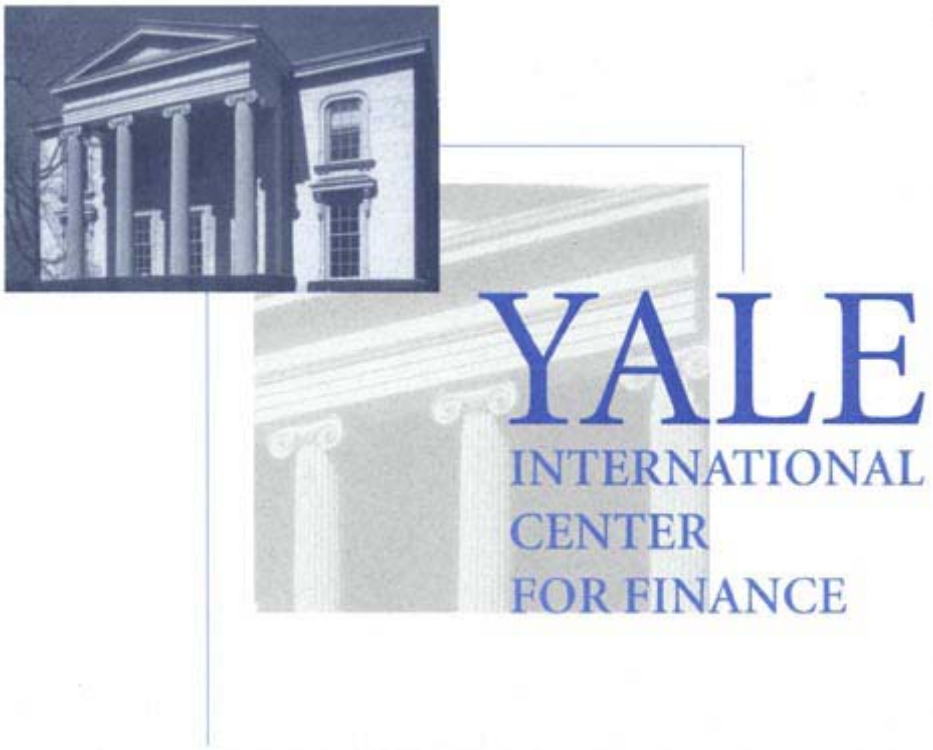

Yale ICF Working Paper No. 07-02

April 2007

Takeover Defenses and Competition

K.J. Martijn Cremers, Yale School of Management, International Center for Finance

Vinay B. Nair, *Wharton School, University of Pennsylvania*

Urs Peyer, INSEAD

TAKEOVER DEFENSES AND COMPETITION

K.J. MARTIJN CREMERS

VINAY B. NAIR

URS PEYER*

FIRST VERSION: March 2006

THIS VERSION: April 2007

* Cremers is from the International Center of Finance at Yale University; Nair is from the Wharton School at the University of Pennsylvania and Peyer is from INSEAD. An earlier version of this paper was called: "Weak Shareholder Rights: A Product Market Rational". We would like to thank Judy Chevalier, Yaniv Grinstein, Gideon Saar and Matthew Spiegel as well as seminar participants at Arizona State, Chicago GSB, Cornell, Duke, Harvard Law School, Indiana, Illinois, INSEAD, Michigan State, Northwestern, Pittsburgh, Rutgers, UNC, Tilburg and Yale for their comments. Dasol Kim and Zhenxu Tong provided excellent research assistance. All errors are our own.

TAKEOVER DEFENSES AND COMPETITION

Abstract

This paper studies the interaction between takeover defenses and product market competition. We find that firms in more competitive industries have more takeover defenses. This is the opposite result from what one would expect if takeover defenses always constitute an inefficient outcome that increases agency costs and managerial entrenchment. A novel explanation is provided by considering the nature of the relationship between the firm and the product (or labor) market. For firms in industries where a long-term relationship with customers and employees is vital, the disruption caused by takeovers could severely negatively impact these stakeholders. In particular, in a competitive environment, this could lead shareholders to optimally choose more takeover defenses to prevent such customers and employees from going to their closest competitor ex ante. We provide empirical evidence that stronger competition is linked to more defenses only in relationship industries, where the previously found negative relation between takeover defenses and firm performance is reversed. Our results cannot be explained by competition being a substitute for the market for corporate control. Finally, we discuss the implications of this framework for the design of various governance mechanisms. In conclusion, the paper provides a rationale for why shareholders themselves might want weak shareholder rights.

I. Introduction

A large body of theoretical and empirical work on corporate governance has emphasized the contracting problems between investors and managers. In response, several different governance mechanisms have been proposed and their impact on valuation investigated.[1] Yet, there has been little attention on the implications of corporate governance on agents other than investors and managers, even when these other agents affect firm value. The paper pursues this objective. In particular, we focus on how an important governance mechanism – takeover defenses – is related to actions of perhaps the most important agents outside the firm, namely customers. The customer's choices in the product market directly affect firm value. We argue in this paper that these customer choices are potentially affected by changes in ownership of the firm, which takeover defenses directly impact. Therefore, it is important to improve our understanding of the link between corporate governance and product market competition before determining the level of takeover defenses.

The takeover defenses considered in this paper can broadly be thought of as a collection of firm-level charter and by-law provisions that affect managerial entrenchment.[2] As Gompers, Iishi and Metrick (2003) show, firms with fewer takeover defenses tend to have a higher value (as measured by Tobin's Q) and higher accounting profitability (as measured by the Net Profit Margin and Returns on Assets). This suggests that adopting fewer takeover defenses may reduce agency costs and managerial entrenchment. It further suggests that firms with too many takeover defenses perform sub optimally, and thus are vulnerable in highly competitive industries.

Alchian (1950), Stigler (1958), Fama (1980) and Fama and Jensen (1983) argue that strong competition in the product markets most negatively affects firms that are governed and managed worst. This is because firms with inferior governance mechanisms incur higher costs, and this reduces their competitiveness. As a result, the pressure to reform any suboptimal

[1] For surveys on governance see Shleifer and Vishny (1997) and Becht, Bolton and Roell (2003). For the impact of some of these governance mechanisms on firm valuation, see Gompers, Ishii and Metrick (2003) and Cremers and Nair (2005).

[2] In effect, in this paper we interpret the 'shareholder rights' in Gompers, Ishii and Metrick (2003) more narrowly as (a lack of) takeover defenses.

governance arrangement is strongest in the most competitive industries (i.e., those with low profit margins), which are quickest to force inefficient firms out (see also Shleifer and Vishny (1997)). As a result, this literature predicts that takeover defenses are less frequent in competitive markets.

This paper tests for an empirical relationship between takeover defenses and industry competition. Using either profit margins or a Herfindahl index as proxies for the degree of product market competition, we find that firms in more competitive industries have *more* takeover defenses, and differences in competitiveness can explain a significant fraction of differences in takeover defenses across industries. These results run counter to those predicted by the theories outlined above. Are pressures from the product market insufficient to change suboptimal governance arrangements? And how can we reconcile this result with the negative association between takeover defenses and firm performance (Gompers, Ishii and Metrick (2003) and Cremers and Nair (2005)), and between product market competition and private benefits of control or agency costs (Perez-Gonzales and Guadalupe (2005))? Our second major contribution in this paper is to provide such reconciliation and advance a novel explanation with empirical support of this arguably surprising finding, by considering potential negative effects changes in ownership or takeovers can have on customers.

The recent acquisition of PeopleSoft by Oracle is a useful example.[3] On June 6th, 2003, Oracle announced a hostile takeover of PeopleSoft.[4] In announcing the planned takeover, Larry Ellison, CEO of Oracle, stated that once the acquisition was complete, Oracle would discontinue development of PeopleSoft products.[5] At PeopleSoft's board meeting, to evaluate Oracle's offer Craig Conway, then-CEO of PeopleSoft, explained that he had already received numerous messages expressing concern from PeopleSoft customers.[6] With PeopleSoft's future in question, sales leads were allegedly being put on hold or simply evaporating. If customers were nervous

[3] "Oracle to Launch Cash Tender Offer for PeopleSoft for $16 Per Share," PR Newswire, June 6, 2003.
[4] See Daines, Drabkin, and Nair (2005), and Arlen (2006).
[5] The statement also said that PeopleSoft customers would be encouraged to migrate to Oracle software, though the firm would continue to provide support for existing PeopleSoft products.
[6] PeopleSoft sold complicated software that required subsequent customization as well as on-going vendor consulting and technical support.

about future support, the customers would not purchase the software, leading to a drop in PeopleSoft market share and profits.

Even in cases where the acquirer does not discontinue the target's products, the disruption due to a takeover can cause customers great concern, and competitors are often quick to act in this period of uncertainty, especially in relationship industries. For example, when CVS acquired Eckerd stores, competing pharmacies put up signs that said, "If your local pharmacy is changing hands, you can always come to us."[7] After Sprint bought Nextel in 2005, "millions of its cell phone subscribers have defected to competitors," such that "Nextel executives say Sprint erred by downplaying the Nextel brand."[8] In the health care industry it is reported that "merging orthopedics companies run an unusually high risk of confusion and lost sales" because "no health care business is more dependent on sales relationships with doctors".[9] In the financial sector, in spite of best efforts to facilitate a smooth transition, bank acquisitions typically witness significant customer losses[10] – one average estimate of these losses is 10-15% of target customers. In cases where cooperation from the target is limited this number is even higher. Wells Fargo is estimated to have lost 30% of First Interstate's customers.[11] In sum, customer losses due to the disruption accompanying takeovers are a real feature of the acquisition landscape. These examples are not atypical either. In a sample of 404 unsolicited bids (i.e., with SDC classifications of 'neutral' or 'hostile') between 1990 and 2004, we investigate the change in sales between the quarters that preceded and followed the takeover announcement date and find a 7% drop in firm sales after the takeover announcement (see Table 1). We take a closer look at such sales drops in section IV.2, but these sales drops appear to be a systematic feature.

Therefore, we argue that for some firms the disruption caused by takeovers could severely negatively impact customers and employees.[12] As these other stakeholders affect firm

[7] "Flight Risk," by Gay Jervey, CFO Magazine, 4/Oct/2005.
[8] "After Sprint and Nextel Merge, Customers and Executives Leave," by Amol Sharma, WSJ, 11/Oct/2006.
[9] "No rush to merge in orthopedics", by Barnaby J. Feder, New York Times, 10/Nov/2006.
[10] See Houston, James and Ryngaert (2001) and "Rival bank's errors will be First Bank's lessons,"
[11] "Banking," by Dee DePass, Satr-Tribune Newspaper of the Twin Cities, 16/July/1997.
[12] See Chevalier and Goolsbee (2005) for supporting evidence and Titman (1984) and Campello and Fluck (2005) for an investigation of how such concerns drive capital structure decisions.

value, shareholders will take such negative effects on these stakeholders into account when deciding on the optimal level of takeover defenses. Therefore, shareholders of firms in some industries might optimally choose to have a higher level of takeover defenses.

In effect, we argue that shareholders face a tradeoff between the positive and negative effects of takeover defenses. Having fewer takeover defenses might increase firm value for the target firm due to the takeover premium, it might reduce managerial entrenchment, and lead to greater efficiency from reduced agency costs. The potential downside of fewer defenses is related to the cost incurred by the customers and employees during a takeover. Customers anticipating a takeover and its associated costs to them could ex ante choose to buy from another firm with a lower probability of being taken over. Hence, if customers care about a potential takeover of the firm, it will be in the interest of shareholders to take such concerns into account.

Across industries, this tradeoff will vary. In particular, if there is a long-term relationship between the firm and its customers and employees, in what we term 'relationship industries' (similar to the notion by Titman (1984) and Campello and Fluck (2005), i.e., essentially durable goods plus long-term services), such disruption caused by takeovers is strongest. Moreover, if the firm operates in a competitive product market environment, then the consequences of exposing customers and employees to such disruption is most severe, as competitive markets will give these agents several alternative firms to go to. Formal models by Klemperer (1987) and Chevalier and Scharfstein (1996) show that anticipated switching costs for customers are a more important determinant of firm profits in competitive industries. Therefore, this tradeoff could lead shareholders to *optimally* choose a higher level of takeover defenses in relationship industries that are competitive. Within such industries, firms that are an easier target for a takeover, e.g. due to their small size, could likewise benefit their shareholders by adopting more takeover defenses.

We provide several empirical results to support our explanation. First, we show that the previously documented finding that firms in competitive industries have more takeover defenses only holds for relationship (or durable goods) industries. Second, the negative relation between firm performance (using either Tobin's Q or measures of accounting profitability) and takeover

defenses is *reversed* in relationship industries, as our tradeoff idea would predict. Within industries all of our effects are strongest for the smallest firms or the easiest targets.

The main alternative to our 'relationship' explanation is given by Holmstrom (1982), Nalebuff and Stiglitz (1983) and Hart (1983), who argue that greater competition increases the amount of available information about the firm, thereby reducing the costs of monitoring. As a result, competition and the market for corporate control become substitutes, as either could reduce agency costs. However, this alternative would seem silent on the importance of the nature of the relationship between the firm and its customers. In addition, Cremers and Nair (2005) provide evidence that increased monitoring (albeit by large institutional blockholders rather than due to more competitive markets) and governance are strong complements rather than substitutes.

In this paper, we try to directly distinguish between this 'substitutes' explanation versus our new 'relationship' account and consider the nature of the competition by separating domestic competition from competition provided by foreign firms. If the competition is mainly by foreign firms, then the threat of disruption to long-term relationships are much weaker, as foreign competitors are not likely to provide a takeover threat (see Rossi and Volpin (2004)). Using the percentage of industry sales that is imported as our proxy for foreign competition, we find that the positive association between defenses and competition exists only when we consider domestic competition, providing further evidence for our story.

Finally, the importance of taking stakeholder concerns into account when designing shareholder power has implications beyond the vulnerability to the market for corporate control and bears more generally on the mix between different corporate governance mechanisms. Our results imply that especially in competitive relationship industries, governance mechanisms that alleviate agency conflicts between managers and shareholders should focus on threatening managerial survival without threatening firm survival. Therefore, in those industries where disruption from takeovers is most costly, governance could be expected to be more likely to be based on internal mechanisms such as monitoring and incentives rather than through takeover threats. We document evidence consistent with this view. In industries where a higher level of

takeover defenses is justified, high stock based executive compensation is more prevalent, possibly serving as a substitute for the market for corporate control.

Our paper relates to several strands of the literature on corporate governance. First, we contribute to the literature that investigates the relation between shareholder rights and firm value (e.g., Gompers et al, 2003; Cremers and Nair, 2005) by showing that weaker shareholder rights (i.e., many takeover defenses) can be optimal from the shareholder's point of view in some industries. Second, we relate to the literature on product market competition. A very large body of literature exists investigating the relation between product market competition and leverage. Most closely related are the studies by Titman (1984) and Maksimovic and Titman (1991) who show that capital structure can affect the viability of a firm's product warranties.[13] A third strand of literature investigates the governance implications of the competitiveness of the product markets. Hart (1983) formalizes the notion posited by Machlup (1967) that more competition in the product market acts as a disciplinary mechanism and reduces managerial slack. Hence, fewer substitute governance mechanisms are needed.[14] Finally, our analysis also relates to the literature that discusses the potential benefits and costs of stakeholder and shareholder value maximization regimes (e.g., Allen, Carletti and Marquez, 2007). We find that even in a shareholder-oriented country like the US, shareholders take customers' concerns into account when designing corporate governance mechanisms.

The remainder of this paper proceeds as follows. In the next section we describe the data used to investigate the link between takeover defenses and industry competition. Section III shows the first tests. Section IV offers two hypotheses that can explain the finding that there are more takeover defenses in more competitive industries. It highlights the importance of the nature of products and the relationship between the firm and its stakeholders. Section V shows results about the relation between takeover defenses and firm performance and value conditional on the

[13] In addition, Chevalier (1995) and Phillips (1995) both find empirical support for the notion that product markets and corporate policy interact in a significant way. Fee, Hadlock and Thomas (2006) finds that corporate customers are more likely to take equity stakes in the supplier if the product market relationship is a long-term relationship.

[14] However, Scharfstein (1988) points out that Hart's (1983) conclusions are sensitive to the assumptions about feasible compensation schemes for managers.

level of product market competition. Section VI sheds some light on the design of governance mechanisms. The conclusion follows.

II. Data

This section describes the data. Since most of the implications for the interaction between takeover defenses and competition are at the industry-level, we compute proxies for those for each industry. For most of our paper, and where the data allows, we use two-digit SIC industry classifications. Alternatively, we use the Fama-French classification into 48 industries.

First, we form a proxy for the industry level of takeover defenses by taking the equal-weighted industry average of each firm's Governance index or 'G-index.' We follow Gompers, Ishii and Metrick (2003) in defining the G-index at the firm level by summing up the number of restrictive provisions that each firm has in their charter and by-laws. Each provision thus contributes equally to the index, and a higher value of the G-index indicates more provisions that limit shareholder rights, thus greater protection against takeovers. The G-index is based upon 24 provisions and is updated information in 1990, 1993, 1995, 1998, 2000, and 2002. For the years where the information is not updated, we assume the last available value. This data is obtained from the Investor Responsibility Research Center (IRRC) database.

We also use a refined measure of the G-index proposed by Bebchuk, Cohen, and Ferrell (2004) termed the E-index (entrenchment), which considers only 6 out of these 24 provisions: staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, and supermajority requirements for charter amendments, and two "takeover readiness" provisions that boards put in place to be ready for a hostile takeover (poison pills and golden parachutes). Finally, we also use a third measure, the anti-takeover or ATI-index from Cremers and Nair (2005) that is closely related to takeover vulnerability and considers only three common anti-takeover provisions that create significant obstacles for takeovers: preferred blank check, staggered boards, and restrictions on calling special meetings and action through written consent.

The univariate statistics on the industry level averages during our sample period from 1990 to 2003 are shown in Panel A of Table 2. We find that the average industry has a G-index of 9.11. There is substantial variation in the industry level G-index, with a minimum industry average G-index of 5 and a maximum of 14 with a standard deviation of 1.11. One potential issue with the industry level analysis of the G-index is that not all industries get equal coverage in IRRC since the sample is based on the largest 1,000 firms. We find that IRRC firms represent, on average, about 70% of the sales of an industry (not tabulated). However, we find no significant correlation between the industry average G-index and a proxy for the representation (i.e., the fraction of firms or sales of the industry as represented in the IRRC database). Adding this proxy to the regressions discussed below also does not affect the inferences. We thus conclude that there is no obvious bias induced by the use of IRRC data to proxy for industry level shareholder rights.

Our main measure for the level of competition in each industry is the industry median net profit margin (NPM). NPM is defined as the income before extraordinary items available for common equity divided by sales (following Gompers et al., 2003). As lack of competition (or product differentiation) allows monopolies to charge higher prices and generate higher profit margins, we follow the industrial organization literature (Lerner, 1934) in interpreting a lower industry NPM as indicating greater competition. Therefore, net profit margin also relates closely to the concept of the Lerner Index (Lerner, 1934) as a measure of competition. [15]

An alternative, commonly used proxy for industry concentration is the Herfindahl-index. The Herfindahl index is given by $H= \Sigma_i (\Pi_i)^2$, where Π_i is the market share of the sales of company *i* and the summation is over the total number of firms in the industry. We calculate the Herfindahl index using either all firms with sales data available in Compustat, or based on sales of the largest four companies in each industry as provided by the Economic Census (1992). Since the Herfindahl index is directly related to the number of firms, we also use the Normalized

[15] The Lerner Index is a measure of the profitability of a firm that sells a good: (price - marginal cost) / price, see e.g. Domowitz, Hubbard, and Petersen (1988). Our proxy is based on the standard assumption in the literature that the marginal cost can be reasonably approximated by the average variable cost (Carlton and Perloff, 1989).

Herfindahl-index. It is defined as (n x Herfindahl – 1)/(n – 1), where 'n' is the number of firms. In all cases, a higher (normalized) Herfindahl index indicates a more concentrated industry, and thus less competitive.

Finally, we also use a measure of foreign competition. The measure of foreign competition is denoted as 'Import' and is computed as ln(1+imports/domestic sales) based on Irvine and Pontiff (2005).[16] Imports and domestic sales are the value of shipments aggregated at the industry level of imports and sales of US firms, respectively, based on data from the NBER-CES Manufacturing Industry Database (Feenstra, 1996), such that a higher value of Import suggests more competition from the foreign product market. This data is available annually from 1990-2001 for a subset of industries only. The use of 'Import' is motivated by the fact that 'Import' is strongly correlated with the degree of product market competition in the US (see Table 2, panel B) but is less likely to be related to takeover threats (very few acquisitions in the US are made by foreign firms, see Rossi and Volpin, 2004). This allows us to disentangle the effects of product market competition and takeover threats, as only domestic competition is directly related to the market for corporate control.

In order to control for other possible factors affecting the anti-takeover provisions at the industry level, we include a number of control variables. The selection of the variables is largely based on Gompers et al. (2003) and Cremers and Nair (2005). Since Gompers, Ishii and Metrick (2003) find that firms tend to have a higher G-index if they are large, have high institutional ownership, high trading volume, low sales growth, poor stock returns and low Tobin's Q, we control for these characteristics within each industry. Following Cremers and Nair (2005) who find that blockholdings and anti-takeover provisions are complements in affecting equity returns, we also control for blockholdings.

To proxy for size, we use the market value of equity (in millions). We then compute the industry-level proxy for size (Equity Value) as the (log of the) equal-weighted average size of all firms in Compustat in any particular industry-year. Institutional Ownership is the fraction of

[16] We thank Paul Irvine for providing us with the data.

shares owned by institutional owners as identified by 13-D filings from the CDA Spectrum database. Proxying for trading, Trading Volume is the average of the monthly trading volume divided by the number of shares outstanding over the past five years. Sales Growth is the growth of sales in the prior five years. Prior Return is the average monthly return over the five years prior to the fiscal year end. TQ is Tobin's Q computed as market value of equity + book value of assets – book value of equity – deferred taxes divided by book value of assets.[17] Block Ownership is the fraction of shares held (in percent) by the largest institutional owner if it is at least 5%, and is zero otherwise. The block ownership is measured in the 4th quarter of the prior fiscal year. We also include ROA, the return-on-assets, calculated as net income divided by book value of assets, and the Dividend Yield defined as the dividend-to-share price ratio at fiscal year end.

III. Does Competition Lead to Fewer Costly Takeover Defenses?

As discussed in the introduction, the early literature by Alchian (1950), Stigler (1958), Fama (1980) and Fama and Jensen (1983), and summarized by Shleifer and Vishny (1997), argues that competition in the product and labor markets would reduce or eliminate inefficiencies in organizations. The logic is that in a very competitive product market, firms can only charge the marginal cost to customers because otherwise customers would switch to a different provider, given that products of different firms are almost perfect substitutes in these competitive industries. Hence, if a firm has to bear extra costs due to inefficiencies associated with takeover defenses, it will loose business as customers will not pay that firm's higher marginal cost. Alternatively, if the firm continues selling at the (lower) industry's marginal cost, it will make losses and hence firm value is expected to be lower. This seems directly supported by the empirical results of Gompers et al. (2003) who find a negative association between the level of takeover defenses and firm profitability (and Tobin's Q), suggesting that, on average, those defenses may be costly or inefficient.

[17] If deferred taxes are missing then these are set to zero.

Therefore, our first hypothesis predicts that in more competitive industries, we should observe fewer takeover defenses. The reason is that, agency costs notwithstanding, higher competition forces firms in more competitive industries to avoid the costs and inefficiencies that may be associated with a more frequent use of takeover defenses. On the other hand, firms in more concentrated industries (where products are more differentiated) might be able to pass these extra costs along to the customers.

III. 1. Takeover defenses and Product Market Competition

To capture the extent of competition in the industry - the main variable of interest - we first use the industry median net profit margin (NPM). Panel B of Table 2 displays the correlations between the NPM and our three proxies for the average number of takeover defenses in an industry using the full panel sample. According to these univariate tests, the correlation of NPM with all three defense proxies is significantly negative. For example, we find a correlation of -8.4% with the Eindex (p-value of 1.7%). This suggests that at the industry-level, more competition or lower industry-median NPM is associated with more takeover defenses.

Table 3 presents corresponding multivariate results of industry-level pooled panel regressions using industry between-effects and year dummies, where the dependent variable is the average level of takeover defenses in an industry. Errors are clustered by industry as observations within an industry (through time) are not independent. The between-effects regression captures the cross-sectional variation by essentially averaging variables over the time-series by industry.

Column 1 shows that decreases in NPM are statistically significantly associated with more frequent takeover defenses. In column 2, we verify that this relation is robust to several control variables. Since these were described in the previous section, we simply summarize them here. These include controls for industry size (average Equity Value), performance (average ROA, Sales Growth) and valuation (average industry TQ). We also use controls for the presence of institutional Block Ownership, since such blockholders can facilitate takeovers (Shleifer and Vishny, 1986). In addition, we control for Institutional Ownership since such shareholders might

play a monitoring role. Finally, we also control for Dividend Yield. As can be seen, adding these controls does not change the relation between takeover defenses and NPM.[18]

According to column 2, variation in NPM across industries (using a one-standard deviation shock in NPM) can explain a difference of approximately 0.66 (=0.09 x 7.3) in the G-index levels between industries. Since the variation in the industry level G-indices is only 1.1 (see Table 2), the link between takeover defenses and NPM is economically important as well.

We also find that industries with higher dividend yields and lower institutional block ownership are associated with a higher frequency of takeover defenses. These associations are generally significant in the subsequent robustness regressions, except when using the ATI index to measure takeover defenses.

In column 3, we report results using an OLS regression and clustering the errors by industry, and column 4 reports Fama-MacBeth type regression results where the coefficients are the average of the year-by-year cross-sectional regressions and the standard error is based on the time series distribution of the coefficients (we report the t-statistics for those coefficients). Both columns use the G-index as the dependent variable. The negative coefficients on the NPM variable indicate that our first main result, that more competition is associated with more takeover defenses, holds also in the combined time-series and cross-section of industries.

In column 5, we use a more refined measure of shareholder rights proposed by Bebchuk, et al. (2004). Using this measure, denoted by E-index, we again find a negative association between takeover defenses and NPM that is significant with a p-value of 3.3%. Finally, we use the anti-takeover index (ATI) proposed in Cremers and Nair (2005) that incorporates only three of the 24 defenses. Once again, we find that firms in competitive industries have more defenses. Variation in NPM, again using a one-standard deviation shock, can explain a difference of approximately 0.3 (= 0.09 x 3.3 and 0.09 x 3.1, respectively) in the E-index and ATI between

[18] This relation is also robust to controls for industry heterogeneity in return, volatility, ROA, TQ and block ownership measured as the within-industry standard deviation in these variables. In the interests of space, these results are not reported, and are available from the authors.

industries. Since the variation in the industry-level E-index is 0.55 and in the ATI is 0.35 (see Table 2), the link between defenses and NPM is once again economically important.

Table 4 addresses some robustness concerns with our basic regression using the G-index. First, the IRRC data from which these shareholder rights indices are formed are not updated every year.[19] To ensure that our results are not driven by this, in column 1 we use only those years where IRRC updates its data. In column 2, we use industry classifications based on the 48 Fama-French industries rather than 2-digit SIC codes. We find that the negative relation between industry-level takeover defenses and NPM is robust to these changes.

The other four columns employ the Herfindahl sales-concentration index as an alternative competition proxy. A higher value of the Herfindahl index means a more concentrated industry and thus less competition. Columns 3 and 4 of Table 4 provide the results using the Herfindahl index computed using all firms in Compustat, using two-digit SIC and 48 Fama-French industry groups, respectively. In column 5, we use the Herfindahl index whose construction does not rely on Compustat data but instead uses the measure of industry concentration reported in the Census data. Since these data are available for only the manufacturing sector, the number of available observations is now lower. Also, this measure is available only for one year and, consequently, we can only test our hypothesis using OLS. Finally, in column 6, we adjust the concentration index for the number of firms in the industry and calculate the Normalized Herfindahl index for each industry, again using all firms in Compustat. This may be important as the measure of concentration as determined by the Herfindahl index can be higher either because the number of firms is lower or because there is a higher asymmetry in the market shares across firms. Across all five different specifications involving the Herfindahl concentration index, we robustly find that it has a negative coefficient. As a result, lower industry concentration (i.e., more competition) is associated with more takeover defenses.

[19] The years during which IRRC is updates are 1990, 1993, 1995, 1998, 2000, 2002. We also run OLS regressions where the variables are constructed as differences between years with updated information. This limits the sample to firms that survive the years between IRRC updating. The inferences from this regression are the same as with the fixed effect regression and confirm that at least part of the effect we are capturing is coming from firms that change their shareholder rights as opposed to new firms entering the industry.

In conclusion, the results from Tables 2, 3 and 4 provide strong evidence against our first hypothesis, that competition forces firms to reduce the use of costly or inefficient takeover defenses and predicting fewer defenses in more competitive industries.

III. 2. Changes in Takeover Defenses around Deregulation Events

One possible concern of our finding of more defenses in competitive industries is that our proxies for takeover defenses do not change frequently, as firms do not revise their charters and by-laws every year. To alleviate that concern, this subsection directly establishes that an expected change in the level of competition within an industry indeed leads firms to adjust their defenses. Specifically, we investigate the effects of eleven major deregulation events, which are taken from Harford (2005) that affect six different industries (using the 48 Fama-French industry groups).[20]

Figure 1 displays the industry average G-index around the deregulation year for the affected industries. To be consistent with the results from the previous subsection, we would expect firms to increase takeover protection in anticipation of more competition. Up to the year before the event year, all industries indeed increase their average G-index.

Consistent with our panel data results, we find that the industry median level of takeover defenses increases in anticipation of greater competition imposed exogenously by regulatory changes. On average across the eleven industries, we find that the median G-index increases by 0.235 (p-value of 0.003, assuming independence) between year -2 and year 0, where year 0 is the year of the deregulation event. This finding is robust to excluding firms that are new to the industry in the years -2 to 0.

[20] The eleven deregulation initiatives (starting with the industry they affect and the event year) are: (Banking, 1991) Federal Deposit Insurance Corporation Improvement Act; (Entertainment, Petrol and Natural Gas, Utilities, 1992) Cable Television Consumer Protection and Competition Act, Energy Policy Act, FERC Order 636; (Communications, Transportation, 1993) Elimination of State Regulation of Cellular Telephone Rates, Negotiated Rates Act; (Transportation, Banking, 1994) Trucking Industry and Regulatory Reform Act, Interstate Banking and Branching Efficiency Act; (Transportation, 1995) interstate Commerce Commission Termination Act; (Communications, Utilities, 1996) Telecommunications Act, FERC Order 888.

IV. Substitutes versus Relationships

There are two possible interpretations of our finding of more frequent takeover defenses in competitive industries. First, competition and the market for corporate control could be substitutes, and second, competitive markets could force shareholders to take into account that takeovers cause severe disruption and thus are costly to customers and employees (especially in industries with long-term relationships between those stakeholders and the firm).

The first 'substitutes' explanation is given by Holmstrom (1982), Nalebuff and Stiglitz (1983) and Hart (1983), arguing that competition leads to greater transparency and lower monitoring costs. If product market competition decreases agency costs by disciplining managers, competition can serve as a substitute for other governance mechanisms. Since strong shareholder rights (i.e., lack of takeover defenses) are less important when agency costs are lower, strong shareholder rights would then be less important in competitive markets. If the costs of strong shareholder rights are uniform across industries, this may produce a positive association between higher competition and more defenses.[21]

The second 'relationship' explanation, motivated also in the introduction, stresses the importance of the nature of the relationship between the firm and its customers (and employees), as argued by Titman (1984). In particular, it argues that the disruption caused by takeovers imposes significant costs on these stakeholders. As a result, customers would be reluctant to buy from a firm if that firm is a likely takeover target. This is particularly true in competitive markets where customers can easily find a relatively close substitute product or service of a firm with a lower takeover threat (and the associated costs for the customer). Since the firm cannot commit ex ante that it would not accept any future takeover bid given the high average premium paid (e.g., Andrade, Mitchell and Stafford, 2001), especially if its managers are less entrenched, a firm might loose customers (and hence value) if it cannot alleviate the customers concern. Thus, one possibility is to make takeovers less likely by adding takeover defenses to its charter or by-laws,

[21] More generally, the documented relation might be due to some omitted variable that is related to both shareholder rights and competition but is independent of takeovers and firm survival. As a result, competition and the market for corporate control become substitutes, as either could reduce agency costs.

which are not easy to change and thus can serve as credible commitment devices towards these stakeholders that the firm is not up for grabs. Therefore, the result of more frequent takeover defenses in competitive industries should be driven by those industries where the costs of disruption from takeovers would be most severe, i.e. in those industries with long-term relationships between the firm and these stakeholders.

In the next two subsections, we study the empirical evidence for these two explanations. We first try to directly distinguish between this 'substitutes' explanation versus our new 'relationship' account by considering the nature of the competition and by separating domestic competition from competition provided by foreign firms. If the competition is mainly by foreign firms, then any threat of disruption to long-term relationships is much weaker, as foreign firms are much less likely to domestic firms to provide a takeover threat (as documented in Rossi and Volpin (2004)). However, both domestic and foreign product market competition could serve as substitutes in Hart (1983). Using the percentage of sales in each industry that is imported as our proxy for foreign competition, we find that the documented link between more defenses and more competition exists only when we consider domestic competition, which seems inconsistent with the substitutes-explanation.

Second, we motivate why the costs of disruption from takeovers would be most severe in industries with long-term relationships of the firm and its customers and employees. We then provide direct evidence that the positive association between competition and defenses indeed only occurs in those industries that can be classified as 'relationship' industries, and show robustness to simply separating industries into those that produce durable versus non-durable goods.

IV. 1. Foreign versus Domestic Competition

Following Irvine and Pontiff (2005), our measure of foreign competition (Import) is the log of (1+imports/domestic sales), where imports are the value of shipments aggregated at the

industry level and domestic sales are sales of domestic firms. As a result, a higher level of Import indicates more competition from the foreign firms.

Consistent with our assumption that imports also provide a competitive threat in the product market, we find that our proxy for foreign competition is significantly correlated with both of the other proxies of competition, NPM and Herfindahl (not tabulated). However, in our US-based sample, only domestic firms are likely to acquire domestic firms (e.g., Rossi and Volpin, 2004). Therefore, the Import measure serves to separate other interpretations of product market competition that are unrelated to acquisitions from the acquisition-related role of product market competition (as proxied by specifically the NPM or Herfindahl measure).

Table 5, column 1 and 2 first confirms that our earlier results in Table 4 (using the NPM or Herfindahl index) holds in this smaller sample based on the NBER-CES data. Next, in column 3, the Herfindahl index is replaced by the measure of foreign competition (Import). Strikingly, we now find more competitive industries, i.e. higher Import, to be associated with *fewer* takeover defenses or a lower G-index.[22]

Therefore, the relation between the frequency of takeover defenses and competition differs across foreign and domestic competition, as proxied by Imports and NPM or the Herfindahl index, respectively. This indicates that the substitutions explanation seems unlikely.[23]

IV. 2. Costs of Disruption and Relationship Industries

Our new explanation, where shareholders optimally set the level of takeover defenses by taking into account the costs to customers caused by takeovers, has a direct implication for the

[22] A related paper on competition and governance is Kadyrzhanova (2006). While the focus there is on the bidding competition in the market for corporate control, empirically, there is a closer relation since as a proxy for bidding competition, a measure of product market competition is used. However, the measure used is quite different from the one used here since it considers concentration of the largest four firms but only if import penetration is above the sample average. When the import penetration is low, the proxy for competition is low. The empirical results are consequently different from our main result. As we show, this is expected since the relations between concentration and takeover defenses look quite different based on whether competition is domestic or foreign.

[23] If all three competition proxies (NPM, Herfindahl and Imports) are included simultaneously, their coefficients keep the same sign as in the 3 separate regressions, but only Herfindahl is (strongly) significant. This also confirms that these 3 proxies are strongly related in how they associate with defenses.

importance of the nature of the firm's relationship with its customers or employees. Specifically, it suggests that the relation between competition and defenses should be stronger in industries where the costs caused by disruptive mergers are likely to be higher.[24] The example of the takeover fight between Oracle and PeopleSoft (see the introduction) highlighted these costs, as customers of PeopleSoft worried about the future product development.

To characterize which industries are more likely to inflict higher costs on customers or employees in the case of an acquisition, we use a simple classification. We posit that when these stakeholders have longer relationships with their firms, they are more concerned about the disruption caused by mergers and acquisitions. The presence of long relationships could mean that the business depends on personal relationship between its sales force or key employees and its customers. It could also indicate that the customers face significant switching costs or learning costs for new products (e.g., Klemperer, 1987; Chevalier and Scharfstein, 1996). In all these cases, takeovers are likely to impose costs, by disrupting personal relationships or changing products and thus giving rise to switching costs. For example, mergers driven by synergistic motives directly imply at least some changes in the product mix of the merged companies, where arguably the products or organizational structure of the smaller entity (i.e., the target) would seem mostly likely to be adjusted to provide economies of scale.

We characterize industries into relationship and non-relationship industries within two-digit-SIC industry groups. The following two-digit-SIC industries are classified as relationship industries: 15-17, 34-39, 42, 47, 50-51, 55, 60-65, 67, 75-76, and 87 (Appendix 1) contains a short description of those industries). Broadly, relationship industries are likely to operate in the service sector or the durable goods sector. Industries that provide longer-term services have an ongoing relationship with the client and hence are relationship-based. The software industry in which firms such as Oracle and PeopleSoft operate is an example. Industries that sell durable

[24] This argument is similar to Titman (1984), who predicts that firms optimally choose to have a lower leverage if customers care about firm survival. High leverage would scare away customers because of the future possibility of default and this in turn would reduce firm value today. Similar to Titman (1984), the customers concern for product or firm survival are more important if the customer requires future service or maintenance of the product or if there is a valuable relationship built between the customer and vendor. Such cross-sectional prediction is not expected by Hart (1983).

goods are also likely to deal with the customer again, for either maintenance of servicing reasons. Prior literature has used this feature to argue that customers in durable industries are forward looking (see e.g. Chevalier and Goolsbee, 2005).[25] An example is the auto industry – as is confirmed by a recent article in the Wall Street Journal (Dec. 27, 2005) that reports that "only 26% of those polled in a recent survey said they would purchase or lease a new car from an auto maker that had declared bankruptcy."[26] Our classification also overlaps with Titman and Wessels' (1988) who classify manufacturing firms in the 3400-4000 SIC codes as firms producing goods that require future, specialized service or spare parts.

We first use this classification to investigate if the sales drop associated with unsolicited takeovers (as discussed in the introduction of the paper) is stronger in relationship industries. We collect a sample of unsolicited takeover bids from SDC for the years 1990-2004. We keep only events where the takeover bid is indicated to be unsolicited (i.e., bids classified as 'neutral' or 'hostile' in SDC), and where both bidder and target are publicly traded firms with data available in Compustat. In this sample of 404 unsolicited bids, 187 target firms belong to industries classified as relationship-based. Changes in target firm sales are tracked for five quarters around the takeover announcement and adjusted at either the two-digit or the four-digit SIC industry level. Since these takeovers are unsolicited, it is unlikely that the information of the takeover is leaked to the market ahead of the announcement. Therefore, sales changes in the quarter of the announcement indicate changes associated due to the takeover announcement.[27] We find that the drop in sales (adjusted for four-digit SIC industry groups) between the quarter that precedes the takeover announcement and the quarter of the takeover announcement equals 10% in relationship industries and is significant at the 1% level (see Table 6 and Figure 2). The analogous drop in

[25] At the same time, there are some durable goods where the customers are not likely to interact with the firm once the purchase has been made, and hence are less likely to be 'relationship industries'.

[26] Interestingly, based on our classification, the level of debt in relationship industries is significantly lower than the level of debt in non-relationship industries. See Titman (1984) and Campello and Fluck (2005) for more evidence on how firm survival affects capital structure decision.

[27] A potential concern with these changes might be that they are driven due to loss in employees, or due to managerial inattention to operations rather than customer loss. We partly mitigate this by showing that the results are stronger in industries where customer concerns for firm survival are higher. Additionally, this concern might also be less important if it might be easier to write termination contracts with employees than with customers.

non-relationship industries is only 4% and is not significant.[28] While the sales drop could come from existing customers switching or potential new customers not buying given the takeover threat, the assumption that customers' buying decisions are affected by firm and product survival in a takeover situation – especially in relationship industries - is confirmed.

Next, we test whether the link between competition and takeover defenses documented earlier is stronger in such relationship industries. To investigate this, we add two regression variables to the basic industry-level regressions reported earlier in Tables 3 and 4. The first is an interaction term between the competition proxies and a dummy signifying whether the industry is a relationship industry or not, and the second is the relationship industry dummy by itself. The results are presented in Table 7.

The first three specifications use NPM as a proxy for competition. Regression 1 reports that it is only in relationship industries, where customers are more likely to care about firm survival, that more competition (i.e., lower NPM) is associated with weaker shareholder rights. Moreover, the relationship industry dummy itself has a positive and significant coefficient, indicating that firms in those industries adopt more defenses regardless of the level of competition. Regression 2 confirms this finding using only those years where the IRRC data is updated.[29] Strikingly, in both regressions there is no significant relation at all between the level of competition and the number of defenses for the non-relationship industries.

Regression 3 uses an alternative classification of industries to proxy for where the costs of disruption from takeovers are highest. It is based on Yogo (2005), who classifies firms into durable and non-durable industries using only industries in the manufacturing and the retail sector. Using this alternative classification of relationship industries as a robustness test, the negative association between NPM and defenses exists again only in durable industries, i.e., where customers are more likely to care about firm survival.

[28] This drop in firm sales is robust to adjustments using a matched firm methodology based on size and industry.

[29] We also perform the robustness tests shown earlier that use a census based Herfindahl measure and a normalized Herfindahl measure and find similar results that, in the interests of space, are omitted.

Regressions 4 – 6 repeat the first three regressions using Herfindahl rather than NPM as our proxy for competition. We again find that more competition is only related to more defenses in relationship (or durable goods) industries. There is even evidence of the opposite result for firms in concentrated, non-relationship industries.[30] This would imply that customers could benefit from a takeover in competitive, non-relationship industries, for example due to synergies that result in improved products. The synergistic benefits are more likely to be shared with customers if there is competitive price pressure and the firm does not have a set of customers that is 'locked in' because of switching costs (or benefits of relationships).

The positive coefficient on the Herfindahl index for non-relationship industries is hard to reconcile with the hypothesis that competition is a substitute for other governance mechanisms. Even if competition works better as a substitute for governance in relationship industries, this would imply that competition would be less effective in non-relationship industries. However, it would not suggest that competition becomes a complement mechanism to governance, as the data implies.

IV. 3. Firm-Level Analysis

Thus far we have performed industry level analyses to test the hypotheses. In Table 8, we provide additional evidence using firm level data on takeover defenses. In addition, the firm level analysis allows us to test whether firms that are more likely takeover targets, display a higher level of takeover defenses – but more so in industries where customers are predicted to benefit from such takeover defenses.

An important explanatory factor for becoming a takeover target is firm size (e.g., Cremers, Nair and John, 2005). Smaller firms are more likely to be taken over than large ones. In Table 8, we use firm level data and investigate whether smaller firms in more competitive industries are more likely to have strong takeover defenses. We find that the coefficients on the interaction variable between our small firm size dummy (equal to one if the market value of the

[30] The same applies in Regression 3 using NPM with the alternative durable goods industry classification.

firm is below the sample median) and NPM (or Herfindahl) are significantly negative. This finding supports our hypothesis to the extent that size is a proxy for becoming a target. Interestingly, the relation between NPM (or Herfindahl) and Gindex is positive and marginally significant for large firms, i.e., firms that are more likely to be bidders. Bidders seem less likely to impose switching costs on their customers and thus takeover defenses might not be optimal for such firms given the average association between defenses and firm performance documented in Gompers et al. (2003).

Further support for the 'relationship' hypothesis comes from the addition of the relationship industry variable in the second and forth columns. In relationship industries the correlation between competition and takeover defenses is clearly strongest for small firms. Indeed, this relation is significantly stronger for relationship industry firms than for non-relationship industry firms. Unless one argues that the takeover probability of small firms in relationship industries is significantly higher than in non-relationship industries, this finding also alleviates the concern that the level of takeover defenses is purely endogenous and thus merely measures the probability of a takeover in our analysis.[31]

Going back to the industry deregulation event study in section III.2, we also examine which firms are most likely to change their charters or bylaws before the industry deregulation events. We would expect that firms exposed to higher takeover threats after the deregulation are more likely to change their takeover provisions ex ante.

In the eleven industries we find that smaller firms increase their takeover defenses more than large firms in anticipation of greater competitive pressure (not tabulated to conserve space). Of the 763 firms that exist in the year of the deregulation, we classify small firms as those with below industry median book value of assets among the sample firms in a given year. For example, the increase in average G-index from four years prior to the deregulation to the year of the deregulation is 0.99 (0.38) among small (large) firms. This average is based on the six events for

[31] Additionally, in unreported results, we find that mergers and acquisitions are not more likely to happen in relationship industries (using the sample from Cremers, Nair and John (2005)).

which we have data four years prior to the event. The change in the two years prior (for ten events) to the event is 0.46 (0.08). This difference is significant with a p-value of 0.03 based on a mean comparison test assuming unequal variances between the two samples (but assuming independence). This conclusion is true even if we restrict our sample to firms that survive the two years prior to the deregulation, suggesting that existing firms adjust their charters and bylaws in anticipation of the change in competition.

If we further divide the industries into relationship and non-relationship industries, we again find a larger effect in relationship industries. Specifically, the biggest increase in takeover defenses among the small-relationship industry firms (0.611, p-value of 0.000). Second are small firms in non-relationship industries (0.203, p-value 0.048), then large firms in non-relationship industries (0.053, p-value 0.381) and finally, large firms in relationship industries (-0.063, p-value 0.635). While these results support the general findings from the firm-level panel data analysis, they are based on only few industries and the events are not independent. Thus, these results should be interpreted with caution.

V. Implications for Performance

This section investigates the association between takeover defenses, profitability and firm value. Using accounting measures of profitability and Tobin's Q as proxies for performance and firm value, respectively, previous research documented some evidence that weak shareholder rights is associated with poor performance (Gompers, Ishii and Metrick, 2003 and Cremers and Nair, 2005). However, our hypothesis suggests that those firms where shareholders would be most likely to optimally decide to have more takeover defenses (i.e., in competitive, relationship industries) should in fact not be less profitable. While there might be costs associated with weak governance, we would at least expect to find the previously documented relation between poor performance and weak governance (i.e., more defenses) to be driven by firms in concentrated and non-relationship industries.

V.1. Firm-Level Profitability, Competition and Takeover Defenses

We use two firm-level measures of profitability that are directly related to product market performance, namely the firm-level return on assets (ROA) and the firm-level net profit margin (NPM). ROA is defined as net income divided by total book value of assets and NPM is defined as income before extraordinary items available for common equity divided by sales.[32] Using these two measures, we compare the performances of firms with strong and weak shareholder rights. Following the cutoffs in Gompers et al. (2003), firms with G>13 are characterized as firms with many takeover defenses (weak shareholder rights) and firms with G<6 are characterized as having few takeover defenses (strong shareholder rights).

In Table 9, we document some preliminary findings using univariate statistics. We first note a finding that is consistent with the results documented in earlier studies. Within concentrated industries firms with fewer takeover defenses perform better than firms with more defenses. However, the difference in average performance is only significant using the Herfindahl index as a concentration measure and firm level NPM as a performance measure (panel B).

Moreover, in competitive industries, firms with more takeover defenses are associated with better performance than firms with fewer defenses. As shown in panel A, the differences in average ROA between firms with many versus few takeover defenses is 1.2% or 0.8%, using NPM or the Herfindahl Index as concentration measures, respectively (both are significant at the 10% level). Similarly in panel B, the difference in the average NPM between firms with many versus few takeover defenses is 1.8% or 1.24%, using NPM or the Herfindahl Index, respectively (significant at the 10% and 5% level, respectively).

Next, we test these performance implications using a multivariate analysis. We estimate firm–level pooled panel regressions with firm-fixed effects, where the dependent variable is either firm-level ROA or NPM and the independent variables include, among others, an interaction term between the number of takeover defenses and a dummy variable signifying whether the firm is in a competitive industry.

[32] We curtail NPM at the 1- and 99-percentile.

Table 10 presents the results, using industry-level NPM as a proxy for competition in Panel A and using the Herfindahl Index in Panel B. We find a negative and significant coefficient of the level of takeover defenses only in concentrated industries. For example, using Herfindahl (industry-median NPM) as a proxy, the regression implies that in concentrated industries an increase in takeover defenses from G = 5 to G = 15 is associated with an *decrease* of 4% (2%) in terms of ROA and 3% (1%) in terms of firm-level NPM. However, firms in competitive industries do not display such underperformance associated with more takeover defenses. This is because the coefficient on the interaction term between takeover defenses and below-median Herfindahl (or NPM) is of the opposite sign and of a similar magnitude as the coefficient on takeover defenses. In fact, in some specifications we even find that firm level profitability in competitive industries increases significantly with more takeover defenses as indicated by the significant F-tests.[33]

Regressions 3 and 6 include a triple interaction of the relationship-industry dummy with the levels of takeover defenses and competition. In a competitive environment, firm performance in relationship industries is even more likely to benefit from more takeover defenses, as evidenced by the significantly positive interaction coefficients.

V.2. Firm-Level Tobin's Q, Competition and Takeover Defenses

Table 11 presents the same regressions as in Table 10 using Tobin's Q as a dependent variable.[34] Gompers et al. (2003) find a significantly negative association between takeover defenses and Tobin's Q. Using either Herfindahl or the industry-median NPM as proxies for competition, we find that this relation is only significant for firms in concentrated industries. This lends further support to our 'relationship' hypothesis since shareholders would optimally choose to have more takeover defenses in such industries in order to attract more business. In line with

[33] The F-test asks whether the sum of the coefficients on Gindex and the interaction term with the dummy variable indicating a competitive industry is significantly different from zero.

[34] Interpreting the results based on Q is more problematic in our setting since a firm's Q is a function of the cost of capital, which itself might be related to the level of takeover defenses (see, e.g., Cremers, Nair and John, 2005).

the accounting performance results in the previous subsection, we again find that firms in relationship industries seem to benefit most from more defenses.

In conclusion, both the accounting performance and the firm-value regressions provide evidence that some firms may benefit from having more takeover defenses, namely those firms that are part of competitive industries and deliver products or services that are relationship based. This is broadly supportive of the 'relationship' explanation rather than of the 'substitutes' hypothesis for the main empirical result in our paper, that the level of competition and defenses have a positive association.

Further, the findings in this section are also useful in evaluating the merits of the concerns about reverse causality, wherein the most profitable firms (or earlier, firms in the most competitive industries) increase takeover defenses to protect themselves. The results of Gompers et al. (2003) who document that firms with more takeover defenses have generally lower performance and firm value (i.e., unconditional on the level of competition) help us to reject the reverse causality argument, as do the results for the relationship industries.

VI. An Extension: The Design of Governance

We have documented several strands of evidence in favor of the view that takeover defenses can have a beneficial impact on firm performance in competitive industries where customers care about firm survival. In those specific industries, by optimally choosing more takeover defenses (i.e., weak shareholder rights), the firm is less likely to be acquired and is hence more likely to survive. However, in the presence of significant agency costs, it might be the case that firm survival itself depends on the extent to which shareholders can control potentially entrenched managers.

Therefore, it is important to address how shareholders can still discipline the manager while maintaining a higher level of takeover defenses. Or equivalently, do more takeover defenses always imply weaker shareholder governance? Of course, among the different mechanisms that shareholders can use to discipline managers, shareholder rights provisions in the

corporate charter are only one possible mechanism. An example of such an alternative mechanism that does not expose the firms to takeovers is stock-based compensation.[35]

As a result, in those special cases where shareholder rights are optimally weak (i.e., more takeover defenses are optimal), shareholders might use a higher level of stock-based compensation to ensure managerial alignment with shareholder interests. Consequently, we investigate if competitive industries are associated not only with more takeover defenses but also with higher performance-based pay. To characterize the level of performance-based compensation, we use the ratio of equity compensation to the total compensation of the CEO from the ExecuComp database in Compustat. We compute the average performance-based pay in each industry and investigate if the average performance-based pay is lower in concentrated industries.[36]

Indeed, as shown in Table 12 (columns 1 and 3), the fraction of equity compensation is higher in competitive industries, while significantly so only if we use Herfindahl as a concentration measure. Most interestingly, this relation is much stronger in relationship industries. Using the Herfindahl index as the proxy for competition, the positive relation between equity incentive pay and competition is three times as strong in relationship industries as in non-relationship industries.

In sum, industries that we predict to benefit from more frequent takeover defenses appear to be accompanied by a higher level of stock-based compensation. To the extent such performance-based pay is viewed as a device to align managers' interests with shareholders', we do not expect dramatic misalignment between managers and shareholders, despite weaker shareholder rights.

[35] In the presence of a high performance based pay, managers would have a lower incentive to divert corporate resources.

[36] Cunat and Guadalupe (2005) find evidence that an increase in product market competition is accompanied by an increase in the pay-for-performance sensitivity using UK data.

VII. Conclusion

Several proponents of shareholder activism have advocated strengthening shareholder rights, making firms more vulnerable to takeovers and the discipline imposed by the market for corporate control (see, e.g., Bebchuk, 2005). However, these arguments ignore the implications of such vulnerability to the market for corporate control on customer and employee decisions. If customers are less likely to consume products from a firm whose future existence is uncertain or if employees are more reluctant to be employed there, such strong shareholder power could have a detrimental impact on firm performance. This is particularly important in those industries where the costs of disruption from takeovers are highest, such as industries characterized by long-term relationships between the firms and its customers and employees.

While fewer takeover defenses (i.e., stronger shareholder power) can make the firm less attractive to customers or employees, it may make synergistic, value-increasing mergers more likely. Therefore, shareholders face a trade-off between the advantages and disadvantages of takeover defenses. We hypothesize that it is optimal to have more takeover defenses in competitive markets. This result arises because the customer loss resulting from takeover threats is more severe in competitive markets. In addition, such greater loss of market share in competitive industries lowers any synergies from the acquisition and hence reduces the potential benefit to the target of having strong shareholder rights. These effects should be stronger in industries where the customer requires future service or product development in order to get the full benefit of the product (i.e., the 'relationship' industries).

The paper documents several results. First, we find that firms in more competitive environments (as measured by the industry-average net profit margin and the Herfindahl index) have more takeover defenses. Second, the documented link between takeover defenses and competition exists only when we consider domestic competition. Since foreign competition is not likely to provide a takeover threat (Rossi and Volpin, 2004), we view this finding as further evidence of the importance of the takeover channel rather than of the agency framework of e.g., Hart (1983). Third, we document that the link between takeover defenses and industry

concentration is stronger in relationship or durable goods industries. Fourth, we find that the drop in quarterly sales around takeover announcements is 10% and is significant only in such relationship industries. Finally, we find takeover defenses to be associated with poor profitability and lower valuation, but only for firms in concentrated industries.

The importance of taking into account customer concerns when designing shareholder power has implications beyond vulnerability to the market for corporate control and bears more generally on the mix between different corporate governance mechanisms. Specifically, and especially in competitive relationship industries, governance mechanisms that alleviate agency conflicts between managers and shareholders should focus on threatening managerial survival without threatening firm survival. Thus, in those industries where firm survival is important for customer (and employee) choices, governance is more likely to be based on internal mechanisms such as monitoring and incentives rather than through takeover threats. We document evidence consistent with this view, and show that in conditions where weak shareholder rights are justified, we also find high stock based compensation. Specifically, we find that stock based compensation is higher in competitive environments with higher domestic competition and relationship products. By showing the importance of product markets in the design of governance, we hope to have made a first step in understanding the limitations of strong shareholder power.

References

Alchian, Armen A., (1950), "Uncertainty, Evolution, and Economic Theory", *Journal of Political Economy*, 58-3, 211-221.

Allen, Franklin, Carletti, Elena and Marquez, Robert S., (2007), "Stakeholder Capitalism, Corporate Governance and Firm Value", Working Paper.

Andrade, Gregor, Mark L. Mitchell, and Erik Stafford (2001), "New evidence and perspectives on mergers", *Journal of Economic Perspectives* 15, 103-120.

Arlen, Jennifer, (2006), "Regulating post-bid embedded defenses: Lessons from Oracle versus PeopleSoft, *Harvard Negotiation Law Review*, 1-24.

Bebchuk, Lucian. A., (2005), "The Case for Increasing Shareholder Power", *Harvard Law Review*, 118-3, 833-913.

Bebchuk, Lucian A., Cohen, Alma and Ferrell, Allen (2004), "What Matters in Corporate Governance?", Harvard Law School John M. Olin Center Discussion Paper No. 491.

Becht, Marco, Patrick Bolton and Ailsa Roell, (2003), "Corporate Governance and Control", The Handbook of the Economics of Finance, edited by George Constantinides, Milton Harris and Rene Stulz, North-Holland.

Campello, Murillo and Zsuzsanna Fluck, (2005), "Product Market Performance, Switching Costs, and Liquidation Values: The Real Effects of Financial Leverage", Working Paper.

Carlton, D. W., and J. M. Perloff, (1989), *Modern industrial organization*. Glenview, IL: Scott, Foresman.

Chevalier, Judith, (1995), Debt and product market competition: Local market entry, exit, and expansion decisions of supermarket chains", *American Economic Review*, 85, 415-435.

Chevalier, Judith and Austan Goolsbee, (2005), "How do consumers make durable goods purchase decisions? Demand for college textbooks" Working Paper.

Chevalier, Judith and David Scharfstein, (1996), "Capital-Market Imperfections and Countercyclical Markups: Theory and Evidence", *American Economic Review,* 86, 703-725.

Cremers, K.J.M. and V.B. Nair, (2005), "Governance Mechanisms and Equity Prices", *Journal of Finance*, 60, 6, 2859-2894.

Cremers, K.J.M., V.B. Nair and K. John, (2005), Takeovers and the Cross-Section of Stock Returns, Working Paper.

Cunat, V., and M. Guadalupe (2005), "How Does Product Market Competition Shape Incentive Contracts?" *Journal of the European Economic Association* 3, 1058-1082.

Daines, Rob, Davina Drabkin, and Vinay Nair, (2005), "Oracle's hostile takeover of PeopleSoft", Stanford Business School Case CG-4.

Domowitz, Ian, Glenn Hubbard, and Bruce Petersen, (1988), "Market Structure and Cyclical Fluctuations in U.S. Manufacturing", *Review of Economics and Statistics*, 70/1, 55-66.

Economic Census, (1992), U.S. Census Bureau, http://www.census.gov/epcd/www/92result.html.

Fama, E. F., and K. R. French, (1997), "Industry Costs of Equity," *Journal of Financial Economics*, 93, 153- 194.

Fee, Edward, Charles Hadlock, and Shawn Thomas, (2006), "Corporate Equity Ownership and the Governance of Product Market Relationships", forthcoming *Journal of Finance*.

Feenstra, Robert C., (1996), "U.S. Imports, 1972-1994: Data and Concordances," NBER Working Paper 5515.

Gompers, P.A., J.L. Ishii, and A. Metrick, (2003), "Corporate governance and equity prices," *Quarterly Journal of Economics*, Vol. 118.

Hart, Oliver, (1983), "The Market Mechanism as an Incentive Scheme," *Bell Journal of Economics*, 14-2, 366-382.

Holmstrom, Bengt, (1982), "Managerial Incentive Problems--A Dynamic Perspective," Republished in *Review of Economic Studies* 66 (1999): 169-82.

Houston, Joel F. , Christopher M. James, and Michael D. Ryngaert, (2001), "Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders," *Journal of Financial Economics* 60, 285-331

Irvine, Paul and Jeffrey Pontiff, (2005), "Idiosyncratic Return Volatility, Cash Flows, and Product Market Competition," Working Paper.

Klemperer, Paul, (1987), "Markets with Consumer Switching Costs", *Quarterly Journal of Economics*, 102, 375-94.

Kadyrzhanova, Dalida, (2006), "Does Governance Pay, or is Entrenchment the Way? Merger Gains and Antitakeover Provisions", Working paper.

Lerner, A., (1934), "The concept of monopoly and the measurement of monopoly power." *Review of Economic Studies* 1 (June): 157-73.

Machlup, F., (1967), "Theories of the Firm: Marginalist, Behavioral, Managerial." *American Economic Review*, 57, 1-33.

Maksimovic, V., and S. Titman, (1991), "Financial Policy and Reputation for Product Quality," *Review of Financial Studies*, 4, 175-200.

Nalebuff, B. and J. Stiglitz, (1983), "Information, competition, and markets" *American Economic Review*, 73(2): 278-283.

Perez-Gonzales, Francisco and Maria Guadalupe, (2005), "The Impact of Product Market Competition on Private Benefits of Control", Working Paper.

Phillips, G., (1995), "Inscreased Debt and Industry Product Markets: An Empirical Analysis", *Journal of Financial Economics*, 37, 189-238.

Rossi, Stefano and Volpin, Paolo, (2004), "Cross-Country Determinants of Mergers and Acquisitions", *Journal of Financial Economics*, 74, 277-304.

Scharfstein, D., (1988), "Product Market Competition and Managerial Slack," *Rand Journal of Economics*, 19, 147-155.

Shleifer, Andrei and Robert Vishny, (1986), "Large Shareholders and Corporate Control," *Journal of Political Economy*, 94, 461-488.

Shleifer, Andrei and Robert Vishny, (1997), "A Survey of Corporate Governance," *Journal of Finance*, 52, 737-783.

Stigler, George, (1958), "The economies of scale," *Journal of Law and Economics* 1, 54-71.

Titman, Sheridan, (1984), "The Effect of Capital Structure on a Firm's Liquidation Decision," *Journal of Financial Economics* 13, 137-151.

Titman, Sheridan, and Roberto Wessels, (1988), "The determinants of capital structure choice," *Journal of Finance* 43, 1-19.

Appendix 1 - Relationship Industries

The following table contains the description of the relationship industries. The industry classification is based on the two-digit SIC code. The detailed description is from the webpage of the U.S. Department of Labor at http://www.osha.gov/pls/imis/sic_manual.html.

SIC code	Industry	Detailed description
15	Building construction – general contractors and operative builders	This major group includes general contractors and operative builders primarily engaged in the construction of residential, farm, industrial, commercial, or other buildings. General building contractors who combine a special trade with the contracting are included in this major group.
16	Heavy construction other than buildings construction – contractors	This major group includes general contractors primarily engaged in heavy construction other than building, such as highways and streets, bridges, sewers, railroads, irrigation projects, flood control projects and marine construction, and special trade contractors primarily engaged in activities of a type that are clearly specialized to such heavy construction and are not normally performed on buildings or building-related projects. Specialized activities that are covered here include grading for highways and airport runways; guardrail construction; installation of highway signs; trenching; underwater rock removal; and asphalt and concrete construction of roads, highways, streets and public sidewalks.
17	Construction – Special trade contractors	This major group includes special trade contractors who undertake activities of a type that are specialized either to building construction, including work on mobile homes, or to both building and nonbuilding projects. These activities include painting (including bridge painting and traffic lane painting), electrical work (including work on bridges, power lines, and power plants), carpentry work, plumbing, heating, air-conditioning, roofing, and sheet metal work.
34	Fabricated metal products	This major group includes establishments engaged in fabricating ferrous and nonferrous metal products, such as metal cans, tinware, handtools, cutlery, general hardware, nonelectric heating apparatus, fabricated structural metal products, metal forgings, metal stampings, ordnance (except vehicles and guided missiles), and a variety of metal and wire products, not elsewhere classified.
35	Industrial machinery and equipment	This major group includes establishments engaged in manufacturing industrial and commercial machinery and equipment and computers. Included are the manufacture of engines and turbines; farm and garden machinery; construction, mining, and oil field machinery; elevators and conveying equipment; hoists, cranes, monorails, and industrial trucks and tractors; metalworking machinery; special industry machinery; general industrial machinery; computer and peripheral equipment and office machinery; and refrigeration and service industry machinery. Machines powered by built-in or detachable motors ordinarily are included in this major group, with the exception of electrical household appliances. Power-driven handtools are included in this major group, whether electric or otherwise driven.
36	Electronic and other electric equipment	This major group includes establishments engaged in manufacturing machinery, apparatus, and supplies for the generation, storage, transmission, transformation, and utilization of electrical energy. Included are the manufacturing of electricity distribution equipment; electrical industrial apparatus; household appliances; electrical lighting and wiring equipment; radio and television receiving equipment; communications equipment; electronic components and accessories; and other electrical equipment and supplies. The manufacture of household appliances is included in this group.
37	Transportation equipment	This major group includes establishments engaged in manufacturing equipment for transportation of passengers and cargo by land, air, and water. Important products produced by establishments classified in this major group include motor vehicles, aircraft, guided missiles and space vehicles, ships, boats, railroad equipment, and miscellaneous transportation equipment, such as motorcycles, bicycles, and snowmobiles.

38	Instruments and related products	This major group includes establishments engaged in manufacturing instruments (including professional and scientific) for measuring, testing, analyzing, and controlling, and their associated sensors and accessories; optical instruments and lenses; surveying and drafting instruments; hydrological, hydrographic, meteorological, and geophysical equipment; search, detection, navigation, and guidance systems and equipment; surgical, medical, and dental instruments, equipment, and supplies; ophthalmic goods; photographic equipment and supplies; and watches and clocks.
39	Miscellaneous manufacturing industries	This major group includes establishments primarily engaged in manufacturing products not classified in any other manufacturing major group. Industries in this group fall into the following categories: jewelry, silverware, and plated ware; musical instruments; dolls, toys, games, and sporting and athletic goods; pens, pencils, and artists' materials; buttons, costume novelties, miscellaneous notions; brooms and brushes; caskets; and other miscellaneous manufacturing industries.
42	Motor freight transportation and warehousing	This major group includes establishments furnishing local or long-distance trucking or transfer services, or those engaged in the storage of farm products, furniture and other household goods, or commercial goods of any nature. The operation of terminal facilities for handling freight, with or without maintenance facilities, is also included.
47	Transportation services	This major group includes establishments furnishing services incidental to transportation, such as forwarding and packing services, and the arrangement of passenger and freight transportation.
50	Wholesale trade – durable goods	This major group includes establishments primarily engaged in the wholesale distribution of durable goods.
51	Wholesale trade – nondurable goods	This major group includes establishments primarily engaged in the wholesale distribution of non-durable goods.
55	Automotive dealers and gasoline service stations	This major group includes retail dealers selling new and used automobiles, boats, recreational vehicles, utility trailers, and motorcycles including mopeds; those selling new automobile parts and accessories; and gasoline service stations. Automobile repair shops maintained by establishments engaged in the sale of new automobiles are also included.
60	Depository institutions	This major group includes institutions that are engaged in deposit banking or closely related functions, including fiduciary activities.
61	Nondepository credit institutions	This major group includes establishments engaged in extending credit in the form of loans, but not engaged in deposit banking.
62	Security and commodity brokers, dealers, exchanges, and services	This major group includes establishments engaged in the underwriting, purchase, sale, or brokerage of securities and other financial contracts on their own account or for the account of others; and exchanges, exchange clearinghouses, and other services allied with the exchange of securities and commodities.
63	Insurance carriers	This major group includes carriers of insurance of all types, including reinsurance.
64	Insurance agents, brokers and services	This major group includes agents and brokers dealing in insurance, and also organizations offering services to insurance companies and to policy holders.
65	Real estate	This major group includes real estate operators, and owners and lessors of real property, as well as buyers, sellers, developers, agents, and brokers.
67	Holding and other investment offices, except trusts	This major group includes investment trusts, investment companies, holding companies, and miscellaneous investment offices.
75	Automotive repair, services, and parking	This major group includes establishments primarily engaged in furnishing automotive repair, rental, leasing, and parking services to the general public. Similar facilities owned and operated by concerns for their own use and not for the general public are treated as auxiliary establishments.
76	Miscellaneous repair services	This major group includes establishments engaged in miscellaneous repair services.
87	Engineering, accounting, research, management, and related services	This major group includes establishments primarily engaged in providing engineering, architectural, and surveying services; accounting, auditing, and bookkeeping services; research, development, and testing services; and management and public relations services.

Table 1
Sales Changes Associated with Takeovers

This table presents the average sales growth around takeover announcements using quarterly data from 1991 - 2004 using Compustat sales data. The total number of unsolicited (i.e., hostile or neutral) takeover announcements (from the SDC database) equals 404. We give the average sales growth ('Average') and the t-statistic of the average ('T-stat'). We adjust for 2-digit and 4-digit industry classifications by deducting the growth of the average sales in the industry in panels A and B, respectively. Finally, 'Quarter 0' gives the sales growth after the announcement, 'Quarter -1' is the sales growth in the quarter before. For comparison and robustness, we also present the numbers for the two quarters before and after these.

Panel A. Sales growth, adjusted for 4-digit SIC industries

Quarter	*Average sales growth*	*T-stat*
-2	0.01	0.18
-1	-0.04	-0.97
0	**-0.07**	**-1.78**
1	-0.01	-0.29
2	-0.05	-1.04

Panel B. Sales growth, adjusted for 2-digit SIC industries

Quarter	*Average sales growth*	*T-stat*
-2	-0.05	-1.62
-1	-0.01	-0.26
0	**-0.07**	**-2.23**
1	0.04	1.24
2	-0.08	-2.36

Table 2
Industry Level Univariate Statistics and Correlations

The table presents univariate statistics and correlations for equally-weighted averages at the industry level using firms between 1990 and 2003. Industries are defined as the two-digit SIC. G-index is the governance index based on IRRC data and is constructed following Gompers, Ishii and Metrick (2003) based on 24 anti-takeover provisions. E-index is the entrenchment index of Bebchuk, Cohen, and Ferrell (2004), which is based on staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, and supermajority requirements for charter amendments, and two "takeover readiness" provisions that boards put in place to be ready for a hostile takeover (poison pills and golden parachutes). The ATI governance index is using three common anti-takeover provisions that create significant obstacles for takeovers: preferred blank check, staggered boards, and restrictions on calling special meetings and action through written consent. The equally-weighted average per industry of the G, E and ATI-indices are computed based on firms with available information only and assessed in 1990, 1993, 1995, 1998, 2000, and 2002. We assume no change for years where the provisions are not updated. Herfindahl-index is based on sales of all firms with data available in Compustat: $H = \sum_{i=1}^{n} (\Pi_i)^2$, where Π_i is the market share of company *i* and *n* is the number of firms in the industry. The Normalized Herfindahl-index is defined as (n x herf – 1)/(n – 1). Net profit margin (NPM) is defined following Gompers, Ishii and Metricks (2003) as income before extraordinary items available for common equity divided by sales (Compustat items #237/#12). The industry/year level variable is the median net profit margin of the firms in the industry in a particular year. Panel A shows univariate statistics. Panel B contains the piece-wise correlation coefficients and their p-value underneath.

Panel A: Univariate statistics

Industry Level Variables	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Gindex	873	9.11	1.11	5	14
Eindex	873	2.08	0.55	0	5
ATI	873	1.77	0.35	0.5	3
Net Profit Margin	873	0.04	0.09	-0.59	0.64
Herfindahl	873	0.21	0.24	0.01	1
Normalized Herfindahl	873	0.14	0.15	0.00	0.98

Panel B: Pair-wise correlation coefficients and p-value (underneath)

Industry Level Variables	*Gindex*	*Eindex*	*ATI*	*NPM*	*Herf.l*
Eindex	0.681				
	0.000				
ATI	0.537	0.560			
	0.000	0.000			
NPM	-0.049	-0.084	-0.087		
	0.016	0.017	0.013		
Herfindahl	-0.082	-0.046	-0.086	-0.034	
	0.019	0.019	0.015	0.307	
Normalized Herfindahl	0.013	-0.063	0.017	0.053	0.966
	0.701	0.072	0.632	0.120	0.000

Table 3
Industry Level Shareholder Rights and Industry Concentration

The table displays coefficients and p-values of pooled panel regressions with industry-between effects (BE) and year-dummies. Errors are clustered at the industry level. Regression three is an ordinary least squares (OLS) regression using the panel data and clustering the errors by industry. Regression four is a Fama-MacBeth type regression where coefficients are based on the average of year-by-year cross-sectional OLS regressions. The t-statistics are based on the standard errors of the 14 annual observations. Industry is defined at the two-digit SIC code. All variables are equally-weighted at the industry level using firms between 1990 and 2003. The dependent variables are the industry average G-index, the entrenchment E-index, and the anti-takeover index (ATI). See Table 2 for a description of these indices and the Herfindahl-index. Equity Value is the average of the market value of equity of all firms in a particular industry in a particular year, measured in millions. TQ is the average Tobin's Q computed as market value of equity + book value of assets – book value of equity – deferred taxes divided by book value of assets. If deferred taxes are missing then it is set to zero. TradingVolume is the average trading volume divided by the number of shares outstanding over the past five years. Prior Return is the average monthly return over the five years prior to the fiscal year end. ROA is the average return-on-assets calculated as net income divided by book value of assets. Sales Growth is the average growth of sales in the prior five years. Dividend Yield is the average dividend-to-share price ratio at fiscal year end. Institutional Ownership is the average fraction of shares owned by institutional owners as identified by 13-D filings. Block Ownership is the average fraction of shares held (in percent) by the largest institutional owner. The block ownership is measured in the 4th quarter of the prior fiscal year. The R-square reported is the between r-square.

Industry Level Variables	*Gindex*		*Gindex*		*Gindex*		*Gindex*		*Eindex*		*ATI*	
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
NPM	-4.883	0.057	-7.287	0.026	-2.814	0.055	-4.638	0.000	-3.288	0.033	-3.149	0.009
Equity Value			0.000	0.593	0.000	0.474	0.001	0.396	-0.051	0.003	0.000	0.216
TQ			0.270	0.393	0.178	0.020	0.165	0.091	0.102	0.492	0.116	0.311
TradingVolume			-4.246	0.461	-1.657	0.232	-1.893	0.254	-1.323	0.626	-0.747	0.720
Prior Return			7.297	0.798	9.043	0.157	5.831	0.304	-18.914	0.163	-0.495	0.962
ROA			-0.398	0.900	-0.728	0.411	-0.889	0.216	0.621	0.677	1.397	0.224
Sales Growth			-0.056	0.544	-0.066	0.006	-0.049	0.062	0.006	0.881	-0.025	0.458
Dividend Yield			37.027	0.078	20.734	0.000	26.641	0.002	18.324	0.065	11.430	0.132
Institutional Ownership			1.640	0.450	0.776	0.186	0.829	0.168	1.205	0.241	-0.767	0.330
Block Ownership			-0.137	0.014	-0.044	0.002	-0.060	0.000	-0.068	0.010	-0.006	0.762
Regression type	BE		BE		OLS		Fama-MacBeth		BE		BE	
Errors Clustered	Industry		Industry		Industry		No		Industry		Industry	
R-square	0.06		0.29		0.11		NA		0.41		0.29	
Observations	876		876		876		14		876		876	

Table 4
Industry Level Shareholder Rights and Industry Concentration: Robustness Tests

The table displays coefficients and p-values of pooled panel regressions with the G-index as the dependent variable. Errors are clustered at the industry level. All variables are equally-weighted at the industry level using firms between 1990 and 2003. See Table 2 and 3 for a description of this index and the regression variables. Industry is defined as the 48 Fama-French industries (FF48) or at the two-digit SIC (SIC2), as indicated. The regressions are industry between effects, except for the fifth regression. The first regression restricts the sample to years where the IRRC updates the governance index (years: 1990, 1993, 1995, 1998, 2000, and 2002). The second regression shows results using the FF48 as industry unit. The third and forth regressions use the Herfindahl index based on sales. The fifth regression is an OLS regression using a Census Bureau measure of concentration (Census). It is defined as the shipment value weighted average of the market share of the largest four firms in each four-digit SIC by aggregating it at the two-digit SIC level. It is established in 1992 and is only available for SIC2>=20 and SIC2<40. The last regression uses the Normalized Herfindahl index, which is defined as (n x Herfindahl – 1)/(n – 1), using the full sample and the FF48 industry definition.

	Gindex		*Gindex*		*Gindex*		*Gindex*		*Gindex*		*Gindex*	
Industry Level Variables												
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Net Profit Margin	-8.230	0.019	-1.716	0.023								
Herfindahl					-1.647	0.000	-3.998	0.000				
Census									-0.196	0.076		
Normalized Herfindahl											-3.884	0.000
Equity Value	-0.024	0.491	-0.084	0.001	0.020	0.098	-0.088	0.000	0.006	0.537	-0.092	0.000
TQ	0.350	0.275	0.078	0.454	0.415	0.000	0.183	0.059	0.071	0.510	0.213	0.030
TradingVolume	-6.453	0.246	-0.210	0.889	-1.238	0.379	-2.767	0.058	-4.295	0.026	-2.521	0.083
Prior Return	6.258	0.750	3.987	0.372	4.309	0.300	4.294	0.303	-16.558	0.102	5.640	0.177
ROA	-0.428	0.887	1.064	0.368	-3.143	0.002	-0.561	0.584	-1.880	0.116	-0.301	0.768
Sales Growth	-0.046	0.562	0.038	0.050	-0.062	0.001	0.014	0.470	0.056	0.135	0.010	0.577
Dividend Yield	44.545	0.015	22.091	0.010	22.030	0.001	6.758	0.416	28.657	0.003	7.822	0.346
Institutional Ownership	1.811	0.391	1.467	0.060	-2.133	0.003	1.240	0.095	-0.568	0.607	0.599	0.424
Block Ownership	-0.106	0.053	0.008	0.589	-0.002	0.838	0.001	0.951	0.009	0.725	0.009	0.529
Industry	SIC2		FF48		SIC2		FF48		SIC2		FF48	
Errors Clustered	Industry		Industry		Industry		Industry		Industry		Industry	
R-square	0.31		0.11		0.15		0.20		0.19		0.20	
Observations	375		665		876		665		280		665	

Table 5
Foreign Product Market Competition: Imports

The table displays coefficients and p-values of pooled panel regressions with industry-fixed effects and year-dummies. Errors are clustered at the industry level. All variables are equally-weighted at the industry level using firms between 1990 and 2003. The dependent variable is the G-index. See the previous tables for a description of this index and the regression variables. Import is computed as ln(1+imports/domestic sales) based on Irvine and Pontiff (2005). Imports (as a fraction of domestic sales) is the value of shipments aggregated at the industry level of imports (sales of US firms) based on data from the NBER-CES Manufacturing Industry Database (Feenstra, 1996). The import measure is only available for manufacturing industries (SIC codes 2000-4000) and the sample years are limited to 1990-2001. The R-square reported is the within r-square.

	Gindex		*Gindex*		*Gindex*	
Industry Level Variables						
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*
NPM	-2.247	0.032				
Herfindahl			-5.258	0.000		
Imports					-1.024	0.076
Equity Value	0.001	0.859	0.023	0.510	0.032	0.413
TQ	-0.170	0.208	0.000	0.997	-0.183	0.173
TradingVolume	-0.243	0.908	-3.620	0.056	0.853	0.684
Prior Return	1.789	0.765	2.719	0.591	-0.467	0.934
ROA	0.515	0.732	-1.837	0.125	-0.220	0.868
Sales Growth	0.034	0.156	-0.003	0.878	0.035	0.134
Dividend Yield	28.956	0.011	7.256	0.474	28.085	0.012
Institutional Ownership	1.930	0.075	1.562	0.104	2.029	0.060
Block Ownership	0.043	0.065	0.054	0.009	0.045	0.052
Errors Clustered	Industry		Industry		Industry	
R-square	0.18		0.35		0.18	
Observations	341		341		341	

Table 6
Relationship Industries and Sales Changes Associated with Takeovers

This table presents the average sales growth around unsolicited takeover announcements using quarterly data from 1991 - 2004 using Compustat sales data. The total number of takeover announcements (from the SDC database) equals 404, out of which 187 are of firms in industries that we classify as 'relationship' based (see the text for a description). In Panel A, we give results for firms in the relationship industries only, and in panel B for the other industries. We report the average sales growth ('Average') and the t-statistic of the average ('T-stat'). Further, we adjust for 4-digit (2-digit) industry classifications by deducting the growth of the average sales in the industry. Finally, 'Quarter 0' gives the sales growth after the announcement, 'Quarter -1' is the sales growth in the quarter before. For comparison and robustness, we also present the numbers for the two quarters before and after these.

Panel A. Relationship industries

Adjusted for 4-digit SIC codes			*Adjusted for 2-digit SIC codes*		
Quarter	*Average sales growth*	*T-stat*	*Quarter*	*Average sales growth*	*T-stat*
-2	-0.05	-0.9	-2	-0.11	-2.42
-1	0.02	0.47	-1	0.02	0.74
0	**-0.10**	**-2.06**	**0**	**-0.09**	**-2.02**
1	-0.05	-1.04	1	0.03	0.68
2	0.01	0.24	2	-0.04	-0.58

Panel B. Non-relationship industries

Adjusted for 4-digit SIC codes			*Adjusted for 2-digit SIC codes*		
Quarter	*Average sales growth*	*T-stat*	*Quarter*	*Average sales growth*	*T-stat*
-2	0.05	0.91	-2	0.00	0.06
-1	-0.08	-1.65	-1	-0.05	-1.14
0	**-0.04**	**-0.62**	**0**	**-0.05**	**-1.12**
1	0.03	0.47	1	0.05	1.09
2	-0.10	-1.54	2	-0.12	-2.79

Table 7
Relationship Industries and Industry Level Shareholder Rights

The table displays coefficients and p-values of pooled panel OLS regressions with year-dummies. Errors are clustered at the industry level. All variables are equally-weighted at the industry level using firms between 1990 and 2003. The dependent variable is the G-index. See the previous tables for a description of this index and the regression variables. The following two-digit-SIC industries are classified as Relationship industries: 15-17, 34-39, 42, 47, 50-51, 55, 60-65, 67, 75-76, 87. The variable *Relationship Industry* takes a value of one if the company operates in one of those two-digit-SIC industries and zero otherwise. In order to classify the industries, we ask whether customers might care whether the products or services are delivered by this particular company or people. For the second regression, the sample is limited to years where the IRRC data is updated (i.e., 1990, 1993, 1995, 1998, 2000, and 2002). The third regression uses the classification of durables in the manufacturing and retail industries only, following Yogo (2005). The following two-digit-SIC industries are classified as *Durable Goods Industries*: 25, 36, 37, 39, 50, 52, 53, 55, and 57. Non-durable industries are: 20-23, 26-28, 31, 51, 54, 56, 58, and 59. The remaining industries are excluded from the forth regression. We report the p-value of the F-test that the sum of the coefficients on NPM (Herfindahl) and NPM (Herfindahl) x Relationship Industry (durable good industry) is equal to zero.

Industry Level Variables	*Gindex*		*Gindex*		*Gindex*		*Gindex*		*Gindex*		*Gindex*	
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
NPM	-0.531	0.656	1.272	0.527	2.715	0.072						
NPM x Relationship Industry	-7.558	0.000	-7.811	0.004								
NPM x Durable Goods Industry					-5.432	0.010						
Herfindahl							1.135	0.001	0.836	0.110	1.137	0.083
Herfindahl x Relationship Industry							-2.099	0.000	-2.349	0.010		
Herfindahl x Durable Goods Industry											-2.575	0.006
Relationship Industry	0.263	0.006	0.259	0.076			0.257	0.028	0.277	0.110		
Durable Goods Industry					0.080	0.671					0.355	0.028
Equity Value	0.000	0.859	0.000	0.806	-0.030	0.131	0.001	0.850	0.001	0.860	-0.036	0.128
TQ	0.145	0.098	0.213	0.104	0.165	0.294	0.055	0.532	0.118	0.383	0.104	0.503
TradingVolume	-2.771	0.046	-2.819	0.142	-2.728	0.119	-1.386	0.321	-2.528	0.227	-4.957	0.016
Prior Return	7.901	0.137	-4.616	0.517	6.778	0.342	3.801	0.477	-5.038	0.516	5.508	0.528
ROA	-0.957	0.274	-0.900	0.487	-0.383	0.801	-1.101	0.206	-0.382	0.768	-0.790	0.593
Sales Growth	-0.047	0.023	-0.082	0.006	0.059	0.099	-0.037	0.080	-0.045	0.147	0.072	0.042
Dividend Yield	25.366	0.000	21.639	0.003	47.884	0.000	17.830	0.001	20.521	0.004	37.752	0.000
Institutional Ownership	-0.067	0.903	0.705	0.375	0.984	0.177	0.956	0.093	0.877	0.307	1.094	0.214
Block Ownership	-0.049	0.000	-0.040	0.020	-0.032	0.068	-0.052	0.000	-0.044	0.010	-0.040	0.028
F-test: p-value	0.000		0.021		0.083		0.045		0.048		0.033	
R-square	0.11		0.10		0.11		0.08		0.11		0.17	
Obs	876		375		308		876		375		308	

Table 8
Firm Level Shareholder Rights and Takeover Probability

We report coefficients of ordinary least square (OLS) regressions using the panel of firm level data for the years 1990-2003. The p-values are based on clustered standard errors by firm. The dependent variable is the firm's Gindex. NPM is the industry median net profit margin based on the two-digit SIC industry definition. Herfindahl is the Herfindahl index based on the two-digit SIC code industry definition. The small firm dummy is equal to one if the firm's book value of assets is below the sample firms' median in a given year. The following two-digit-SIC industries are classified as Relationship industries: 15-17, 34-39, 42, 47, 50-51, 55, 60-65, 67, 75-76, 87. The variable *Relationship Industry* takes a value of one if the company operates in one of those two-digit-SIC industries and zero otherwise. The other control variables are at the firm level and are defined in Table 3.

Firm Level Variables	*Gindex*		*Gindex*		*Gindex*		*Gindex*	
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
NPM	2.856	0.108	4.465	0.123				
NPM x Small Firm Dummy	-6.334	0.005	-7.404	0.030				
NPM x Relationship Industry x Small Firm Dummy			-5.183	0.060				
NPM x Relationship Industry			-0.126	0.969				
Herfindahl					1.399	0.015	3.355	0.000
Herfindahl x Small Firm Dummy					-1.998	0.001	-3.128	0.000
Herfindahl x Relationship Industry x Small Firm Dummy							-8.139	0.000
Herfindahl x Relationship Industry							-6.141	0.000
Relationship Industry			0.184	0.238			0.425	0.000
Small Firm Dummy	0.673	0.000	0.672	0.000	0.414	0.000	0.379	0.000
Equity Value	0.006	0.068	0.006	0.072	-0.004	0.001	-0.004	0.003
TQ	-0.100	0.002	-0.098	0.002	-0.104	0.000	-0.101	0.000
TradingVolume	-3.250	0.000	-3.279	0.000	-3.432	0.000	-3.905	0.000
Prior Return	-11.260	0.000	-11.559	0.000	-12.590	0.000	-12.561	0.000
ROA	-0.430	0.258	-0.312	0.419	-0.296	0.103	-0.153	0.444
Dividend Yield	13.508	0.000	14.056	0.000	15.564	0.000	16.390	0.000
Institutional Ownership	3.181	0.000	3.154	0.000	3.561	0.000	3.901	0.000
Block Ownership	-0.048	0.000	-0.048	0.000	-0.050	0.000	-0.051	0.000
F-test: p-value	0.062				0.056			
Errors Clustered	Firm		Firm		Firm		Firm	
R-square	0.08		0.09		0.08		0.09	
Observations	16806		16806		16658		16658	

Table 9
Firm Performance, Shareholder Rights and Industry Concentration: Univariate Statistics

The table displays univariate statistics about return on assets (ROA) in panel A and net profit margin in panel B, using various subsamples based on firm level data between 1990 and 2003 and concentration measures based on the two-digit SIC (for NPM) and the 48 Fama-French industry classifications (for Herfindahl). Columns are divided into competitive versus concentrated industries. The cut is determined yearly as the median NPM (Herfindahl index) across all industries. In the rows we display the subsamples stratified by the Gindex, using firms with a Gindex less than 6 and more than 13. P-values indicate the significance of the difference in the means either per row or column. Underneath the mean, we report the number of observations in brackets. ROA is the return-on-assets calculated as net income divided by book value of assets. Net profit margin is defined following Gompers, Ishii and Metrick (2003) as income before extraordinary items available for common equity divided by sales (Compustat items #237/#12). Net profit margin at the firm level is curtailed at the 1 and 99 percentiles.

Panel A. Firm-level ROA

Competition proxy: industry-NPM

	Competitive	*Concentrated*	
G-index	*Average*	*Average*	*p-value of difference*
<6	10.3%	12.4%	0.011
	[950]	[1136]	
>13	11.5%	11.9%	0.244
	[453]	[657]	
p-value of difference	0.070	0.534	

Competition proxy: Herfindahl Index

	Competitive	*Concentrated*	
G-index	*Average*	*Average*	*p-value of difference*
<6	11.0%	13.3%	0.001
	[1556]	[534]	
>13	11.8%	12.2%	0.609
	[850]	[262]	
p-value of difference	0.074	0.227	

Panel B. Firm-level NPM

Competition proxy: industry-NPM

	Competitive	*Concentrated*	
G-index	*Average*	*Average*	*p-value of difference*
<6	0.7%	6.3%	0.000
	[934]	[1172]	
>13	2.5%	5.7%	0.000
	[454]	[670]	
p-value of difference	0.015	0.341	

Competition proxy: Herfindahl Index

	Competitive	*Concentrated*	
G-index	*Average*	*Average*	*p-value of difference*
<6	3.73%	4.95%	0.092
	[1569]	[533]	
>13	4.49%	2.31%	0.000
	[862]	[262]	
p-value of difference	0.058	0.002	

Table 10
Firm Performance, Shareholder Rights and Industry Concentration: Regression Analysis

The table displays coefficients and p-values of pooled panel regressions with firm-fixed effects and year-dummies. Errors are clustered by firm. All variables are at the firm level using firms between 1990 and 2003. Industry concentration measures are based on the two-digit SIC level. Panel A reports results for industry median Net Profit Margin as a proxy for industry concentration, panel B for the Herfindahl index. The dependent variables are firm level ROA and Net Profit Margin. ROA is the return-on-assets calculated as net income divided by book value of assets. Net profit margin is defined following Gompers, Ishii and Metrick (2003) as income before extraordinary items available for common equity divided by sales (Compustat items #237/#12). Net profit margin is curtailed at the 1 and 99 percentiles. Low NPM (Herfindahl) Dummy is equal to one if the NPM (Herfindahl) of the industry in which the firm operates is below the median NPM (Herfindahl) in that year for all industries. See the previous tables for a description of other variables. We report the p-value of an F-test whether the sum of the coefficients on Gindex and Gindex x Low NPM (Herfindahl) Dummy (x Relationship Industry Dummy) is equal to zero (, respectively).

Panel A: Industry Concentration Measure, Industry Median Net Profit Margin

Firm Level Variables	*ROA*						*Net Profit Margin*					
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Gindex	-0.002	0.008	-0.002	0.003	-0.002	0.003	-0.001	0.142	-0.001	0.163	-0.001	0.165
Gindex x Low NPM Dummy	0.004	0.000	0.004	0.000	0.002	0.000	0.003	0.000	0.003	0.000	0.002	0.014
Gindex x Relationship Industry x Low NPM Dummy					0.002	0.001					0.002	0.007
Low NPM Dummy	-0.002	0.001	-0.002	0.000	0.000	0.656	-0.021	0.006	-0.022	0.005	-0.019	0.050
Relationship Industry					0.046	0.116					0.079	0.063
Relationship Industry x Low NPM Dummy					0.000	0.990					-0.014	0.294
Equity Value			0.000	0.008	0.000	0.009			0.000	0.000	0.000	0.000
Sales Growth			0.012	0.000	0.012	0.000			0.038	0.000	0.038	0.000
Dividend Yield			-0.472	0.000	-0.473	0.000			-0.417	0.000	-0.420	0.000
TradingVolume			-0.127	0.000	-0.127	0.000			-0.190	0.000	-0.190	0.000
Institutional Ownership			0.000	0.001	0.000	0.001			0.000	0.060	0.000	0.063
F-test: p-value	0.121		0.149		0.118		0.212		0.192		0.117	
R-square	0.05		0.07		0.07		0.05		0.06		0.07	
Obs	17,776		17,776		17,776		17,766		17,766		17,766	

Panel B: Industry Concentration Measure, Herfindahl Index

Firm Level Variables	*ROA*						*Net Profit Margin*					
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Gindex	-0.003	0.006	-0.004	0.001	-0.002	0.009	-0.004	0.021	-0.003	0.000	-0.004	0.000
Gindex x Low Herfindahl Dummy	0.003	0.007	0.003	0.004	0.000	0.877	0.005	0.015	0.007	0.000	0.004	0.002
Gindex x Relationship Industry x Low Herfindahl Dummy					0.002	0.040					0.005	0.063
Low Herfindahl Dummy	-0.031	0.004	-0.032	0.002	-0.034	0.100	-0.037	0.013	-0.037	0.000	-0.034	0.004
Relationship Industry					0.030	0.000					-0.009	0.834
Relationship Industry x Low Herfindahl Dummy					-0.019	0.106					-0.001	0.918
Equity Value			0.000	0.000	0.000	0.160			0.001	0.000	0.001	0.000
Sales Growth			0.000	0.628	0.000	0.000			0.000	0.865	0.000	0.989
Dividend Yield			-0.441	0.000	-0.404	0.000			-0.314	0.000	-0.376	0.000
TradingVolume			-0.118	0.000	-0.135	0.000			-0.271	0.000	-0.183	0.000
Institutional Ownership			0.114	0.000	0.149	0.000			0.128	0.000	0.159	0.000
F-test: p-value	0.647		0.159		0.755		0.160		0.000		0.059	
R-square	0.037		0.077		0.086		0.001		0.012		0.058	
Obs	19,557		19,398		19,398		19,519		19,358		19,358	

Table 11
Firm Performance, Shareholder Rights and Industry Concentration: Regression Analysis

The table displays coefficients and p-values of pooled panel regressions with firm-fixed effects and year-dummies. Errors are clustered by firm. All variables are at the firm level using firms between 1990 and 2003. Industry concentration measures are based on the two-digit SIC level. Panel A reports results for industry median Net Profit Margin as a proxy for industry concentration, panel B for the Herfindahl index. The dependent variable is the firm level Tobin's Q. Net profit margin is defined following Gompers, Ishii and Metrick (2003) as income before extraordinary items available for common equity divided by sales (Compustat items #237/#12). Low NPM (Herfindahl) Dummy is equal to one if the NPM (Herfindahl) of the industry in which the firm operates is below the median NPM (Herfindahl) in that year for all industries. See the previous tables for a description of other variables. We report the p-value of an F-test whether the sum of the coefficients on Gindex and Gindex x Low NPM (Herfindahl) Dummy (x Relationship Industry Dummy) is equal to zero (, respectively).

Panel A: Industry Concentration Measure, Industry Median Net Profit Margin

Firm Level Variables	*Tobin's Q*					
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Gindex	-0.022	0.006	-0.016	0.050	-0.016	0.054
Gindex x Low NPM Dummy	0.019	0.002	0.021	0.001	0.006	0.524
Gindex x Relationship Industry x Low NPM Dummy					0.032	0.011
Low NPM Dummy	-0.496	0.000	-0.473	0.000	-0.292	0.001
Relationship Industry					0.033	0.924
Relationship Industry x Low NPM Dummy					-0.383	0.002
Equity Value			0.000	0.000	0.000	0.000
Sales Growth			0.027	0.000	0.112	0.000
Dividend Yield			-0.094	0.091	-4.830	0.000
TradingVolume			-0.143	0.000	-0.946	0.000
Institutional Ownership			-0.000	0.668	-0.001	0.462
F-test: p-value	0.73		0.58		0.05	
R-square	0.04		0.08		0.08	
Obs	17,776		17,776		17,776	

Panel B: Industry Concentration Measure, Herfindahl Index

Firm Level Variables	*Tobin's Q*					
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Gindex	-0.017	0.016	-0.019	0.006	-0.015	0.022
Gindex x Low Herfindahl Dummy	0.021	0.003	0.023	0.001	0.002	0.983
Gindex x Relationship Industry x Low Herfindahl Dummy					0.035	0.007
Low Herfindahl Dummy	-0.187	0.117	-0.118	0.348	-0.086	0.494
Relationship Industry					0.221	0.530
Relationship Industry x Low Herfindahl Dummy					-0.314	0.000
Equity Value			0.000	0.000	0.000	0.000
Sales Growth			0.146	0.000	0.125	0.000
Dividend Yield			-5.649	0.000	-5.103	0.000
TradingVolume			-1.099	0.000	-0.984	0.000
Institutional Ownership			-0.001	0.278	-0.001	0.356
F-test: p-value	0.29		0.31		0.04	
R-square	0.02		0.06		0.07	
Obs	19,557		19,398		19,398	

Table 12
Industry Concentration and Industry Level Equity Compensation

The table displays coefficients and p-values of pooled panel regressions with industry-fixed effects (FE) and year-dummies for the first two columns and an OLS regression in the third column. Errors are clustered at the industry level. All variables are equally-weighted at the industry level using firms between 1990 and 2003. The dependent variable is the proportion of total CEO compensation that consists of equity compensation using data from ExecuComp. See the previous tables for a description of all other variables. Industries are defined as either the Fama-French (1997) industries (FF48) or at the two-digit SIC level (SIC2). The variable *Relationship Industry* takes a value of one if the company operates in one of following two-digit-SIC industries: 15-17, 34-39, 42, 47, 50-51, 55, 60-65, 67, 75-76, 87, and zero otherwise.

Industry Level Variables	*Equity Compensation Relative to Total Compensation*							
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
NPM	-0.261	0.324	0.178	0.499				
NPM x Relationship Industry			-0.728	0.063				
Relationship Industry			0.049	0.017			0.019	0.319
Herfindahl					-0.325	0.008	-0.154	0.014
Herfindahl x Relationship Ind.							-0.279	0.020
Equity Value	0.005	0.091	0.003	0.084	0.000	0.414	0.001	0.051
TQ	-0.025	0.301	-0.024	0.117	0.033	0.174	-0.021	0.153
TradingVolume	2.080	0.000	1.844	0.000	0.300	0.389	1.816	0.000
Prior Return	-0.165	0.839	0.408	0.689	2.582	0.007	0.223	0.817
ROA	-0.064	0.826	-0.647	0.000	-0.725	0.004	-0.486	0.001
Sales Growth	0.018	0.000	0.016	0.002	0.014	0.005	0.016	0.001
Dividend Yield	3.432	0.037	0.346	0.784	0.811	0.691	1.272	0.282
Institutional Ownership	0.527	0.000	0.125	0.217	0.084	0.658	0.034	0.723
Block Ownership	0.004	0.078	0.004	0.167	-0.005	0.173	0.004	0.092
Industry	SIC2		SIC2		FF48		SIC2	
Regression type	FE		OLS		FE		OLS	
Errors Clustered	Industry		Industry		Industry		Industry	
R-square	0.19		0.20		0.34		0.20	
Obs	747		747		566		747	

Figure 1. Changes in Industry Level Shareholder Rights around Deregulation Events

The figure shows industry level G-indices around eleven major deregulation events as listed in Harford (2005), Table 3, Panel B, after 1990. There are six different industries, some with multiple deregulation events. The industry level G-index is the equally-weighted average of firm level G-indices in the industry and the industry is defined as the 48 Fama-French industries. The eleven deregulation initiatives, the industry they affect and the event year are: (Banking, 1991) Federal Deposit Insurance Corporation Improvement Act; (Entertainment, Petrol and Natural Gas, Utilities, 1992) Cable Television consumer Protection and Competition Act, Energy Policy Act, FERC Order 636; (Communications, Transportation, 1993) Elimination of State Regulation of Cellular Telephone Rates, negotiated Rates Act; (Transportation, Banking, 1994) Trucking Industry and Regulatory Reform Act, Interstate Banking and Branching Efficiency Act; (Transportation, 1995) interstate Commerce Commission Termination Act; (Communications, Utilities, 1996) Telecommunications Act, FERC Order 888.

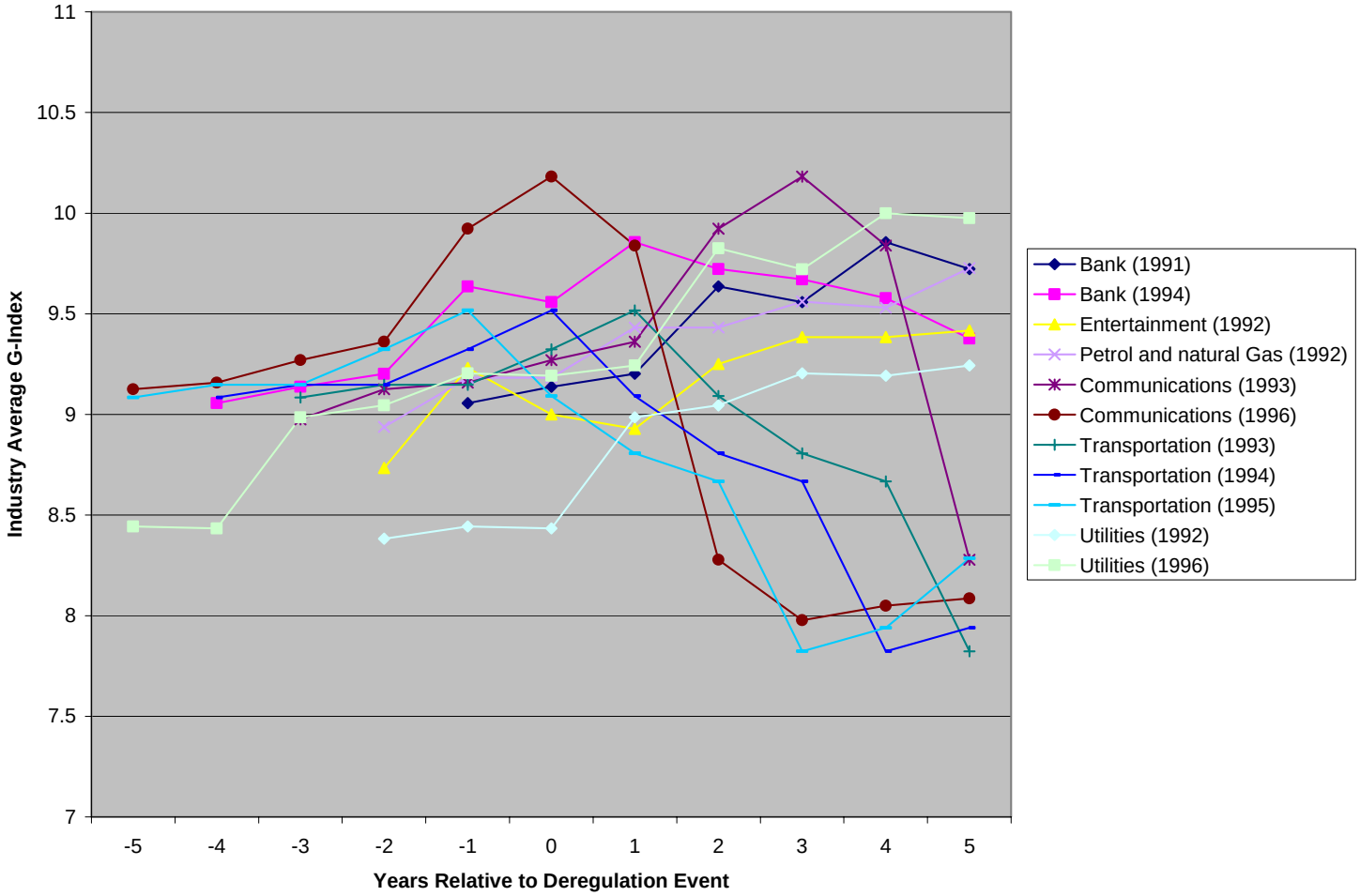

Figure 2. Relationship Industries and Sales Changes Associated with Takeovers

This figure presents the average industry adjusted sales growth and the 95% confidence interval around unsolicited takeover announcements using quarterly data from 1991 - 2004 using Compustat sales data. We adjust for 4-digit industry classifications by deducting the growth of the average sales in the industry. The figure combines results from Table 1 and Table 6. We give the average sales growth for all firms in all industries and within two industry groups: those in industries that we classify as 'relationship' based (see the text for a description) as one group, and the remainder group of industries. The total number of takeover announcements (from the SDC database) equals 404, out of which 187 are of firms in relationship industries.