

# Takeover Protections and Stock Returns\*

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## Abstract

We argue that takeover protections decrease equity value and increase equity risk and stock returns by removing a valuable put option to sell equity when firms approach financial distress. We investigate these claims empirically by looking at the dynamics of equity prices, equity risk, and stock returns in distressed firms around the enactment of pro- and anti-takeover laws, both domestically and internationally. In line with our predictions, we find that distressed firms experience a significant decrease in value and increase in returns and market betas after the passage of anti-takeover laws. Pro-takeover legislation changes have the opposite effect.

**Keywords:** Equity risk, stock returns, takeovers.

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Decisions that affect the scope of firms are among the most important faced by management and among the most studied by academics. Takeovers are classic examples of such decisions. While empirical research on takeovers has investigated a wide range of topics, we still know very little about the asset pricing implications of these major corporate events for potential targets. In this paper, we argue that takeovers provide a valuable put option for shareholders in firms that are close to financial distress.<sup>1</sup> Takeover protections reduce the likelihood of a successful takeover and therefore lead to a decrease in shareholder wealth and to an increase in equity risk and expected stock returns. Using several regulatory changes that have a direct effect on acquisition markets, both internationally and domestically, we present new evidence on the dynamics of equity prices, equity risk, and stock returns in distressed stocks that is strongly supportive of these predictions.

We develop our main intuition using a stylized model that illustrates in the simplest possible setting the effects of takeovers on valuations, equity risk, and stock returns. This model analyzes corporate takeovers as real options and allows us to explicitly relate takeover laws to equity prices and expected stock returns. In the model, takeovers increase target shareholder value by providing a valuable exit option. Pro- (respectively anti-) takeover laws facilitate (respectively reduce) the feasibility of takeovers. As a result, they increase (respectively reduce) shareholder value and reduce (respectively increase) equity risk and expected returns. The model predicts that this is particularly true among distressed firms, for which the exit option is more valuable.

We test these predictions using several regulatory changes that have a direct effect on acquisition markets, both domestically and internationally. Our first set of tests focuses on pro-takeover laws passed in 23 developed and emerging countries and examines the dynamics of equity risk and stock returns around the enactment of these laws. Our second set of tests focuses on the effects of U.S. state Business Combination (BC) laws.<sup>2</sup> BC laws impose a moratorium on certain transactions (e.g., asset sales, mergers) between a large shareholder and the firm for a period ranging between three and five years after the shareholder's stake passes a pre-specified threshold, making hostile

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<sup>1</sup>Examples of a positive effect of takeovers on the values of distressed stocks abound. For instance, on June 21, 2011 Forbes reported that "Research In Motion shares staged an impressive rebound last week, aided in no small measure by reports that the company after its recent sharp slide could now be a takeover target."

<sup>2</sup>Recent research by Karpoff and Wittry (2018) raises concerns about the use of anti-takeover laws for identification in the finance literature. We perform a large set of robustness checks to address these potential concerns. Furthermore, we note that we merely argue that any regulatory change that impedes the feasibility of takeovers affects stock returns and betas, particularly in distressed firms, as long as this change has not been fully anticipated by investors. Our approach is therefore less of a subject to endogeneity concerns.

takeovers more difficult and often impossible (see e.g. Giroud and Mueller (2010)).

We begin our empirical investigation by examining the relation between returns to distressed stocks and pro-takeover laws using cross-sectional firm-level Fama-MacBeth (1973) regressions. Our international data is from Compustat Global and our sample spans the years from 1989 to 2017. Using the passage of pro-takeover laws as a source of identifying variation, we examine if these laws have an effect on the returns of distressed firms. In these tests, the dependent variable is the market-adjusted stock return. The main independent variable is a dummy variable that equals one if the firm is incorporated in a country with a pro-takeover law and zero otherwise. In line with our hypothesis, we find that market-adjusted returns of distressed stocks are significantly lower in countries with a pro-takeover law in place. The effect is economically large: After controlling for usual determinants of stock returns, distressed stocks earn about 0.39% a month less in the countries with a pro-takeover law relative to those without a law.

Our model generates specific predictions for the betas of financially distressed firms. A legislative act that makes it easier to conduct takeovers should have a negative effect on the firm's risk and its beta and this effect is expected to be strongest among financially distressed firms. To test this prediction, we run difference-in-differences regressions of firm-level monthly market beta on a dummy variable that indicates the presence of a pro-takeover law in the firm's country of incorporation. Our test shows that the coefficients on the pro-takeover law dummy for the most financially distressed stocks are negative and statistically significant. The effect of is economically meaningful: For quintile sorts the betas of distressed stocks decrease by 0.13 on average.

Our last international test takes advantage of the merger control index recently developed by Bradford and Chilton (2018) for over 100 countries, with high values of the index indicating additional difficulties and regulatory hurdles that reduces the feasibility of a takeover. When running cross-sectional Fama-MacBeth regressions of market-adjusted returns on the merger control index, we find that the coefficients on the merger control index are positive and statistically significant in all regressions, thereby providing additional support for our hypothesis. The effects are large: Market-adjusted returns to distressed stocks in countries with most stringent merger control exceed returns in countries with the most lenient merger control by 89 basis points a month.

We next turn to the effects of anti-takeover laws by analyzing the returns and alphas from factor models in portfolios that contain stocks of companies incorporated in U.S. states either with

or without business combination laws. The portfolios are applied to the full sample of stocks, and separately to the quintile of the most financially distressed stocks. Our tests demonstrate a large and statistically significant difference in returns for stocks of distressed companies incorporated in states that have passed a BC law versus distressed stocks in states that have not passed such a law, in line with the predictions of the model. In terms of mean excess returns, the portfolio of distressed stocks in states with BC laws outperforms by 0.85% per month the portfolio of distressed stocks in states without BC laws. The differences in monthly alphas from factor models vary from 0.72% for the Fama-French three-factor model to 0.82% per month for the six-factor model.

Portfolio sorts provide a simple view of the relation between returns and factor loadings and the presence of anti-takeover laws in the state of incorporation. As in our tests of the effects of pro-takeover laws, we also run Fama and MacBeth (1973) regressions and use the passage of BC laws as a source of identifying variation. In these tests, the dependent variable is the excess stock return. The main independent variable is a dummy variable that equals one if the firm is incorporated in a state with a BC law and zero otherwise. We find that the passage of BC laws has a significant positive effect on the returns of distressed stocks, in line with our hypothesis. The effect is economically large: After controlling for usual determinants of stock returns, distressed stocks earn about 0.36% a month more in the states with a BC law.

Our model additionally predicts that anti-takeover laws should have a positive effect on equity betas, particularly among financially distressed firms. We test this prediction in two ways. First, we go back to portfolios of stocks incorporated in states with and without a BC law and examine the portfolio loadings from the CAPM and a six-factor model (the Fama-French (2015) five factors augmented with a momentum factor). Second, we estimate the effect of the enactment of a BC law in a state on market beta using a difference-in-differences regression. Both sets of tests provide strong support for our predictions. The first set of tests shows that the beta of the distress portfolio is larger in states with BC laws and the difference between betas in states with and without BC laws is highly statistically significant. The second set of tests reinforces our portfolio-based results and points towards a causal effect of anti-takeover laws on the betas of distressed firms.

To confirm the validity of our results, we perform various robustness checks, including leaving out lobbying firms, using an alternative proxy for financial distress, investigating the effects of alternative second-generation anti-takeover laws (Fair Price and Control Share Acquisition laws),

as well as excluding firms incorporated in Delaware. All these robustness tests confirm our results.

Lastly, to examine whether anti-takeover laws have an effect on stock prices, we conduct an event study around the dates of the first newspaper reports on the BC laws (as in Giroud and Mueller (2010)). We find that the abnormal return over the two-day window surrounding the event for financially distressed stocks is -1.55% and highly statistically significant. While the corresponding abnormal return in the sample of all firms is also negative, it is much smaller in magnitude and lacks statistical significance, in line with our model prediction.

Our theory is based on the premise that takeovers create value and reduce risk for target shareholders. The most reliable evidence on whether control transactions create value for shareholders draws on short-term event studies. Most event studies examine abnormal returns around merger announcement dates as an indicator of value creation (see Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), Schwert (1996), or Eckbo, Makaew, and Thorburn (2018)). The evidence points to substantial gains for target shareholders in control transactions (see Betton, Eckbo, and Thoburn (2008) for a survey). There is a substantial literature connecting legislation deterring takeovers to shareholder value. Examining the second-generation of U.S. anti-takeover laws, Karpoff and Malatesta (1989) find abnormal returns of -0.29% in a two-day window starting on the day before the first announcement, or -0.47% for the subset of BC laws, although the abnormal returns are concentrated in firms with no pre-existing firm-level defenses. More recently, Giroud and Mueller (2010) conduct an event study around the dates of the first newspaper reports about the BC laws and find a significant cumulative abnormal return of -0.32%, the effect being stronger in less competitive industries.

Our contribution with respect to this literature is not to introduce a novel source of exogenous variation. Rather, it is to show that exogenous variation in takeover legislation has important effects on equity risk and stock returns, particularly among distressed firms. Another important point of departure from prior studies is that we use not only U.S. but also international data. Exploring the effects of takeover markets on financially distressed stocks in an international settings offers several important advantages. First, expanding our sample to a global setting allows us to obtain a much richer set of results. Second, we are able to see the effect of both positive as well as negative shocks to takeover markets on distressed stocks. Finally, international takeover laws are generally free from the criticism that applies to BC laws in the U.S.

An important paper for our analysis is Cremers, Nair, and John (2009), which documents a positive relation between takeover likelihood and stock returns. The paper first estimates a logistic model to predict the probability that a firm becomes target in a takeover transaction and then examines returns to portfolios sorted on this probability. In this paper, we take an alternative approach and try to identify exogenous shocks to takeover markets. Because the focus of our paper is on distressed stocks, it would be troublesome for us to use a similar approach as many of the covariates in Cremers, Nair, and John (2009) that are used to estimate the takeover probability also have a direct effect on financial distress (e.g. market-to-book, size, leverage, and return on assets) making it impossible to meaningfully interpret the results. Furthermore, many of these covariates directly predict stock returns, further complicating identification.<sup>3</sup>

Lastly, this paper continues a line of research using real options models to analyze mergers and acquisitions (M&As); see for example Lambrecht (2004), Morellec and Zhdanov (2005, 2008), or Margsiri, Mello, and Ruckes (2008).<sup>4</sup> Much of this literature focuses on the analysis of the effects of M&As for bidding firms. A good example is Hackbarth and Morellec (2008), which characterizes the effects of M&As on the betas of bidding firms. In this paper, we instead look at target firms with a specific focus on the relation between takeover protections and stock returns. We argue theoretically that takeover protections increase equity risk and stock returns in distressed firms and provide strong empirical support for these claims.

Section 1 presents a simple model that illustrates the effects of takeovers on equity prices, equity risk, and stock returns. Section 2 examines the effects of pro-takeover laws on equity risk and stock returns in an international setting. Section 3 examines the evolution of the riskiness of distressed stocks around the enactment of second-generation state anti-takeover laws. Section 4 examines the effects of anti-takeover laws on equity prices. Section 5 concludes.

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<sup>3</sup>In unreported results, we replicate the tests in Cremers, Nair, and John (2009) on our US sample. We find no effect of the fitted values from their predictive regressions in value-weighted portfolio returns, both in the whole sample as well as in the subsample of most distressed firms. When using equally-weighted returns we find a positive effect, similarly to Cremers, Nair, and John (2009). However, as we argue above, this approach does not allow for meaningful identification when focusing on distressed stocks and therefore we resort to natural shocks to takeover markets as our main identification strategy.

<sup>4</sup>From a modeling perspective, our paper also relates to the literature that analyzes asset pricing implications of corporate investment decisions using real options models. See for example Carlson, Fisher, and Giammarino (2005, 2006), Garlappi, Shu, and Yan (2008), Favara, Schroth, and Valta (2012), or Lambrecht, Pawlina, and Teixeira (2016).

# 1 Mechanism

We start our analysis with a stylized model that illustrates the effects of takeovers on equity value, equity risk, and expected stock returns in the simplest possible setting. We consider an economy with two firms: a potential acquirer and a potential target. These roles are exogenously assigned and determined by firms' specific characteristics, not modelled in this paper. Each firm has rational expectations about the underlying uncertainty and the decision rules of the other firm. The target firm is levered and has assets that generate a continuous stream of cash flows  $X - c$ , where  $c > 0$  is the coupon payment on the target's debt and  $(X_t)_{t \geq 0}$  is a cash flow shock governed by:

$$dX_t = \mu X_t dt + \sigma X_t dW_t, \quad X_0 = x, \quad (1)$$

where  $\mu$  and  $\sigma > 0$  are constant parameters and  $(W_s)_{s \geq 0}$  is a standard Brownian motion. Because we want to derive predictions relating stock returns to takeover protections, we consider in the following that there exists a traded asset with market beta  $\beta_X$  that is perfectly correlated with  $X$ , and a riskless bond with dynamics  $dB_t = rB_t dt$ . This allows us to construct a risk-neutral probability measure  $\mathcal{Q}$  under which the drift rate of  $X$  is given by  $r - \delta$  with  $\delta > 0$ .

The bidder has a valuation  $V \geq \frac{c}{r}$  for the target firm, i.e. its valuation of the target exceeds the risk-free value of the promised payments to debtholders in the target firm. In addition, conditional on the bidder making an offer to the target, there is a probability  $\lambda \geq 0$  that a takeover is successful. As we argue below, this probability depends on anti-takeover laws so that the passage of an anti-takeover law should reduce  $\lambda$ . In case of a successful takeover, target shareholders extract a fraction  $\eta \geq 0$  of the takeover surplus. Denoting by  $\mathcal{S}(X; c, \lambda)$  the surplus generated by the takeover, the timing of the takeover solves:

$$\max_{\tau} \mathbb{E}^{\mathcal{Q}} [e^{-r\tau} (1 - \eta) \mathcal{S}(X_{\tau}; c, \lambda)], \quad (2)$$

where  $\tau$  is the endogenous time of the takeover. Because the value of the target firm is strictly increasing in the value of the cash flow shock  $X$ , the optimal policy for bidding shareholders is to initiate the takeover the first time that the target cash flows reach an endogenous lower threshold  $X_T$  so that the time of the takeover is defined by  $\tau \equiv \inf\{t \geq 0 : X_t = X_T\}$ . For tractability,

we assume that if the takeover attempt is unsuccessful at  $X = X_T$ , which occurs with probability  $1 - \lambda$ , the option of being taken over disappears.

Because the target firm has debt outstanding, it may be optimal for target shareholders to default on their debt obligations if the firm conditions deteriorate sufficiently. In default, a fraction  $\alpha$  of asset value is lost as a frictional cost. Under this assumption, the present value of the takeover surplus is given by

$$\mathcal{S}(X; c, \lambda) = \lambda \left\{ \left[ V - \frac{X_T}{\delta} \right] \left( \frac{X}{X_T} \right)^\xi + \frac{\alpha X_D}{\delta} \left( \frac{X}{X_D} \right)^\xi \right\}, \quad (3)$$

where  $\xi < 0$  is the negative root of the quadratic equation  $\frac{1}{2}\sigma^2 y(y-1) + (r-\delta)y - r = 0$ . Plugging this expression in (2) and solving bidding shareholders' optimization problem, we get that the takeover threshold is given by

$$X_T = \frac{\xi}{\xi - 1} \delta V. \quad (4)$$

To determine the value of equity in the target firm, we conjecture (and later verify) that  $X_T \geq X_D$ , where  $X_D$  is the default threshold selected by target shareholders. Target shareholders therefore get the cash flow stream  $X - c$  until the firm is taken over at  $X = X_T$  with probability  $\lambda$  or defaults at  $X = X_D$ . We can therefore write the value of equity in the target firm as

$$E^T(X; c, \lambda, \eta) = \max_{\theta} \left\{ \mathbb{E}^{\mathcal{Q}} \left[ \int_0^{\theta} e^{-rt} (X_t - c) dt \right] + 1_{\{\tau \leq \theta\}} e^{-r\tau} \eta \mathcal{S}(X_\tau; c, \lambda) \right\}, \quad (5)$$

where  $\theta \equiv \inf\{t \geq 0 : X_t = X_D\}$ . Standard derivations show that:

$$E^T(X; c, \lambda, \eta) = \frac{X}{\delta} - \frac{c}{r} + \left[ \frac{c}{r} - \frac{X_D}{\delta} \right] \left( \frac{X}{X_D} \right)^\xi + \lambda \eta \left\{ \left( V - \frac{X_T}{\delta} \right) \left( \frac{X}{X_T} \right)^\xi + \frac{\alpha X_D}{\delta} \left( \frac{X}{X_D} \right)^\xi \right\}, \quad (6)$$

for  $X > X_T \geq X_D$ . The first two terms on the right hand side of this equation correspond to the unlimited liability value of equity. The third term captures the value of the option to default. The last two terms capture the value of being taken over, which is the product of the probability of a successful takeover and the discounted gain from a takeover. When  $\lambda = 0$  or  $\eta = 0$ , this expression collapses to the standard valuation formula for equity in a levered firm (see e.g. Leland (1994)).

If shareholders cannot commit to a default policy (as in e.g. Leland (1994), Duffie and Lando



(2001), or Morellec and Zhdanov (2008)) and the option of being taken over is lost for  $X < X_T$ , the default threshold satisfies:

$$X_D = \frac{\xi}{\xi - 1} \frac{c}{r} \delta \leq X_T. \quad (7)$$

Plugging the expressions for the default and takeover thresholds in the value of the target's equity leads to the following result:

**Proposition 1** (Equity value and beta). *Define  $\xi = \frac{1}{2} - \frac{r-\delta}{\sigma^2} - \left[\frac{1}{2} - \frac{r-\delta}{\sigma^2} + \frac{2r}{\sigma^2}\right]^{\frac{1}{2}} < 0$ . When  $X > X_T$ , the value of the target's equity is given by*

$$E^T(X; c, \lambda, \eta) = \frac{X}{\delta} - \frac{c}{r} + \frac{1}{1 - \xi} \left( \frac{X(\xi - 1)}{\xi \delta} \right)^\xi \left[ (1 - \xi \lambda \eta \alpha) \left( \frac{c}{r} \right)^{1-\xi} + \lambda \eta V^{1-\xi} \right]. \quad (8)$$

The expected return on the target's equity satisfies  $ER^T = r + \beta^T \theta$ , where  $\theta$  denotes the market risk premium and the beta of the target's equity is given by

$$\begin{aligned} \beta^T(X; c, \lambda, \eta) &\equiv \beta_X \frac{\partial E^T(X; c, \lambda, \eta)}{\partial X} \frac{X}{E^T(X; c, \lambda, \eta)} \\ &= \beta_X \frac{\frac{X}{\delta} + \frac{\xi}{1-\xi} \left( \frac{X(\xi-1)}{\xi \delta} \right)^\xi \left[ (1 - \xi \lambda \eta \alpha) \left( \frac{c}{r} \right)^{1-\xi} + \lambda \eta V^{1-\xi} \right]}{E^T(X; c, \lambda, \eta)}. \end{aligned} \quad (9)$$

In our model, firms move away from financial distress as the level of cash flow increases and get closer to financial distress as the level of cash flow decreases towards the takeover threshold  $X_T$ . (In effect, the takeover threshold and the default threshold coincide in the special case where  $V = \frac{c}{r}$ .) We can thus investigate the effects of anti-takeover laws on the values and expected returns of healthy and distressed firms, respectively, by looking at the change in equity value and in beta due to a change in  $\lambda$  when  $X$  tends to infinity or when it tends to  $X_T$ , respectively. Using Proposition 1, we immediately get the following result (see Appendix A for details):

**Corollary 1** (Takeover protections, equity value, and equity beta). *The following holds*

1. *Equity beta and the expected return on the target's equity decrease with the likelihood of a successful takeover  $\lambda$  in that  $\frac{\partial \beta(X_T; c, \lambda, \eta)}{\partial \lambda} < 0$ . The change in equity beta due to anti-takeover laws, defined by  $\Delta \beta^T(X; c, \lambda, \eta) \equiv \beta^T(X; c, 0, 0) - \beta^T(X; c, \lambda, \eta)$ , is positive and satisfies*

$\lim_{X \rightarrow +\infty} \Delta \beta^T(X; c, \lambda, \eta) = 0$  for healthy firms and

$$\lim_{X \rightarrow X_T} \Delta \beta^T(X; c, \lambda, \eta) = \beta_X \left\{ \frac{-\xi \lambda \eta (rV - c) V^\xi \left(\frac{c}{r}\right)^\xi \left[ V^{1-\xi} - \xi \alpha \left(\frac{c}{r}\right)^{1-\xi} \right]}{E^T(X; c, \lambda, \eta) E^T(X; c, 0, 0)} \right\} > 0, \quad (10)$$

for distressed firms.

2. Equity value increases with the likelihood of a successful takeover  $\lambda$  in that  $\frac{\partial E^T(X_T; c, \lambda, \eta)}{\partial \lambda} > 0$ . The change in equity value due to anti-takeover laws, defined by  $\Delta E^T(X; c, \lambda, \eta) \equiv E^T(X; c, 0, 0) - E^T(X; c, \lambda, \eta)$ , is negative and satisfies  $\lim_{X \rightarrow +\infty} \Delta E^T(X; c, \lambda, \eta) = 0$  for healthy firms and

$$\lim_{X \rightarrow X_T} \Delta E^T(X; c, \lambda, \eta) = \frac{\lambda \eta}{1 - \xi} \left[ \xi \alpha \left(\frac{c}{r}\right)^{1-\xi} - V^{1-\xi} \right] < 0, \quad (11)$$

for distressed firms.

Corollary 1 shows that anti-takeover laws increase the risk of target firms. In effect, takeovers are akin to a put option on the firm's equity for target shareholders. Because put options have negative betas, they reduce a firm's equity beta and equity returns. The magnitude of the effects of takeovers on valuations and returns increases with the likelihood of the takeover. It also increases as the firm approaches financial distress and the weight of the put option associated with the takeover in the value of equity increases. This leads to the following novel empirical predictions.

**Prediction 1** *Takeover protections increase equity risk and returns, especially in distressed firms.*

This first testable implication follows directly from Corollary 1 and relates to the effects of takeovers on equity risk and expected stock returns. Because this empirical prediction is entirely novel, much of the empirical analysis is dedicated to its testing.

**Prediction 2:** *Takeover protections decrease shareholder value, especially in distressed firms.*

This second prediction also directly follows from Corollary 1 and provides a novel view on the relation between takeover protections and shareholder value. According to our model, the relation should be negative, but most of the effect should come from distressed firms. We now turn to testing these two empirical predictions using regulatory changes that have had a direct effect on the acquisition markets, both domestically and internationally.

## 2 Pro-takeover laws, equity risk, and stock returns

Our empirical predictions relate equity prices and the riskiness and returns of distressed firms' stocks to the market for mergers and acquisitions, and in particular, to the feasibility of takeovers. To test these predictions, we use several regulatory changes that have a direct effect on the acquisition markets, both internationally and domestically. We start by analyzing the effects of pro-takeover laws in an international setting.

### 2.1 Pro-takeover laws and stock returns

We argue that the passage of a pro-takeover law in a country facilitates takeovers, thereby decreasing equity risk and expected returns. Our model shows that this effect is particularly strong for financially distressed firms as takeovers provide such firms with a means to avoid bankruptcy by “being saved” through a takeover. We therefore expect (1) lower returns to distressed stocks in countries that have passed a pro-takeover law and (2) that the passage of pro-takeover laws should decrease equity risk (beta) and returns.

In this first set of tests, we take advantage of staggered enactments of country pro-takeover legislation. Takeover acts are laws passed specifically to foster takeover activity by reducing barriers to M&A transactions and simplifying the acquisition process. Lel and Miller (2015) study the effects of takeover laws on managerial discipline and CEO turnover. As noted in their study, “They (country takeover laws) are aimed at reducing informational uncertainties regarding the legal framework applicable to M&A transactions, thus simplifying the application of various laws in connection with M&A transactions and streamlining M&A procedures.”

The adoption of country-level takeover laws provide a natural way to test the effect of an exogenous shock to the feasibility of takeovers on the returns and riskiness of distressed stocks. Our model predicts that both expected returns and riskiness of distressed stocks are negatively related to takeover probability as the possibility of a takeover essentially provides equityholders with a valuable put option. Importantly for our analysis, Lel and Miller (2015) find that the merger intensity increases after initiation of pro-takeover M&A laws. We test how this exogenous shock to the takeover probability affects the betas and returns of distressed stocks world-wide.

Table A.1 provides the list of countries that passed a pro-takeover law. While there are obviously

differences in takeover legislation across countries, the common theme in pro-takeover laws is to simplify M&A transactions and promote more active acquisition markets. For example, the 2002 Merger and Acquisition Act in Taiwan provides some general amendments to the Company Act to simplify the M&A process, while introducing more types of mergers including cash-out mergers and cross-border mergers, as well as providing some tax incentives to neutralize the transaction costs associated with M&A deals. The Merger Act passed in 2004 in Switzerland regulates the civil law aspects of mergers in a broad comprehensive framework, significantly facilitating acquisition deals, which used to be governed by Swiss corporate law and had to be carried out through a series of complicated transactions, often triggering unfavorable tax consequences and formal liquidation procedures. In Germany, the 2002 Takeover Act introduces formal provisions governing acquisition of publicly traded companies. As Strelow and Wildberger (2002) argue, prior to the passage of the act, takeovers of public companies had not often been considered an option worth pursuing. Table A.2 provides additional specific details about the features of takeover laws in our sample.

Our international data is from Compustat Global and our sample spans the years from 1989 to 2017. In order to have a meaningful cross-section of financially distressed firms in each country, we only include countries with at least 50 firms in any given month. Furthermore, we discard all monthly returns higher than 500% and daily returns higher than 100%, all zero returns, and firms with equity market value below five million dollars. Our final dataset consists of 42,868 firms in 43 developed and emerging countries with a 5,106,895 combined firm-month observations.

The summary statistics for our international sample are presented in Table 1. We winsorize all variables at the 1st and 99th percentiles. For each variable, we first calculate the cross-sectional mean and median across stocks. We then report the time-series averages of these means and medians. Size is the equity value of the underlying stock (in billions of dollars). Market-to-book of the underlying stock is the ratio of current equity market value to equity book value as of the previous quarter. Past return of the underlying stock is the cumulative return over the past six months. Book leverage is the book value of debt divided by book value of assets. In order to control for traditional determinants of returns, we also construct measures of profitability and investment. Following Haugen and Baker (1996), we define profitability as the annual income before extraordinary items divided by the previous year's book equity value. We measure investment by the annual change in gross property, plant, and equipment, plus the change in inventories, scaled

by lagged book value of assets (see, e.g., Titman, Wei, and Xie (2004)). The default probability is derived from the Merton/KMV distance-to-default model.<sup>5</sup>

We report the statistics for the whole sample as well as for subsamples of firms in countries with and without a pro-takeover (PTL) law. As shown in Table 1, firms have similar characteristics in PTL versus no-PTL countries. An average firm in our international sample has a market capitalization slightly in excess of 1 billion US dollars, a market-to-book ratio of about 2.6, a book leverage of about 0.35, and faces a 2.4% probability of going bankrupt in the following year.

Insert Table 1 Here
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We start our analysis by examining the relation between returns to distressed stocks and the presence of a pro-takeover law in a country. For this purpose, we run cross-sectional firm-level Fama-MacBeth (1973) regressions of market-adjusted stock returns on a dummy variable set to one if there is a pro-takeover law in the country in year  $t$  and to zero otherwise. Since there could be some anticipation effect prior to the formal enactment of a law, we exclude the year of the passage of the law. We market-adjust raw returns by subtracting the value-weighted market return in the country in order to control for exogenous country-level shocks to stock returns (the nature of our tests does not allow for the inclusion of country-level fixed effects as such effects would absorb any variation in returns due to pro-takeover laws). We additionally control for traditional determinants of stock returns that include size and market-to-book ratio as well as past return, profitability, and investment. Given the relatively small number of firms in some specific countries, to make sure that our results are not driven by a particular cut-off in defining distressed stocks, we report results for both the quintile as well as tercile of most distressed stocks based on the Merton/KMV model.<sup>6</sup> The results from the Fama-MacBeth regressions are presented in Table 2.

Insert Table 2 Here
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<sup>5</sup>The limited availability of accounting data forces us to resort to the Merton/KMV model in our international tests as the model uses only equity value, equity return volatility, and the face value of short-term debt as inputs. In our US tests below we employ the more commonly used distress measure of Campbell, Hilscher, and Szilagyi (2008). We provide details on the construction of the financial distress measures in Appendix B.

<sup>6</sup>Because we use market-adjusted returns in our tests and pro-takeover laws affect all stocks in the country, unlike in our tests based on the BC laws in U.S., we are not able to examine the effect of pro-takeover laws on returns in the sample of all stocks in the country.

Results in Table 2 support our hypothesis about the effect of pro-takeover laws on the stocks returns of distressed firms. Regression coefficients on the PTL dummy are negative and significant in all specifications ( $t$ -statistic of -2.22 in the specification with controls for the quintile of most distressed firms), consistent with our model (Prediction 1). The coefficients are also economically large. For example, in the regression specification with the full set of control variables, the market-adjusted returns to distress stocks are 31 (39) basis points a month lower in countries with a pro-takeover law in effect, in tercile (quintile) sorts on proximity to default.

## 2.2 Pro-takeover laws and equity risk

Our model additionally predicts that the betas of financially distressed stocks should be sensitive to the probability of a takeover—a pro-takeover law increases that probability and hence reduces their risk and betas. To test this prediction, we estimate the beta of each firm in our sample by regressing the firm’s daily excess stock return on the daily excess market return in the country. We then run difference-in-differences regressions of firm-level monthly market betas on a dummy variable that indicates the presence of a pro-takeover law in the firm’s country of incorporation. Our empirical specification has the following form:

$$\beta_{i,t} = \alpha + \xi PTL_{i,t} + \delta_1 size_{i,t} + \delta_2 Leverage_{i,t} + \delta_3 Before_{i,t}^1 + \delta_4 Before_{i,t}^2 + v_t + \eta_i + \varepsilon_{i,t}, \quad (12)$$

where  $\beta_{i,t}$  is the estimated beta of firm  $i$  in month  $t$ ,  $PTL_{i,t}$  indicates whether a pro-takeover law had been passed in the country of firm  $i$  by month  $t$ ,  $Size$  and  $Leverage$  are the logarithm of the firms’ market capitalization and of book leverage. We include time fixed effects  $v_t$  to absorb a potential impact from global time-varying economic conditions. We also include firm fixed effects  $\eta_i$  to account for potential exogenous determinants of risk and betas at the firm level. Lastly, we follow Bertrand and Mullainathan (2003) and also include two time dummy variables,  $Before_{i,t}^1$  and  $Before_{i,t}^2$ , that indicate years one and two prior to the enactment of pro-takeover laws for any time trends in the riskiness of firms in pre-law years.

The results from these regressions are presented in Table 3.

Insert Table 3 Here
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The evidence in Table 3 demonstrates that the betas of distressed stocks are affected by the passage of pro-takeover laws in ways consistent with our theory. The coefficients on the PTL dummy for the most financially distressed stocks are negative and statistically significant ( $t$ -statistic of -4.17 in the specification with controls for the quintile of most distressed firms), indicating that the betas of distressed stocks in the treated countries decrease relative to the betas of distressed stocks in the countries that do not pass a pro-takeover law. Note that the staggered nature of PTL enactments across countries allows the same countries to act as a treatment (when it adopts a pro-takeover law) as well as a control country (when there is no change in pro-takeover legislation). The effect of pro-takeover laws on the betas of distressed stocks is also economically meaningful: For tercile sorts the betas of distressed stocks decrease by 0.08 on average and for quintile sorts the change in betas is -0.13 on average.

To summarize, the evidence from the staggered adoption of pro-takeover laws in our international data set is consistent with the predictions of the model for the effects of takeover markets on the returns to financially distressed stocks in that both their (market adjusted) returns and betas are negatively affected by pro-takeover law enactments.

### 2.3 Merger Competition Laws

In this section, we provide additional evidence in favor of our hypotheses by taking advantage of the competition law index (CLI) recently developed by Bradford and Chilton (2018) for over 100 countries. The index measures the stringency of competition regulation around the world. The CLI quantifies the key elements of the competition laws and regulations that are in force in each country in each year. These elements are aggregated into an index that can be used to measure the intensity of competition regulation. The CLI is based on analysing and coding competition law statutes in general competition laws and sectoral regulations containing competition provisions or other laws such as constitutions or criminal laws to the extent they regulate competition or provide sanctions for anti-competitive behavior. It is constructed for the years from 1889 to 2010 and spans 126 countries. It is available for all 43 countries in our international dataset.

The competition law index combines different categories: Merger control, abuse of dominance, and anti-competitive agreements. Due to the focus of our study on takeover markets, out of the three categories, merger control is most relevant as it is directly related to the feasibility of

conducting takeovers. In the following, we therefore focus on the “merger control” sub-index. This sub-index incorporates the effects of the mandatory or voluntary merger notification systems, the degree of powers that the law grants to the authority in reviewing mergers, as well as the presence of various defenses in the competition statute. In particular, the merger control index is increased if there is mandatory merger control and if the firms are obligated to notify the authority pre-merger (as opposed to post-merger). The merger control index is further increased in jurisdictions that restrict mergers on grounds that they lessen competition or create or strengthen dominance and in jurisdictions that additionally restrict mergers on grounds of some “public interest.” The index is reduced if “efficiency defense” is present and the merging parties can escape prohibition by showing that the efficiencies that the merger generates outweigh the potential anti-competitive effect. Likewise, the “failing firm” defense (that allows a firm on a verge of bankruptcy to be acquired) and the “public interest” defense (that allows a merger if it results in certain public benefits) further reduce the merger control index.

In general, higher values of the merger control index indicate additional difficulties and regulatory hurdles that reduce the feasibility of a takeover. Therefore, the returns to distressed stocks are expected to be positively related to the merger control index, as predicted by our model. To test this prediction, we run cross-sectional Fama-Macbeth return regressions on the merger control index as well as a set of control variables, in a similar fashion to our return regressions in Section 2.1. Like in Section 2.1, we market adjust raw returns by subtracting the country-level value weighted market return from raw returns. Table 4 reports the results from these regressions.

Insert Table 4 Here
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The results in Table 4 support our hypothesis of a positive relation between merger control and returns to distressed stocks. The coefficients on the merger control index are positive and statistically significant in all regression specifications (marginally significant in the specification with tercile sorts and the full set of control variables). The economic effect of the merger control index is also large. For example, in the quintile regression and the full set of controls, the market adjusted returns to distressed stocks in countries with most stringent merger control (merger control index equals one) exceed returns in countries with the most lenient merger control (merger control



index equals zero) by 89 basis points a month.

Overall, using both staggered enactments of specific pro-takeover laws in various countries as well as the index of merger control legislation derived from the law statutes reveals a negative relation between returns to distressed stocks and takeover feasibility, consistent with the predictions of our model.

### 3 Anti-takeover laws: The U.S. evidence

We next turn to the effects of anti-takeover laws on equity risk and stock returns. To do so, we examine the dynamics of equity risk and returns to distressed stocks around the enactment of second-generation state anti-takeover laws. These laws have been implemented to reduce the threat of hostile takeovers and, therefore, present a natural setting to study how betas and stock returns react to a change in the likelihood of a takeover.

Our tests focus on state Business Combination (BC) laws and use other types of laws (Fair Price and Control Share Acquisition laws) in robustness tests. We choose to focus our analysis on BC laws because they have been extensively studied. BC laws impose a moratorium on certain kinds of business combination transactions (e.g., asset sales, mergers, share exchanges) between a large shareholder and the firm for a period usually ranging between three and five years after the shareholder's stake passes a pre-specified (minority) threshold. Our main hypothesis is that financially distressed firms can benefit from a takeover as the acquiring firm can provide additional resources and potentially rescue the target from distress or alleviate its severity. BC laws pose significant challenges to conducting hostile takeovers and, hence, make this channel less feasible (see e.g. Giroud and Mueller (2010) or Gormley and Matsa (2016)).<sup>7</sup>

Recent research by Karpoff and Wittry (2018) raises concerns about the use of anti-takeover laws for identification. As they argue, the inference can be muddled by other anti-takeover laws, firm-level takeover defenses, and important court decisions. In addition, some firms lobbied for state anti-takeover laws and therefore those laws are not exogenous to those firms. We perform a multitude of robustness checks to address these potential concerns in Section 3.6. Furthermore, we

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<sup>7</sup>In unreported tests, we find indeed that there is a strong effect of the enactment of BC laws on the probability that a distressed firm becomes a target in a takeover (and in particular in a hostile takeover), thereby validating our use of BC laws to proxy for the likelihood of such acquisitions.

note that our goal is to study the asset pricing implications of takeover markets, not their effect on firms' decisions. Our approach is therefore less subject to endogeneity concerns. We merely argue that regulatory changes that impede the feasibility of hostile takeovers have a certain effect on equity prices and stock returns and betas, particularly those of distressed firms, as long as those changes have not been fully anticipated by investors long in advance.

### 3.1 Data

Our main data source for U.S. companies is Compustat for accounting data and CRSP for stock prices and returns. Our tests are targeted at the effects of state anti-takeover laws on equity prices, stock returns, and betas. We start our sample in 1988 to make sure that we have enough states with an anti-takeover law at any given point in time. This ensures that we have at least 15% of states that have an anti-takeover law in place in any given year.

Our main tests rely on the staggered enactments of BC laws in various states (we also examine the effect of alternative anti-takeover laws in robustness tests). Our sample is comprised of about 1.9 million firm-months, of which about 350 thousand firm-months belong to states with no BC law in effect, and the remaining firm-years are in states that passed a BC law. The dynamics of the introductions of BC laws by various states is presented in Figure 1.

Insert Figure 1 Here

Figure 1 shows both the number of states that have a BC law enforced and the percentage of firms incorporated in those states. We follow Bertrand and Mullainathan (2003), Atanassov (2013), and Karpoff and Wittry (2018) in constructing a sample of state anti-takeover laws.<sup>8</sup> The dates of these laws are reported in Table A.3. Out of the 50 states and the District of Columbia, 31 states passed a BC law. Most states passed BC laws in the late 1980s, with New York being the first state that passed a law (in 1985), and Iowa and Texas being the last, with both states passing anti-takeover laws in 1997. In 1988, when we start our sample, seven states have a BC law in place—Arizona, Indiana, Kentucky, Minnesota, Missouri, New Jersey, and New York. The large increase in the percentage of firms in states with a law in 1989 is due to the adoption of a BC law by Delaware,

<sup>8</sup>As Karpoff and Wittry (2018) argue, three of passage dates in Atanassov (2013) and Bertrand and Mullainathan (2003) are subject to errors, and three states with laws are not included (Oregon, Iowa, and Texas). In our analysis we update our set of laws accordingly.

the state that hosts the majority of the firms in our sample (about 53%). In Section 3.6, we verify that our results are robust to the exclusion of Delaware.

Our objective in this section is to examine the effects of the passage of BC laws on equity prices and the risk and returns of distressed firms' stocks, as classified by the financial distress measure from Campbell, Hilscher, and Szilagyi (2008). We use the Merton/KMV measure in robustness tests in section 3.6 (see details on the distress measures in Appendix B) .

Insert Table 5 Here
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In addition to our distress measure, Table 5 also reports the various control variables that are used in our regressions. We winsorize all variables at the 1st and 99th percentiles. For each variable, we first calculate the cross-sectional mean and median across stocks. We then report the time-series averages of these means and medians. The average firm in our sample exhibits characteristics that are similar to those reported in prior studies with a market capitalization of about \$2.5 billion, a market-to-book ratio of 2.5, and a book leverage of 0.34.

### 3.2 Portfolio tests

To study the effect of anti-takeover laws on the returns of distressed stocks, we sort each month all stocks into two portfolios, containing stocks of companies incorporated in states with and without an anti-takeover law (ATL) as of the year of portfolio formation. As in our international tests, to eliminate any potential anticipation effect prior to the formal enactment of a law, we exclude the year of the passage of the law. In addition, because our model predicts a differentiated effect of takeover feasibility on distressed versus solvent stocks, we perform these portfolios sorts for the full sample of stocks, and separately for the subsample of the most financially distressed stocks. For that purpose, each month we sort all stocks into quintiles based on the measure of Campbell, Hilscher, and Szilagyi (2008), hereafter 'CHS', that we use to proxy for the degree of financial distress. We define stocks in the top quintile as most distressed ones. The portfolios are value-weighted and held for one month.

While in our model the risk of the firm's equity is driven by its beta, conditional betas are notoriously hard to estimate and therefore our estimates of betas are likely subject to measurement

errors. Furthermore, we recognize the limitations of the CAPM in empirical asset pricing and acknowledge the possibility that other risk factors can be behind the risk premium associated with the stochastic process  $X_t$  in the model. Therefore, we follow the literature (e.g. Garlappi, Shu, and Yan (2008) or Garlappi and Yan (2011)) and examine the effect of anti-takeover laws on both mean excess returns and alphas from traditional asset pricing models. We also study the direct effect of these laws on CAPM betas in Sections 3.4 and 3.5.

Panel A of Table 6 shows the portfolios' mean excess monthly returns (in excess of the risk-free rate) and alphas from factor models. The CAPM uses the market factor. The factors in the three-factor model are the Fama and French (1993) factors. The factors in the four-factor model are the Fama-French three factors augmented with the momentum factor. The factors in the five-factor model are the Fama and French (2015) factors. The factors in the six-factor model are the Fama-French five factors augmented with a momentum factor.

Insert Table 6 Here
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The results in Table 6 demonstrate a significant difference in returns to ATL (stocks of companies incorporated in states that have passed a BC law) versus no-ATL (stocks in the states that have not passed such a law) portfolios for the subsample of distressed stocks, in line with the predictions of the model. The differences in monthly returns and portfolio alphas to ATL and no-ATL distress portfolios are economically large and statistically highly significant. In terms of mean excess returns, the ATL distress portfolio outperforms the no-ATL portfolio by 0.85% per month. The differences in monthly alphas from factor models vary from 0.72% for the Fama-French three-factor model to 0.82% per month for the six-factor model. There is no evidence, however, that the ATL portfolio outperforms the no-ATL on the sample of all stocks. If anything, the opposite obtains. We show, however, in Table 6 Panel B, that this non-statistically significant effect is driven by very large firms that are most likely to be acquirers (not targets).<sup>9</sup> When we exclude large-cap stocks every month, classified as the top 5% by NYSE breakpoints, which is common in the literature, the ATL portfolio outperforms the no-ATL portfolio on the sample of all stocks but the effect is not statistically significant.

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<sup>9</sup>Because large firms are more likely to be the acquirers of the (risky) distressed firms, we expect the returns and betas of these large firms to be negatively affected by the passage of anti-takeover laws. Results in Table 6 are consistent with this conjecture.

### 3.3 Fama-MacBeth regressions

Portfolio sorts provide a simple view of the relation between returns and factor loadings and the presence of anti-takeover laws in the state of incorporation. An additional approach commonly used in the literature is Fama and MacBeth (1973) regressions. Beyond serving as an additional diagnostic check, these regressions offer the advantage of controlling for other well-known determinants of the cross-sectional patterns in returns (in the previous section we control for these determinants by relying on alphas from various factor models) and thus check for the marginal effect of the anti-takeover laws.

In this section, we use these cross-sectional regressions and report the results in Table 7. The dependent variable is the excess stock return while the main independent variable is a dummy variable that equals one if the firm is incorporated in a state with a BC law and zero otherwise. Control variables include the logarithm of market capitalization, the logarithm of the market-to-book ratio, the past six-month return, profitability, and investment. We winsorize all independent variables at the 1% and 99% levels to reduce the impact of outliers. All reported coefficients are multiplied by 100 and we report Newey-West (1987) corrected (with twelve lags)  $t$ -statistics in parentheses. To isolate the effect of BC laws on distressed stocks, we run the cross-sectional Fama-MacBeth regressions on the full sample and separately for the subsample of the most distressed stocks (top CHS quintile).

Insert Table 7 Here
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Results in Table 7 show that there is a significant positive effect of BC laws on the returns of distressed stocks ( $t$ -statistic of 2.47 in the specification with controls). The effect is also economically large: After controlling for usual determinants of stock returns, distressed stocks earn about 0.36% a month more in the states with an anti-takeover law relative to those without a law. While the ATL also has a positive effect on returns in the sample of all stocks, the magnitude of this effect is three times smaller than in the sample of distressed stocks. The coefficients on the control variables show the usual patterns: Returns are generally negatively related to size, market-to-book, and investment, and positively related to profitability and past return. Returns to distressed stocks also in general have a higher sensitivity to firm characteristics such as size, market-to-book, and investment, consistent with the finding in the literature that return anomalies are stronger in

distressed firms' stocks (see, e.g. Avramov, Chordia, Jostova, and Philipov (2013)).

To summarize, the cross-sectional regressions of Table 7 coupled with the portfolio sort results from Table 6 demonstrate the importance of the presence of an anti-takeover law in a state for the returns to stocks of firms incorporated in that state, and particularly financially distressed firms. As our model predicts, anti-takeover laws lead to higher returns for distressed stocks. Both portfolio sort results and regression-based evidence yield support for this prediction.

### 3.4 Factor model loadings

Our model generates specific predictions for the betas of financially distressed firms. A legislative act that makes it hard to conduct hostile takeovers should have a positive effect on the firm's risk and its equity beta and this effect is expected to be the strongest for financially distressed firms. To look more closely at the risk attributes of distressed stocks in relation to anti-takeover laws, we go back to portfolios of stocks incorporated in states with and without a business combination law, whose returns are reported in Table 6. Table 8 reports the CAPM alphas as well as loadings from the Fama-French (2015) five-factor model, augmented with the momentum factor. As in Table 6, we report results for all stocks, and separately for the most distressed stocks (top CHS quintile).

Insert Table 8 Here
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The results in Table 8 show that, as predicted, the CAPM betas of distressed stocks are higher in ATL states than in no-ATL states. Not surprisingly, distressed stocks tend to have higher than average betas in general, both in ATL and no-ATL states. More importantly, and consistent with the model predictions, the beta of the ATL state distress portfolio is 1.83 while it is 1.65 for the no-ATL states. The difference between these betas is 0.18 and highly statistically significant. There is no such effect in the portfolios of all stocks: In the full sample there is virtually no difference in the betas of ATL state and no-ATL state portfolios, both betas being close to one. Interestingly, firms in ATL states have lower leverage, which should lower their equity beta (all else equal). It is therefore remarkable that we find higher betas in these states, despite the lower leverage.

The results in Table 8 also show that distressed stocks tend to load positively on the SMB (size) and negatively on the RMW (profitability) and MOM (momentum) factors. These loadings

are expected as distressed stocks are generally smaller, less profitable, and have low past returns. However, between the ATL and no-ATL portfolios of distressed stocks there are no significant differences in the loadings on return factors.

Overall, the data exhibit the expected pattern. As predicted by the model, the riskiness of distressed firms (as measured by beta) is higher in states that have a BC law in place.

### 3.5 Difference-in-differences

Our portfolio based results demonstrate that the betas of distressed stocks are higher in states with BC laws than in those without such laws, consistent with the prediction of the model that anti-takeover laws increase the riskiness of distressed firms. As in our international tests, we can also use a difference-in-differences methodology to study how distressed firm betas react to the passage of BC laws in the states that enact such laws relative to those states that do not.<sup>10</sup> Because slightly less than half of all states never passed a BC law, we can measure the marginal change in betas around the enactment of the laws in treated states relative to a similar change in control states. A further advantage is that different states passed the laws at different times, which allows a given state to be both a treatment (if it has already passed a law) and a control (if it has not yet passed a law).

In this section we follow this path and, as before, divide all stocks into equal-sized quintiles according to the financial-distress measure from Campbell et al. (2008). For the full sample and for the subsample of distressed firms (top quintile), we construct state-wide portfolios. We then estimate the market beta of each state-wide portfolio in each month by regressing the value-weighted daily excess return of the portfolio on the market daily excess return during the month. To capture the effect of anti-takeover laws on firm betas, we adopt a difference-in-differences methodology and define an ATL dummy that indicates whether or not the state has an anti-takeover law by year  $t$ . We set the ATL dummy to one in the years following the enactment of an anti-takeover law in a state and set it to zero in the years before the enactment year and in all years in the states with no anti-takeover law. We control for size and book-to-market, defined as the value-weighted means

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<sup>10</sup>This methodology has been used in the literature to study the effect of anti-takeover laws on various types of corporate activity. For example, Bertrand and Mullainathan (2003) focus on corporate governance and managerial discipline, Giroud and Mueller (2010) study the effect on operating performance in relation to industry competitiveness, Atanassov (2013) examines the impact of those laws on corporate innovation. In our setting, the staggered enactment of BC laws provides a fruitful ground for testing the effect of these laws on firm riskiness and their betas.

of the logarithm of the firms' market capitalization and of the book leverage in the state-wide portfolio. In addition, to check for any potential existence of trends in betas preceding the years in which anti-takeover laws had been enacted, we include two time dummies  $Before^1$  and  $Before^2$  that indicate years one and two prior to the enactment year. As standard in the difference-in-difference methodology, we include state fixed effects to account for determinants of state-portfolio betas as well as time fixed effects to absorb potentially economy-wide shocks.

Insert Table 9 Here
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The results from these difference-in-differences regressions are presented in Table 9. The first two columns present the results for the full sample (with just the ATL dummy and a full set of control variables) while the last two present the results for the subsample of the most distressed stocks. While there is no significant effect of the ATL dummy on the betas for the full sample of stocks, the effect is positive and statistically significant in the sample of the most distressed stocks. The effect is also economically large: An enactment of a business combination law increases distressed firm betas by about 0.13, on average, relative to the states that pass no law. There is no evidence on any pre-trends in betas of distressed firms; the regression coefficients on the  $Before_{i,t}^1$  and  $Before_{i,t}^2$  dummies are statistically indistinguishable from zero.

Overall, the evidence from the difference-in-differences tests reinforces our portfolio-based results and points toward a causal effect of anti-takeover laws on the betas of distressed firms.

### 3.6 Robustness tests

In a recent paper, Karpoff and Wittry (2018) raise several concerns about the use of regulatory and legal changes to identify exogenous variation in economic conditions and, in particular, the use of second-generation state anti-takeover laws in various corporate finance studies. They argue that the effect of anti-takeover laws can be muddled by confounding effects arising because of coverage by a first-generation state anti-takeover law or by other second-generation laws, preexisting firm-level takeover defenses, and the legal regime as determined by important court decisions. Furthermore, there is evidence that corporate laws are affected by corporate lobbying and are therefore not exogenous to the lobbying firms. As Karpoff and Wittry argue, the results in some corporate



finance studies disappear if one excludes these lobbying firms.

We believe that the asset pricing nature of our tests makes our paper less of a subject to endogeneity issues. Whether the second-generation state antitakeover laws, and BC laws in particular, are completely exogenous or whether some of them had been promoted by some lobbying firms is less of a concern for us. We merely posit that antitakeover laws impose some limitations on the feasibility of hostile takeovers. As long as the enactment of these laws has not been fully anticipated by investors years in advance, we expect to find a differential effect on returns to distressed stocks and their betas in states with and without an anti-takeover law, as our model implies.

Nevertheless, to address the important concerns raised by Karpoff and Wittry (2018), we perform a series of robustness tests. Karpoff and Wittry’s first concern is that first-generation anti-takeover laws can interfere with any inference, especially in the studies that use pre-1982 data (in 1982 first-generation anti-takeover laws had been effectively invalidated by the court decision in the “Edgar versus MITE” case). To this concern, we note that we deliberately start our sample in 1988 in order to have a sufficiently populated ATL portfolios, and hence our sample does not include the times when first-generation laws were still in effect.

As further argued by Karpoff and Wittry, the constitutionality of BC laws was only established in a ruling by the U.S. Seventh Circuit Court of Appeals in “*Amanda Acquisition Corp. v. Universal Foods Corp.*” on May 24, 1989. They also find that BC laws in and of themselves are not associated with meaningful changes in most outcome variables from previous corporate finance papers in the literature that rely on BC laws. To account for these concerns, we perform an additional test by starting our sample in 1990. By 1990, the constitutionality of BC laws had been fully established. We note that our main sample starts in 1988 so that we do not expect this concern to have a material effect on the results. The results are reported in Table 10, Panel A, where as in Table 6 we present results for the full sample of stocks as well as the most distressed (highest CHS score) quintile.<sup>11</sup> To conserve space, we only report mean excess returns and six-factor alphas of the ATL and no ATL portfolios as well as the difference in returns. Table 10 corroborates our conjecture. Both mean excess return of the ATL-No ATL long-short portfolio and its six-factor alpha remain

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<sup>11</sup>Table A.4 in the Appendix replicates the results in Table 9 while excluding from the sample large-cap stocks, defined as the top 5% by NYSE breakpoints in each month.

virtually unchanged.

Insert Table 10 Here
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Another concern voiced by Karpoff and Wittry is that, as argued by Werner and Coleman (2015), antitakeover laws are affected by corporate lobbying, therefore invalidating the exogeneity assumption for lobbying firms (see Table 3 in Karpoff and Wittry for the list of lobbying firms). We believe that this issue is less relevant for our asset pricing tests as our objective is not to study corporate decisions, but stock returns. As a result, whether the laws are exogenously imposed on managers or are passed partly due to their lobbying is less of a concern to us, as long as those legal changes are not perfectly anticipated by investors and fully impounded by them in firm valuations long in advance of the law enactment (which would be highly unlikely). Nevertheless, to further alleviate potential endogeneity concerns due to firm lobbying, we re-run our portfolio tests while excluding the firms identified in the literature as lobbying. The results are presented in Table 10, Panel A. The exclusion of motivating firms has essentially no effect on the returns of the ATL and no-ATL distress portfolios and their difference. While the monthly mean excess return and the six-factor alphas are 0.85% and 0.82% when including all firms, they change to 0.82% and 0.79%, respectively, when excluding motivating firms, and remain statistically significant.

About a half of all firms in our sample (53%) are incorporated in the state of Delaware. Delaware famously dominates the market for incorporations due to its attractive legal regime. To make sure that our results are not largely attributable to the effect of Delaware firms, we re-estimate portfolio returns while excluding firms incorporated in Delaware. The results are presented in Table 10, Panel A. Interestingly, excluding Delaware firms widens the return differential between ATL and no-ATL distress portfolios as both mean excess return and six-factor alpha rise to 1.08% and 1.10% monthly, respectively, while remaining highly significant statistically.

Finally, we use the CHS measure of financial distress in our U.S. tests while we use the Merton/KMV measure in our international tests, due to a lack of proper accounting data. Table 10, Panel A, shows that our results are largely unaffected by the choice of distress measure. In unreported tests, we also find using Fama McBeth regressions that there is a significant positive effect of BC laws on the returns of distressed stocks ( $t$ -statistic of 2.82 in the specification with controls). The effect is also economically large: After controlling for usual determinants of stock returns,

distressed stocks earn about 0.35% a month more in the states with an anti-takeover law relative to those without a law.

Another concern is that BC laws (that are argued to be the strongest out of the second-generation anti-takeover laws and hence are used most often in the literature) represent just one type of anti-takeover laws and other anti-takeover laws were passed by various states. To address this issue, we examine returns of ATL and no-ATL portfolios formed on the basis of alternative anti-takeover laws: Fair Price and Control Share Acquisition laws. The passing dates of these laws are presented in Table A.3. The evidence with respect to these alternative laws is presented in Table 10, Panel B. The results reveal the robustness of our portfolio tests. For the most distressed stocks, the difference in mean returns and six-factor alphas between ATL and no-ATL portfolios are slightly lower in magnitude when using alternative laws than in the case of business combination laws (Table 6), but still largely statistically significant and economically high. The six-factor alphas range from 0.58% a month for Control Share Acquisition to 0.76% for Fair Price laws, while mean excess returns are 0.51% monthly for Fair Price laws and 0.68% for Control Share Acquisition laws. In addition, the statistical significance of these effects is high, except for effect of Fair Price laws on the mean return, which is only marginally significant.

## 4 Takeover protections and shareholder value

We next turn to testing the second prediction of the model on the effect of takeover protections on shareholder value in distressed firms. Our main hypothesis is that the presence of an anti-takeover law in a state reduces the likelihood of being acquired for distressed firms incorporated in that state, leading to a drop in their equity value. We therefore expect ATL announcements to cause a drop in distressed equity values and hence to generate negative abnormal returns to distressed firms around ATL announcement dates.

We test this prediction by exploiting the staggered enactments of BC laws in various states, as described in Section 3.1. Specifically, we follow Giroud and Mueller (2010) and conduct an event study to examine the market reaction to the announcements of anti-takeover laws in various states. As Karpoff and Malatesta (1989) and Giroud and Mueller (2010) argue, the enactment date by itself is likely well anticipated and hence is unlikely to contain any new information and cause a

significant reaction in equity values. Consistent with this conjecture, Karpoff and Malatesta (1989) find no significant abnormal returns when using the passage dates of the anti-takeover laws, but find significant stock price reaction when using the first date of a newspaper report as the event date. We therefore follow Giroud and Mueller (2010) and use the first dates of newspaper articles on an impending anti-takeover law as event dates. These dates are available for 19 states (these are normally larger states and represent close to 90% of all firms in our sample incorporated in the states with ATL laws.)<sup>12</sup>

Our event study methodology closely follows Karpoff and Malatesta (1989) and Giroud and Mueller (2010). In order to address potential cross-sectional correlation of standard errors at the firm level, we form state portfolios and examine abnormal announcement returns at the state level. For each state portfolio  $j$ , we estimate the market model using CRSP daily equity returns from 241 to 41 trading days prior to the event date. That is, we estimate:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + e_{jt}, \quad (13)$$

where  $R_{jt}$  is the daily return of the equally weighted portfolio of all firms incorporated in state  $j$  and  $R_{mt}$  is the daily return of the equally weighted CRSP market portfolio. The abnormal return of the state portfolios is computed as the raw return less the fitted value from the market model:

$$AR_{jt} = R_{jt} - \hat{R}_{jt} \quad (14)$$

The cumulative abnormal return (CAR) during a multiple-day window is obtained as the sum of the daily abnormal returns during the window. Table 11 reports cumulative abnormal returns for the same time intervals as Karpoff and Malatesta (1989) and Giroud and Mueller (2010): [-40,-2], [-30,-2], [-20,-2], [-10,-2], [-3,-2], [-1,0], [1,2], and [1,10], where day 0 is the event date. As in our main set of tests, we perform the event study on the full sample as well as on the subsample of financially distressed stocks.

Insert Table 11 Here
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The results in Table 11 are consistent with the prediction of the model on the negative effect of

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<sup>12</sup>We are grateful to Xavier Giroud for providing the set of these event dates.

ATL enactments on the equity values of distressed stocks.<sup>13</sup> The abnormal return over the two-day window surrounding the event is -1.55% for financially distressed stocks and is highly statistically significant. While the corresponding abnormal return in the sample of all firms is also negative, it is much smaller in magnitude and lacks statistical significance. There is no evidence of any significant run-up in returns prior to the announcement dates, nor are there any post-event trends in returns. Thus, the evidence in Table 11 supports the prediction of our model on the effect of anti-takeover laws on firm values, and in particular those of financially distressed firms.

## 5 Conclusion

We argue that takeovers provide a valuable exit option for shareholders of distressed firms and show, using a stylized model of takeovers, that anti-takeover laws should decrease shareholder value and increase equity risk and stock returns, while pro-takeover legislation changes should have the opposite effect. We empirically investigate these predictions by looking at the return dynamics in distressed firms around the enactment of anti- and pro-takeover laws in the US and internationally. We also exploit variation in merger control statues across countries and over time. Our approach is multi-faceted. In our US-based tests, we analyze the returns and factor loadings of portfolios that contain stocks of companies incorporated in states with or without anti-takeover laws. We also run Fama-MacBeth cross sectional regressions on a dummy indicating the presence of an anti-takeover law. We additionally study the riskiness (betas) of portfolios in states with or without anti-takeover laws as well as the effect of anti-takeover laws on betas in a difference-in-differences setting. In our international tests, we resort to Fama-Macbeth return regressions as well as difference-in-difference tests for betas.

We obtain multiple results that are consistent with the predictions of the model, both in the U.S. and internationally. In particular, we find that portfolios of distressed stocks in states with anti-takeover laws outperform similar portfolios in states without anti-takeover laws both in terms of returns and alphas obtained from traditional factor models. Similarly, in our international tests we find that distress stock returns are negatively (positively) affected by the passage of pro-takeover (anti-takeover) laws. We also find a positive relation between returns to distress stocks and the

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<sup>13</sup>Our results for the full sample are qualitatively similar to those reported by Giroud and Mueller (2010). The difference in results is likely due to the updates that Compustat implements to their files over time. We get results that are quantitatively much closer to Giroud and Mueller (2010) when using Compustat legacy files as of 2006.

stringency of merger competition laws as proxied for by the merger control index. Consistent with the notion that anti-takeover (pro-takeover) laws increase (decrease) equity risk in distressed firms, our analysis of factor loadings in the U.S. as well as the difference-in-differences tests (both in the U.S. and internationally) show a negative (positive) relation between the betas of distressed firms and the enactment of pro-takeover (anti-takeover) laws. Furthermore, by using the publication dates of anti-takeover laws in the U.S., we find that distressed firms experience a significant abnormal stock price decline around the date of the first newspaper report on the BC law.

Overall, our paper demonstrates an important link between acquisition markets and the risk and equity returns, particularly those of financially distressed firms. Our analysis therefore is of potential interest to both academics as well as the regulators of takeover markets.

## Appendix

### Appendix A

The change in equity beta due to anti-takeover laws, defined by  $\Delta\beta^T(X; c, \lambda, \eta) \equiv \beta^T(X; c, 0, 0) - \beta^T(X; c, \lambda, \eta)$ , can be calculated using Equation (9). By definition,  $\beta^T(X; c, 0, 0)$  is independent of  $\lambda$  and  $\eta$ . The derivative of  $\beta^T(X; c, \lambda, \eta)$  with respect to  $\lambda$  is given by

$$\frac{\partial\beta(X; c, \lambda, \eta)}{\partial\lambda} = \frac{\delta\eta \left(\frac{X(\xi-1)}{\xi\delta}\right)^\xi \left(\frac{c}{r}\right)^\xi V^\xi \left(\left(\frac{c}{r}\right)^\xi rV - \xi cV^\xi\alpha\right) (rX(\xi-1) - \xi c\delta)}{\left[\left(\frac{c}{r}\right)^\xi r \left(V^\xi X + \left(\frac{X(\xi-1)}{\xi\delta}\right)^\xi \delta\eta\lambda\right) - cV^\xi\delta \left(\left(\frac{c}{r}\right)^\xi + \left(\frac{X(\xi-1)}{\xi\delta}\right)^\xi (\alpha\eta\lambda\xi - 1)\right)\right]^2} \quad (\text{A1})$$

As a result

$$\text{Sign}\left(\frac{\partial\beta(X; c, \lambda, \eta)}{\partial\lambda}\right) = \text{Sign}(rX(\xi-1) - c\delta\xi) \quad (\text{A2})$$

Since  $X > X_D$ , we immediately get that

$$\frac{\partial\beta(X; c, \lambda, \eta)}{\partial\lambda} < 0. \quad (\text{A3})$$

### Appendix B: Distress measures

#### B.1 Campbell, Hilscher, and Szilagyi's (2008) model

We calculate the distress-risk measure from Campbell, Hilscher, and Szilagyi (2008, Table IV, Column 3), which combines most recent quarterly accounting data with current monthly and daily equity market data:

$$\begin{aligned} \text{CHS}_t = & -9.164 - 20.264 \text{NIMTAAVG}_t + 1.416 \text{TLMTA}_t - 7.129 \text{EXRETAVG}_t \\ & + 1.411 \text{SIGMA}_t - 0.045 \text{RSIZE}_t - 2.132 \text{CASHMTA}_t + 0.075 \text{MB}_t - 0.058 \text{PRICE}_t, \quad (\text{B1}) \end{aligned}$$

where NIMTA is the net income divided by the market value of total assets (the sum of market value of equity and book value of total liabilities), TLMTA is the book value of total liabilities divided by market value of total assets, EXRET is the log of the ratio of the gross returns on the firm's stock and on the S&P500 index, SIGMA is the standard deviation of the firm's daily stock return over the past three months, RSIZE is ratio of the log of firm's equity market capitalization to that of the S&P500 index, CASHMTA is the ratio of the firm's cash and short-term investments to the market value of total assets, MB is the market to-book ratio of the firm's equity, and PRICE is the log price per share. NIMTAAVG and EXRETAVG are moving averages of NIMTA and

EXRET, respectively, constructed as (with  $\phi = 2^{-1/3}$ ):

$$\text{NIMTAAVG}_{t-1,t-12} = \frac{1 - \phi^3}{1 - \phi^{12}} (\text{NIMTA}_{t-1,t-3} + \dots + \phi^9 \text{NIMTA}_{t-10,t-12}) \quad (\text{B2})$$

and

$$\text{EXRETAVG}_{t-1,t-12} = \frac{1 - \phi}{1 - \phi^{12}} (\text{EXRET}_{t-1} + \dots + \phi^{11} \text{EXRET}_{t-12}) \quad (\text{B3})$$

Following Campbell et al. (2008), we winsorize all inputs at the 5th and 95th percentiles of their pooled distributions across all firm-months, where PRICE is truncated above at \$15. Further details on the data construction are provided by Campbell et al. (2008).

## B.2 Merton-KMV model

Merton-KMV approach to measuring a firm's distance-to-default is based on the two-equation contingent-claim method of Ronn and Verma (1986). The first equation, based on Merton (1974), expresses the value of the firm's equity as the value of a call option written on the firm's assets, using the Black and Scholes (1973) formula:

$$V_E = V_A N(d_1) - F e^{-rT} N(d_2), \quad (\text{B4})$$

where  $V_E$  is the equity value,  $V_A$  is the total asset value,  $N(\cdot)$  is the cumulative function of a standard normal distribution,  $d_1 = \frac{[\ln(\frac{V_A}{F}) + (r + \frac{\sigma_A^2}{2})T]}{\sigma_A \sqrt{T}}$ ,  $d_2 = d_1 - \sigma_A \sqrt{T}$ ,  $\sigma_A$  is asset volatility,  $F$  is the face value of debt,  $r$  is the risk-free rate, and  $T$  is debt maturity. The second equation, which is derived from Ito's lemma, represents the relation between equity volatility,  $\sigma_E$ , and asset volatility,  $\sigma_A$ :

$$\sigma_E = \frac{V_A N(d_1) \sigma_A}{V_E} \quad (\text{B5})$$

The unobservable variables  $V_A$  and  $\sigma_A$  are then calculated using observable inputs. In line with the literature (e.g., Bharath and Shumway (2008)), we assume a yearly framework ( $T=1$ ), and measure  $F$  by short-term debt (debt maturing within a year) plus half of the long-term debt (debt maturing after one year). The short-term risk-free rate  $r$  is proxied by the yield on one-year Treasuries, and  $\sigma_E$  is approximated by the annualized standard deviation of monthly returns in the past year.

We solve the two equations simultaneously for each firm in our sample. Because there are no closed-form solutions for  $V_A$  and  $\sigma_A$ , we use a numerical algorithm with  $V_E + F$  and  $\sigma_E$  as initial values. The risk-neutral probability of bankruptcy is then defined as the probability that the face value of debt exceeds the asset value at maturity, and is given by  $1 - N(d_2)$ . The distance-to-default is thus defined by  $d_2$ .



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Table 1: SUMMARY STATISTICS: INTERNATIONAL SAMPLE

This table presents data for a pooled sample of publicly traded firms from 43 developed and emerging countries appearing in Compustat Global over the period 1989-2017, and separately for firms from countries with and without pro-takeover laws (PTL). These laws have been passed by 23 countries, in 10 countries prior to the sample period, and in 13 countries during the sample period, between 1997 and 2004. The specific objective of these laws is to foster takeover activity by reducing barriers to mergers and acquisitions (M&A) transactions (see Lel and Miller (2015)). All variables are winsorized at the 1st and 99th percentiles. For each variable, we first calculate the cross-sectional mean and median across stocks. We then report the time-series averages of these means/medians. Size is the equity value of the underlying stock (in billions of dollars). Market-to-book of the underlying stock is the ratio of current equity market value to equity book value of the recent annual statement. Past return of the underlying stock is cumulative return over the past six months. Book leverage is the book value of debt divided by book value of assets. Profitability is the annual income before extraordinary items divided by the previous year's book equity value. Investment is the annual change in gross property, plant, and equipment, plus the change in inventories, scaled by lagged book value of assets. Default probability is derived from the Merton/KMV distance-to-default model.

		All countries	No PTL	PTL
	# firm-months	5,106,895	3,982,019	1,124,876
Size	Mean	1.042	1.046	1.052
	Median	0.178	0.203	0.163
Market-to-book	Mean	2.646	2.609	2.525
	Median	1.561	1.547	1.414
Past stock return	Mean	0.067	0.058	0.083
	Median	0.006	-0.004	0.028
Book leverage	Mean	0.347	0.369	0.307
	Median	0.321	0.350	0.275
Profitability	Mean	0.055	0.054	0.064
	Median	0.067	0.061	0.087
Investment	Mean	0.032	0.036	0.031
	Median	0.030	0.034	0.023
Default probability	Mean	0.024	0.023	0.025
	Median	0.000	0.000	0.000

Table 2: FAMA-MACBETH REGRESSIONS ON PRO-TAKEOVER LAW DUMMIES FOR FINANCIALLY DISTRESSED STOCKS: INTERNATIONAL EVIDENCE

The table presents the results of monthly cross-sectional firm-level Fama and MacBeth (1973) regressions of market-adjusted stock returns (raw returns minus value-weighted market returns) on a dummy variable that indicates the presence of a pro-takeover law (PTL) in the firm's country of incorporation. The control variables include the log market capitalization, log market-to-book ratio, past six-month return, profitability, and investment. We run the regressions on subsamples of financially distressed firms, classified by the top tercile and quintile based on the Merton/KMV distance-to-default model. All coefficients are multiplied by 100 and Newey-West corrected t-statistics (with twelve lags) are in parentheses. The sample period is 1989-2017.

	Distressed firms			
	Top tercile		Top quintile	
Cnst	-0.10	0.00	-0.34	-0.14
	(-0.61)	(0.01)	(-1.91)	(-0.35)
PTL dummy	-0.44	-0.31	-0.50	-0.39
	(-2.81)	(-2.09)	(-2.83)	(-2.22)
Log(size)		0.00		-0.02
		(-0.09)		(-0.35)
Log(market-to-book)		-0.25		-0.21
		(-3.52)		(-2.89)
Past return		-1.62		-1.97
		(-4.27)		(-4.99)
Profitability		0.67		0.74
		(2.83)		(2.32)
Investment		-0.67		-0.68
		(-2.61)		(-2.58)

Table 3: DIFFERENCE-IN-DIFFERENCES FOR MARKET BETA: INTERNATIONAL EVIDENCE

The table presents the results of difference-in-difference regressions of firm-level monthly market beta on a dummy variable that indicates the presence of a pro-takeover law (PTL) in the firm's country of incorporation. The firm's market beta for each month is estimated by regressing the firm's daily excess stock return on the daily excess market return in the country. The control variables include the log market capitalization and book leverage ratio. The regressions also include two time dummy variables, *Before*<sup>1</sup> and *Before*<sup>2</sup>, that indicate years one and two prior to the enactment of pro-takeover laws, as well as country and time fixed effects. We run the regressions on subsamples of financially distressed firms, classified by the top tercile and quintile based on the Merton/KMV distance-to-default model. We report regression coefficients and *t*-statistics are in parentheses. The sample period is 1989-2017.

	Distressed firms			
		Top tercile	Top quintile	
PTL dummy	-0.06 (-3.45)	-0.08 (-4.60)	-0.11 (-4.07)	-0.13 (-4.17)
Log(size)		0.07 (21.18)		0.07 (14.32)
Book leverage		-0.03 (-4.20)		-0.04 (-4.09)
Before <sup>1</sup>		-0.03 (-1.03)		0.01 (0.20)
Before <sup>2</sup>		0.01 (0.42)		0.04 (0.95)

Table 4: FAMA-MACBETH REGRESSIONS ON THE MERGER CONTROL INDEX FOR DISTRESSED STOCKS

The table presents the results of monthly cross-sectional firm-level Fama and MacBeth (1973) regressions of market-adjusted stock returns (raw returns minus value-weighted market returns) on a merger control index (obtained from Bradford and Chilton (2018)), which is a proxy for the difficulty of exercising M&A transactions in a country. The control variables include the log market capitalization, log market-to-book ratio, past six-month return, profitability, and investment. We run the regressions on subsamples of financially distressed firms, classified by the top tercile and quintile based on the Merton/KMV distance-to-default model. All coefficients are multiplied by 100 and Newey-West corrected t-statistics (with twelve lags) are in parentheses. The sample period is 1989-2010.

	Distressed firms			
	Top tercile		Top quintile	
Cnst	-0.98 (-3.51)	-0.65 (-1.13)	-1.42 (-4.38)	-0.92 (-1.72)
Merger control index	1.01 (2.76)	0.71 (1.92)	1.27 (2.84)	0.89 (2.02)
Log(size)		0.00 (0.00)		-0.02 (-0.37)
Log(market-to-book)		-0.24 (-2.54)		-0.17 (-1.78)
Past return		-2.27 (-5.16)		-2.67 (-5.95)
Profitability		0.31 (1.27)		0.29 (0.82)
Investment		-0.76 (-2.81)		-0.73 (-2.59)



Table 5: SUMMARY STATISTICS

The table presents data for the full CRSP/Compustat firm population over the period 1988-2017, and separately for firms incorporated in states with and without anti-takeover Business Combination law (ATL). See Table A.1. for the dates of anti-takeover laws. All variables are winsorized at the 1st and 99th percentiles. For each variable, we first calculate the cross-sectional mean and median across stocks. We then report the time-series averages of these means/medians. Size is the equity value of the underlying stock (in billions of dollars). Market-to-book of the underlying stock is the ratio of current equity market value to equity book value as of the previous quarter. Past return of the underlying stock is the cumulative return over the past six months. Book leverage is the book value of debt divided by book value of assets. Profitability is the annual income before extraordinary items divided by the previous year's book equity value. Investment is the annual change in gross property, plant, and equipment, plus the change in inventories, scaled by lagged book value of assets. CHS is the distress measure from Campbell, Hilscher, and Szilagyi (2008).

		All states	No ATL	ATL
		1,935,322	352,373	1,582,949
	# firm-months			
Size	Mean	2.565	2.338	2.605
	Median	0.242	0.153	0.253
Market-to-book	Mean	2.522	2.274	2.544
	Median	1.715	1.588	1.734
Past stock return	Mean	0.053	0.046	0.054
	Median	0.024	0.016	0.025
Book leverage	Mean	0.340	0.333	0.341
	Median	0.312	0.313	0.313
Profitability	Mean	0.013	0.011	0.015
	Median	0.084	0.081	0.085
Investment	Mean	0.070	0.079	0.069
	Median	0.039	0.046	0.039
CHS distress level	Mean	-7.323	-7.201	-7.341
	Median	-7.654	-7.476	-7.677

Table 6: RETURNS OF PORTFOLIOS OF STOCKS IN STATES WITH AND WITHOUT ANTI-TAKEOVER LAWS FOR DISTRESSED FIRMS

Each month we divide all stocks into two portfolios, which contain stocks of companies incorporated in states with and without anti-takeover law (ATL). The portfolios are value-weighted and held for one month. The table shows the portfolios' mean excess monthly stock returns (in excess of the risk-free rate) and alphas from factor models. The CAPM uses the market factor. The factors in the three-factor model are the Fama and French (1993) factors. The factors in the four-factor model are the Fama-French three factors augmented with a momentum factor. The factors in the five-factor model are the Fama and French (2015) factors. The factors in the six-factor model are the Fama-French five factors augmented with a momentum factor. The portfolios are applied to the full sample of firms, and to a subsample of financially distressed firms, classified by the top quintile based on the financial-distress measure from Campbell et al. (2008). The sample in Panel A includes all stocks, and the sample in Panel B excludes large-cap stocks, defined as the top 5% by NYSE breakpoints in each month. All returns and alphas are in percent per month and the corresponding  $t$ -statistics are in parentheses. The sample period is 1988-2017.

Panel A. All-size stocks						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.80 (3.37)	0.67 (3.09)	-0.13 (-1.21)	-0.89 (-1.49)	-0.04 (-0.07)	0.85 (2.41)
CAPM alpha	0.11 (1.15)	-0.02 (-1.03)	-0.13 (-1.22)	-2.04 (-4.25)	-1.31 (-3.81)	0.73 (2.04)
3-factor alpha	0.14 (1.42)	-0.03 (-1.96)	-0.17 (-1.59)	-2.06 (-4.69)	-1.34 (-4.49)	0.72 (2.01)
4-factor alpha	0.11 (1.11)	-0.02 (-1.31)	-0.13 (-1.21)	-1.54 (-3.65)	-0.74 (-2.96)	0.80 (2.19)
5-factor alpha	0.10 (0.98)	-0.03 (-2.26)	-0.13 (-1.21)	-1.49 (-3.44)	-0.71 (-2.60)	0.77 (2.07)
6-factor alpha	0.08 (0.78)	-0.03 (-1.78)	-0.11 (-0.96)	-1.12 (-2.71)	-0.29 (-1.31)	0.82 (2.19)

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Panel B. Excluding large-cap stocks

	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.61 (2.46)	0.74 (2.73)	0.13 (1.70)	-0.95 (-1.78)	-0.12 (-0.23)	0.83 (2.89)
CAPM alpha	-0.08 (-0.71)	-0.04 (-0.39)	0.04 (0.58)	-2.03 (-4.95)	-1.36 (-4.03)	0.68 (2.36)
3-factor alpha	-0.20 (-2.70)	-0.12 (-2.59)	0.08 (1.16)	-2.13 (-6.06)	-1.43 (-5.57)	0.69 (2.40)
4-factor alpha	-0.14 (-1.94)	-0.03 (-0.75)	0.11 (1.68)	-1.71 (-5.07)	-0.87 (-4.21)	0.84 (2.88)
5-factor alpha	-0.22 (-2.87)	-0.13 (-2.67)	0.09 (1.27)	-1.59 (-4.63)	-0.83 (-3.60)	0.76 (2.52)
6-factor alpha	-0.17 (-2.34)	-0.06 (-1.47)	0.11 (1.66)	-1.30 (-3.96)	-0.43 (-2.50)	0.87 (2.87)

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Table 7: FAMA-MACBETH REGRESSIONS ON ANTI-TAKEOVER LAW FOR DISTRESSED FIRMS

We run cross-sectional Fama and MacBeth (1973) regressions each month of excess stock returns. The main independent variable is a dummy variable that equals one if the firm is incorporated in a state with anti-takeover law (ATL) and zero otherwise. The control variables include the log market capitalization, log market-to-book ratio, past six-month return, profitability, and investment intensity. We run the regressions on the full sample and on a subsample of financially distressed firms, classified by the top quintile based on the financial-distress measure from Campbell et al. (2008). All coefficients are multiplied by 100 and Newey-West corrected  $t$ -statistics (with twelve lags) are in parentheses. The sample period is 1988-2017.

	Full sample		Distressed firms	
Cnst	-0.10	1.60	0.33	4.67
	(-0.35)	(2.33)	(0.67)	(5.34)
ATL dummy	0.31	0.12	0.23	0.36
	(3.16)	(2.23)	(1.28)	(2.47)
Log(size)		-0.04		-0.41
		(-0.87)		(-5.46)
Log(market-to-book)		-0.43		-0.69
		(-4.55)		(-5.90)
Past return		0.58		0.22
		(2.46)		(0.96)
Profitability		0.35		0.08
		(2.92)		(0.74)
Investment		-1.29		-2.03
		(-6.05)		(-6.90)

Table 8: CAPM BETA AND SIX-FACTOR MODEL LOADINGS

Each month we divide all stocks into two portfolios, which contain stocks of companies incorporated in states with and without anti-takeover law (ATL). The portfolios are value-weighted and held for one month. The table shows the portfolios' loadings from the CAPM and a six-factor model (the Fama-French (2015) five factors augmented with a momentum factor). The portfolios are applied to the full sample of firms and to a subsample of financially distressed firms, classified by the top quintile based on the financial-distress measure from Campbell et al. (2008). The  $t$ -statistics are in parentheses. The sample period is 1988-2017.

	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
CAPM Beta	0.98 (41.90)	0.99 (258.80)	0.00 (0.20)	1.65 (14.55)	1.83 (22.41)	0.18 (2.08)
6-factor model						
EMKT	1.00 (35.48)	1.00 (261.15)	0.00 (-0.04)	1.11 (9.94)	1.26 (20.84)	0.15 (1.46)
SMB	0.00 (0.12)	-0.03 (-5.89)	-0.03 (-0.86)	0.89 (6.18)	0.78 (9.99)	-0.11 (-0.85)
HML	-0.10 (-1.95)	0.03 (4.88)	0.13 (2.45)	-0.26 (-1.31)	-0.15 (-1.37)	0.11 (0.61)
RMW	0.06 (1.32)	0.02 (2.78)	-0.04 (-0.88)	-1.16 (-6.14)	-1.11 (-10.85)	0.05 (0.30)
CMA	0.01 (0.22)	0.00 (-0.38)	-0.02 (-0.25)	0.41 (1.50)	0.16 (1.07)	-0.25 (-1.00)
MOM	0.03 (1.41)	-0.01 (-3.69)	-0.04 (-1.79)	-0.59 (-6.65)	-0.68 (-14.01)	-0.08 (-1.01)

Table 9: DIFFERENCE-IN-DIFFERENCES FOR MARKET BETA

Each month we divide all stocks into equal-sized quintiles according to the financial-distress measure from Campbell et al. (2008). For the full sample and for a subsample of distressed firms (top quintile), we construct state-wide portfolios. We estimate the market beta of each state-wide portfolio in each month by regressing the value-weighted daily excess return of the portfolio on the market daily excess return during the month. We estimate the effect of passing the anti-takeover law (ATL) in a state on market beta using the difference-in-differences regression (12). We report regression coefficients and  $t$ -statistics are in parentheses. The sample period is 1982-2017.

	Full sample		Distressed firms	
Cnst	1.40	1.11	1.09	-0.90
	(18.86)	(10.78)	(3.77)	(-2.94)
ATL dummy	-0.01	0.02	0.14	0.13
	(-0.89)	(0.98)	(2.42)	(2.04)
State-mean log(size)		0.03		0.20
		(7.58)		(20.28)
State-mean leverage ratio		-0.29		-0.27
		(-6.81)		(-3.44)
Before <sup>1</sup>		0.11		0.00
		(3.68)		(-0.04)
Before <sup>2</sup>		0.07		0.01
		(2.50)		(0.11)

Table 10: SENSITIVITY CHECKS AND ALTERNATIVE TYPES OF ANTI-TAKEOVER LAWS

In Panel A we replicate the portfolio sort results of Table 3 with four modifications: assuming that all BC laws were not enforced prior to 1989, excluding 25 firms that were motivating/lobbying for the law (see Karpoff and Wittry (2018)), excluding firms incorporated in the state of Delaware, and using the Merton/KMV model as the distress measure. In Panel B we replicate the results using two alternative types of antitakeover laws to Business Combination laws (see Atanassov (2013) and Karpoff and Wittry (2018)). Fair Price laws require shareholders acquiring a percentage of stocks beyond a threshold level to pay all shareholders the highest price paid during a specified period of time before the start of a tender offer. Control Share Acquisition laws give non-interested shareholders the right to decide whether a newly qualified large shareholder has any voting right.

Panel A. Sensitivity checks						
	Post-1989 BC Law					
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.78	0.64	-0.13	-0.90	-0.02	0.88
	(3.09)	(2.81)	(-1.20)	(-1.42)	(-0.04)	(2.35)
6-factor alpha	0.08	-0.02	-0.10	-1.11	-0.25	0.86
	(0.76)	(-1.79)	(-0.88)	(-2.54)	(-1.08)	(2.15)
Excluding Motivating or Lobbying Firms						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.80	0.67	-0.13	-0.89	-0.06	0.82
	(3.24)	(3.08)	(-1.16)	(-1.49)	(-0.12)	(2.32)
6-factor alpha	0.12	-0.01	-0.13	-1.12	-0.33	0.79
	(1.00)	(-0.89)	(-1.07)	(-2.71)	(-1.48)	(2.09)
Excluding Delaware						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.80	0.68	-0.12	-0.89	0.19	1.08
	(3.37)	(3.49)	(-1.00)	(-1.49)	(0.37)	(2.70)
6-factor alpha	0.08	-0.03	-0.11	-1.12	-0.02	1.10
	(0.78)	(-0.85)	(-0.96)	(-2.71)	(-0.06)	(2.58)
Merton/KMV distress measure						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.80	0.67	-0.13	0.11	0.66	0.55
	(3.37)	(3.09)	(-1.21)	(0.27)	(1.54)	(1.88)
6-factor alpha	0.08	-0.03	-0.11	-0.76	-0.03	0.73
	(0.78)	(-1.78)	(-0.96)	(-2.74)	(-0.19)	(2.55)

TABLE 10: SENSITIVITY CHECKS AND ALTERNATIVE TYPES OF ANTI-TAKEOVER LAWS – CONTINUED

Panel B. Alternative Anti-Takeover Laws						
	Fair Price Law					
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.69 (2.94)	0.69 (3.66)	0.01 (0.08)	-0.15 (-0.29)	0.36 (0.67)	0.51 (1.73)
6-factor alpha	-0.01 (-0.28)	-0.03 (-0.72)	-0.03 (-0.41)	-0.46 (-2.05)	0.30 (1.01)	0.76 (2.46)
Control Share Acquisition Law						
	Control Share Acquisition Law					
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.69 (3.10)	0.70 (3.54)	0.02 (0.21)	-0.13 (-0.24)	0.55 (1.06)	0.68 (2.40)
6-factor alpha	-0.01 (-0.59)	-0.07 (-1.28)	-0.06 (-1.01)	-0.38 (-1.72)	0.20 (0.63)	0.58 (1.98)



Table 11: EVENT STUDY RESULTS

The table shows average abnormal returns of state-wide portfolios around the announcement of the passage of antitakeover laws in the states. The announcement dates are provided by Giroud and Muller (2010) and include 19 states over the years 1985-1991. We first compute the equal-weighted average daily stock returns of all firms incorporated in each state. For each state-portfolio, we estimate the market model from 241 to 41 trading days prior to the event (announcement) date, using the equally weighted market portfolio. For each day around the event, the abnormal return is given by the portfolio return minus the fitted value from the market model. The windows around the event (day 0) cover the period from 40 days prior to the event to 10 days after the event, and are specified in the left column on the table. If the announcement was made on a non-trading day, we specify the next trading day as the event date. We conduct the event study on the full sample and on the subsample of the most financially distressed stocks, classified by the top quintile based on the financial-distress measure from Campbell et al. (2008). The numbers reported in the table are the cumulative abnormal returns of the 19 state-portfolios, where all returns are expressed in percentage points and  $t$ -statistics are reported in parentheses.

Window around the event	Average abnormal return	
	Full sample	Distressed firms
[-40, -2]	0.66 (0.89)	-0.94 (-0.31)
[-30, -2]	0.33 (0.56)	-0.41 (-0.15)
[-20, -2]	0.04 (0.10)	0.69 (0.31)
[-10, -2]	0.24 (0.90)	0.77 (0.68)
[-3, -2]	-0.11 (-0.66)	0.29 (0.40)
[-1, 0]	-0.25 (-1.51)	-1.55 (-2.83)
[1, 2]	0.05 (0.34)	-0.01 (-0.01)
[1, 10]	0.06 (0.11)	-2.09 (-0.94)

Figure 1: ANTI-TAKEOVER LAW PROPORTIONS

The upper figure shows the numbers of firms with and without anti-takeover law (ATL) over the period 1986-2017. The lower figure shows the proportions of firms that are incorporated in states with and without anti-takeover law over the sample period.

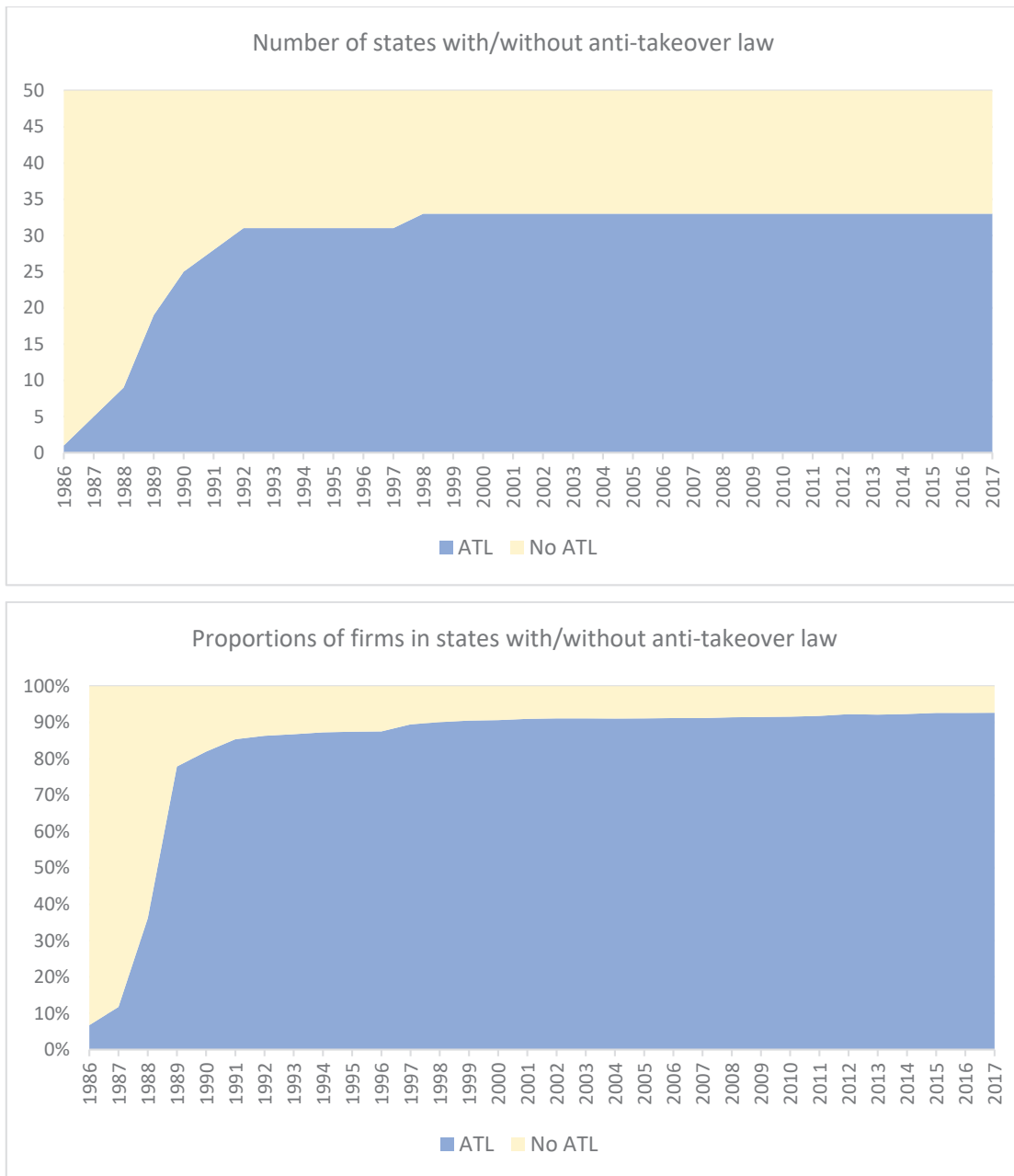


TABLE A.1. COUNTRIES WITH PRO-TAKEOVER LAWS

This table reports the list of countries in our sample of developed and emerging countries that passed a takeover law.

Country	Year of takeover law
Australia	1975
Austria	1998
Belgium	1989
Chile	2000
Finland	1989
Germany	2002
Hong Kong	1975
India	1997
Indonesia	1998
Ireland	1997
Italy	1992
Malaysia	1998
Netherlands	1970
New Zealand	2001
Pakistan	2000
Philippines	1998
Singapore	1974
South Africa	1991
Spain	1991
Sweden	1991
Switzerland	2004
Taiwan	2002
United Kingdom	1968

TABLE A.2. DETAILS ON COUNTRY TAKEOVER LAWS

Country	Year	Name of the law	Source	Details
Australia	1975	Foreign Acquisitions and Takeovers Act	Lel and Miller (2015), <a href="http://www.takeovers.gov.au">www.takeovers.gov.au</a> , <a href="http://www.comlaw.gov.au">www.comlaw.gov.au</a>	Simplifies the process of acquiring interests in securities, assets, or Australian land
Austria	1998	Takeover Act	Lel and Miller (2015)	Introduces for the first time formal rules for acquiring a majority interest in a company. Also intended to make Austria takeover legislation more transparent and consistent with that of other major European Countries. Explicit rules regarding purchase offers involving acquisitions of a controlling participation in a company. For further details, see, for example, Poch (1998).
Belgium	1989	Royal Decree of 11/8/1989 and the law of March 3/2/1989	Lel and Miller (2015), Nenova (2006)	Specific rules about takeover bids, mandatory offers, and disclosure of shareholder information. Formal provisions for governing mergers and acquisitions.
Germany	2002	Takeover Act	Lel and Miller (2015), Strelow and Wildberger (2002), Baum (2006)	Formal provisions for governing acquisitions of publicly traded companies. Under the Act, a bidder who has obtained control over a target must make an offer for all of the target outstanding shares, including any preference shares (“mandatory offer”). As per Strelow and Wildberger (2002), prior to the passage of the takeover act, takeovers of public companies had not often been considered worth pursuing.
Hong Kong	1975	Code on Takeovers and Mergers	Lel and Miller (2015), Nenova (2006), <a href="http://www.charltonslaw.com/hong-kong-law">www.charltonslaw.com/hong-kong-law</a>	Operates to ensure fair and equal treatment of all shareholders in relation to takeovers.
Finland	1989	Securities Markets Act of 1989	Lel and Miller (2015)	Relates to the issuance of securities to the public, the transfer and clearing of securities issued to the public as well as to the arrangement of trading in securities. Sections 6 and 8 regulate takeover bids, including publication and communication of the bid, time allowed for acceptance of the bid, and treatment of competing bids. Section 10 regulates mandatory bids.
India	1997	Substantial Acquisition of Shares and Takeovers	Government of India, Ministry of Finance: <a href="http://dipam.gov.in/">http://dipam.gov.in/</a> , Lel and Miller (2015)	Regulates disclosures of shareholding and control in a listed company as well as acquisition of shares or voting rights, acquisition of control over a listed company and bail out takeovers.
Indonesia	1998	M&A regulations (Government regulation No 27/1998), Presidential Decree No. 96 and No. 118	Lel and Miller (2015)	Is intended to guard the interests of the target company, its shareholders, and employees. Introduces formal requirements for transactions involving acquisition of controlling interest in the target company.
Ireland	1997	Takeover Panel Act	Lel and Miller (2015), <a href="http://irishtakeoverpanel.ie/">http://irishtakeoverpanel.ie/</a>	Provides an orderly framework within which takeovers are conducted.

Table A.2: DETAILS ON COUNTRY TAKEOVER LAWS – CONTINUED

Country	Year	Name of the law	Source	Details
Italy	1992	Public Tender Offer, Law 149/1992	Nenova(2006), Lel and Miller (2015), Rossi (2012)	Regulates public tender offers and the transfer of corporate control by giving powers to the Commissione Nazionale per le Società e la Borsa.
Malaysia	1998	Code on Takeovers and Mergers	Nenova(2006), Lel and Miller (2015)	Regulates mandatory offers, voluntary offers, advisers, acquisition of additional voting shares, etc. For further details see <a href="https://www.sc.com.my/the-malaysian-code-on-take-overs-and-mergers-1998-the-code/">https://www.sc.com.my/the-malaysian-code-on-take-overs-and-mergers-1998-the-code/</a> .
Netherlands	1970	Merger Code of the Social Economic Council		
New Zealand	2001	Takeover Code	Lel and Miller (2015)	Ensures that all shareholders have the opportunity to participate in changes of control and that all parties to the transaction have a level playing field. The rules of the Takeovers Code are intended to ensure that shareholders will have all of the information they need and plenty of time to make their decision about the control-change transaction. See also <a href="http://www.takeovers.govt.nz/assets/Assets-2/Takeovers-Directors-booklet-linked2a.pdf">http://www.takeovers.govt.nz/assets/Assets-2/Takeovers-Directors-booklet-linked2a.pdf</a> .
Pakistan	2000	Ordinance on Substantial Acquisition of Shares and Takeovers of Listed Companies	Nenova(2006), Lel and Miller (2015), Khan (2008)	Establishes fair treatment to all shareholders; equal and timely access to information to all; orderly process for substantial acquisition; and a methodology of offer to all shareholders as in UK.
Philippines	1998	Tender Offer Rules	Lel and Miller (2015)	
Singapore	1974	Code on Takeovers and Mergers	Lel and Miller (2015)	Provides guidance on the principles of good business practice to be observed in takeover and merger transactions. Modelled after the City Code on Takeovers and Mergers of the UK. See also <a href="https://eoasis.rajahtam.com/eoasis/lu/pdf/2016-03_Rev-SG-Code-Takeovers-Mergers.pdf">https://eoasis.rajahtam.com/eoasis/lu/pdf/2016-03_Rev-SG-Code-Takeovers-Mergers.pdf</a>
South Africa	1991	Code on Takeovers and Mergers	Nenova(2006), Lel and Miller (2015)	The Takeover Regulations are largely based on older versions of the UK City Code on Takeovers and Mergers. The Takeover Regulations are statutory and are enforced by the courts rather than through self-regulation.
Spain	1991	Public Takeover Offerings (Royal Decree 1197/1991)	Lel and Miller (2015)	Regulates disclosure of significant shareholdings in listed companies and acquisitions of shares owned by them.
Sweden	1991	Industry and Commerce Stock Exchange Committee Takeover Standard, Financial Instruments Trading Act	Nenova(2006), Lel and Miller (2015)	Regulates disclosure of changes in shareholdings. The disclosure obligation is triggered if a holding reaches, exceeds or falls below certain thresholds of the votes or the number of shares in a company. A company's acquisition and transfer of its own shares shall also be reported if the transaction implies that the holding reaches, exceeds or falls below any of the thresholds.

Table A.2: DETAILS ON COUNTRY TAKEOVER LAWS – CONTINUED

Country	Year	Name of the law	Source	Details
Switzerland	2004	The Merger Act	Lel and Miller (2015)	Regulates the civil law aspects of mergers in a broad comprehensive framework, significantly facilitating acquisition deals, which used to be governed by under Swiss corporate law and had to be carried out through a series of complicated transactions, often triggering unfavorable tax consequences and formal liquidation procedures.
South Africa	1991	Code on Takeovers and Mergers	Nenova(2006), Lel and Miller (2015)	The Takeover Regulations are largely based on older versions of the UK City Code on Takeovers and Mergers. The Takeover Regulations are statutory and are enforced by the courts rather than through self-regulation.
Taiwan	2002	Business Mergers and Acquisitions Act	Lel and Miller (2015)	Provides some general amendments to the Company Act to simplify the M&A process, introduces more types of mergers including cash-out mergers and cross-border mergers, as well as provides some tax incentives to neutralize the transaction costs associated with M&A deals.
United Kingdom	1968	City Code on Takeovers and Mergers Act	Lel and Miller (2015), <a href="http://www.thetakeoverpanel.org.uk">www.thetakeoverpanel.org.uk</a>	Established the Panel on Takeover and Mergers, whose central objective is to ensure fair treatment for all shareholders in takeover bids.

TABLE A.3. STATE ANTITAKEOVER LEGISLATION

The table reports the year in which second- and third-generation antitakeover laws known as Business Combination (BC), Fair Price (FP), and Control Share Acquisition (CSA) laws, have been passed in various U.S. states, as listed in Atanassov (2013) with the corrections made by Karpoff and Wittry (2018).

State	BC	FP	CSA
Arizona	1987	1987	1987
Connecticut	1988	1984	.
Delaware	1988	.	.
Georgia	1988	1985	.
Hawaii	.	.	1985
Idaho	1988	1988	1988
Illinois	1989	1984	.
Indiana	1986	1986	1986
Iowa	1997	.	.
Kansas	1989	1989	1988
Kentucky	1986	1989	.
Louisiana	.	1985	1987
Maine	1988	.	.
Maryland	1989	1983	1988
Massachusetts	1989	.	1987
Michigan	1989	1985	1988
Minnesota	1987	.	1984
Mississippi	.	1985	1991
Missouri	1986	1986	1984
Nebraska	1988	.	1988
Nevada	1991	.	1987
New Jersey	1986	1986	.
New York	1985	1985	.
North Carolina	.	1987	1987
Ohio	1990	1990	.
Oklahoma	1991	.	1987
Oregon	1991	.	1987
Pennsylvania	1988	1989	1989
Rhode Island	1990	.	.
South Carolina	1988	1988	1988
South Dakota	1990	1990	1990
Tennessee	1988	1988	1988
Texas	1997	.	.
Utah	.	.	1987
Virginia	1988	1985	1988
Washington	1987	1990	.
Wisconsin	1987	1985	1991
Wyoming	1989	.	1990

TABLE A.4. SENSITIVITY CHECKS AND ALTERNATIVE TYPES OF ANTI-TAKEOVER LAWS EXCLUDING LARGE-CAP STOCKS

We replicate the results in Table 9 while excluding from the sample large-cap stocks, defined as the top 5% by NYSE breakpoints in each month.

Panel A. Sensitivity checks												
Post-1989 BC Law												
Full sample			Distressed firms			Full sample			Distressed firms			
	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.58 (2.19)	0.72 (2.52)	0.15 (1.83)	-0.95 (-1.68)	-0.05 (-0.10)	0.90 (2.95)						
6-factor alpha	-0.19 (-2.38)	-0.06 (-1.46)	0.13 (1.74)	-1.29 (-3.73)	-0.36 (-2.08)	0.92 (2.90)						
Excluding Motivating or Lobbying Firms												
Full sample			Distressed firms			Full sample			Distressed firms			
	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.61 (2.46)	0.74 (2.72)	0.13 (1.67)	-0.95 (-1.78)	-0.09 (-0.18)	0.85 (2.97)						
6-factor alpha	-0.17 (-2.34)	-0.06 (-1.46)	0.12 (1.67)	-1.30 (-3.96)	-0.41 (-2.39)	0.89 (2.96)						
Excluding Delaware												
Full sample			Distressed firms			Full sample			Distressed firms			
	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.61 (2.46)	0.75 (3.33)	0.14 (2.05)	-0.95 (-1.78)	0.00 (0.00)	0.95 (3.04)						
6-factor alpha	-0.17 (-2.34)	-0.05 (-1.18)	0.12 (1.75)	-1.30 (-3.96)	-0.35 (-1.55)	0.95 (2.87)						
Merton/KMV distress measure												
Full sample			Distressed firms			Full sample			Distressed firms			
	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.61 (2.46)	0.74 (2.73)	0.13 (1.70)	-0.12 (-0.29)	0.60 (1.34)	0.73 (2.81)						
6-factor alpha	-0.17 (-2.34)	-0.06 (-1.47)	0.11 (1.66)	-0.86 (-3.48)	-0.15 (-1.08)	0.71 (2.77)						



TABLE A.4. SENSITIVITY CHECKS AND ALTERNATIVE TYPES OF ANTI-TAKEOVER LAWS EXCLUDING LARGE-CAP STOCKS – CONTINUED

Panel B. Alternative Anti-Takeover Laws									
Fair Price Law									
Full sample									
	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.72 (2.50)	0.78 (3.51)	0.06 (0.60)	-0.19 (-0.37)	0.21 (0.40)	0.39 (1.72)			
6-factor alpha	-0.08 (-1.81)	-0.04 (-0.90)	0.03 (0.69)	-0.52 (-3.03)	-0.11 (-0.45)	0.41 (1.69)			
Control Share Acquisition Law									
Full sample									
	No ATL	ATL	Diff	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.73 (2.55)	0.75 (3.37)	0.02 (0.23)	-0.20 (-0.38)	0.28 (0.57)	0.48 (2.03)			
6-factor alpha	-0.08 (-1.87)	-0.04 (-0.79)	0.04 (0.83)	-0.51 (-2.97)	-0.13 (-0.53)	0.38 (1.59)			