Takeover Protections and Stock Returns*

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Abstract

We argue that takeover protections 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 risk and return dynamics of distressed firms around the enactment of anti-takeover laws, both domestically and internationally. In line with our predictions, we find that distressed firms experience a significant increase in returns and market betas after the passage of anti-takeover laws. We find no such effects in the full sample of firms.

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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. 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 two regulatory changes that have a direct effect on acquisition markets, both domestically and internationally, we present new evidence on the return dynamics of distressed stocks that is strongly supportive of these predictions.

We develop our main intuition in a stylized model that illustrates in the simplest possible setting the effects of takeovers on equity risk and stock returns. This model analyzes corporate takeovers as real options and allows us to derive explicitly the link between anti-takeover laws and expected stock returns. In the model, takeovers increase target shareholder value by providing a valuable exit (put) option. Anti-takeover laws reduce the feasibility of takeovers. As a result, they reduce shareholder value and 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 two regulatory changes that have a direct effect on acquisition markets, both domestically and internationally. Our U.S.–based tests focus on state Business Combination (BC) laws and examine the dynamics of equity risk and stocks returns around the enactment of these laws.[1] 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 (minority) threshold. As discussed in Giroud and Mueller (2010), this moratorium makes hostile takeovers more difficult and often impossible. Outside of the U.S., we take advantage of the Alstom Decree, a law that was passed in France in 2014 and that equips the French government with the right to veto takeover transactions in strategic industries if such transactions involve a foreign bidder (Frattaroli (2020)).

[1]Recent research by Karpoff and Wittry (2018) raises concerns about the use of anti-takeover laws for identification in the finance literature. We perform many 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.

We begin our empirical investigation of the effects of anti-takeover laws on stock returns 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 BC laws. The portfolios are applied to the full sample of stocks, and separately to the subsample (quintile) of most financially distressed stocks, as classified by the financial distress measure of Campbell, Hilscher, and Szilagyi (2008). Our tests demonstrate a large and statistically significant difference in returns to stocks of distressed companies incorporated in states that have passed a BC law versus distressed stocks in the 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. We find no such effects in the full sample of firms.

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. Another approach commonly used in the literature is Fama and MacBeth (1973) regressions. Using the passage of BC 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 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 an anti-takeover law relative to those without a law. In addition, and also in line with our model prediction, the relation between stock returns and the passage of BC laws in the state of incorporation is weaker for the full sample of firms.

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 beta and this effect is expected to be strongest for 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 passing 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 anti-takeover laws and the difference between betas in states with or without anti-takeover 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.

In additional tests, we examine the effects of changes in the state of incorporation and find that both returns and betas of distressed firms increase when moving to a state with a BC law, in line with our predictions. We also perform various robustness checks, including leaving out lobbying firms, using alternative proxies 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.

To strengthen the interpretation of the results, we examine the stock returns and equity risk of French firms around the enactment of the Alstom Decree, a protectionist law introduced in France in 2014 that covers a subset of all firms in the economy. Our tests demonstrate a large and statistically significant effect of the passage of the Alstom decree on the returns to stocks of distressed companies subject to the decree. Specifically, the mean excess return of a hedge portfolio of distressed firms that is long in treated firms and short in non-treated firms increases by 0.72% per month following the passage of the decree. Using a difference-in-differences analysis, we additionally show that the betas of distressed firms in the treated industries increase relative to the betas of distressed firms in the industries that were not affected by the Alstom Decree. The economic magnitude of this effect is large: For quintile portfolios the betas of distressed stocks increase by 0.54 on average. These tests provides further validation for our model predictions on the relation between takeover protections and equity risk and stock returns in distressed firms.

Lastly, financially distressed stocks earn lower average returns than healthy stocks (Campbell, Hilscher, and Szilagyi (2008)). This result, known as the "financial distress puzzle," proves to be a challenge to rational asset pricing. While explaining the distress risk puzzle is outside of the scope of this paper, our tests offer a novel and interesting perspective on this issue. The six-factor alpha in the quintile of the most distressed stocks in states with a BC law is only negative 29 basis points per month and statistically indistinguishable from zero. By contrast, distressed stocks in the

states that have not passed a BC law have a negative six-factor alpha of 112 basis points per month that is highly statistically significant at any conventional level. Thus, the under-performance of distressed stocks almost disappears in the states with a BC law, after controlling for well-accepted risk factors. This result suggests that the anti-takeover legislation plays a role in the formation of the distress risk puzzle. This evidence is consistent with the conjecture that investors overestimate the benefits of hostile takeovers for distressed stocks, and in particular the effect of potential hostile takeovers on their riskiness and expected returns.

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). For example, Andrade, Mitchell, and Stafford (2001) find that for the period 1973-1998 the average three-day abnormal return for target firms is 16 percent, which rises to 24 percent over the longer event window.

There is a substantial literature connecting legislation deterring takeovers to shareholder value. Examining the second generation of anti-takeover laws in the U.S., 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 event studies 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 is therefore not to introduce a novel source of exogenous variation. Rather, it is to show that exogenous variation in legislation deterring takeovers has important effects on equity risk and stock returns and that these effects are particularly strong among distressed firms.

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), Margsiri, Mello, and Ruckes (2008), or Gorbenko and Malenko (2018).[2] Much of this literature

[2]From a modeling perspective, our paper also relates to the literature that analyzes asset pricing implications of

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.

The remainder of the paper is organized as follows. Section 1 presents a simple model that illustrates the effects of takeovers on equity risk and stock returns. Section 2 describes our empirical strategy and data. Section 3 tests our predictions by examining the evolution of the riskiness of distressed stocks around the enactment of second generation state anti-takeover laws. Section 4 strengthens the interpretation of the results by implementing a difference-in-differences analysis around the enactment of a protectionist law, called the Alstom Decree, in France in 2014. Section 5 concludes. Technical developments are gathered in the Appendix.

1 Mechanism

We start our analysis with a stylized model that illustrates the effects of takeovers on 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 the stochastic process:

$$dX_t = \mu X_t dt + \sigma X_t dW_t, \qquad X_0 = x, \tag{1}$$

where μ and $\sigma > 0$ are constant parameters and $(W_s)_{s\geq 0}$ is a standard Brownian motion. This equation implies that the growth rate of the target firm cash flows is normally distributed with mean $\mu\Delta t$ and variance $\sigma^2\Delta t$ over the time interval Δt. 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 β_X that is perfectly correlated with X, and a riskless bond with dynamics

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).

$dB_t = rB_t dt$. 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 and firm-level takeover defences so that the passage of an anti-takeover law should reduce λ. 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 a takeover for bidding shareholders, the timing of the takeover solves:

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

where τ 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. We assume that in default a fraction α of asset value is lost as a frictional cost. Under this assumption, the present value of the takeover surplus is given by

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

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 yields that the takeover threshold is given by

$$X_T = \frac{\xi}{\xi - 1} \delta V. \tag{4}$$

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 λ or defaults at $X = X_D$. We can therefore write the value of equity in the target firm as

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

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

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

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:

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

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

Proposition 1. *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*

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

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

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

Using Proposition 1, we immediately get the following result:

Corollary 1. *Equity beta and the expected return on the target's equity decrease with the likelihood of a successful takeover* λ *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* $lim_{X\to+\infty}\Delta\beta^T(X;c,\lambda,\eta) = 0$ *for healthy firms and*

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

for distressed firms.

Corollary 1 shows that takeovers decrease 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 prediction.

Testable implications: *Anti-takeover laws increase stock returns and equity beta, especially among distressed firms.*

These predictions follow directly from Corollary 1 and relate to the effects of takeovers on equity risk and expected stock returns. We now turn to testing these predictions using regulatory changes that have had a direct effect on the acquisition markets, both domestically and internationally.

2 Data and methodology

2.1 Empirical strategy

Our empirical predictions relate 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 two regulatory changes that have a direct effect on the acquisition markets, both domestically and internationally. In the U.S., we examine the return dynamics of 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. Outside of the U.S., we take advantage of the Alstom Decree, a protectionist law introduced in France in 2014. The Alstom Decree designates five industry sectors (energy, water supply, transportation, electronic communications, and public health) as strategic and enables the secretary of commerce to veto M&A transactions involving foreign bidders targeting companies operating in those sectors. The remaining sectors are not affected by the Alstom Decree. We study the effects of the Alstom Decree on the risk and return of distressed stocks in France in section 4.

Our U.S.–based 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 heavily 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)).[3]

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 defences, 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 3.7. Furthermore, we 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 any regulatory changes that impede the feasibility of hostile takeovers has a certain effect on stock returns and betas, particularly those of distressed firms, as long as those changes have not been fully anticipated by investors long in advance. Lastly, our analysis of the effects of the Alstom Decree in France is free of many concerns raised by Karpoff and Wittry (2018). In particular, the

[3]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.

Decree had not been lobbied for by any firms, does not interfere with earlier generation laws of the same kind, and had become constitutional immediately upon enactment.

2.2 Data

Our main data source for U.S. companies is Compustat for accounting data and CRSP for stock prices and returns. Our U.S. based tests are targeted at the effects of state anti-takeover laws on 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 the 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-years, of which about 350 thousand firm-years 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.[4] The dates of these laws are reported in Table A1. 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, the state that hosts the majority of the firms in our sample (about 53%). In section 3.7, we verify that our results are robust to the exclusion of Delaware.

Our objective in the empirical section is to examine the effects of the passage of BC laws on

[4] 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 risk and returns of distressed firms' stocks. We measure financial distress using the model of Campbell, Hilscher, and Szilagyi (2008). We discuss this financial distress measure in Section 3 below and provide details on its construction in Appendix B. In robustness tests, we use several alternatives variables, that are summarized in Table 1.

Insert Table 1 Here

In addition to our distress measure, Table 1 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. *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 cumulative return over the past six months. *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. *Market leverage* is the book value of total liabilities divided by the sum of total liabilities and equity market value. *Total volatility* is the standard deviation of daily stock returns over the previous month. *Idiosyncratic volatility* is the standard deviation of the residuals of regression of daily stock returns on the market return over the previous month.

The average firm in our sample exhibits characteristics that are similar to those reported in other papers in the literature. It has a market capitalization of about $2.5 billion, a market-to-book ratio of 2.5, a market leverage of 0.43, and about 50% annualized stock return volatility.

In addition to the U.S. based tests we also take advantage of the Alstom Decree, a law that was passed in France in 2014 and that equipped the French government with the right to veto certain takeover transactions. We describe the sample of the French firms that we use to examine the effects of the Alstom Decree in Section 4 below. When examining the effects of the introduction of new antitakeover laws on the risk and returns of distressed firms in France, we measure financial distress with the Merton-KMV distance-to-default model, due to lack of proper accounting data required to compute the CHS measure.

3 Empirical results

Our main hypothesis is that the imposition of an anti-takeover law in a state reduces the feasibility of a hostile takeover for firms incorporated in that state, thereby increasing their risk and expected returns. Our theoretical model shows that this effect is particularly strong for financially distressed firms as hostile takeovers provide such firms with a means to avoid bankruptcy by "being saved" through a takeover. We therefore expect higher returns to distressed stocks in states that have passed an anti-takeover law.

3.1 Portfolio tests

To study the effect of anti-takeover laws on returns to 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. 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. In addition, because our model predicts a differentiated effect of takeover feasibility on financially distressed versus solvent stocks, we perform these portfolios sorts for the full sample of stocks, and separately for the subsample of 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 3.3 and 3.4.

Table 2 Panel A 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 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.

Insert Table 2 Here

The results in Table 2 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 one 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 2 Panel B, that this non-statistically significant effect is driven by very large firms that are most likely to be acquirers (not targets).[5] When we exclude large-cap stocks every month by the top 5% by NYSE breakpoints, which is common in the literature, the ATL portfolio outperforms the no-ATL on the sample of all stocks but the effect is not statistically significant.

To further illustrate the difference in returns to distressed stocks in states with and without a BC law, we construct a zero-investment strategy that takes long positions in the stocks of distressed firms incorporated in states with a BC law and take short positions in distressed stocks incorporated in states without such a law. The value-weighted return of this strategy is plotted in Figure 2. The strategy delivers about 400% return in a 29-year period spanning years 1988 to 2017. The strategy exhibits consistent performance over the sample period with the exception of the 2001-2002 period, largely due to the dotcom bubble burst for which many companies were headquartered in Delaware, which is in the ATL state group.

Insert Figure 2 Here

Our results so far are based on the measure of financial distress of Campbell et al. (2008). While

[5]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 2 are consistent with this conjecture.

this is a widely accepted measure, we also use different firm characteristics that are likely associated with proximity to distress to ensure the robustness of our results. The first such characteristic is size, that we measure by the market value of equity as of the previous month. Size is one of the inputs in the Campbell et al. (2008) measure and hence can be considered a reduced-form proxy for financial distress. Furthermore, small companies likely face stronger competitive challenges and tighter capital constraints and are hence more likely to default or abandon their operations. The second characteristic likely related to distress is financial leverage. Firms with greater amounts of debt are more likely to default, keeping everything else equal. One issue with relying on leverage as a proxy for distress is that it is endogenous and firms that are less likely to default may choose higher leverage ratios (see Gomes and Schmid (2010) or Glover (2016)). We measure financial leverage as the book value of total liabilities divided by the sum of the value of total liabilities and the market value of equity.

In addition to size and financial leverage, we also use two measures of volatility—total stock return volatility and idiosyncratic stock return volatility—to measure proximity to financial distress. Standard structural models of default risk (e.g. Merton (1974) or Galai and Masulis (1976)) predict that for a given asset volatility, stock return volatility (total and idiosyncratic) should increase with default risk. We measure idiosyncratic volatility as the standard deviation of the residuals of regression of daily stock returns on the market return over the previous month. Total volatility is measured as the standard deviation of daily stock returns over the previous month. Note that total volatility also serves as one of the inputs in the CHS measure.

We proceed in the same way as with the CHS distress measure. Each month we first sort all stocks into five quintiles according to each characteristic (size, leverage, total and idiosyncratic volatilities), using current market data and quarterly accounting data of the previous quarter. We use equal-sized quintiles when forming these characteristics-based portfolios. Then, within each characteristic quintile we sort stocks into those incorporated in ATL and no-ATL states, as of the year of portfolio formation. The average portfolio contains 476 stocks. We then report the difference in value-weighted ATL and no-ATL portfolio returns for the bottom/top quintile of each characteristic-based portfolio. These results are provided in Table 3. In addition to mean excess returns, Table 3 also shows factor model alphas for the ATL minus no-ATL long-short portfolios.

Insert Table 3 Here

The results in Table 3 generally conform with our main hypothesis: the ATL–No ATL portfolio generally delivers positive returns for firms with characteristics associated with higher likelihood of financial distress. The results are highly significant when using size as a characteristic of distressed firms. The effect generated by size is somewhat weaker than that of the CHS measure, but is still economically large: The monthly factor alphas of the ATL–no ATL portfolio for stocks in the bottom size quintile range from 0.38% for the CAPM to 0.49% for the four-factor alpha.

The results are also economically large and statistically significant when using total and idiosyncratic volatility as proxies for distress. Economically, the returns to the long-short portfolios based on total and idiosyncratic volatility are higher than those based on size: factor alphas for the ATL–no ATL portfolio for most highly volatile stocks range from 0.56% to 0.73% per month for total volatility and from 0.60% to 0.94% for idiosyncratic volatility. Finally, results for leverage-sorted portfolios are weaker with only two factor models delivering statistically significant or marginally significant alphas of the long-short ATL–no ATL portfolio for most highly levered stocks (the six-factor alpha is 0.44% monthly and highly significant and the five-factor alpha is 0.36% and marginally significant). As argued above, weaker results for leverage are expected because leverage is endogenous and safer firms (e.g. with lower cash flow risk and less likely to default ex-ante) may be inclined to choosing more debt in their capital structures (Glover (2016)).

Overall, the results in Tables 2 and 3 corroborate our main hypothesis about the effect of hostile takeovers on the stock returns of distressed firms: Returns to distressed stocks are lower in the states that have not passed an anti-takeover law relative to the states that have passed such a law. Of all firm characteristics that we use to proxy for the degree of financial distress, the CHS measure produces the strongest results. This is expected, as it is a multi-faceted measure of distress that employs multiple characteristics as inputs. These results also validate the use of the CHS measure as our main proxy for financial distress.

3.2 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 subsection, we use these cross-sectional regressions and report the results in Table 4. 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 most distressed stocks (top CHS quintile).

Insert Table 4 Here

Resutls in Table 4 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 weaker than in the sample of distressed stocks. The coefficients on the control variables show 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 like 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 4 coupled with the portfolio sort results of Tables 2 and 3 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.

3.3 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 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 2. Table 5 reports the CAPM alphas as well as loadings from the Fama-French (2015) five-factor model, augmented with the momentum factor. As in Table 2, we report results for all stocks, and separately for the most distressed ones (top CHS quintile).

Insert Table 5 Here

The results in Table 5 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.

The results in Table 5 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 porfolios of distressed stocks there are no significant differences in the loadings on return factors.

To verify the robustness of our findings, we also sort portfolios on additional firm characteristics that are likely to be related to the degree of financial distress, as in Table 3, and examine CAPM betas of ATL and no-ATL portfolios sorted also on these additional characteristics. As in Table 3, these alternative characteristics include size, leverage, as well as total and idiosyncratic volatility. To conserve space we only report CAPM betas, since our model generates specific predictions about betas, and omit loadings on other return factors. As in Table 3, we first sort all stocks into five quintiles according to each characteristic. Then, within each characteristic quintile we sort stocks

into those incorporated in ATL and no-ATL states, as of the year of portfolio formation. Table 6 presents the results.

Insert Table 6 Here

The evidence in Table 6 is in line with our results in Table 5 that rely on the CHS measure. The differences between the betas of the ATL and no-ATL portfolios for leverage and volatility (both total and idiosyncratic) as proxies for distress are economically large (between 0.25 for idiosyncratic volatility and 0.29 for leverage) and highly statistically significant. When using size a a measure of distress the corresponding difference is lower in magnitude and insignificant.

Overall, the data exhibits the expected pattern in the riskiness of distressed firms. As predicted by the model, their riskiness (as measured by beta) is higher in states that have a BC law in place. To further gauge the effect of takeover markets on the riskiness of distressed stocks, the next subsection conducts a difference-in-differences test on the betas of distressed stocks around enactments of state anti-takeover laws.

3.4 Difference-in-differences

Our portfolio based results in section 3.3 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. Alternatively, one can use a difference-in-differences methodology to study how distressed firm betas react to the passage of anti-takeover laws in the states that enact such laws relative to those states that do not.[6] Because slightly less than a half of all states never passed a BC law, we can measure the marginal change in betas around the enactment of the laws in the treated states relative to a similar change in the 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 the financial-distress measure of Campbell et al. (2008). For the full sample and for the

[6]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.

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. Our empirical specification has the following form:

$$\beta_{i,t} = \alpha + \xi ATL_{i,t} + \delta_1 size_{i,t} + \delta_2 Leverage_{i,t} + \delta_3 Before^1_{i,t} + \delta_4 Before^2_{i,t} + v_t + \eta_i + \varepsilon_{i,t}, \quad (11)$$

where $\beta_{i,t}$ is the estimated beta of the portfolio in state i and in month t, $ATL_{i,t}$ indicates whether an anti-takeover law had been passed in state i by month t, $Size$ and $Leverage$ are the value-weighted means of the logarithm of the firms' market capitalization and of the book leverage in the state-wide portfolio. We include time fixed effects v_t to absorb a potential impact of global time-varying economic conditions. We also include state fixed effects η_i to account for potential exogenous determinants of risk and betas at the state level. Lastly, we follow Bertrand and Mullainathan (2003) and also include two time dummy variables, $Before^1_{i,t}$ and $Before^2_{i,t}$, that indicate years one and two prior to the enactment of anti-takeover laws to see if there is any time pre-trends in the riskiness of state-wide portfolios in pre-anti-takeover law years. Finding such a trend would potentially undermine the causal relation between anti-takeover laws and firm betas.

The results from theses difference-in-differences regressions are presented in Table 7.

Insert Table 7 Here

The first two regressions present the results for full sample (with just the ATL dummy and a full set of control variables) while the last two regressions are run on the subsample of 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 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 as the regression coefficients on the $Before^1_{i,t}$ and $Before^2_{i,t}$ dummies are statistically indistinguishable from zero.

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

3.5 Changes in the states of incorporation

Occasionally, firms change their state of incorporation. Reincorporation is generally accomplished by merging the company into a shell corporation incorporated in the desired state (Bebchuk and Fried (2003)). Reincorporations happen infrequently and in our sample only 99 firms change their state of incorporation from a state without a business combination law to a state with such a law. Out of these 99 firms, 88 firms move to Delaware, of which 61 move from California.[7] While those reincorporations are likely motivated by various nuances of state laws and other geographical considerations, reincorporations present an opportunity to study the effect of the differences in takeover legislation between states, and in particular state anti-takeover laws on stock returns. As long as such reincorporations are not fully anticipated by investors long in advance (as we detail below, we use a three year window around the incorporation event to study its effects), our model implies that returns and riskiness of distressed firms subject to reincorporation should change.

To examine how returns and betas of financially distressed firms react to reincorporations, we calculate the average monthly return and the market beta during the three years before the reincorporation year and during the three years after the reincorporation year for each of the 99 firms that reincorporated at some point in time in our sample. We look at raw returns and betas as well as their industry- and state-adjusted versions. We obtain industry (state) adjusted returns and betas by subtracting the corresponding 2-digit SIC (state) averages for the same period from the raw numbers. We then compute the difference between the returns after the reincorporation year and the returns before the reincorporation year, $R_{after} - R_{before}$, as well as the equivalent difference in betas, $\beta_{after} - \beta_{before}$. Finally, we run a regression of these differences on the firm's CHS distress score.

Insert Table 8 Here

Results form this regression are reported in Table 8. The coefficients on the CHS measure are

[7]The incorporation movement in the other direction, from a state with a business combination law to a state without such a law is less frequent, a total number of 18 cases, which is too small to make valid inferences.

positive and statistically significant for both returns and betas. This evidence is robust across the various measures of returns and betas—raw as well as industry- and state-adjusted. The effect of reincorporations is also economically meaningful: A one standard deviation increase in the CHS distress level increases the difference in monthly returns around reincorporations by 0.95% and the difference in betas by 0.41. Therefore, the evidence from reincorporation events provides further support for our hypotheses as both returns and betas of distressed firms move as predicted by the model when firms change their states of incorporation.

3.6 Anti-takeover laws and the distress risk puzzle

Financially distressed stocks tend to underperform healthy stocks in terms of average returns and alphas from various asset pricing models. This result, known as the "financial distress puzzle", represents a challenge to rational asset pricing. While Fama and French (1992) hypothesize financial distress to be the main reason behind the high expected returns of value stocks, other studies that sort stocks on distress proxies directly, such as Dichev (1998), Griffin and Lemmon (2002), and Campbell et al. (2008), find that returns to distressed stocks are significantly lower than those to healthy stocks. Deepening the puzzle, distressed firms have higher market betas than healthy firms. Hence, risk and return do not go hand in hand in the financial distress cross section.

Although potential explanations have been proposed, there is still no consensus in the literature about what drives this anomaly. Garlappi et al. (2008), for example, propose a model in which distressed stocks become safer as a result of violations of the absolute priority rule. George and Hwang (2010) argue that firms with high exposure to systematic distress costs will choose lower leverage levels while having higher expected returns. Chava and Purnanandam (2010) argue that the observed anomaly may actually be just an in-sample phenomenon, resulting from a streak of surprisingly low realized returns on distressed U.S. stocks in the 1980s. Eisdorfer and Misirli (2020) argue that the underperformance of distressed stocks occurs mostly in periods of bull markets.

While explaining the distress risk puzzle is outside of the scope of this paper, the evidence presented in Table 2 offers an interesting perspective on this issue. The six-factor alpha in the quintile of the most distressed stocks in ATL states (sorted into distress quintiles based on the measure of Campbell et al., 2008) is only negative 29 basis points and statistically indistinguishable from zero. This result is in striking contrast with the six-factor alpha of the no-ATL most distressed

portfolio. Distressed stocks in the states that have not passed a BC law have a six-factor alpha of -1.12% per month, that is highly statistically significant. Thus, the underperformance of distressed stocks almost disappears in the states with a BC law, after controlling for well-accepted risk factors (in particular, profitability, investment, and momentum factors). However, in the states without a BC law the underperformance still persists even after controlling for these risk factors. Alphas from alternative factor models are still negative and statistically significant in both ATL and no ATL states. However, the magnitude is reduced dramatically in ATL states.

To look deeper into the effect of anti-takeover laws on the distress risk puzzle, we closely follow the procedure in Campbell et al. (2008) and sort stocks into decile portfolios. In particular, each month we sort all stocks into ten equal-sized portfolios based on their financial-distress measure. We construct a zero-investment value-weighted hedge portfolio that is long in the portfolio of the most healthy stocks and short in the portfolio of the most distressed stocks. We hold this zero-investment portfolio for one month. Figure 3 shows the monthly mean excess return and six-factor alpha of the portfolio when including all firms, and separately when including firms operating in states with and without a BC law.

Insert Figure 3 Here

The results in Figure 3 reveal a pattern similar to that in Table 2: The returns and factor alphas of the long-short healthy-distressed portfolio are much higher in the states that have not passed an anti-takeover law. The difference in six-factor alphas is three-fold: 0.67% in the states with a BC law versus 1.96% in the states without a BC law. While the distress risk puzzle does not completely disappear in states with a BC law when using decile sorts as in Campbell et al. (2008), it does weaken significantly and the difference between ATL and no-ATL states is striking. Moreover, and as shown in Table 2, there is no evidence of the distress risk puzzle in the states that have passed a BC law in the quintile-sorted portfolios based on the six-factor model.

In summary, the evidence in Table 2 and Figure 3 suggests that the anti-takeover legislation plays a role in the formation of the distress risk puzzle. This evidence is consistent with the conjecture that investors overestimate the benefits of hostile takeovers for distressed stocks, and in particular the effect of potential hostile takeovers on their riskiness and expected returns.

3.7 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 to 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 further 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 9 where, as in Table 2, we present results for the full sample of stocks as well as the most distressed (highest CHS score) quintile.[8] Table 9 corroborates our conjecture. Both mean excess return of the ATL-No ATL long-short portfolio and its six-factor alpha remain virtually unchanged.

Insert Table 9 Here

Karpoff and Wittry argue that incorporation decisions are not exogenous and firms choose their states of incorporation deliberately and can also reincorporate. We examine the reincorporation phenomenon in Section 3.5 above. First, only a small number of firm actually chooses to reincorporate in our sample. Second, we examine the effect of reincorporation decisions on risk and return of reincorporating firms and find evidence consistent with our model.

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 of a concern to 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 9, Panel A. The exclusion of the motivating firms has essentially no effect on the returns to ATL and no-ATL distress portfolios and their difference. While the mean excess return and the six-factor alphas are 0.85% and 0.82% monthly when including all firms, this results 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

[8] Table A.2 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.

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 9, 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, 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 to 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.1. The evidence with respect to these alternative laws is presented in Table 9. 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. Results in Table 9 reveal the robustness of our portfolio tests to the use of the alternative anti-takeover laws. For 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 2), 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 Evidence from a French Experiment

To strengthen the interpretation of the results, we examine the stock returns and equity risk of French firms around the enactment of the Alstom Decree, a protectionist law introduced in France in 2014. The French government acted quickly to pass this law following competing acquisition offers made by General Electric and Siemens in April 2014 for Alstom's power and grid division. At that time, Alstom was one of the largest manufacturing companies in France, with many of its products being used in industries deemed as critical for national interest such as nuclear power plants. France's secretary of commerce used the newly passed law to block both acquisition bids.

The Alstom Decree designates five industry sectors: energy, water supply, transportation, electronic communications, and public health as critical for France's interest and national security. Together, these industries account for around 30% of the total market capitalization of the French stock market. The Decree endows the secretary of commerce with a right to veto M&A transactions targeting companies in these strategic industries if a proposed transaction involves a foreign bidder. As Frattaroli (2020) reports, in the time period between the introduction of the Alstom Decree until early 2018, over a hundred transactions have been the subject of an investigation. In addition, the law also has the potential to deter M&A transactions ex-ante (as in Dinc and Erel, 2013), as potential foreign bidders might anticipate the resistance of the French government and associated elevated regulatory costs and, therefore, decide not to go ahead with the bid.

Frattaroli (2020) uses the Alstom Decree as a quasi-natural experiment to estimate the impact of protectionist anti-takeover legislation on firms' investment and employment policies, operating performance, capital structure, cash distributions to shareholders, and executive compensation. As shown in his study, the Alstom Decree reduces affected firms' likelihood of becoming the target of a merger or acquisition. This can be both due to the direct application of the Decree to specific transactions and also because of anticipation effect and the deterrence role of the Decree as potential acquirers might decide to stay away fearing an uphill regulatory battle. We therefore posit that the Alstom Decree provides a natural setting for us to study the effect of an anti-takeover law on the riskiness and stock returns of firms (and in particular those of distressed firms). In addition to providing an opportunity to study this effect in a different market, it is also free of many concerns raised by Karpoff and Wittry (2018) that apply to state anti-takeover laws in the U.S.. In particular, the Decree had not been lobbied for by any firm, does not interfere with earlier generation laws of the same kind, and had become constitutional immediately upon enactment.

We collect the accounting and stock market data for French companies from Compustat Global. Our tests focus on the effect of the Alstom Decree on the stock returns and betas of French firms (both those affected by the Decree and those that were not affected). We therefore restrict our sample to the period 2011-2017, so that we have coverage within three years before and three years after the Decree year. Our sample includes 50,859 firm-years representing 801 firms, of which 189 belong to the treated industries (those subject to the Decree) and 612 belong to the control industries (those deemed by the French government as non-strategic and hence exempt from the

Decree). The characteristics of the French companies are similar to those of the U.S. firms in our sample. The average firm in our sample of French companies has a market capitalization of 2.52 billion dollars, an average market leverage of 0.30, and an average monthly stock return of 1.2%.

To study the effect of the Alstom Decree on equity risk and stock returns in distressed firms, we first need to identify these firms. Unfortunately, accounting data, especially quarterly, are missing for many French companies making it impossible to use the CHS score to measure financial distress, as this score relies primarily on accounting data. An additional concern is that the parameters of the CHS model have been estimated using U.S. stocks and may not be suitable for other countries. To circumvent this problem, we take advantage of the alternative Merton-KMV measure that proxies for the severity of financial distress by the distance to default (defined as the distance between the asset value and the default boundary in terms of the number of standard deviations of the asset value). The distance to default measure can be computed using the firm's equity value, its equity volatility, and the face value of debt, as opposed to CHS that relies on a large set of accounting variables. The details on the construction of this measure are provided in Appendix B.

As with the U.S. data, we start by analyzing the effects of the passage of the Alstom decree on the stock returns of distressed firms in the industries subject to the decree. To do so, we sort each month all stocks traded on the French market into two portfolios, containing stocks of companies operating in industries subject to (treated) or not subject to (non-treated) the Alstom decree. The portfolios are value-weighted and held for one month. To adjust for potential differences in industry returns, we compute the return on a hedge portfolio, defined as the return of firms in the treated portfolio minus the return of firms in the non-treated portfolio. We then examine how this difference in returns (i.e. how the return on the hedge portfolio) is affected by the passage of the decree. Our hypothesis is that the passage of the Alstom decree should increase the return on the hedge portfolio among distressed firms.

Table 10 shows the mean excess monthly stock returns and six-factor alphas of the hedge portfolio over the three-year period before the introduction of the Alstom decree in 2014 (pre-ATL) and over the three-year after (post-ATL). The factors in the six-factor model are the Fama-French five factors augmented with a momentum factor, using the European factors. The portfolios are applied to the full sample and to a subsample (quintile) of most financially distressed firms, where we measure the level of financial distress every month using the Merton-KMV distance-to-default

model. All returns and alphas are in percentage points per month and the corresponding t-statistics are reported in parentheses.

Insert Table 10 Here

The results in Table 10 demonstrate a significant effect of the passage of the Alstom decree on the return of the hedge portfolio of distressed firms, in line with the predictions of the model. The mean excess return of the hedge portfolio of distressed firms increases by 0.72% per month while its six-factor alpha increases 3.22% per month, following the passage of the decree. We get lower t-statistics in this table (1.63 and 2.00) because of the smaller sample size. As with the U.S. data, we find no such effects in the full sample of firms.

We next turn to equity risk. Unlike in our U.S. based tests that take advantage of state anti-takeover laws, we cannot use a similar portfolio approach in application to the Alstom Decree because prior to the enactment of the Decree there are no treated firms. We therefore rely on the standard difference-in-differences methodology.

To do so, we first estimate the level of financial distress of all stocks as of June 2014 using the Merton-KMV distance-to-default model. Accordingly, we divide the stocks into both equal-sized quintiles and terciles. (We use terciles in addition to quintiles to make sure our portfolios are sufficiently well populated and the quintile results are not driven by a few outliers.) We estimate the market beta of each stock by regressing monthly returns on the French stock market index return. We estimate betas during the three years prior to the ATL introduction year, 2011-2013, and during the three years after the introduction year, 2015-2017. This yields pre- and post-Decree market betas for each stock. We assign to each stock an ATL dummy variable that equals one in the post-Decree period for all firms that operate in industries that are affected by the Decree, and equals zero otherwise. We then regress firm betas on the ATL dummy separately for the full sample and for the subsample of most financially distressed stocks, as proxied for by the distance to default measure. As in our U.S. based tests, we include firm and pre/post-ATL period fixed effects. The results from these regressions are presented in Table 11.

Insert Table 11 Here

The evidence in Table 11 demonstrates that the betas of French firms are affected by the Alstom

Decree in a way consistent with our model. The coefficients on the ATL dummy for the most financially distressed stocks are positive and statistically significant indicating that the betas of distressed firms in the treated industries increase relative to the betas of distressed stocks in the industries that were not affected by the Alstom Decree. The economic magnitude of this effect is large and also greater than in our U.S. state-level tests: For tercile portfolios the betas of distressed stocks increase by 0.33 on average and for quintile portfolios the change in betas is 0.54 on average.

To conclude, the evidence from the sample of French companies in relation to the Alstom Decree is consistent with that for the U.S., providing further validation for the predictions of our model on the relation between takeover markets and equity risk and stock returns in distressed firms.

5 Conclusion

We argue that takeovers provide a valuable exit option for shareholders of distressed firms so that anti-takeover laws should decrease shareholder value and increase equity risk and stock returns. To illustrate this effect theoretically, we develop a stylized model with a focus on the effects of takeovers on equity risk and expected returns. We investigate the predictions of the model empirically by looking at the return dynamics in distressed firms around the enactment of anti-takeover laws. Our approach is multi-faceted. We start by analyzing 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 an 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. We complement our analysis by examining the effect of a French anti-takeover law (Alstom degree) on the riskiness of French firms and find consistent results.

We obtain five main results. First, in line with our hypothesis that anti-takeover laws increase stock returns in distressed firms, 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. We find no such effects in the full sample of firms. Second, we find that while distressed firms experience a significant increase in returns after the passage of anti-takeover laws, there is virtually no effect in our full sample of firms. Third, consistent with the notion that anti-takeover laws increase equity risk in distressed

firms, our analysis of factor loadings shows that the beta of the distress portfolio is larger in states with an anti-takeover law. Fourth, we find that the betas of distressed firms increase significantly following the passage of anti-takeover laws. Again we find no such effects in our full sample of firms. Fifth, we find that the Alstom degree had a positive effect on the stock returns and riskiness of treated distressed firms in France, consistent with the model predictions.

Our results survive various robustness and sensitivity checks, including leaving out motivating or lobbying firms, using alternative proxies for financial distress, investigating the effects of alternative second generation anti-takeover laws, excluding firms incorporated in Delaware, as well as studying the effect on risk and returns of firms that change their state of incorporation.

An auxiliary result of our analysis has a potential to shed additional light on the distress risk puzzle: The finding in the empirical asset pricing literature that financially distressed stocks earn lower average returns and alphas. Our empirical results suggest that the anti-takeover legislation plays a role in the formation of this puzzle and point towards the need of a deeper analysis of the effects of corporate governance and the market for acquisitions on the dynamics of stock returns, particularly among distressed firms.

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 λ and η. The derivative of $\beta^T(X;c,\lambda,\eta)$ with respect to λ is given by

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

As a result

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

Since $X > X_D$, we immediately get that

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

Appendix B: Distress measures

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

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

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

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 $\phi = 2^{-1/3}$):

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

and

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

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:

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

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, $d_1 = \frac{[ln(\frac{V_A}{F}) + (r + \frac{\sigma_A^2}{2})T]}{\sigma_A \sqrt{T}}$, $d_2 = d_1 - \sigma_A \sqrt{T}$, σ_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, σ_E, and asset volatility, σ_A:

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

The unobservable variables V_A and σ_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 σ_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 σ_A we use a numerical algorithm with $V_E + F$ and σ_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

Table 1 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 law (ATL), based on the data provided by Atanassov (2013). Following Atanassov we use the enactment of Business Combination antitakeover laws, which impose a moratorium (3 to 5 years) on specified transactions between the target and the acquirer holding a specified threshold percentage of stocks unless the board votes otherwise before the acquiring person becomes an interested shareholder. 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 cumulative return over the past six months. 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 of Campbell, Hilscher, and Szilagyi (2008). Market leverage is the book value of total liabilities divided by the sum of total liabilities and equity market value. Total volatility is the standard deviation of daily stock returns over the previous month. Idiosyncratic volatility is the standard deviation of the residuals of regression of daily stock returns on the market return over the previous month.

		All states	No ATL	ATL
	# firm-years	1,935,322	352,373	1,582,949
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
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
Market leverage	Mean	0.431	0.466	0.428
	Median	0.391	0.436	0.388
Total volatility	Mean	0.033	0.036	0.033
	Median	0.027	0.029	0.026
Idiosyncratic volatility	Mean	0.031	0.034	0.030
	Median	0.024	0.026	0.024

Table 2: 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), based on the data provided by Atanassov (2013). 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 of 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	0.67	-0.13	-0.89	-0.04	0.85
	(3.37)	(3.09)	(-1.21)	(-1.49)	(-0.07)	(2.41)
CAPM alpha	0.11	-0.02	-0.13	-2.04	-1.31	0.73
	(1.15)	(-1.03)	(-1.22)	(-4.25)	(-3.81)	(2.04)
3-factor alpha	0.14	-0.03	-0.17	-2.06	-1.34	0.72
	(1.42)	(-1.96)	(-1.59)	(-4.69)	(-4.49)	(2.01)
4-factor alpha	0.11	-0.02	-0.13	-1.54	-0.74	0.80
	(1.11)	(-1.31)	(-1.21)	(-3.65)	(-2.96)	(2.19)
5-factor alpha	0.10	-0.03	-0.13	-1.49	-0.71	0.77
	(0.98)	(-2.26)	(-1.21)	(-3.44)	(-2.60)	(2.07)
6-factor alpha	0.08	-0.03	-0.11	-1.12	-0.29	0.82
	(0.78)	(-1.78)	(-0.96)	(-2.71)	(-1.31)	(2.19)

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

Table 3: Portfolio Sort for Additional Firm Characteristics

Each month we divide all stocks into two portfolios, which contain stocks of companies incorporated in states with and without anti-takeover law (ATL), based on the data provided by Atanassov (2013). The portfolios are value-weighted and held for one month. The table shows the return/alphas of the hedge ATL–No ATL portfolio. The portfolios are applied separately to equal-sized quintile subsamples of small size, high market leverage, high total volatility, and high idiosyncratic volatility stocks. All returns and alphas are in percent per month and the corresponding t-statistics are in parentheses. The sample period is 1988-2017.

	Return/alphas on the hedge ATL–No ATL portfolio			
	Small size	High leverage	High total vol.	High idio. vol.
Mean excess return	0.41	0.17	0.76	0.77
	(3.33)	(0.81)	(2.81)	(2.77)
CAPM alpha	0.38	-0.03	0.57	0.60
	(3.08)	(-0.16)	(2.11)	(2.16)
3-factor alpha	0.40	-0.03	0.56	0.63
	(3.22)	(-0.15)	(2.09)	(2.26)
4-factor alpha	0.49	0.12	0.67	0.87
	(3.95)	(0.60)	(2.46)	(3.17)
5-factor alpha	0.41	0.36	0.66	0.77
	(3.14)	(1.81)	(2.35)	(2.66)
6-factor alpha	0.48	0.44	0.73	0.94
	(3.71)	(2.24)	(2.59)	(3.32)

Table 4: 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 of 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 stocks	
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 5: 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), based on the data provided by Atanassov (2013). 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 of Campbell et al. (2008). The t-statistics are in parentheses. The sample period is 1988-2017.

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

Table 6: CAPM Beta for Additional Firm Characteristics

Each month we divide all stocks into two portfolios, which contain stocks of companies incorporated in states with and without anti-takeover law (ATL), based on the data provided by Atanassov (2013). The portfolios are value-weighted and held for one month. The table shows the portfolios' CAPM beta. The portfolios are applied separately to equal-sized quintile subsamples of small size, high market leverage, high total volatility, and high idiosyncratic volatility stocks. The t-statistics are in parentheses. The sample period is 1988-2017.

	Small size		
	No ATL	ATL	Diff
CAPM Beta	0.86	0.90	0.04
	(14.16)	(15.14)	(1.31)
	High leverage		
	No ATL	ATL	Diff
CAPM Beta	0.94	1.23	0.29
	(15.56)	(27.15)	(6.06)
	High total volatility		
	No ATL	ATL	Diff
CAPM Beta	1.55	1.83	0.28
	(18.51)	(26.31)	(4.38)
	High idiosyncratic volatility		
	No ATL	ATL	Diff
CAPM Beta	1.52	1.77	0.25
	(19.03)	(24.91)	(3.77)

Table 7: Difference-in-Differences for Market Beta

Each month we divide all stocks into equal-sized quintiles according the financial-distress measure of 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 (11). All coefficients are multiplied by 100 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	-1.37	1.72	13.96	13.32
	(-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[1]		0.11		0.00
		(3.68)		(-0.04)
Before[2]		0.07		0.01
		(2.50)		(0.11)

Table 8: Change in State of Incorporation

The sample contains 99 firms that changed their state of incorporation from a state without antitakeover law to a state with antitakeover law. For each firm we calculate the average monthly return and the market beta during the three years before the moving year and during the three years after the moving year. The average returns and betas are taken at a raw level and when adjusted to the 2-digit SIC code and state averages in the same time period. We then compute the difference between the returns after the moving year and the returns before the moving year ($R_{after} - R_{before}$), as well as the equivalent difference in betas ($Beta_{after} - Beta_{before}$). We run a regression of these differences on the firm's CHS distress level (Campbell et al. (2008)). All coefficients are multiplied by 100 and t-statistics are in parentheses.

	Dependent variable: $R_{after} - R_{before}$		
	Raw	Industry-adjusted	State-adjusted
Cnst	4.79	4.72	4.88
	(2.21)	(2.20)	(2.24)
CHS distress level	0.69	0.60	0.60
	(2.42)	(2.09)	(2.09)

	Dependent variable: $Beta_{after} - Beta_{before}$		
	Raw	Industry-adjusted	State-adjusted
Cnst	239.38	230.60	232.75
	(3.13)	(3.33)	(2.98)
CHS distress level	29.69	27.34	28.21
	(2.93)	(2.98)	(2.72)

Table 9: Sensitivity Checks and Alternative Types of Anti-Takeover Laws

In Panel A we replicate the portfolio sort results of Table 3 with three 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)), and excluding firms incorporated in the state of Delaware. 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 to all shareholders the highest price paid to any during a specified period of time before the start of a tender offer. Control Share Acquisition laws give noninterested shareholders the right to decide whether a newly qualified large shareholder has any voting right.

Panel A. Senstitivity 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)

Table 9: 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	0.69	0.01	-0.15	0.36	0.51
	(2.94)	(3.66)	(0.08)	(-0.29)	(0.67)	(1.73)
6-factor alpha	-0.01	-0.03	-0.03	-0.46	0.30	0.76
	(-0.28)	(-0.72)	(-0.41)	(-2.05)	(1.01)	(2.46)
Control Share Acquisition Law						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.69	0.70	0.02	-0.13	0.55	0.68
	(3.10)	(3.54)	(0.21)	(-0.24)	(1.06)	(2.40)
6-factor alpha	-0.01	-0.07	-0.06	-0.38	0.20	0.58
	(-0.59)	(-1.28)	(-1.01)	(-1.72)	(0.63)	(1.98)

Table 10: Returns of Portfolios of Stocks in Industries that are Subject and not Subject to Anti-Takeover Laws: Evidence from France

The table shows portfolio sort results for companies traded in the French stock market over the three-year period before the introduction of an antitakeover law in France in 2014 (pre-ATL) and over the three-year after (post-ATL), which applies to certain industries. Each month we divide all stocks into two portfolios, which contain stocks of companies operating in industries that are subject and that are not subject to the antitakeover law. 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 six-factor alphas for the difference between the treated and non-treated industry portfolios. The factors in the six-factor model are the Fama-French five factors augmented with a momentum factor, using the European factors. The portfolios are applied to the full sample and to a subsample of most financially distressed firms by top quintile based on the Merton/KMV distance-to-default model. All returns and alphas are in percent per month and the corresponding t-statistics are in parentheses.

	Return/alpha of hedge portfolios of treated/non-treated industries					
	Full sample			Distressed firms		
	Pre-ATL	Post-ATL	Diff	Pre-ATL	Post-ATL	Diff
Mean excess return	-0.37	-0.61	-0.23	-0.78	-0.06	0.72
	(-0.85)	(-2.31)	(-0.45)	(-1.81)	(0.76)	(1.63)
6-factor alpha	-0.41	-0.65	-0.24	-0.83	2.39	3.22
	(-0.87)	(-1.67)	(-0.39)	(-0.74)	(2.08)	(2.00)

Table 11: Difference-in-Differences for Market Beta: Evidence from France

The table shows results of difference-in-differences regressions for market betas of companies traded on the French stock market during the three-year window around the introduction of the Alstom decree. We first estimate the level of financial distress of all stocks as of June 2014 using the Merton/KMV distance-to-default model. Accordingly, we divide the stocks into both equal-sized quintiles and terciles. We then estimate the market beta of each stock using monthly returns during the three years prior to the introduction year of the decree, 2011-2013, and during the three years after the introduction year, 2015-2017. This yields pre- and post-ATL market betas of each stock. We assign to each stock an ATL dummy variable that equals one in the post-decree period for all firms that operate in industries that are affected by the decree, and zero otherwise. We regress the firm market beta on the ATL dummy variable for the full sample and for the subsamples of most financially distressed firms by top quintile/tercile. The regression includes firm and pre/post-decree period fixed effects. All coefficients are multiplied by 100 and t-statistics are in parentheses.

	Full sample	Distressed firms top tercile	Distressed firms top quintile
# obs	989	329	198
Cnst	0.47	2.36	2.36
	(0.84)	(3.60)	(3.37)
ATL dummy	12.62	30.34	58.56
	(1.51)	(1.77)	(2.23)

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.

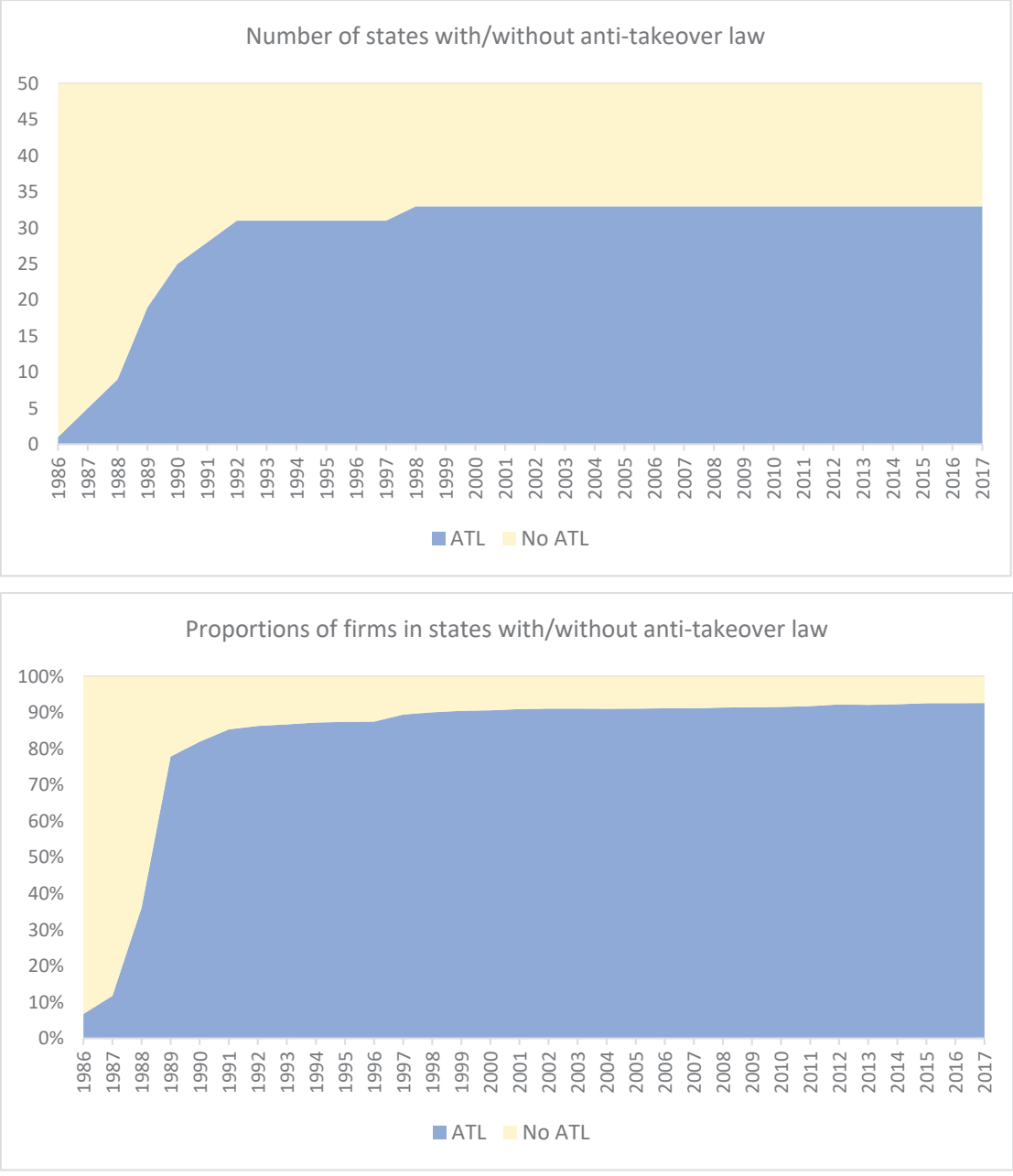

Figure 2: Cumulative Return

The figure plots the cumulative excess return and six-factor alpha of the zero-investment strategy that buys stocks of companies incorporated in states with anti-takeover law (ATL) and shorts stocks of companies incorporated in states without the law, applied for most financially distressed stocks, as described in Table 2.

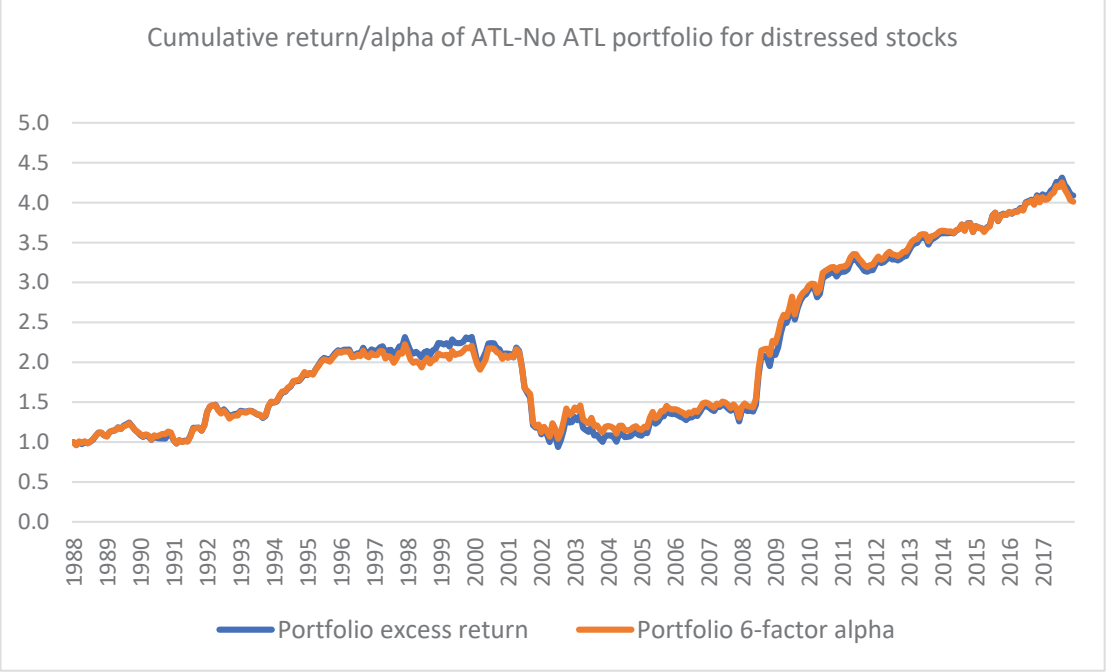

Figure 3: The Effect of Anti-Takeover Law on the Distress Anomaly

Each month we sort all stocks into ten equal-sized portfolios based on the financial-distress measure of Campbell et al. (2008). We construct a zero-investment value-weighted hedge portfolio of buying the most healthy stocks portfolio and selling the most distressed stocks portfolio, and we hold this portfolio for one month. The figure shows the monthly mean excess return and six-factor alpha (the Fama-French (2015) five factors augmented with a momentum factor) of the portfolio when including all firms, and separately when including firms operating in states with and without antitakeover law. The sample period is 1986-2017.

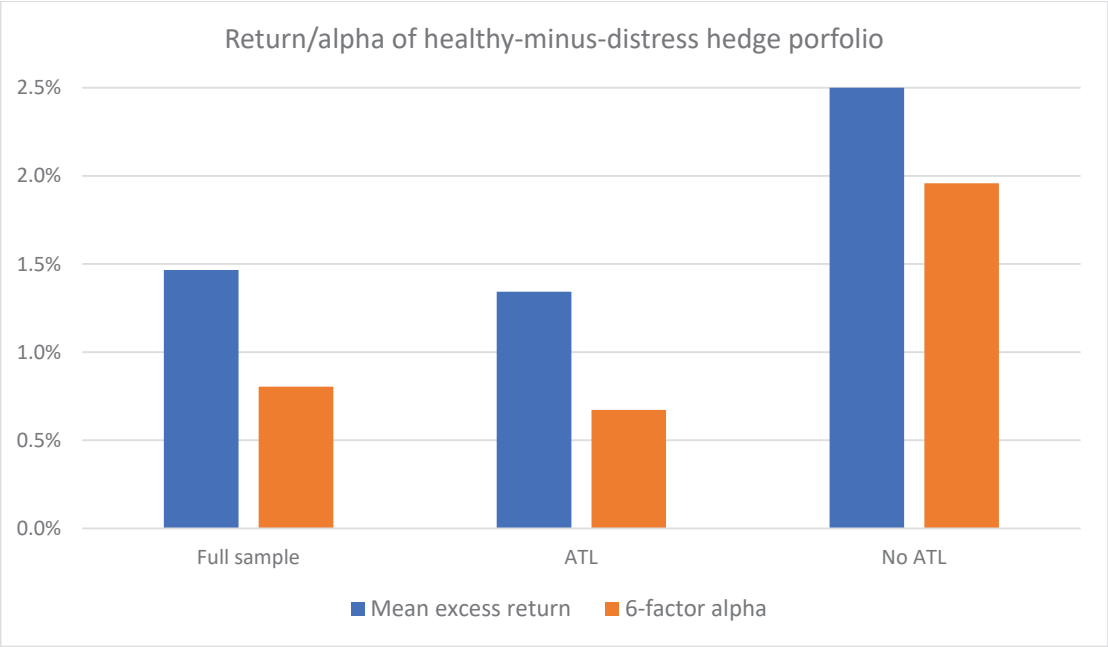

Table A.1. State Antitakeover Legislation

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.2. 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. Senstitivity checks						
Post-1989 BC Law						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.58	0.72	0.15	-0.95	-0.05	0.90
	(2.19)	(2.52)	(1.83)	(-1.68)	(-0.10)	(2.95)
6-factor alpha	-0.19	-0.06	0.13	-1.29	-0.36	0.92
	(-2.38)	(-1.46)	(1.74)	(-3.73)	(-2.08)	(2.90)
Excluding Motivating or Lobbying Firms						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.61	0.74	0.13	-0.95	-0.09	0.85
	(2.46)	(2.72)	(1.67)	(-1.78)	(-0.18)	(2.97)
6-factor alpha	-0.17	-0.06	0.12	-1.30	-0.41	0.89
	(-2.34)	(-1.46)	(1.67)	(-3.96)	(-2.39)	(2.96)
Excluding Delaware						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.61	0.75	0.14	-0.95	0.00	0.95
	(2.46)	(3.33)	(2.05)	(-1.78)	(0.00)	(3.04)
6-factor alpha	-0.17	-0.05	0.12	-1.30	-0.35	0.95
	(-2.34)	(-1.18)	(1.75)	(-3.96)	(-1.55)	(2.87)

Table A.2. 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			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.72	0.78	0.06	-0.19	0.21	0.39
	(2.50)	(3.51)	(0.60)	(-0.37)	(0.40)	(1.72)
6-factor alpha	-0.08	-0.04	0.03	-0.52	-0.11	0.41
	(-1.81)	(-0.90)	(0.69)	(-3.03)	(-0.45)	(1.69)
Control Share Acquisition Law						
	Full sample			Distressed firms		
	No ATL	ATL	Diff	No ATL	ATL	Diff
Mean excess return	0.73	0.75	0.02	-0.20	0.28	0.48
	(2.55)	(3.37)	(0.23)	(-0.38)	(0.57)	(2.03)
6-factor alpha	-0.08	-0.04	0.04	-0.51	-0.13	0.38
	(-1.87)	(-0.79)	(0.83)	(-2.97)	(-0.53)	(1.59)