text{ROA}_t$ is also negative and statistically significant beyond ROA_t. These results can be interpreted as follows. Firstly, in the case of earnings reducing firms (i.e. those firms that exhibit a positive, while reduced, ROA_t) the historic patterns effect dominates the earnings reduction effect: established firms (i.e. the case when $ES\text{TA}B$=1) exhibit a significantly more negative association between the probability of dividend cuts and ROA_t versus less-established firms. In other words, among earnings reducing firms, the longer past earnings/dividends patterns are, the more reluctant managers are to deviate from an ongoing commitment of paying regular dividends to their shareholders. Secondly, in the case of loss firms (i.e. when ROA_t is negative), the "historic patterns" effect dominates the loss effect: a loss increases the probability to reduce or omit dividends significantly more for established versus less-established firms. Thus the longer the string of past earnings and dividends prior to the first annual loss, the more a dividend reduction signals that losses are not short lived, but rather result from a substantial deterioration in profitability that is expected to persist, and accordingly, dividend cuts are more likely.[101]

[101] It is worth pointing out that there are cases that although firms are seriously troubled, managers prefer not to break their implicit commitment of paying regular dividend payments as it is rather difficult to persuade stockholders that a dividend cut is warranted and it is not an attempt to disgorge free cash flows (Jensen (1986),

Viewed collectively, the negative and statistically significant coefficient on ROA_t indicates that firm's current earnings problems as captured by the magnitude of earnings (which represents either positive, albeit reduced, earnings or losses), significantly affects the probability of a dividend reduction. However, the statistical significance of *ES*TA*B**ROA_t beyond ROA_t supports that a given magnitude of sustainable earnings of established firms has a significantly greater negative impact on the likelihood of dividend cuts compared to less-established firms. In other words, a one-dollar of sustainable earnings of established firms has a much greater information content for reducing or omitting dividend payments than a one-dollar of sustainable earnings of less-established firms.[102]

Results in table 3.6 also show that the coefficient on the interaction variable *NON-LOSS**ROA_t is positive and statistically significant in both model specifications. Thus, the overall negative relationship between the probability of dividend reductions and positive earnings for the earnings reduction firms (i.e. when *NON-LOSS*=1) is smaller (that is, the overall negative coefficient on ROA_t is lower) compared to the overall negative coefficient in the case of loss firms (i.e. when *NON-LOSS*=0). This result is not surprising, as it illustrates that losses provide greater information content in explaining dividend reductions compared to (reduced but) positive earnings.

The negative and significant coefficients on $SIZE_t$, CFO_t, and $SALEGR_t$, indicate that larger firms with greater cash holdings and increasing sales revenues have a higher likelihood of keeping up with their dividend policy. The coefficient on SPI_t does not exhibit statistical significance consistent with special items providing no incremental information on dividend policy decisions. Also, the estimated coefficients on MTB_t, $DEBTEQ_t$, and $RETTE_t$, are not significant.

Brav et al. (2005)). This difficulty in convincing stockholders regarding the necessity of a dividend cut is expected to be higher, the longer the history of regular dividend payments precedes a low earnings realisation. In this respect, reported losses may partially manifest accounting choices made by managers of established dividend paying firms, as a dividend cut coupled with a loss can more easily convince stockholders that the firm is seriously troubled (DeAngelo et al. (1992, 1994)).

[102] In unreported analysis, I re-estimate the logistic regression model [3.2] by changing the specification of the dependent variable, and setting it equal to one, if dividend payments are either increased or sustained, and zero if dividends are reduced or omitted. Results show that the estimated coefficient of *ESTAB**ROA_t is positive and statistically significant beyond ROA_t, indicating that a one-dollar of sustainable earnings of established firms has a much greater information content for keeping up the dividend policy than a one-dollar of sustainable earnings of less-established firms. Overall, using any of the two qualitative dependent variables, the logistic regression results support that the magnitude of current sustainable earnings has a significantly greater impact on the likelihood of a dividend cut the stronger the historic patterns of earnings and dividend payments prior to the first annual earnings reduction.

Finally, since (as it was shown in section *3.5.2*) dividend omissions or reductions by more than 50% constitute a much more powerful signal regarding firm’s future performance, then we conjecture that sustainable earnings of established firms should provide a much greater information content in explaining dividend policy changes when distinguishing between “less severe” versus “more severe” dividend cuts. As a direct test of this view, table 3.7 reports logistic regression results of the relation between the likelihood of “severe” dividend reductions and the magnitude of sustainable earnings for established vis-à-vis less-established firms, incorporating the same control variables as described in equation [3.2]. Thus, the dependent variable is now *DIV_OMISSION* which equals one if dividends have been omitted or reduced by 50% and below, and zero otherwise. Results in table 3.7 show that the coefficients on ROA_t and on $ESTAB$*ROA_t are negative and statistically significant, but more importantly, are much greater in magnitude than the respective coefficients observed in table 3.6.

In summary, the evidence provided in tables 3.6 and 3.7 is in favor of *hypothesis 3.2*. Logit analysis reveals that among earnings reducing or loss firms, the magnitude of firm’s current earnings affects the likelihood of a dividend cut significantly more the longer the historic earnings/dividends patterns. This result coupled with the stylized fact that managers’ reluctance to reduce dividends is higher the more established the historic dividend policy, implies that dividend cuts are more likely to reflect persisting earnings difficulties the stronger the historic patterns effect. In other words, because management is less flexible to deviate from an implicit commitment to pay dividends the more consistently dividends have been distributed in the past, earnings troubles need to be serious enough in order to warrant a reduction in regular dividend payouts. Thus, dividend cuts are a stronger signal that current low sustainable-earnings realisations will persist in the future for established versus less-established firms. In this respect, this section’s findings also provide corroborative evidence in favor of *hypothesis 3.1*, supporting that adverse dividend policy changes are more informative regarding earnings prospects the longer the history of past earnings/dividends.

3.6. Conclusions.

Chapter 3 provides empirical evidence that past earnings and dividends patterns matter when firms change their dividend policy. Consistent with prior literature it is shown that among firms that face earnings difficulties, dividend policy has information content in explaining future earnings (DeAngelo et al. (1992), Charitou (2000)). By extending prior literature, evidence supports that the information content of dividends varies, depending on different patterns of prior earnings and dividend payments records. Specifically, using a sample of U.S. firms for the period 1987-2004, I find that knowledge that a firm has reduced dividends enhances the ability of current earnings to predict future earnings, the more established prior earnings and dividends are.

The enhanced information content of dividends is due to the association between current earnings reliability and past earnings and dividends patterns. Longer patterns weaken the signalling role of current earnings, when firms experience losses or earnings reductions. As a result, the information content of dividends is strengthened (DeAngelo et al. (1992), Charitou (2000), Joos and Plesko (2004), Skinner (2004)).

The aforementioned result also stems from the fact that managers are more cautious not to deviate from an established dividend policy, as this could be perceived by investors as a structural shift in profitability with persisting effects (Miller and Modigliani (1961), Allen and Michaely (2003), Koch and Sun (2004), Brav et al. (2005)). This reluctance to break an established dividend payments pattern is stronger the more consistently this pattern has been followed, but, it is also subject to management perception regarding the persistency of earnings difficulties. Thus, dividends will be reduced if the earnings decline is considered to be serious and persistent enough so as to warrant a dividend cut. Consequently, dividend reductions have higher information content in explaining future earnings (1) the longer the patterns of earnings and dividend payments preceding the drop in earnings and (2) the more substantially dividends and earnings are reduced.

Moreover, logistic regression analysis demonstrates that among earnings reducing or loss firms, the magnitude of earnings is more important in explaining dividend decisions for firms with more established track earnings and dividends records. This evidence corroborates the posited relationship between the magnitude of current low earnings realisations, past earnings and dividends patterns and dividend reductions. Thus, beyond establishing that reductions in current sustainable earnings significantly affect the likelihood of dividend reductions, evidence further supports that the magnitude of low earnings realisations has a much more significant information content for reducing or omitting dividends the longer the earnings and dividends history.

In summary, this chapter's findings offer insight to market participants. Awareness regarding the association between established vis-à-vis less-established records of past earrings and dividends and the information content of dividends can be utilized by investors when assessing dividend paying firms that incur low earnings realisations. Managers may also benefit from such knowledge as they may confront the need to use dividend policy when earnings are less informative about the future performance of the firm. This issue gains more interest, given on the one hand the increasing tilt of publicly traded firms towards lower earnings and the substantial increase in the frequency of reported losses (Givoly and Hayn (2000), Fama and French (2001), Skinner (2004), De Angelo et al. (2004), among others), and on the other hand, the increasing evidence that corporate earnings have become more concentrated and more variable in the past three decades (De Angelo et. al. (2004), Fama and French (2004)).

Table 3.1

Number of Announcements of Dividend Reductions and Dividend Omissions

Panels A and B present the number of announcements of dividend reductions and dividend omissions for the Less-established sample and for the Established sample, respectively. The Less-established sample consists of 2,991 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction). The Established sample consists of 1,383 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). The sample period is 1987-2004.

Panel A: Announcements of Dividend Reductions and Omissions for the Less-established sample

	Number of firm-year observations	Percentage
Dividend Reductions	657	70.95%
Dividend Omissions	269	29.05%
Total	926	

Panel B: Announcements of Dividend Reductions and Omissions for the Established sample

	Number of firm-year observations	Percentage
Dividend Reductions	408	94.01%
Dividend Omissions	26	5.99%
Total	434	

Table 3.2

Distribution of Sample Firm-Year Observations According to Past Earnings and Dividends Patterns and Yearly Distribution of the Loss and the Earnings Reduction Events

Panels A and B report the distribution of firm-year observations according to the past earnings and dividends patterns. For example, subsample ´Time 1` consists of those firms that incurred their first annual loss (or annual earnings reduction) during the period 1987-2004, after having one year of positive earnings and dividends. Subsample ´Time 2` consists of those firms that incurred their first annual loss (or annual earnings reduction) during the period 1988-2004, after having two years of positive earnings and dividends (and so forth for the rest subsamples untill Time 10).

Panel A presents the distribution of the firm-year observations for the 2,291 firm-year observations of the Less-established sample, and Panel B the distribution of the firm-year observations for the 1,383 firm-year observations of the Established sample. The Less-established sample consists of those firms that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction), i.e. 'Time 1' firms, and /or 'Time 2' firms, and/or 'Time 3' firms. The Established sample consists of those firms that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). Panel C describes the distribution of the loss and the earnings reduction event years over the sample period 1987-2004.

Panel A: Sample distribution for the Less-established sample

Sample	Number of firms
Time1	930
Time2	745
Time3	616
Total	2,291

Panel B: Sample distribution for the Established sample

Sample	Number of firms
Time7	350
Time8	218
Time9	215
Time10	600
Total	1,383

Panel C: Yearly Distribution of Loss and Earnings Reduction Events

Year	Number Loss Events	Earnings Decrease Events	Yearly Total
1987	4	24	28
1988	26	110	136
1989	32	181	213
1990	15	66	81
1991	29	70	99
1992	24	61	85
1993	37	186	223
1994	30	135	165
1995	46	207	253
1996	46	234	280
1997	55	197	252
1998	61	248	309
1999	47	218	265
2000	72	199	271
2001	142	296	438
2002	59	175	234
2003	46	193	239
2004	16	87	103
Total	787	2,887	3,674

Table 3.3
Descriptive Statistics

This table reports descriptive statistics (mean, median, standard deviation) for all the variables used in the cross sectional analysis. Panels A and B present descriptive statistics for the Less-established and Established samples, respectively. Panel C presents a parametric *t-test* and a non-parametric two-sample *Kolmogorov-Smirnov test* carried out to test whether the variables used in the Less-established sample are statistically different from those of the Established sample. The Less-established sample consists of 2,291 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction), i.e. 'Time 1' firms, and /or 'Time 2' firms, and/or 'Time 3' firms.

The Established sample consists of 1,383 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). ROA_t is the return on assets net of special items where $ROA_t = (IB_t - SPI_t) / TA_{t-1}$, IB is annual Compustat data item #18, SPI_t is special items, and TA is total assets or annual Compustat data item #6; ROA_{t+1} is the return on assets on year t+1 (i.e. one year following the event year t). CFO_t is cash flows from operatiing activities (annual Compustat data item #308) scaled by TA_{t-1}; $SIZE_t$ is ln(total assets), i.e. $ln(TA_t)$; $SALEGR_t$ is the sales growth rate defined as $SALES_t$ (annual Compustat data item #12) - $SALES_{t-1}$ all scaled by $SALES_{t-1}$; MTB_t is the market-to-book ratio defined as market value scaled by annual Compustat data item #60 (i.e. total common equity), where market value is the closing price (annual Compustat data item #199) times shares outstanding (annual Compustat data item #25) at fiscal year end; $DEBTEQ_t$ is the debt-equity ratio defined as long term debt plus debt in current liabilities (annual Compustat data item #9 + annual Compustat data item #34) all scaled by annual Compustat data item #60; $RETTE_t$ is retained earnings (annual Compustat data item# 36) divided by total common equity (Compustat data item # 60).The sample period is 1987-2004. The event year t, is the year of the first annual loss (or the first annual earnings reduction). For Panel C, *, **, ***, significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

PANEL A: Less-established sample

Variable	Mean	Median	Std. Deviation	*N*
ROA_t	0.056	0.049	0.108	*2,991*
ROA_{t+1}	0.046	0.045	0.085	*2,991*
SPI_t	-0.023	0.000	0.073	*2,991*
CFO_t	0.089	0.085	0.121	*2,991*
$SIZE_t$	6.374	6.364	2.188	*2,991*
$SALEGR_t$	0.070	0.035	0.427	*2,991*
MTB_t	2.561	1.600	15.619	*2,991*
$DEBTEQ_t$	4.102	0.517	153.183	*2,991*
$RETTE_t$	0.066	0.570	16.394	*2,991*

PANEL B: Established sample

Variable	Mean	Median	Std. Deviation	*N*
ROA_t	0.062	0.056	0.058	*1,383*
ROA_{t+1}	0.058	0.053	0.057	*1,383*
SPI_t	-0.024	-0.004	0.049	*1,383*
CFO_t	0.103	0.100	0.076	*1,383*
$SIZE_t$	7.068	7.002	1.941	*1,383*
$SALEGR_t$	0.033	0.021	0.218	*1,383*
MTB_t	2.303	1.846	4.925	*1,383*
$DEBTEQ_t$	0.734	0.540	2.616	*1,383*
$RETTE_t$	0.753	0.799	0.936	*1,383*

Table 3.3 (continued)

PANEL C: Independent samples test for equality of means and medians between the two samples				
Variable	*Parametric t-test*	*p-value*	*Kolmogorov-Smirnov z-value*	*p-value*
ROA_t	-2.421**	0.016	2.973***	*0.000*
ROA_{t+1}	-5.048***	0.000	2.626***	*0.000*
SPI_t	0.398	0.691	2.781***	*0.000*
CFO_t	-4.196***	0.000	3.059***	*0.000*
$SIZE_t$	-10.003***	0.000	4.950***	*0.000*
$SALEGR_t$	3.538***	0.000	3.005***	*0.000*
MTB_t	0.733	0.464	3.434***	*0.000*
$DEBTEQ_t$	1.052	0.293	0.921	*0.365*
$RETTE_t$	-2.001**	0.045	7.111***	*0.000*

Table 3.4
OLS Regression Results

Dependent Variable ROA_{t+1}		
	(1)	(2)
ROA_t	0.189**	0.198**
	0.041	*0.041*
DIV_REDUCTION	-0.020***	-0.014***
	0.000	*0.003*
ROA_t * *DIV_REDUCTION*	0.331***	0.254***
	0.006	*0.009*
ESTAB	-0.012***	-0.008**
	0.004	*0.026*
ROA_t * *ESTAB*	0.417***	0.257***
	0.000	*0.000*
ESTAB * ROA_t * *DIV_REDUCTION*	-0.226**	-0.187**
	0.037	*0.035*
NON-LOSS	0.018***	0.020***
	0.000	*0.000*
ROA_t * *NON-LOSS*	0.046	0.082
	0.701	*0.406*
SPI_t		-0.093*
		0.092
CFO_t		0.110***
		0.001
$SIZE_t$		0.000
		0.512
$SALEGR_t$		-0.016**
		0.022
MTB_t		0.001
		0.414
$DEBTEQ_t$		-0.003*
		0.065
$RETTE_t$		0.006**
		0.044
Intercept	0.021***	0.000
	0.000	*0.999*
Adjusted R^2	29.77%	46.45%
F-statistic	199.592	200.062
p-value	*0.000*	*0.000*
Number of observations	*4,211*	*3,674*

This table reports OLS regressions, where the dependent variable is one year ahead return on assets net of special items, i.e. ROA_{t+1}, where $ROA_t = (IB_t - SPI_t) / TA_{t-1}$, IB is annual Compustat data item #18, SPI_t is special items (annual Compustat data item #17), TA is total assets or annual Compustat data item #6; *DIV_REDUCTION* is a qualitative variable and equals 1 if the firm annnounced a reduction or an omission in its regular cash dividends during its initial loss (or its initial earnings reduction year), and zero otherwise. Dividends are annual Compustat data item #21.

ESTAB is a qualitative variable that takes the value of one if the firm-year observation belongs in the Established sample, and zero if it belongs in the Less-established sample; *NON-LOSS* is a qualitative variable that takes the value of one if the firm incurred an earnings reduction on the event year, and zero if it incurred a loss; CFO_t, SIZE_t, SALEGR_t, MTB_t, DEBTEQ_t, and RETTE_t are as defined in table 3.3.

The event year t, is the year during which the first annual loss or the first annual earnings reduction took place. The Less-established sample consists of 2,291 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction). The Established sample consists of 1,383 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). The sample period is 1987-2004. *p-values* appear below the coefficient estimates in italics. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively. Standard errors are estimated using White's heteroscedasticity-consistent covariance matrix.

Table 3.5
OLS Regression Results

Dependent Variable ROA_{t+1}		
	(1)	(2)
ROA_t	0.184**	0.196**
	0.035	*0.034*
DIV_OMISSION	-0.029***	-0.023***
	0.002	*0.008*
ROA_t * *DIV_OMISSION*	0.349**	0.281**
	0.024	*0.036*
ESTAB	-0.018***	-0.011***
	0.000	*0.002*
ROA_t * *ESTAB*	0.432***	0.256***
	0.000	*0.000*
ESTAB * ROA_t * *DIV_OMISSION*	-0.827***	-0.720***
	0.002	*0.004*
NON-LOSS	0.019***	0.021***
	0.000	*0.000*
ROA_t * *NON-LOSS*	0.115	0.124
	0.331	*0.207*
SPI_t		-0.113**
		0.044
CFO_t		0.110***
		0.003
$SIZE_t$		0.000
		0.735
$SALEGR_t$		-0.012*
		0.066
MTB_t		0.001
		0.341
$DEBTEQ_t$		-0.004**
		0.020
$RETTE_t$		0.006**
		0.046
Intercept	0.016***	-0.023
	0.000	*0.643*
Adjusted R^2	29.16%	45.62%
F-statistic	191.953	193.544
p-value	*0.000*	*0.000*
Number of observations	*4,211*	*3,674*

This table reports OLS regressions, where the dependent variable is one year ahead return on assets net of special items, i.e. ROA_{t+1}, where $ROA_t = (IB_t - SPI_t)/TA_{t-1}$, IB is annual Compustat data item #18, SPI_t is special items (annual Compustat data item #17), TA is total assets or annual Compustat data item #6; *DIV_OMISSION* is a qualitative variable that takes one if the firm omitted or reduced its annual dividend payment by more than 50% compared to previous year level, and zero otherwise. Dividends are annual Compustat data item #21.

ESTAB is a qualitative variable that takes the value of one if the firm-year observation belongs in the Established sample, and zero if it belongs in the Less-established sample; *NON-LOSS* is a qualitative variable that takes the value of one if the firm incurred an earnings reduction on the event year, and zero if it incurred a loss; CFO_t, $SIZE_t$, $SALEGR_t$, MTB_t, $DEBTEQ_t$, and $RETTE_t$ are as defined in table 3.3.

The event year t, is the year during which the first annual loss or the first annual earnings reduction took place. The Less-established sample consists of 2,291 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction). The Established sample consists of 1,383 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). The sample period is 1987-2004. *p-values* appear below the coefficient estimates in italics. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively. Standard errors are estimated using White's heteroscedasticity-consistent covariance matrix.

Table 3.6
Logistic Regression Analysis of the Decision to Reduce Dividends

	(1)	(2)
ROA_t	-3.498***	-3.467***
	0.000	*0.003*
$ESTAB_t$	0.079	0.127
	0.450	*0.238*
$ESTAB_t$ * ROA_t	-7.950***	-7.636***
	0.000	*0.000*
NON-LOSS $_t$	-0.735***	-0.641***
	0.000	*0.000*
NON-LOSS * ROA_t	4.118***	4.455***
	0.000	*0.001*
SPI_t		-0.747
		0.279
CFO_t		-1.055**
		0.010
$SIZE_t$		-0.102***
		0.000
$SALEGR_t$		-0.474***
		0.001
MTB_t		0.004
		0.587
$DEBTEQ_t$		0.008
		0.563
$RETTE_t$		-0.015
		0.575
Intercept	0.141*	0.792***
	0.000	*0.000*
Adj. Mc Fadden's PseudoR ^{2}	4.33%	5.70%
Negelkerke's PseudoR ^{2}	7.22%	9.53%
Probability $> \mathcal{X}^2$	*0.000*	*0.000*
N	*3,674*	*3,674*

This table reports the results of a logistic regression where the dependent variable is *DIV_REDUCTION* and equals one if the firm annnounced a reduction or an omission in its regular cash dividends during its initial loss (or earnings reduction year), and zero otherwise. *ESTAB* is a qualitative variable that takes the value of one if the firm belongs in the Established sample, and zero if it belongs in the Less-established sample; *NON-LOSS* is a qualitative variable that takes the value of one if the firm incurred an earnings reduction on the event year, and zero if it incurred a loss; ROA_t, CFO_t, SPI_t, $SIZE_t$, $SALEGR_t$, MTB_t, $DEBTEQ_t$, and $RETTE_t$ are as defined in table 3.3.
The event year t, is the year during which the first annual loss or the first annual earnings reduction took place. The Less-established sample consists of 2,291 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction). The Established sample consists of 1,383 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). *p-values* appear below the coefficient estimates. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

Table 3.7

Logistic Regression Analysis of the Decision to Omit or Substantially Reduce Dividends

	(1)	(2)
ROA$_t$	-5.068***	-2.667**
	0.000	*0.023*
ESTAB$_t$	-1.525***	-1.170***
	0.000	*0.000*
ESTAB$_t$ * ROA$_t$	-10.463***	-11.836***
	0.000	*0.000*
NON-LOSS$_t$	-1.176***	-1.006***
	0.000	*0.000*
NON-LOSS * ROA$_t$	8.310***	4.419***
	0.000	*0.001*
SPI$_t$		-0.788
		0.335
CFO$_t$		-1.305**
		0.010
SIZE$_t$		-0.391***
		0.000
SALEGR$_t$		0.695***
		0.001
MTB$_t$		0.005
		0.635
DEBTEQ$_t$		-0.001
		0.765
RETTE$_t$		-0.011
		0.667
Intercept	-1.409***	0.809***
	0.000	*0.000*
Adj. Mc Fadden's PseudoR^2	13.65%	22.04%
Negelkerke's PseudoR^2	16.56%	26.51%
Probability > $\mathcal{X}^2$	*0.000*	*0.000*
N	*3,674*	*3,674*

This table reports the results of a logistic regression where the dependent variable is *DIV_OMISSION* and equals one if the firm omitted or reduced its annual dividend payments by more than 50% compared to previous year level, and zero otherwise. *ESTAB* is a qualitative variable that takes the value of one if the firm belongs in the Established sample, and zero if it belongs in the Less-established sample; *NON-LOSS* is a qualitative variable that takes the value of one if the firm incurred an earnings reduction on the event year, and zero if it incurred a loss; ROA$_t$, CFO$_t$, SPI$_t$, SIZE$_t$, SALEGR$_t$, MTB$_t$, DEBTEQ$_t$, and RETTE$_t$ are as defined in table 3.3.

The event year t, is the year during which the first annual loss or the first annual earnings reduction took place. The Less-established sample consists of 2,291 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for one, and/or two, and /or three years before the first annual loss (or the first annual earnings reduction). The Established sample consists of 1,383 firm-year observations that incurred an annual loss (or an annual earnings reduction) after having positive annual earnings and dividend payments for at least seven consecutive years before the first annual loss (or the first annual earnings reduction). *p-values* appear below the coefficient estimates. *, **, ***, statistically significant at the 0.10, 0.05, 0.01 levels of significance, respectively.

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