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Do Corporate Headquarters Play a Role in Mandatory Versus Voluntary Financial Distress Driven Trading Suspensions?

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ABSTRACT

Motivated by previous researchers' conclusion that management of financially distressed firms extends considerable efforts to avoid exchange delisting and trading suspension, we formulate a methodology to incorporate managerial efforts and corporate characteristics driving exchange decisions. Employing an ordinal logit model with random unobserved heterogeneity, we confirm that there exists an implicit managerial influence on exchange rulings; analyzing a panel of financially distressed firms listed on the Athens stock exchange we establish that management of financially distressed firms' acts in a synergistic to shareholders fashion, preferring corporate restructuring (voluntary suspensions) to staying inactive and the latter to mandatory (involuntary) suspensions. Furthermore, we find that size, fixed and total asset growth, asset intensity and persistence of financial distress, coupled with the macroeconomic environment, significantly affect its eventual stock exchange route.

JEL Classification: G10, G15, G33, G34, G38

Keywords: Financial Distress; suspension; pecking order; mandatory suspension; voluntary suspension; ordered logit.

1. INTRODUCTION

This study focuses on stock exchange trade disrupting decisions resulting from corporate Financial Distress (FD), classifying them under voluntary and mandatory suspensions. Mandatory trading suspensions are often imposed to a listed FD company because of exchange authority's fears of FD-related severe financial shortcomings and may last for days or years. In contrast, firms initiate a voluntary suspension, commonly lasting for minutes or day(s), in order to disseminate to market participants Merger and Acquisition (M&A) or other corporate restructuring information in their attempts to counter FD. Other causes of voluntary suspensions such as trade imbalances and specialist demands for trading halts will not be considered in this study, as they encompass a wider range of occasions than are our main focus which is on FD outcomes.

Although trading suspensions and their efficacy in transmitting information and price discovery has been a subject extensively scrutinized by international researchers (Howe & Schlarbaum 1986; Ferris et al 1992; Wu 1998; Engelen & Kabir 2006), it has been largely treated as exogenous to the firm. Nevertheless, both voluntary and mandatory suspensions represent milestones signifying the evolution of FD. The latter bear significantly negative ramifications to company's stakeholders (Wu 1998; Engelen & Kabir 2006) and are a consequence of an increased probability (according to regulators) of bankruptcy or other sort of extraordinarily adverse FD complication. Involuntary trading suspension and delistings' undesirable effects on management and shareholders have been substantially evidenced (Macey et al., 2008). Moreover, the fact that considerable efforts are consumed from company's management to avoid suspension, as has been evi-

denced in NASDAQ (Frost et al., 2009) and Chinese Stock Exchange (Jiang & Wang 2008;Cheng et al., 2010), leads us to hypothesize that they have an influential role to play in rendering stock exchange "mandatory" suspensions more or less probable to occur. Hence, the conflict of interest between FD company management, shareholders and creditors with respect to the more beneficial course of action may be directly extended to the choices between restructuring (generating a voluntary trading suspension) and bankruptcy (causing a mandatory suspension).

In order to test whether existing research, treating the stock exchange suspensions as entirely exogenous to the firm, is a more valid approach than the one we propose, we hypothesize that, under our modeling framework, management should portray a preference of voluntary halts over mandatory suspensions; assuming managerial interests are aligned with its shareholders, the price reduction of a trading suspension should be the least desirable outcome of FD. On the other hand, stock exchange authorities should be indifferent between alternative trading disruptions to be imposed in member firms because a) the price impact of a trade suspension leaves exchange authorities unaffected (unless it's their own listed stock), and b) preserving the reputation of an exchange (Macey et al., 2008) would counter the loss of income from a delisted firm, notwithstanding it would normally take several periods of suspension before a stock disappears from the exchange.

The more the company approaches towards bankruptcy its creditors would rather have all company's assets preserved whereas stockholders might prefer, especially in the cases of an extremely low expected reorganization value, the firm to "roll the dice" as they have little to lose. Managerial incentives should have a role to play, aligning their interests with shareholders, creditors or their own. We check whether preference of FD outcomes is driven by non-synergistic (Jensen, 1986) or synergistic (Jensen, 1993) motivations. For this purpose, we formulate an ordered logit model to test which pecking order of our dependent variable fits our data better (a synergistic or not). Given that the majority of companies in our sample are family or manager owned, our findings should confirm the synergistic supposition.

Vis a vis the dichotomy between expected shareholder returns under a FD corporate restructuring resolution (Theodossiou et al., 1996) and FD-related fears for a forthcoming bankruptcy (Ferris et al., 1992), our categorization makes even more economic sense; restructuring announcements via trading halts would be expected to signal shareholder benefits, whereas decisions to set company's shares under mid to long term suspension for FD-related reasons would signal the opposite. Our differentiation from the extensive previous research on FD alternative outcomes (John et al., 1992; Howe & Schlarbaum, 1986; Gertner & Scharfstein, 1996; Franks & Sussman, 2005) relies on our analysis of the official stock exchange announcements. We expand the typically analyzed universe of bankrupt firms with those that, according to the official stock exchange rulings, are highly probable to get bankrupt. Hence, we may exploit the, mostly in advance, signal expressed by the official stock exchange's view for severe FD problems, which in most cases sums up the investor community's and stock exchange authorities' verdict on whether significant financial trouble exists (Bradley 1996).

Stock exchange trading suspension decisions, apart from signaling a potential forthcoming financial difficulty, bear an important and simultaneous effect on investors and corporate credit standing because of their negative stock performance implications. Trading suspension not only affects company's shareholders and its managers, to the degree they participate in the stock's upside potential, but also bankers, especially those that have extended loans collateralized by shares. Loss Given Default (LGD), in the spirit of Basle II guidelines, for outstanding stock-collateralized loans may be significantly magnified under a trading suspension decision: Jokivuolle & Peura (2003) have shown that lending against stock collateral may increase sevenfold the expected LGD, rendering trading suspension's ramifications deleterious for practicing institutions. Insofar as

mandatory trading suspensions bear a negative share price impact, the overall firm credit standing should be affected, because of the implied reduction of the distance of company's asset valuation from its debt's nominal value, referred to in option theoretical credit formulation as "distance to default" (Merton 1974). Under those circumstances, our overall goal to estimate the probability of stock exchange's supervision decisions could be instrumental in estimating probability of default and economic-downturn LGD internationally, as per Basel II convention's guidelines. According to Basel Committee's regulations (BCBS, 2005), advanced Internal Ratings Based banks are required to estimate their own downturn LGDs that, where necessary, reflect the tendency for LGDs during economic downturn conditions to exceed those that arise during typical business conditions. Hence, our attempt to predict the official stock exchange supervision/suspension/ delisting rulings assumes increased importance for the investor and creditor communities.

Appreciating the fact that banks may hold on to considerable stock collateral positions stemming from loans to major shareholders or margin loans, our analysis implicitly considers the direct impact of stock exchange's decisions to their value. Such a case has e.g. arisen in the U.S. in the case of the WorldCom scandal and the infamous $400 million loan to its CEO Bernnie Ebbers pledged by WorldCom shares, which eventually suffered a trading suspension by NASDAQ (Fanto, 2004). Additionally, the practice of lending against stock and margin loans is well established internationally, by banks and their stockbrokerage subsidiaries in mainstream (Jostarndt & Sautner, 2008) and emerging markets (Endo & Rhee, 2006).

The typical theoretical underpinning analyzed in equivalent studies of FD is to explore the driving force behind the conflicts of interest between restructuring and bankruptcy tradeoff (Gertner & Scharfstein, 1991; Franks & Sussman 2005). In line with Dahiya and Klapper (2007), our restructuring categorization, in addition to the commonly scrutinized M&A announcements, encompasses events such as asset sell-offs, divestitures, debt-rescheduling, employee layoffs and rights issues that may create positive wealth effects (Guedes & Parayre 1997), affecting credit-standing. By modeling the official stock exchange decisions to supervise/suspend or delist rather than the ultimate bankruptcy filings, we treat the former as "official" advance warnings for the latter. Although we do not examine in our study the effectiveness of stock exchange suspension announcements, they generally stem from the available facts and data, enhanced by press reports and anecdotal evidence (Bradley 1996). Assuming they do reflect severe FD corporate problems, they could be employed as proxies of a, by large, market consensus of severe difficulties. Under this formulation, the managerial-creditor tradeoff between bankruptcy and restructuring could be effectively proxied by a tradeoff between restructuring and impending stock supervision.

We model Financial Distress (FD) as the condition of a firm being unable to cover Financial Expenses (FE) with its generated Earnings Before Interest and Taxes, Depreciation and Amortization adjusted (EBITDA) (Wruck, 1990) for two consecutive years. The setting of our model distinguishes restructuring cases, assumed a bullish investment signal (John et.al. 1992), from supervision, assumed a bearish one (Subrahmanyam, 1994); this presupposes that cases of stocks set under short term trading supervision or suspension because of other than financial shortcomings reasons be excluded. Insofar restructuring announcements command a stock exchange's trading supervision or suspension we classify them under "restructuring". A third option for FD companies may be to remain "idle", without pursuing any of the two previous alternatives (a summary of our categorization can be seen in Fig. 1).

This figure summarizes the categorization we employ for the alternative FD-related stock exchange decisions that may affect a listed firm. The option to pursue bankruptcy or liquidation is almost always preceded by a stock exchange suspension. The decision to enter into a significant corporate restructuring may or may not ignite an official stock exchange action, although, in most cases, it does. Corporate inertia may follow either a trading supervision/suspension/delisting or exchange's inaction.

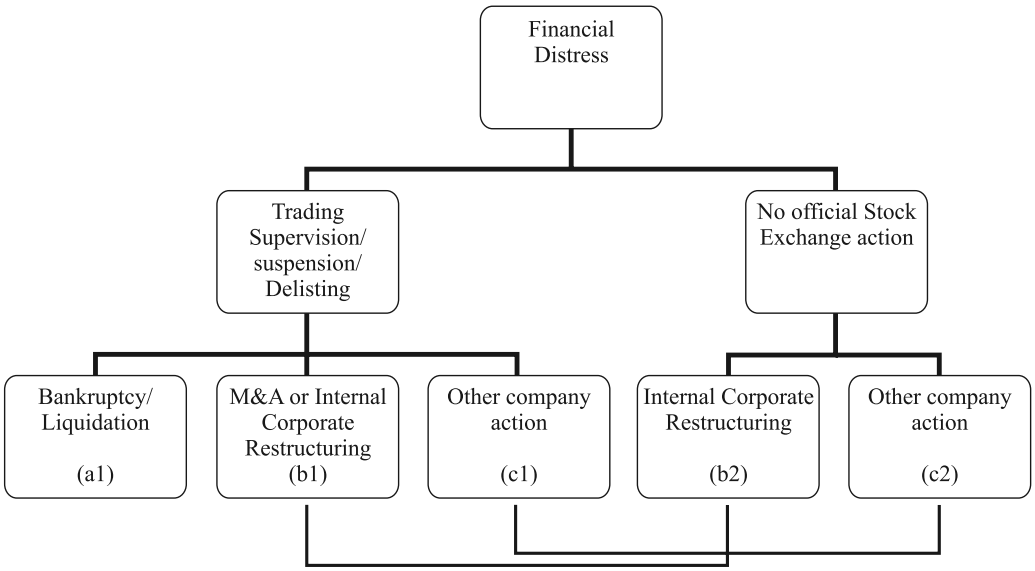

Figure 1. Categorization of Financial Distress outcomes with respect to stock exchange enactments

Our overall goal to predict restructuring versus supervision needs adequate explanatory variables that manage to discriminate between the three potential outcomes. We employ alternative ordinal logit model specifications, the most conclusive consisting of discrete probability mass-points of random unobserved heterogeneity and corresponding latent error classes (Greene 2008), alleviating inconsistency-generating normality assumptions for random error. We test whether the availability and attractiveness of our outcomes hinges on the severity of the FD condition, individual corporate characteristics, evidenced by selected financial ratios, and the overall macroeconomic conditions. We also test whether individual company characteristics, possibly unobserved, may also affect the outcomes. Stepping one step ahead, we introduce covariates that may affect the probability of belonging to our estimated latent classes, accounting for crucial corporate characteristics that may drive *ex ante* the firm towards one or another latent class.

Our sample of FD nonfinancial listed companies on the Athens Stock Exchange (ASE) from 1998-2004 confirms our hypotheses and the validity of our modeling approach. As for specific covariates, we find that the probability of getting supervised/suspended/delisted increases for firms in severe FD, portraying lower performance than their peers and of lower size. A sequence of distressful macroeconomic performances and a self-destructing increased fixed asset investment may equally drive firms towards the same end. Larger firms exhibiting higher growth, more intense asset restructuring activity and higher managerial inefficiency (evidenced by a negative retained earnings history) show increased probability of getting restructured.

The rest of our study is composed of the following parts: Second Part summarizes the definition of our problem alongside with pertinent literature and our hypotheses, Third Part depicts our econometric specification which allows us to test our hypotheses, outlines our data and variables used, our Fourth Part presents our results and our comments and finally the Fifth Part sums up with our conclusions and suggestions for further research.

2. Problem definition, Literature review and hypotheses

Within international literature different definitions of FD exist. The situation of a company's inability to generate sufficient EBITDA to cover current Financial Expenses (Wruck 1990), used in our study is not a legally defined situation of FD such as bankruptcy or payment defaults, but a financial one. It has the benefits of describing a distressful situation that:

a) On the one hand precedes, in the majority of cases, one or even more time-steps, the official filing for bankruptcy procedure or any restructuring attempts and
b) On the other, amasses a much larger sample of companies that experience it without an eventual filing for bankruptcy, ending in alternative situations such as getting acquired by another entity or internally reorganized.

Moreover, in our sample we screen firms that meet the aforementioned criterion for two consecutive years, following the Jorstarndt and Sautner's (2008) approach, rendering less likely a classification of a not FD firm in FD.

Taking into consideration the fact that a company's debt-driven failure will most probably render its listed equity valueless, stock exchange authorities are carefully scrutinizing corporations in FD. As a matter of fact, trading suspension*s*, stock supervision and trading disruptions are more common in shares of firms under FD as approximately half of delistings in major exchanges have their roots in FD (Dahiya & Klapper 2007). A shorter or longer-term -depending on the nationality of the stock exchange- trading suspension may be the selected approach by exchange authorities (Engelen & Kabir 2006) compelling firms to disclose new pertinent information to the market.

According to existing Athens Stock Exchange (ASE) regulations (ASE, 2008) FD driven stock supervision may be decided based on a) negative equity, b) losses exceeding 30% of its equity, without having officially announced a rights issue, c) exhibiting severe short-term debt overhang, d) official filling for bankruptcy protection (Articles 44, 45, 46 of Law 1982/1990) or e) facts or announcements casting serious doubts on whether it can continue to relentlessly operate. More severe measures available at ASE's and Greek Capital Markets Committee's hands, according to Article 17 of Law 3371/2005, include the decision to temporarily suspend trading or to delist company's shares. We categorize explicit FD-driven cases of exchange authorities' trading supervision/suspension/delisting for the above reasons under one roof, notwithstanding that there may be numerous unrelated or implicitly related to FD, such as diminishing daily traded volume and mounting volatility.

From the investor's point of view, stock supervision on the ASE means disrupted and infrequent (thrice per day) auction-based trading, coupled with closer scrutinizing of company's economic performance by the regulatory authorities. As a result of interrupted stock trading, negative implications are expected for the stock price or at least an augmentation of its risk (Subrahmanyam, 1994). Analogous detrimental return implications have been evidenced in the case of NASDAQ delistings to the Pink Sheet market category on OTCBB (Macey 2008). From the point of view of its lenders, setting the stock under supervision or, even worse, suspension creates numerous problems in terms of its creditworthness along two directions: 1) should it bear a negative share price performance impact, it further depresses its market capitalization, reducing manager-owner willingness to continue struggling to cover the firm's debt burden and 2) it raises the risk of outstanding stock collateral becoming entirely illiquid. Assuming financial institutions may already have advance FD warnings at their disposal, the most profound impact of setting a company's stock under supervision/suspension/delisting may be on lending against to-be-supervised company's shares. Stockbrokerage banking subsidiaries may also finance margin loans. Among the 27 developed countries surveyed by Endo, Rhee (2006), margin trading has been reportedly practiced in Greece (since 2001), Czech Republic (since 1808), Hungary (since 1990, regulated since 1996) South Korea and Kuwait.

Notwithstanding the fact that announcements of events such as mergers, acquisitions or any other significant restructuring attempts give rise to a, mostly short term, trading halt, they gain entirely different economic importance, promising a turnaround eventuality. Managerial, operational, asset and financial restructuring are the broad categories of strategies a FD firm may assume, the most common reportedly

being (John et. al. 1992) 'contraction' policies. Following this, we augment M&A events to encompass other restructuring forms by means of a) significant (>10% of book equity) divestitures, asset sales, spinoffs or plant shutdowns, b) substantial employee layoffs (>5% of workforce), c) successful raising funds in capital markets and d) private debt reschedulings.

2.1. Pecking order between alternatives

FD may be a reason to overcome managerial inertia and force it to modify its existing policies. On one hand, neither following a restructuring strategy nor experiencing a financial-shortcomings-driven trading supervision/suspension/delisting identifies our doing nothing category, which implies an underlying incentive to be relatively inactive. It reflects a situation in which a FD firm might either stay inert, undertake "softer" measures than those falling within our restructuring classification or escape trading supervision/ suspension/ delisting. The way we have defined restructuring outcomes, replacement of top management and dividend reductions/omissions have been omitted as counter-FD measures, although they are commonly undertaken in practice; implicitly we encompass such reactions within our nothing done category, appreciating that in our sample of Greek listed firms: (i) major shareholders are also the CEOs and (ii) the vast majority of the FD companies studied have had historically zero or very low dividend payout policy.

A reason for pursuing "idleness" may be the inability or unwillingness to undertake any of our identified as restructuring measures, because of the illiquidity of its assets (Hotchkiss et. al. 2008) or the agency conflicts of managers (Jensen & Meckling, 1976). Agency theorists (Jensen, 1986) might purport to proclaim that management's self-fulfillment would be their top priority, leading them choosing nothing as their principle choice, alleviating possible power shifts via either restructuring or supervision. An interest divergence between shareholders and managers may alleviate personal utility-reducing strategies (of managers) such as mergers, sell offs, layoffs and divestitures. At the same time, managers may be either unwilling, because of significant equity holdings, or unable, because of lenders' monitoring efforts, to pursue high risk projects which might render the FD firm vulnerable to bankruptcy and closer to our supervision/ suspension/ delisting classification.

On the other hand, for situations where company reorganization value is sufficiently large, equity holders' and creditors' incentives are to avoid bankruptcy, which could wipe out their shareholdings; alongside, management may assume an agent role for equity holders, through their self-interest in the preservation of their own jobs, actively taking up a non-liquidation (i.e. supervision/suspension/delisting) outcome. Should that be right, managers would be acting synergistically in a profit-maximizing rational "*homo economicus*" pursuit. Assuming this supposition right, we should expect supervision/suspension/delisting to be the last choice in management's pecking order because of its adverse impact on its share value.

Pecking order theorists (Myers & Mijluf, 1984) might be inclined to believe that because management prefers internal to external funds, the restructuring option might *not* be their number one priority, because of its dependence on external financing. Contrasting restructuring vs. supervision/suspension/delisting we should most probably expect manager-owners to prefer the former, especially when indications that the going-concern value of the firm (minus restructuring costs) would exceed its liquidation value (future profitability), or that levels of liquidity will be high enough to pay off unsecured creditors.

Finally, it is worth noting that should any outcome order be prevalent, our hypothesis that management has a role to play in stock exchange trading decisions to suspend or delist trading would be then confirmed. On the other hand, indifference between outcomes of FD would ratify that the decision is entirely exogenous to the firm and would render our modeling approach validity questionable.

2.2. Explanatory variables

Our formulation employs financial ratios and economic variables that add incremental information to the already existing situation of FD. It's worth mentioning that our incorporating M&A with other forms of internal corporate actions in restructuring may render typical predictors of M&A probability insignificant, such as higher Return on Assets or leverage, because of the conflicting economic drivers: contrast e.g. rights issues and asset sell-offs (divestitures) difficulty to implement during FD to the additional incentive for potential acquirers to buy out a firm during its recession business-cycle.

Studies undertaken to uncover the economic drivers of trading supervision*s* and suspension*s* at Honk Kong's stock exchange (Tai & Tai, 1986) reveal lower performance as an influential factor. Better corporate performance has been identified to bear an increased likelihood of an internal Turnaround (Baker & Kennedy, 2002) and the chances of getting acquired (Dahiya & Klapper 2007). Along the same lines, FD companies of lower performance and size reportedly exhibit higher propensity of bankruptcy versus getting acquired (Dahiya & Klapper 2007, Baker & Kennedy 2002). Furthermore, Köke (2001) reports that ongoing restructuring activity, measured by the rate of fixed asset reduction, is significantly higher in German firms that are driven to bankruptcy in comparison to surviving ones, both categories depicting higher rates. An alternative measure of corporate performance to return on assets (EBITDA over total assets) is also the rate of total asset growth as a measure of reduced risk resulting from increased investment and overall business activity (Cooper et. al., 2008).

The severity of FD has been mentioned as a positively driving factor of increased probability of bankruptcy versus restructuring; we measure it by means of an indicator variable for two consecutive periods of our definition of FD, i.e. three consecutive years of EBITDA vs. Financial Expenses shortfall.

Company characteristics such as higher size has been reportedly a positive indicator of i)the likelihood of a forthcoming acquisition (Dahiya & Klapper, 2007) and ii) the chances of getting either acquired or internally restructured (Köke, 2001). Another corporate characteristic, Fixed Asset Intensity (FAI), i.e. the percentage of tangible fixed assets in their total asset structure, has been reportedly positively associated with an increased probability of restructuring, asset sales, and becoming acquired (Baker & Kennedy, 2002), as there is an increased collateral value and, hence, financing potential.

Managerial inefficiency is expected to positively influence the probability a FD firm assumes a suboptimal decisional route; it may also contribute to either corporate failure or a potential acquisition by a more efficient predator (Theodossiou et al., 1996). Baker and Kennedy (2002) have reportedly spotted it as a factor leading to both distressed delistings and takeovers. A way to measure this is via poor historical performance, evidenced by lower retained earnings.

A macroeconomic evidence of stimulus undertaken to curb economic downturn is interest rate reduction; as such, it is expected to positively influence the probability of FD driven stock Supervision. An even more severe downturn, reflected by two consecutive years of interest rate decline, should further indicate increased likelihood of supervision/suspension/delisting versus restructuring. On the contrary, interest rate hikes, portraying evidence of attempts to curb inflation and economic growth's inflationary impact, are expected to positively influence restructuring.

Another potentially influential factor may be the particular stock exchange's rules concerning supervision or suspension as well as the institutionalized framework for M&A. ASE identifies companies with negative equity or significant losses relative to book equity as supervision/suspension/delisting candidates.

Summing up, we employ covariates which portray a) the severity of FD situation, b) firm's financial performance, c) individual firm characteristics (size, fixed asset intensity), d) managerial inefficiency e) the overall economic condition and f) local stock exchange rules (covariates used are fully described underneath Table 1).

Table 1. Expected covariates' influence on OUTCOMES:

Covariate/ Outcome	*Likelihood Ratio Test:*		*Supervision/Suspension/Delisting*			*Corporate Restructuring*		
	LR(chi2)	*Prob>Chi2*	*Expected Sign*	*Hypothesis*		*Expectedsign*	*Hypothesis*	
Lagged_FD	*6.66*	*0.010*	+	*S1*	✓	–	*R2*	✓
Report_FD	9.78	0.002	+	S1	✓	–	R2	✓
Restruct_AI	8.92	0.003	+	S1	×	+	R1	✓
Reli_assgrow	7.08	0.008	–	S2	✓	+	R2	✓
RoA	2.31	0.129	–	S2	×	+	R2	×
Size	3.56	0.059	–	S3	✓	+	R3	✓
FAI	1.63	0.201	–	S3	×	+	R3	×
RetEarn	10.22	0.006	–	S4	×	–	R4	✓
Intdif	21.55	0.000	–	S5	✓	+	R5	×
Lintdif	16.74	0.000	–	S5	✓	+	R5	×

✓Indicates hypothesis has been confirmed, × not confirmed. Likelihood ratio tests have been performed comparing the full covariates model with one lacking the variable tested.

Covariates include Lagged_FD, which is a one-period lagged value of the indicator variable for FD (=1 if for two consecutive years EBITDA is less than Financial Expenses), Report_FD assuming value of one should EBITDA plus extraordinary income be less than Financial Expenses, Restruct_AI which represents the industry-adjusted growth rate of company's fixed assets, Reli_assgrow representing industry adjusted growth of total assets, RoA standing for EBITDA divided by total assets, Size proxied by the logarithm of total asset replacement value, FAI standing for industry-adjusted fixed assets as a percentage of total assets (following Pearce, Robbins (1993) findings we adjust it relative to individual industrial sectors of our FD universe), RetEarn representing retained earnings scaled by its replacement cost of total assets, Intdif for the rate of benchmark interest rate growth between current and previous years and Lintdif which is Intdif's one period lagged value. The replacement cost of total assets has been estimated according to the Perfect and Wiles (1994) proposal as follows:

$$\text{Replacement cost of Total Assets:} \quad K_{it} = RF_{it} + (TA_{it} - BF_{it})$$

RF_{it} is the replacement cost of Fixed Assets, TA_{it} is Total Assets variable and BF_{it} the total remaining book value of fixed assets, as portrayed on the Balance Sheet. The Replacement Cost of total Assets is calculated according to Perfect and Wiles (1994):

$$RF_{it} = RF_{it-1}[(1 + \varphi_t)/(1 + \delta_{it})] + I_{it}$$

For $t > t_0$, whereas for the first year of observations we assume $RF_{it0} = BF_{it0}$, t_0 standing for the first observations' year. δ_{it} equals to D_{it}/BF_{it}, with D_{it} the annual Depreciation expense and $\varphi_t = (GCGP_t - GCGP_{t-1})/GCGP_{t-1}$ with GCGP the Growth of Capital Goods Price Index as reported by the Greek National Statistics Service.

The severity of FD is accounted for by modeling its temporal persistence and the degree to which extraordinary revenue has succeeded in covering financial expenses. Relative financial performance and managerial inefficiency measured by the rate of total assets growth, return on assets and scaled retained earnings are also accounted for. Individual company characteristics such as total asset size and fixed asset intensity are also included. We also incorporate the degree macroeconomic environment affects the overall outcome by including recent interest rate adjustments. Lastly, Athens Stock Exchange's rules for supervision/ suspension/ delisting (ASE, 2008) are taken into account through the level of retained earnings.

2.2.1 Hypotheses regarding the probability of supervision/suspension/delisting vs. nothing

Our Hypotheses with respect to the probability of supervision/suspension/delisting versus doing nothing are summarized as follows:

S1: **The more severe the situation of FD**, as reflected by a) lagged FD indicator variable, b) an indicator variable of Reported FD reflecting situations in which firms in FD have not managed, even after having accounted for extraordinary income generated to cover their FE and c) a higher Industry-Adjusted Restructuring Activity Intensity (RAI), evidenced from mounting fixed asset sales, **the higher the probability a FD company's stock will be set under supervision/ suspension/ delisting.**
S2: A lower than average FD firm's performance, evidenced by a) lower adjusted RoA or b) negative Total Asset growth, **the higher the probability a FD company's stock will be set under supervision/suspension/delisting.**
S3: The lower the size and Fixed Asset Intensity of a company, measured respectively by a) the natural logarithm of the replacement value of its Total Assets and b) the percentage of tangible fixed assets in total assets, **the higher the probability a FD company's stock will be set under supervision/ suspension/ delisting.**
S4: The higher the managerial inefficiency and firm's accumulated losses, measured by scaled Retained Earnings, which may bring closer the stock exchange's decision for supervision/suspension/delisting, **the higher the probability a FD company's stock will be set under supervision/suspension/delisting.**
S5: The more interest rates have been declining during a) the preceding accounting period and b) the one before it, **the higher the probability a FD company's stock will be set under supervision/suspension/ delisting.**

2.2.2 Hypotheses regarding the probability of Restructuring versus doing nothing

Our Hypotheses with respect to the probability of restructuring versus doing nothing are summarized as follows:
R1. The higher the undergoing Restructuring Activity –reflected by greater fixed asset reduction, **the higher the probability a FD company will undertake corporate restructuring.**
R2. The less severe the FD in terms of a lower a) reported FD indicator, b) lagged FD indicator **and the better its financial performance**, measured by c) Return on Total Assets, or d) total assets growth rate, **the higher the probability a FD company will undertake corporate restructuring.**
R3. The higher its asset collateral value, measured by a) its total assets size and b) its fixed asset intensity, **the higher the probability a FD company will undertake corporate restructuring.**
R4. The higher the managerial inefficiency and firm's accumulated losses, indicated by lower scaled Retained Earnings, **the higher the probability a FD company will undertake corporate restructuring.**
R5. The better the macroeconomic environment, as evidenced by ascending interest rates over a) the last year and the b) preceding, **the higher the probability a FD company will undertake corporate restructuring.**

Based on the above, our explanatory variables are expected to portray an influence on each of the established outcomes as shown on Table 1. Our final results regarding significance of coefficients and hypotheses tested are also, alongside, depicted.

2.2.3 Hypotheses regarding managerial pecking order for alternatives

We expect a different order of outcome choices depending on each theoretical supposition for managerial incentives. By analyzing our sample we may test the following hypotheses:
Po1 Assuming managers pursue their own hubris interests, independently of the rest of shareholders, we expect them to **prefer nothing done** (remaining idle).
Po2 Should **management actions adhere to Pecking order theory's** suppositions, **they would avoid restructuring** more than any other choice.
Po3 Managers pursuing shareholder interests select restructuring as their most preferred choice and supervision as their least.

Bearing in mind that our sample consists of firms with increased managerial shareholdings, we expect profit maximization to portray a higher propensity rather than any other choices, confirming Po3. An indifferent choice result nullifies our hypothesis that managerial decisions have a role to play on exchange mandatory suspensions, alongside with their apparent role in voluntary ones.

3. Econometric modeling

We follow an ordinal modeling outcome approach in order to incorporate managerial preferences of restructuring over doing nothing over suffering a FD-driven supervision/suspension/delisting into our modeling framework. The econometric modeling approach we take estimates company's alternatives in an ordinal mixed logit setting with random unobserved heterogeneity to account for unobserved individual company effects. Latent Class (LC) structuring of unobserved heterogeneity, outlined in Greene (2008), has only appeared, to the best of our knowledge, in one related paper in predicting the takeover targets for FD corporations (Jones & Hensher, 2007), without a regression structure for latent class membership dependence on covariates. The parametric approach we take in estimating unobserved heterogeneity with a more flexible discrete latent class error distribution, differentiates our approach from previous studies, achieving a more consistent error distribution. Regressing the probability, at company level, of belonging to one or another LC provides us with a prior credit risk assessment tool to assess *ex-ante* counterparty credit risk.

We have used the Generalized Linear and Latent Mixed Modeling framework (gllamm) software package in STATA (StataCorp LP, 4905 Lakeway Drive, College Station, TX 77845 USA stata@stata.com) as the basis of calculations (Rabe-Hesketh et. al., 2005). The basic concept behind this package is the use of a linear predictor which is the binomial mapping of the mean response –ordinal in our case– representing the mean utility associated with a particular outcome. Its basic assumption is a linear relation between the mean utility and the explanatory variables. It also offers the additional flexibility to model multilevel/hierarchical and mixed/random coefficient models, even with non-parametric discrete mass distributions for each of the random effects at every single level.

3.1. Models and assumptions

The conditional probabilities of getting the company's stock under supervision/ suspension/ delisting or having the enterprise restructured or nothing of the previous happening, given FD, are the conditional probabilities:

i) Pr $[(\text{restructuring})_{it} \mid (\text{FD})_{it}]$
ii) Pr $[(\text{nothing})_{it} \mid (\text{FD})_{it}]$
iii) Pr $[(\text{supervision/suspension/delisting})_{it} \mid (\text{FD})_{it}]$

Schematically, our model is depicted in Appendix A. Assuming that management proceeds in an effort to maximize utility pertaining to each of the three available choices j preferring restructuring ($j = 1$) to doing nothing ($j = 2$) to supervision/suspension/delisting ($j = 3$), there is a trinomial ordered choice setting. The utility function U_{ij} or, to be more concise, U_{itj} to account for the temporal nature of the decisions, consists of an observable V_{itj} part and an unobservable error ϵ_{itj}:

$$U_{itj} = V_{itj} + \epsilon_{itj}$$

The probability a firm's management selects one of the three choices would then be:

$$Prij = Pr(Uitj > Uitm);\ \forall\ m \neq j,\ m = 1, ..3.$$

The basic ordinal logit model assumes that the cumulative log odds are specified as a linear function of its covariates X_i:

$$\text{Logit}\ \{P(Y_i > j \mid X_i)\} = \beta X_i - \kappa_j \qquad (1)$$

An easy way to understand how ordinal model formulation works is via the specification of an unobserved latent variable Y^*, which may be assumed to reflect an underlying continuous scale of e.g. the propensity to exit from FD in our case. The continuous latent variable Y^* is assumed to have several –as many as our distinct categories- threshold points. The value of the outcome Y_i depends on whether or not individual propensity Y^* has crossed a particular threshold, usually referred to as cutpoints in empirical literature. For our three outcome framework there exist two (three minus one) cutpoints and this model then implies that:

$$Y_i = 1 \text{ if } Y_i^* \text{ is} \leq \kappa_1$$

$$Y_i = 2 \text{ if } \kappa_1 \leq Y_i^* \leq \kappa_2$$

$$Y_i = 3 \text{ id } Y_i^* \geq \kappa_2$$

Or equivalently the cumulative probabilities:

$$P(Y_i > j) = \frac{e^{(\kappa_j + X_i\beta)}}{1 + e^{(\kappa_j + X_i\beta)}}, j = 1,2,..., M-1$$

In order to estimate individual probabilities, apart from $P(Y_i = 3)$ which is readily obtained from $P(Y_i > 2)$, we must subtract individual outcome probabilities to calculate the rest:

$$P(Y_i = 1) = 1 - P(Y_i > 1) \text{ and } P(Y_i = 2) = P(Y_i > 1) - P(Y_i > 2).$$

In order to obtain a usable model we need to address the issue of the unobservable error's distribution. Assuming that the errors are independent of explanatory variables and distributed iid Logistic with constant variance equal to $\frac{\pi^2}{3}$ we get the ordinal logit specification:

$$\Lambda = \frac{\exp(\kappa_i + X_i\beta)}{1 + \exp(\kappa_i + X_i\beta)}$$

Assuming errors are distributed Gumbel type 1 (extreme value) with constant variance equal to $\frac{\pi^2}{6}$ we get the complementary ordinal log-logit model:

$$F(\epsilon_{its}) = \exp(-\exp(\epsilon_{its}))$$

This basic model assumes that observed ordinal responses Y_i for the same firm are conditionally independent given the covariates X_i. It further assumes that beta coefficients are the same for each outcome j which is commonly referred as the 'proportional odds' assumption, namely that the effect of a variable is assumed (actually constrained) to have a constant effect on the probability of Y_i, a highly restrictive assumption.

The parallel slope (proportional odds) formulation may be relaxed by introducing random slopes β_j to certain covariates in order to allow them to vary according to the categories of Y_i. A fully unconstrained slopes model yields very similar results and fit to multinomial logit models, resembling to running a series of logistic regressions, firstly category 1 versus all others and secondly categories 1 and 2 versus all others. Relaxing this, we may assume a partially proportional odds model, whereas some but not all coefficients are the same across values of outcomes j. We would expect that such models are more parsimonious than their equivalent non-ordinal multinomial alternatives. Assuming there exist ζ coefficients, same for each alternative, and β_j with varying slopes across firms, our model would be then formulated as:

$$\text{Logit } \{P(Y_i > s \mid x_i, \psi_i, \zeta, \beta_j)\} = \zeta\psi_i + \beta_j x_i - \kappa_s \quad (2)$$

By introducing random unobserved company heterogeneity we may in addition to (3) relax the restrictive absence of company effects in the previous model:

$$\text{Logit } \{Pr(y_{ij} > s \mid x_{ijt}, \psi_{sjt}, \beta_j, \zeta, \zeta_j)\} = \beta_j x_{ijt} + \zeta_i + \zeta\,\psi_{sjt} - \kappa_s \quad (3)$$

Whereas, the overall intercept is ζ_i and is varying over firms throughout our panel, but assumed independent across firms and following a normal distribution $\zeta_i \mid x_{ijt} \sim N(0,z)$.

The model's Log likelihood will be estimated as:

$$\log L = \sum_{i=1}^{N} \log \int_{\zeta_i} [\prod_{j=1}^{M} \int_{u_{i,j}} \prod_{t=1}^{T} f(d_{i,j,t}, x_{i,j,t}, \psi_{i,j,t}, \zeta_j, u_{i,j}) h(u_{i,j}) du_{i,j}] h(\zeta_j) d\zeta_j$$

d_{ijt} denotes the indicator variable for the event $y_{ij} = j$.

The fact that random effects may not be normally distributed supports our motivation for a Non-Parametric Maximum Likelihood estimation which can relax the random error distributional assumption and estimate its form via a number of discrete probability mass-points. Based on this formulation, the unobserved company heterogeneity ζ_i for company i consists of $c = 1, \ldots, C$ latent classes in M dimensions. Firms belonging to the same latent class share the same value-location of ζ_i. Hence, the joint distribution of outcomes Y_i for unit i is given by the multiple of the conditional density of the response given the observed and latent variables times the probability distribution of latent classes:

$$P(Y_i \mid X_i, \Psi_i, v_i; \theta) = \sum_{c=1}^{C} P(n_i = \zeta_c \mid v_i; a) \prod_{l=1}^{n_i} f(Y_{li} \mid X_i, \Psi_i, n_i = \zeta_c; \beta_i, \gamma, \lambda) \tag{4}$$

By increasing the number of classes until the likelihood cannot be further increased we get a nonparametric maximum likelihood (NPML) estimator of the continuous random error distribution. Following the same NPML approach we may establish certain covariates o_i which affect the prior probability that firm i is in latent class c. By denoting this probability as π_{ic} we may formulate a multinomial logit dependency on covariates:

$$\pi_{ic} = \frac{e^{o_i u_c}}{\sum_d e^{o_i' u_d}}, \text{ where } u_c \text{ are parameters with } u_1=0 \text{ for identification.} \tag{5}$$

Along the same lines, we may assume that there exist random slopes across firms for specific covariates, discrete latent error classes but relax the logit error formulation, which might be applicable for symmetric and gradual changes in the cumulative probabilities but fail to account for asymmetric distributions as complementary log-logistic can. We introduce the complementary log-logistic link as our data have higher cumulative probability for lower scores and the approach towards probability of 1 is slow (Norusis, 2005).

The complementary log-logistic link function is given by:

$$f(Y) = \ln(-\ln(1 - Y) \tag{6}$$

Finally, we may introduce random coefficients for selected explanatory variables in order to better capture their stochastic nature. In addition to the random intercepts we may introduce random slopes ζ_s':

$$\text{Logit } \{\Pr(y_{ij} > s | x_{ijt}, \zeta_j, \zeta_s')\} = \beta_j x_{ijt} + \zeta_i + \zeta_s' x_{sjt} + \zeta \psi_{sjt} - \kappa_s \tag{7}$$

In this model, apart from the intercept, slope ζ_s' varies over companies. For identification purposes we assume that the random intercept and slope have a bivariate discrete class distribution with zero mean and symmetrical covariance matrix, and that both random intercepts and slopes are independent across firms.

Marginal effects in ordinal models differ from coefficient signs. In order to obtain marginal effects of the continuous covariates we follow delta method (Greene, 2008).

3.2. Sample characteristics

Our sample consists of the complete universe of FD non-financial, not government-owned, non utility or investment companies listed and delisted from the Athens Stock Exchange (ASE), with a listing history of at least three years between 1998 and 2004 included. For comparison purposes, we have excluded observations of companies which published annual reports at a period different than the year-end or for an accounting period surpassing twelve months (typical during their IPO year). It is an unbalanced panel which has the format depicted at Table 2, including companies with one up to seven observations.

Table 2. Frequency distribution of outcomes for FD FIRMS

Outcome	*Year*							
	1998	1999	2000	2001	2002	2003	2004	*Total*
Supervision	0	3	3	4	3	11	9	33
Nothing	12	11	6	15	14	10	10	78
Restructuring	3	5	6	4	10	7	9	44
Total	15	19	15	23	27	28	28	155

It contains both bull and bear years, e.g. the stock market bubble of the late 1990s, the decline between 2000 and 2003 and the partial recovery during 2004. All accounting data have been extracted from the official ASE database. Company data are based on Greek Accounting Standards. Beginning on 2005, the mandatory introduction of IFRS for listed companies has changed the comparison yardstick for previously published accounting data. Our data represent 155 observations from 59 companies in 20 industrial sectors, according to the ASE's official industry classification.

We use trading supervision/ suspension/ delisting and corporate event information published at the official Athens stock exchange website www.ase.gr, cross checked with individual company announcements at their official websites, in the case of still existing firms, but also with web news providers, such as www.euro2day.gr and www.naftemporiki.gr. We notice that our sample is scarce with Supervision events in 1998 and depicts increased frequency of supervision/suspension/delisting and restructuring events during the last two years, as an aftermath to the 2000-2002 market slump. The rules for supervision have been initiated in 1998, hence the lack of such events before 1998. Table 3 displays summary statistics for selected explanatory variables.

Table 3. Selected summary statistics (mean/se mean)

	Lagged_FD	*Report_FD*	*Reli_asst.grow*	*Restruct_AI.*	*RoA*	*FAI*	*Size*	*Intdif*	*Lintdif*	*RetEarn*
supervision	.757	.848	.789	.976	–.0387	.566	.482	–.246	–.251	.699
	.075	.063	.073	.092	.0131	.032	.025	.038	.031	.029
nothing	.602	.628	1.125	1.078	–.0270	.685	.587	–.181	–.195	.786
	.056	.055	.242	.144	.007	.025	.022	.017	.016	.008
restructuring	.568	.432	.999	.892	–.0169	.655	.636	–.179	–.235	.760
	.075	.075	.090	.036	.0061	.034	.025	.025	.024	.020
Total	.626	.619	1.018	1.003	–.0267	.651	.578	–.195	–.218	.760
	.039	.039	.125	.0759	.0050	.018	.015	.014	.012	.009

Means are shown on the top and standard errors of mean at the bottom.
Variable definitions are provided at Table 1 above.

Table 4. Comparison of means among outcomes

	Supervision versus Nothing		*Supervision versus Restructuring*		*Restructuring versus Nothing*	
Lagged_FD	0.0365	(0.39)	0.106	(0.98)	0.069	(0.72)
Report_FD	0.295**	(3.37)	0.394***	(4.12)	0.098	(1.00)
Reli_asst.grow	–0.331	(–0.96)	–0.186	(–1.63)	0.145	(0.41)
Restruct_AI.	–0.106	(–0.50)	0.126	(1.52)	0.232	(1.10)
RoA	–0.00535	(–0.40)	–0.0110	(–0.88)	–0.006	(–0.48)
FAI	–0.116**	(–2.84)	–0.0671	(–1.44)	0.049	(1.15)
Size	–0.0476	(–1.33)	–0.0815*	(–2.10)	–0.034	(–0.92)
Intdif	0.0323	(0.93)	0.0212	(0.50)	–0.011	(–0.36)
Lintdif	–0.171***	(–6.39)	–0.118**	(–3.08)	0.053*	(2.43)
RetEarn	–0.0474*	(–2.32)	–0.0165	(–0.50)	0.031	(1.43)
N	115		83		114	

Results from t-tests comparing explanatory variable means between alternative outcomes; t-statistics in parentheses.
Stars indicate p-values as follows: *p < 0.05, **p < 0.01, ***p < 0.001.
Variable definitions are provided at Table 1 above.

4. Results

Estimation results for alternative model formulations are shown at Table 4. We start with a simple ordinal model (*ORD_1*) without random effects; next, to a selective non-parallel, no random effects (*ORD_2*) model; the following is a non-parallel with random effects (*ORD_3*); we proceed with a non-parallel discrete probability mass error distribution (*ORD_4*); the following uses size as a regressand of the prior probability of belong to each latent class (*ORD_5*); next, with complementary log-log error distribution (*ORD_6*) and finally with a stochastic coefficient (slope) for company size (*ORD_7*).

Table 4. results of alternative regression models

	MODEL ORD_1	*MODEL ORD_2*	*MODEL ORD_3*	*MODEL ORD_4*	*MODEL ORD_5*	*MODEL ORD_6*	*MODEL ORD_7*
Lagged_FD	–0.695*	–0.689+	–0.783+	–0.929*	–0.937*	–0.839**	–1.071**
	(–1.974)	(–1.872)	(–1.886)	(–2.338)	(–2.359)	(–3.020)	(–2.632)
Report_FD	–1.119**	–1.255**	–1.478**	–1.083**	–1.081**	–0.783**	–1.127**
	(–2.999)	(–3.201)	(–3.166)	(–2.609)	(–2.615)	(–2.770)	(–2.674)
Reli_assgrow	0.731*	0.873*	1.028*	0.850*	0.854*	0.628**	1.706**
	(2.171)	(2.370)	(2.436)	(2.116)	(2.119)	(3.104)	(3.254)
Restruct_AI	–1.337*	–1.599**	–1.925**	–1.654*	–1.665*	–1.164***	–3.046***
	(–2.431)	(–2.632)	(–2.698)	(–2.438)	(–2.442)	(–3.297)	(–3.464)
RoA	–0.805	–0.191	0.185	2.119	1.916	–0.037	3.717
	(–0.288)	(–0.059)	(0.050)	(0.467)	(0.415)	(–0.013)	(0.863)
FAI	0.321	0.239	0.304	0.260	0.277	0.531	0.484
	(0.366)	(0.259)	(0.268)	(0.261)	(0.279)	(0.814)	(0.475)
Size	2.367*	2.507*	2.402	1.727	1.629	1.263	–24.480*
	(2.091)	(2.099)	(1.614)	(1.360)	(1.290)	(1.418)	(–2.253)
Intdif	2.818*						
	(2.471)						
RetEarn	0.247						
	(0.132)						
Lintdif	1.174						
	(0.910)						
_cutpoint 11							
Intdif		–5.629***	–6.198***	–9.040***	–9.140***	–4.835***	–9.536***
		(–3.710)	(–3.477)	(–3.795)	(–3.872)	(–3.947)	(–3.807)
RetEarn		–3.422+	–3.297	–3.491	–3.547	–1.767	–2.252
		(–1.890)	(–1.549)	(–1.381)	(–1.387)	(–1.306)	(–0.779)
Lintdif		–4.890**	–5.198*	–9.401**	–9.644**	–4.648**	–10.139**
		(–2.606)	(–2.379)	(–2.999)	(–3.137)	(–3.208)	(–3.109)
_cons	–2.285	–1.677	–2.634	–4.355*	–0.567	–0.544	–11.689**
	(–1.410)	(–1.071)	(–1.289)	(–1.985)	(–0.194)	(–0.334)	(–3.167)
_cutpoint 12							
Intdif		–0.756	–0.755	–0.966	–0.940	–0.567	–0.687
		(–0.535)	(–0.483)	(–0.677)	(–0.658)	(–0.475)	(–0.479)
RetEarn		2.879	3.761+	4.076+	4.020+	3.042*	5.276*
		(1.604)	(1.690)	(1.838)	(1.803)	(2.170)	(1.984)

Table 4. (*continue*)

	MODEL ORD_1	*MODEL ORD_2*	*MODEL ORD_3*	*MODEL ORD_4*	*MODEL ORD_5*	*MODEL ORD_6*	*MODEL ORD_7*
Lintdif		1.456	1.781	1.200	1.194	1.310	1.598
		(0.923)	(0.984)	(0.755)	(0.752)	(1.044)	(0.989)
_cons	0.427	–1.195	–2.071	–2.511	1.373	0.318	–9.191**
	(0.265)	(–0.758)	(–1.023)	(–1.303)	(0.473)	(0.186)	(–2.751)
Unobs.			0.926*				
Heterog.			(2.215)				
Masspoint 1				–5.331***	–1.604	–1.408	0.378
				(–3.528)	(–0.789)	(–1.179)	(0.567)
Probability 1				–2.444***	0.998	0.235	2.437
				(–4.599)	(0.589)	(0.163)	(1.340)
Masspoint 2							–2.215
(Size)							(–0.585)
Probability 2					–6.697+	–4.275	–9.019*
(Size)					(–1.843)	(–1.542)	(–2.307)
N	155	155	155	155	155	155	155
ll	–141.03	–130.46	–129.35	–125.37	–123.23	–124.15	–120.52
aic	306.06	290.92	290.69	284.74	282.45	284.30	279.03
bic	342.58	336.57	339.39	336.47	337.24	339.08	336.86
Prob>chi2 =	0.0000 (w.r.t. const)	0.0001	0.1356	0.0048	0.0385	(–)	0.0199 (w.r.t. no rand. slope)

***,**,*,+ indicate significance at the 0.001,0.01,0.05,0.10 levels respectively. t-statisic in parenthesis. *N* indicates number of observations under each alternative outcome, *ll* is each model's maximum likelihood at convergence and *aic* and *bic* represent Akaike's and Baye's criteria. *Prob>chi2* indicates Likelihood ratio tests performed between successive nested models from left to right. The first test compares full covariates to constant-only model and the last to a model with no random slope.

Ordinal regression seems to offer a better data fit than its multinomial equivalent, as evidenced by the improvement of Akaike's Information scoring Criterion between parallel and non parallel slopes (*ORD_1* vs. *ORD_2*). Noteworthy is our estimated unobserved company effect, consisting of only two probability mass-points, rendering normality a rather restrictive assumption (Figure 2). These two mass-points may be assumed to represent latent classes of firms depicting alternative propensity to exit FD, as can be shown at their respective latent class boxplots (Figure 3).

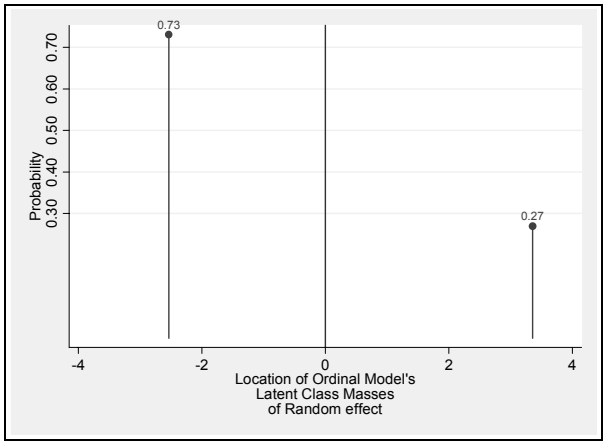

Figure 2. Location of estimated random effects latent class mass-points

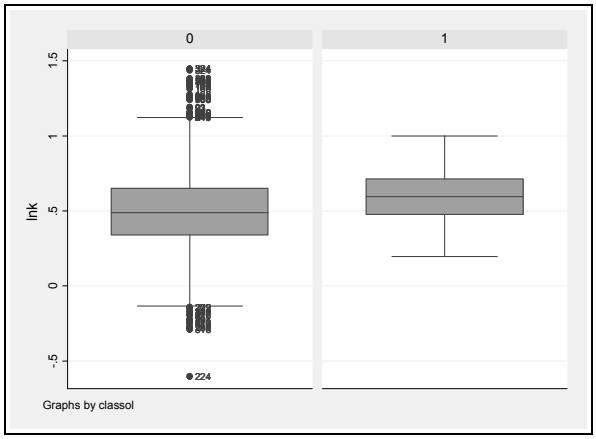

Figure 3. Boxplots of companies represented by each latent class

Furthermore, as seen from our results from model specification (*ORD_5*), size influences the probability of belonging to one or another of the estimated latent classes. Our results show that the lower the size the higher the *ex ante* probability of belonging to the class with increased likelihood of supervision/suspension/delisting. Furthermore, removing size as a latent class membership regressand and introducing it as a stochastic slope, we get an improvement in the overall likelihood and better model fit by the AIC and BIC criteria. Moreover, estimating classification tables for prediction of the outcomes, we find that classification accuracy is by far better than by chance (results available upon request from the authors).

Finally, for reasons of completeness, we have also estimated models allowing for industry clustering (3 level clustering, results not shown) and explored other covariates for random coefficients, but have not identified any particular formulation significantly better than those we have described above.

4.1. Explanatory variables/Hypotheses/Average Partial effects

Summing up our findings, Return on Assets and Fixed Asset Intensity are not statistically significant in any of our specifications. Size, as a mean effect, is significant in both our no-random effects as well as in our final random size coefficient model. Interest differential, its lagged value and scaled Retained Earnings are significant in most of our random effects specifications.

By averaging partial effects (APE) over our estimation sample (assuming zero random effects) we may estimate the average directional influence of each statistically significant covariate. The summary of our findings with respect to influences of each covariate are summarized at Table 1, as well as which of our hypotheses have been confirmed. Severity of FD, portrayed by lagged FD and RFD indicator variables, as expected in hypotheses **S1** and **R1**, bears an inverse impact on the probability of supervision/suspension/delisting vs. restructuring (positive vs. negative). Corporate performance positively influences the probability of restructuring, and inversely the probability supervision/suspension/delisting, confirming hypotheses **S2** and **R2**.

Restructuring Intensity (rate of fixed asset reduction), significant throughout our specifications, positively affects the probability of restructuring (negative fixed asset growth coefficient) confirming our **R1** hypothesis. Although its impact on the probability of supervision has been also expected negative, it is positive, indicating that companies in supervision/suspension/delisting instead of enacting fixed asset reductions to generate income have rather increased their tangible asset investments, failing to endorse our **S1** hypothesis. Notwithstanding that supervision/suspension/delisting is not the same situation as bankruptcy, which has been previously found dependent on restructuring intensity, there may be two plausible explanations for our

result: i) either managerial overconfidence (Khaneman et. al., 1982) leads them to underestimate the situation and pursue self-destructing policies, which because of the severity of the circumstances they are facing affects them to a greater extent than companies doing nothing, resulting to their setting under supervision or ii) the announcement of fixed asset investment in periods of FD signals to the investor community a positive misperception which promotes stock market performance exploiting "signal jamming" (Bizjak et al., 1993). Further to Bizjak et al., (1993), this behavior is more probable to take place whenever managers place more emphasis on current stock price relative to future profits and future stock price, a situation that characterizes FD.

Size negatively affects the probability for supervision/suspension/delisting and positively restructuring, indicating that smaller firms tend to get more often under supervision, whereas larger companies usually restructure, confirming our hypotheses **S3** and **R3**. Moreover, size is an influential factor for determining the ex-ante membership of the estimated latent error classes (see discussion below).

Scaled Retained Earnings has a statistically significant negative effect, indicating an increased probability of restructuring due to chronic management inefficiency problems, ratifying our **R4** hypothesis.

On the macroeconomic front, year on year interest rate differential and its lagged value influence the probability of getting a FD company under supervision/suspension/delisting. Its APE direction is in line with our anticipated hypotheses, indicating that the deeper the macroeconomic difficulties, evidenced by sequential YOY interest rate reductions, the higher the difficulties listed companies in FD face, hence the greater the probability of having their shares under supervision or suspension. The same APE directional impact also holds for interest rate differential's lagged value, confirming our **S5** hypothesis.

Table 5. Results for managerial pecking order

Dependent	*'Synergistic' **Po3***		*'Agency conflict' **Po1***		*'Pecking order' **Po2***	
	Order of outcomes:	*N*	*Order of outcomes:*	*N*	*Order of outcomes:*	*N*
	supervision	33	nothing	78	restructuring	44
	nothing	78	restructuring	44	supervision	33
	restructuring	44	supervision	33	nothing	78
N	155		155		155	
ll	–122.973		–136.672		–139.405	
aic	281.946		309.345		312.811	
bic	336.728		364.126		364.549	

N indicates number of observations under each alternative outcome, *ll* is each model's maximum likelihood at convergence and *aic* and *bic* represent Akaike's and Baye's informational criteria for evaluating each particular selection order.

Finally, we estimate three alternative dependent variable rankings (Table 5), run with our best fitting model specification. Comparing the models, the most likely choice managers made is Restructuring, Supervision being the least wanted, as evidenced by the significant difference in AIC, BIC and log likelihood scores. This result confirms our hypothesis **Po3**, indicating that they act rationally with profit maximization and company's valuation as their premier goal. Bearing in mind that in the majority of the market they represent manager-owners, our finding is congruent with the synergistic theoretical supposition. Moreover, it validates our modeling, justifying that management plays, at least an implicit, role in stock decision to supervise or suspend trading of shares; the existence of an apparent ordering among alternatives implies that some stock exchange decisions are more preferred by the average FD company than others, hence influence the way management takes strategic decisions.

5. Conclusions

We have estimated the probability for FD firms to enter stock exchange's supervision/ suspension/ delisting or have their company restructured. Having set up several theoretical hypotheses regarding the influence of individual financial ratios, indicators and macroeconomic variables we have tested them on a sample of listed industrial and services companies on the ASE. We have found that our models adequately describe the cases of listed companies on the ASE between 1998 and 2004 taken under stock exchange's supervision/ suspension/ delisting as well as those which pursued corporate restructuring (asset or liability). Moreover, our model depicts that different economic reasons drive management to opt for restructuring versus supervision/ suspension/ delisting. We also reject the hypothesis that stock exchange's decisions to suspend company shares, involuntarily or not, are taken exogenously to the firm and confirm that management does play an interactive role with the authorities.

Pursuing an ordinal logit econometric modeling we find that our distinction between the cases of supervision/ suspension/ delisting and restructuring is successful. Employing a latent class construction of random unobserved heterogeneity we find it is constituted with only two probability mass-points, showing apparent non-normality. Based on Akaike's AIC and Bayesian Information scoring Criterion, the best formulation consists of a non-parametric error with company size as regressand for *ex ante* class membership and a random size coefficient. Concluding, we show that our sample, consisting of a majority of manager-owned firms, decisions taken in times of FD are principally determined by synergistic criteria (value maximization).

We find strong evidence that the probability of assuming a restructuring option depends upon financial ratios that positively relate to lower retained earnings (denoting managerial inefficiency), better performance, intense restructuring, higher size and a less severe FD. The probability of getting a company's stock under supervision/ suspension/ delisting depends on the gravity and state dependence of its FD condition, lower size, worse corporate performance and increased tangible asset investments, a controversial element. The latter might be explained by either managerial overconfidence or a managerial effort to signal jam (Bizjak et al., 1993).

Our methodology is a helpful tool for regulators or bankers wishing to assist or better supervise specific industrial segments in FD, as we provide tools to effectively monitor and understand the situation. The incorporation of additional stock market data for FD companies' shares to estimate their influence on managerial decisions and exchange authorities' rulings is left for future researchers.

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