

## Stockholder Wealth Effects of Corporate Inversions: Is It just Tax or Does Governance Matter too?

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**Abstract:** This study investigates the effects of governance on stockholder wealth effects when a firm announces its intention to invert. Using a sample of 59 inversions during the period 1994 to 2014, we find that irrespective of the type of inversion and other firm characteristics, stockholders gain when the new country of incorporation has stronger country-level governance. Gains also vary significantly with the nature of the inversion: firms which invert purely for tax-related reasons without any intention to merge with another firm experience negative stockholder wealth effects. In addition to the cross-sectional tests, this study also uses Mylan's inversion and subsequent events as an example to show that stockholders are indeed affected by whether or not a firm reincorporates in a jurisdiction with weaker stockholder rights protection. Such weaker protection insulated Mylan's management from removal and cost shareholders significantly by allowing it to successfully reject a takeover attempt by Teva. Therefore, stockholders would need to evaluate the benefits from inversion in the form of tax savings against the potential costs arising from weaker corporate governance.

**Keywords:** Corporate inversions; Taxes; Corporate governance; Corporate restructuring

**JEL Classification:** G30, G32, G34

### 1. Introduction

Inversions are corporate restructurings in which multinational firms (MNCs) change their tax jurisdictions to reduce corporate tax and increase firm value. Existing literature documents the benefits of inversions (Hines and Hubbard, 1990; Atshuler, *et al.*, 1995; and Desai, *et al.*, 2001) but the puzzling observation that the number of inversions is tiny compared to the total number of firms (Talley, 2015) remains. If the path to tax benefits is clear, it is expected that a much larger number of firms would generate shareholder value by inverting. This suggests that material costs exist which impede the path to tax benefits.

One such potential cost is that the quality of governance may change. An inversion changes the applicable corporate law from the relevant U.S. state law to that of the new country of reincorporation. This can influence a firm's governance by affecting various anti-takeover defenses it employs (Dammann, 2014) as well as by affecting the nature of fiduciary duties of the board of directors (Kun (2004). Thus, shareholder protection can vary depending on the corporate laws of the new jurisdiction. This study examines whether governance-related costs are imposed on the inverting firm and how such costs vary in the cross-section.

This study takes a two-step approach to this question. First, it examines whether changes in country-level corporate governance plays a direct role in determining stockholders' wealth effects when a firm announces its intention to invert. In a sample of 59 inversions drawn from Talley (2015) over 1994 to 2014, we explore whether the three-day cumulative abnormal return (CAR) experienced by shareholders varies with change in country-level governance. Using various alternative multivariate regression specifications, we consistently find that wealth effects are higher if a firm switches to a country which has relatively greater strength of country-level governance compared to the home country. Further examination of the CARs shows that while the original strength of firm-level governance does not seem to matter, the nature of the inversion itself plays a role in determining CARs. If the inversion is pure, i.e. is undertaken purely for tax purposes and is unaccompanied by a merger with another entity, stockholders lose more during the announcement period. This supports the conjecture that pure inversions maybe suboptimal for maximizing firm value and indicative of managerial agency costs (Zhou, 2017).

Ex-ante, it is expected that stockholders will trade-off the benefits of a lower tax rates versus the downside of potentially weaker protection. Surprisingly, we are unable to correlate our various proxies for tax gains with the 3-day CARs. This could be an artifact of reduced test power due to the small sample size. In addition, information leakage might have occurred implying that the value of tax-related gains is already reflected in the announcement period stock price. Further, in many cases, the costs and benefits of the trade-off may not come to fruition in the period during, or even immediately after, the inversion. For instance, post-inversion a firm may incorporate more antitakeover provisions but since no bid is made, the opportunity to utilize those provisions against a takeover may not arise. Therefore, stockholders may not be able to gauge the effect of the changes accurately.

To perform a more in-depth examination, we explore the case of Mylan Inc. in detail. Mylan was incorporated in Pennsylvania and inverted in 2014 by merging with a portion of Abbott Laboratories. Since Mylan's shareholders voted overwhelmingly (98%) in favor of the inversion and Talley (2015) finds that Mylan's stock experienced a +2.25% 3-day announcement period CAR, shareholders viewed this as an inversion where the (tax) benefits outweighed the (governance) costs. However Netherlands does not provide shareholders with a similar level of protection that U.S. corporate laws do. Therefore, when Mylan was targeted by Teva Pharmaceutical Industries Ltd. almost immediately after its inversion, it was able to reject the offer using anti-takeover protection afforded by Dutch corporate laws. This case provides a unique opportunity to study the corporate governance effects of inversion on a firm because the takeover proposal followed the inversion so quickly that it is possible to reliably link the events of the post-takeover offer period to the inversion itself.

Using this case, we find that equityholders experienced the largest gains when Teva's takeover bid was rumored or announced and the largest losses when Teva rescinded its offer. Overall, given the large economically (and statistically) significant CARs, we conclude that inversion-related corporate governance change imposed material costs on Mylan's shareholders.

This paper contributes to the literature on both tax inversions as well as the effects of corporate governance on firm value. By showing that stockholders expect country-level governance related costs, the study shows that stockholders discount the expected present value of tax benefits from inversions. The presence of such costs also helps to explain why despite such clear path to tax benefits, so few firms choose to ultimately invert. Mylan's example further shows that such

governance-related costs can be substantial and that firms need to assess the trade-off between tax benefits and such costs prior to the inversion decision.

The remainder of the paper is organized as follows. Section 2 provides an overview of inversions and discusses its costs and benefits. Section 3 reviews the literature and develops the hypotheses tested in the study. Section 4 describes the data and variables while section 5 presents the econometric model and describes the sample characteristics. Section 6 reports the regression results. Section 7 describes Mylan's case and discusses the empirical results from the case. The last Section concludes.

## **2. Institutional Details, Costs and Benefits of Inversions**

Prior to the recent corporate tax cut in 2018, the U.S. had the highest corporate income tax rate among the 34 industrialized nations of the Organization for Economic Co-operation and Development (Pomerleau, 2015). While U.S. MNCs may operate and pay taxes in many different jurisdictions, the place of incorporation of the parent firm is a major determinant of the firm's effective tax rate. If a US firm reincorporates in a jurisdiction with lower taxes by inverting, it stands to gain due to lower marginal corporate tax rates in the new country of incorporation.

Further, U.S. tax laws require firms to pay the domestic marginal tax rate on their global income. The differential tax which does not have to be paid until that foreign income is repatriated back to the US, can be avoided if the U.S. firm leaves the money elsewhere. The cost of availing this option is that the firm is unable to use the extra funds for investments in the U.S. or to pay dividends or buybacks to local stockholders. Overall, relocating to a lower-tax jurisdiction offers an opportunity for the firm to benefit from a future lower (and non-global) tax rate as well as from the ability to move the accumulated cash back to the U.S. without incurring any tax penalties.

Inversions can generally take one of two main forms: pure inversion or merger inversion. In a pure inversion, a foreign subsidiary of a U.S. MNC becomes the parent thus changing the effective country of incorporation. The shareholder group remains unchanged by exchanging their existing shares for shares in the new foreign-incorporated firm. In addition, the location, management and underlying business operations are generally unaffected by pure inversions. This form was common prior to the enactment of the American Jobs Creation Act of 2004. Per this law, if 80% or more of the shareholding in the new entity is held by the shareholders of the old U.S. incorporated firm, the inverting firm is ineligible for any tax benefits as it remains classified as a U.S. firm for tax purposes (Zhou, 2017).

After 2004, merger inversions, which involve the U.S. firm acquiring a foreign company and the surviving entity being domiciled in the lower-tax foreign jurisdiction became more common. Merger inversions differ from pure inversions since effectively, two corporate events occur simultaneously, the merger itself and the domicile change of the U.S. firm. This implies that a merger inversion creates a bundle of benefits for the stockholders which includes both tax related benefits as well as gains from synergy. Potential costs arising from this strategy include changes in ownership and management and loss of control.

Apart from tax effects, post-inversion, many firms continue trading on U.S. exchanges and remain classified by the SEC as U.S. issuers. As per the SEC, such classification requires that the inverting firm have significant business within the U.S. and more than 50% of its stock be held by U.S. residents. Reporting requirements such as filing of periodic quarterly and annual financial statements and adhering to U.S. GAAP remain in place. However, the applicable corporate law changes from the relevant U.S. state law to that of the new country of reincorporation. This can

influence a firm's governance by affecting various anti-takeover defenses that firm can employ (Dammann, 2014) as well as by affecting the nature of fiduciary duties of the board of directors (Kun (2004). In the U.S., stockholders are protected by the fiduciary duty of the company's directors to protect their interests. However, in other countries, for instance, Netherlands in Europe, directors owe fiduciary duties to non-equity participants such as employees and other stakeholders (Chazen and Wermuller, 2015). Therefore shareholder protection can vary depending on the corporate laws of the jurisdiction in which the firm is reincorporated.

### 3. Literature Review and Hypothesis Development

The number of inversions observed is very small compared to the total number of firms (Talley, 2015). This shows that firms are not able to achieve inversion-related tax benefits without incurring any costs. In this study, conditional on the inversion decision, we try to discern the cross-sectional determinants of the cumulative abnormal returns experienced by stockholders during the inversion announcement period, focusing specifically on whether changes in corporate governance impose costs on stockholders.

This study is therefore related to the strand of literature that examines the relation between inversion and potential governance effects. Cortes, Gomes and Gopalan (2016) find that executives in inverted firms receive more cash compensation which is less sensitive to stock prices. In addition, they find that after an inversion, firms increase the number of anti-takeover charter provisions. Col, Liao and Zeume (2016) examine the drivers of corporate inversions across countries and find that firms opt for destinations where the corporate governance standards are similar to the original country of incorporation but have the advantage of lower tax rates. Day (2016) examines the question of why shareholders do not seem to recognize the misaligned incentives that arises when inversions move firms to jurisdictions with lower shareholder protections. Similar to Col, *et al.* (2016), Day also finds that investors enjoy the value gained from a lower tax rate but only as long as the company reincorporates in a jurisdiction with a comparably strong corporate governance statute. Firm value tends to be discounted if the jurisdiction of reincorporation has weaker laws to protect shareholders compared to U.S.

This study is also related to the strand of literature that employ event studies to calculate abnormal returns to shareholders upon inversion announcement. Desai and Hines (2002) were the first to report on inversion announcement's wealth effects on equity investors. Examining a sample of inversions between 1993 and 2002, they found slightly positive, though statistically insignificant, abnormal returns on during the five-day period surrounding the announcement date. More recently, Rao (2015) finds wide dispersion in abnormal returns within her sample of 42 firms announcing inversion decisions during the period of 1982 to 2014. Cortes, *et al.* (2016) document that, on average, in their sample of 66 inverting firms during the period 1996 and 2013, announcing firms experience +3.9% CAR over a five-day period. The lack of significant abnormal returns in these event studies is surprising if future tax savings create large benefits for the stockholders.

In contrast to other studies, we focus on examining whether the observed abnormal returns correlate with various proxies for the costs and benefits that stockholders can expect to incur post-inversion. Assuming stock prices changes incorporate the effects on future cash flows or risk due to the inversion, the announcement period abnormal stock returns should measure investor's perception of expected overall gain from the inversion. Ex-ante, stockholders would trade-off the benefits of a lower effective tax rates versus the downside of potentially weaker protection. We therefore hypothesize the following:

**H1:** The greater the change in strength of governance from original country to the new country of incorporation, the greater the stockholder wealth effects (CAR) upon announcement of the inversion.

**H2:** The greater the net tax benefits to inversion, the greater the stockholder wealth effects (CAR) upon announcement of the inversion.

In addition to the change in country level governance, the firm's original corporate governance would also affect the relative change that stockholders experience. One potential measure of the existing governance framework can be found using the U.S. state in which the firm was incorporated. According to Daines (2001), the legal framework existing in the state of Delaware and its accompanying institutions increase the value of public companies incorporated there and serve shareholders' interests better. In addition, Delaware incorporation provide more protection to the shareholders against hostile take-overs (Talley, 2015). Therefore, the effect of the change in the country of incorporation should be more if the firm was originally based in Delaware relative to other states, i.e. since the shareholders who enjoyed the protections that Delaware offered stand to lose more if the firm moved to a region with less stringent country-specific governance.

**H3:** The effect of a relatively lowered strength of governance from original country to the new country of incorporation is magnified if the firm was originally incorporated in Delaware.

Pure inversions are limited in terms of their potential benefit whereas merger inversions may involve changes in the business structure and synergy. Zhou (2017) finds that pure inversions are less efficient at creating value for shareholders compared to merger inversions. Zhou (2017) further hypothesizes that the inefficient choice of pure inversions may have been driven by managerial agency problems. If the decision to invert without any merger is indeed driven by agency problems, the effects on stockholder wealth should be negative during the time of announcement relative to merger inversions.

**H4:** Pure inversions generate less wealth for stockholders compared to merger inversions.

Further, if the change in country-level governance is negative, the effect of pure inversions would be amplified. This is because investors are facing a new country of incorporation where stockholder rights are less secure in addition to the inversion being potentially driven by managerial agency problems and lacking sources of benefit such as synergy.

**H5:** The effect of a relatively lowered strength of governance from original country to the new country of incorporation is magnified if the inversion is pure.

## **4. Data Description**

In order to investigate the determinants of the CAR, we start by using the sample of seventy firms listed in Talley (2015) which announced their inversion between 1994 and 2014. Inversions are identified as those transactions which involved an acquisition of a publicly traded U.S. company in which the surviving entity incorporated abroad, the pre-merger shareholders of the U.S. target owned at least 45% of the surviving entity and the surviving entity traded in at least one public securities market after the inversion. For each of the inversion events listed in Talley (2015), we

measure the following three sets of independent variables: corporate governance measures, tax measures and firm characteristic controls as detailed below.

#### 4.1 Corporate governance measures

The main variable employed to proxy for changes in governance due to inversion announcement is the change in the Rule of Law (ROL) from the home country to the country of reincorporation. The rule of law index, part of the World Bank's Worldwide Governance Indicators, captures the extent to which agents have confidence in and abide by the rules of society, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (Cortes, *et al.*, 2016). The index ranges from -2.5 (weak) to 2.5 (strong) governance performance. We calculate the *Change in ROL* as the ROL of the new country of incorporation minus the ROL of the original country of incorporation (U.S.) for the year in which the inversion announcement was made. Prior to 2002, data for rule of law is available for every other year. Therefore, for years prior to 2002, we use the average of the values from the preceding year and the succeeding year.

In addition to the rule of law, we distinguish between the types of inversion that happened. *A Pure inversion indicator* variable equals 1 if the acquirer involved in the inversion is the same as the target, i.e. the firm undergoes a merger purely for reincorporation purposes. If a merger with an economically separate entity is involved, the indicator equals 0. *Delaware incorporation* is an indicator variable that equals to 1 if the inverting firm was originally incorporated in the U.S. state of Delaware and 0 if it was incorporated in any other state.

#### 4.2 Tax measures

We calculate pre-inversion GAAP based effective tax rates (*Effective tax rate*) as the ratio of total income tax expense to pre-tax income for all our sample firms since the effective tax rate is likely to differ from the marginal statutory tax rate. These differences arise due to differences in accounting standards for book versus tax income and since MNCs may be subject to different tax rates and rules across different geographic locations. We also calculate the *cash tax rate* (ratio of cash tax paid to pre-tax income) in addition to the effective tax rate since differing accounting standards and ability to defer taxes gives rise to differences between accounting income taxes and cash taxes for the year. Both the effective and the cash tax variables are calculated using data from Compustat till the year 2012 and then supplemented for the remaining year (2013) using data from the firm's annual reports. To ensure that results are not affected by sudden changes in the tax rates of the firm such as those that arise due to yearly accounting decisions, we use averaged values for the two years preceding the announcement.

To estimate the maximum rate at which the inverting firm can expect to pay taxes, we utilize the statutory marginal corporate tax rate of the highest tax bracket in the intended country of incorporation in the year of the announcement (*Tax rate of venue*). For most of our multivariate tests, we utilize the difference between the tax rates that the firm faced in the home country during the year of the inversion announcement and the potential highest rate that it may face in the future after inversion (*Change in effective tax rate* or *Change in cash tax rate*). If the new country of incorporation has a statutory marginal corporate tax rate equaling zero as the highest tax bracket in the year of the inversion announcement, the new country of incorporation is classified as a tax haven, i.e. *Tax haven* indicator =1 and zero otherwise.



#### 4.3 Firm characteristic controls

Consistent with the existing literature, we control for other firm-specific characteristics which may drive the announcement period abnormal returns. *Size* is measured as the log of assets of the inverting firm. Profitability (*ROA*) is measured as the operating profit of the inverting firm divided by book assets. *Market to Book* value is calculated as the market value of assets divided by the book value of assets where market value of assets is calculated as the book value of total assets minus the book value of equity plus the market value of equity. *Leverage* is calculated as the inverting firm's total debt-to-total assets. As with the tax variables, the averaging over two prior years is done for each variable to ensure that results are not affected by sudden changes in the firm but rather to capture economically relevant long-term firm characteristics.

### 5. Econometric Model and Sample Characteristics

The baseline model to be estimated takes the following form:

$$\begin{aligned} CAR_i = & \alpha_0 + \beta_1(Change\ in\ governance\ measure_i) \\ & + \beta_2(Change\ in\ tax\ rate\ measure_i) \\ & + \gamma_1(Firm\ level\ control\ variables_i) + u_i \end{aligned}$$

where the dependent variable is the 3-day announcement period cumulative abnormal returns,  $CAR_i$ , which is taken directly from the calculated values listed in Appendix B of Talley (2015). These CARs are estimated using CRSP data, using a boot-strapped market model estimated prior to the event window which consists of the 3-day period around the inversion announcement date (Talley, 2015).

The change in governance measure as well as the change in tax rate measure vary with the particular model being estimated. Since the data in the sample takes the form of a cross-section over the period between 1993 and 2014, results might be affected by changes in the economy and other time varying factors not controlled for in the specification. Therefore, all results are presented after controlling for year-level clustering effects. Table 1 on the next page describes the distribution of the final sample of firms which announced their intention to complete an inversion. Panel A of Table 1 shows the year-wise distribution of firms in the sample. Panel A shows the distribution of inversions by year. The sample period is from 1993 to 2014 and includes 59 events. Panel B shows the distribution of inversions by the intended venue of incorporation.

The sample has a clustering of firms which announced their intention to invert in 2014. The general consensus expectation in 2014 was that the U.S. government would soon take steps to make inversions more difficult to complete and firms announced merger inversions at a faster pace before the rules were tightened. In September 2014, the expectation came to fruition as Treasury tightened tax rules which made it harder for U.S. firms to spin off subsidiaries overseas. Panel B of Table 1 provides the distribution of the sample by country of reincorporation. Over 50% of the sample firms chose to reincorporate in tax havens: Bermuda (32%) and Ireland (18.6%). Table 2 presents the descriptive statistics of the main variables in the cross-sectional study.

**Table 1.** Distribution of inverting firms (Total events, N=59)**Panel A:** Yearly distribution of inverting firms in sample

Year	Count	Percent of sample
1993	1	1.69
1996	2	3.39
1997	1	1.69
1998	1	1.69
1999	7	11.86
2000	2	3.39
2001	2	3.39
2002	3	5.08
2005	1	1.69
2007	3	5.08
2008	3	5.08
2009	4	6.78
2010	1	1.69
2011	2	3.39
2012	5	8.47
2013	6	10.17
2014	15	25.42
Total	59	100.00

**Panel B:** Distribution of inverting firms in sample by new country of incorporation

Venue	Count	Percent of sample
Bermuda	19	32.20
British Virgin Islands	1	1.69
Canada	5	8.47
Cayman Islands	6	11.86
Denmark	1	1.69
Ireland	11	18.64
Israel	1	1.69
Marshall Is.	1	1.69
Netherlands	4	6.78
Switzerland	2	3.39
UK	7	11.86
Total	59	100.00

**Table 2.** Descriptive statistics of main variables

Firm characteristic controls	N	Mean	Median	Max.	Min.
ROA	59	0.13	0.13	1.18	-0.38
Market to Book value	59	1.70	1.23	6.40	0.31
Leverage	59	0.25	0.23	0.76	0.00
Size	59	7.34	7.86	12.13	0.50
<b>Governance variables</b>					
Change in ROL	59	-0.15	0.09	0.37	-1.65
Pure Inversion Indicator	59	0.37	0.00	1.00	0.00
Delaware incorporation	59	0.66	1.00	1.00	0.00
<b>Tax related variables</b>					
Effective tax rate	59	0.21	0.22	0.95	-0.35
Cash tax rate	59	0.20	0.19	1.24	-0.22
Tax haven status	59	0.70	1.00	1.00	0.00
Tax rate of venue	59	0.09	0.00	0.28	0.00

This table provides descriptive statistics for cross-sectional variables (N = 59). ROA is the operating profit margin of the inverting firm. Leverage is calculated as the average of the firm's total debt-to-total assets. Size is the log of the book value of total assets. ROL is defined as the Rule of Law Index obtained from the Worldwide Governance Indicators by the World Bank. The index ranges from -2.5 (weak) to 2.5 (strong) governance performance. Change in ROL is defined as the ROL of the new country of incorporation minus the ROL of the original country of incorporation (U.S.). Pure Inversion indicator variable equals 1 if the inversion does not include any form of merger and 0 otherwise. Delaware incorporation is an indicator equaling 1 if the inverting firm was originally incorporated in the state of Delaware and 0 otherwise. Effective tax rate is the ratio of total income tax expense to pre-tax income. The cash tax rate is the ratio of cash tax



paid to pre-tax income. Tax rate of venue is the statutory marginal corporate tax rate of the highest tax bracket in the new country of incorporation. Tax haven is a country in which the statutory marginal corporate tax rate of the highest tax bracket is zero.

After eliminating firms for which all independent variables were not available, the final sample consists of 59 firms. On average the inverting firm experiences a drop in ROL on a mean basis though not on a median basis. 66% of the inverting sample were originally incorporated in Delaware while 37% of the sample is made up of inversions which are purely tax related. From the tax rates, we see that the GAAP effective tax rate is higher than the cash tax rate both on a mean and median basis. This may reflect that sample firms may have been deferring the payment of U.S. taxes on profits earned abroad by retaining them in the foreign country.

## **6. Empirical Results of Inversion Announcement CARs**

Table 3 on the next page presents the results of the main cross sectional regression. Column-1 shows the result from a univariate specification using only the change in ROL. The resulting coefficient on this variable is positive and statistically significant showing that as the change in ROL increases, the 3-day abnormal returns to stockholders increases. This is consistent with hypothesis 1 since it shows that the greater the change in strength of governance from original country to the new country of incorporation, the higher the CAR.

In column-2, the independent variable used to capture tax effects is the indicator variable for tax haven status. Tax havens arguably offer the greatest marginal tax benefit since by definition, a tax haven's highest statutory marginal corporate tax rate is zero. Per hypothesis 2, ex-ante, we expect to see a positive and significant coefficient on this variable. However, while we see a positive coefficient in column-2, the value is not statistically significant. We add both of our main variables, first without, and then with, additional firm-level controls in columns 3 and 4 respectively. We find that the overall results remain unchanged—change in governance is significant and tax benefits are insignificant. Nonetheless, the coefficient of tax haven does increase in magnitude and significance compared to the results in column-2.

In columns 5-7, we explore the lack of significance of our tax benefit variable by using more refined measures of tax benefits. In Column 5 and 6 we use changes in GAAP effective tax rate and cash tax rate respectively while in Column 7 the highest statutory corporate tax rate in the new country of reincorporation is used. In all three cases, we would expect negative and significant coefficients but while we see the expected negative sign, we do not see any significance. Potential explanations for this could be due to the small sample size or that stockholders have already priced the positive effects of tax benefits due to information leakage about the inversion prior to the actual announcement.

**Table 3.** Cross-sectional analysis of inverting firm's CAR around announcement date

Dependent Variables	CAR over (-1, +1) for inverting firm around the initial announcement of inversion						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	0.0438 (3.24) <sup>***</sup>	0.0366 (1.71)	0.0281 (1.22)	0.0360 (0.88)	0.0561 (1.62)	-0.0055 (-0.20)	0.0614 (1.62)
Change in ROL	0.0322 (2.47) <sup>**</sup>		0.0451 (4.20) <sup>***</sup>	0.0586 (3.54) <sup>***</sup>	0.0359 (2.13) <sup>**</sup>	0.0583 (2.11) <sup>**</sup>	0.0491 (2.51) <sup>**</sup>
Tax haven status		0.0036 (0.14)	0.0253 (0.90)	0.0307 (1.17)			
Change in cash tax rate						-0.0334 (-1.10)	
Change in effective tax rate					-0.0370 (-0.67)		
Corporate tax rate in venue							-0.0337 (-0.23)
Size				0.0023 (0.88)	0.0022 (0.71)	-0.0010 (-0.25)	0.0020 (0.70)
Leverage				-0.1526 (-2.37) <sup>**</sup>	-0.1488 (-2.47) <sup>**</sup>	-0.2032 (-2.67) <sup>***</sup>	-0.1493 (-2.42) <sup>**</sup>
ROA				-0.0510 (-1.00)	-0.0479 (-0.94)	-0.0840 (-1.28)	-0.0522 (-1.04)
Market to Book value				0.0117 (1.26)	0.0123 (1.36)	0.0112 (0.72)	0.0125 (1.37)
No. of observations	59	59	59	59	59	59	59
p-value of F-statistic	0.0166	0.8884	0.0003	0.0109	0.1079	0.1154	0.0028
Adjusted-R <sup>2</sup>	0.0079	-0.0172	0.0029	0.0382	0.0364	0.0641	0.0264

This table presents the coefficient estimates of cross-sectional regressions for the inverting firm's abnormal returns around the announcement date. The dependent variable is the CAR of the inverting firm, taken directly from Appendix B of Talley (2015), estimated with available CRSP data, using a boot-strapped market model estimated prior to the event window which starts on the trading day preceding the inversion announcement and includes the following two trading days (Talley, 2015). All independent variables are calculated as described in Table 2. The t-statistics reported in parentheses control for announcement year clustering effects. Asterisks \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

However if the last explanation is at work, it is worth questioning why the effects of change in governance was also not already priced. Similarly, it is also possible that investors are slow to incorporate the effects of tax benefits and abnormal returns over larger windows would better capture this effect but that leads to the same question as to why the change in ROL is unaffected by this.

In Table 4, we include proxies for firm level changes in governance. In column-1, we add the Delaware incorporation indicator. Empirically, we observe that the Delaware incorporation variable has the expected negative sign but is insignificant. Next we examine hypothesis 3 by adding an interaction term in column-2 between *Delaware incorporation* and *change in ROL*. The aim is to test whether firms stand to lose more by going from a stronger stockholder protection (due to being

a Delaware firm) to a weaker country-level governance compared to those which were not originally Delaware firms. We find that the interaction term is insignificant indicating that the starting governance does not seem to matter. Nonetheless, the country level governance variable, *change in ROL* retains its significance.

**Table 4.** Impact of governance on inverting firm's CAR around announcement date

Dependent Variables	CAR over (-1, +1) for inverting firm around the initial announcement of inversion			
	(1)	(2)	(3)	(4)
Intercept	0.0529 (1.15)	0.0544 (1.16)	0.0310 (0.77)	0.0598 (0.94)
Change in ROL	0.0504 (1.79)*	0.0286 (1.78)*	0.0545 (2.96)***	0.0709 (2.42)**
Tax haven status	0.0240 (0.84)	0.0229 (0.78)	0.0424 (1.74)*	0.0374 (1.03)
Pure Inversion Indicator			-0.0493 (-2.34)**	-0.0668 (-2.65)***
Delaware incorporation	-0.0174 (-0.44)	-0.0178 (-0.45)		
Delaware incorporation*change in ROL		0.0236 (0.25)		
Pure Inversion*change in ROL				-0.0974 (-1.65)*
Size	0.0002 (0.68)	0.0017 (0.68)	0.0039 (1.35)	0.0019 (0.36)
Leverage	-0.1435 (-2.42)**	-0.1443 (-2.35)**	-0.1549 (-2.37)**	-0.1761 (-2.61)***
ROA	-0.0529 (-0.99)	-0.0526 (-0.99)	-0.0793 (-1.53)	-0.0600 (-1.08)
Market to Book value	0.0118 (1.25)	0.0120 (1.27)	0.0156 (1.71)	0.0112 (1.13)
No. of observations	59	59	59	59
p-value of F-statistic	0.0007	0.0016	0.0165	0.0518
Adjusted-R <sup>2</sup>	0.0329	0.0141	0.0905	0.0945

This table presents the coefficient estimates of cross-sectional regressions for the inverting firm's abnormal returns around the announcement date. The dependent variable is the CAR of the inverting firm, taken directly from Appendix B of Talley (2015), estimated with available CRSP data, using a boot-strapped market model estimated prior to the event window which starts on the trading day preceding the inversion announcement and includes the following two trading days (Talley, 2015). All independent variables are calculated as described in Table 2. The t-statistics reported in parentheses control for announcement year clustering effects. Asterisks \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

In column-3, we add an indicator equaling 1 if the inversion announced was a pure inversion. As reasoned in hypothesis 4, in a pure inversion, the only material change is the change in the registration jurisdictions and the choice may be affected by managerial agency issues. However, with a merger-inversion, the inversion is accompanied by potential gains from synergy, changes in stockholder composition, management and the underlying business operations. The results in

column-3 are interesting. Firstly, as anticipated in hypothesis 4, the coefficient on the pure inversion variable is negative and significant showing that stockholders face greater costs in such inversions. However, after the addition of the pure inversion indicator, while the coefficient on the change in ROL is similar as before, the coefficient on the tax haven variable is positive and marginally significant. This suggests a potential reason for the lack of observed significance on the tax haven variable in Table 3. In general, we expect that pure inversions to be correlated with tax haven status since pure inversions are undertaken purely for tax purposes whereas merger inversions will almost certainly involve other economic considerations (such as synergy) and therefore, the occurrence of merger inversions may not be correlated with tax haven status.

In column-4, we test hypothesis 5 by adding an interaction term between *change in ROL* and *pure inversion*. The results show that both *change in ROL* and *pure inversion* maintain their individual explanatory power but the interaction term is negative and only marginally significant. The negative coefficient shows that relative to merger inversions, even in the presence of a positive country-level change in governance, stockholders experience lower CARs.

## 7. The Case of Mylan's Inversion

### 7.1 Design

We explore Mylan's case using event study methodology. The aim is to quantify the abnormal returns which Mylan experienced as a result of the decisions relating to the decision to reject Teva's offer and examine if stockholder's wealth was destroyed. We start by creating a detailed timeline after the merger with Abbott was announced by searching major newspapers and newswires using Lexis Nexis over the full 2015 year using the following terms "Mylan" + ("Inversion" or "Teva" or "Perrigo"). Using prices from Bloomberg, CARs were estimated using a market model estimated for each date in the chronology. Since many dates are clustered closely in time, each event window is restricted to a single day so that if needed, we can evaluate the effects of successive announcements individually.

### 7.2 Mylan's inversion and subsequent events

In early 2015, soon after Mylan completed its inversion, it put in place a poison pill measure that would allow it to fend off a hostile takeover offer, were one to emerge. As per Dutch law, Mylan's poison pill meant that it could sell shares (maximum 50%) to an independent third-party trust– (stichting) in order to dilute the ownership of existing shareholders and potentially thwart an unsolicited takeover offer. Subsequently, when Teva completed acquisition of 4.6% of Mylan's shares and sought to call a vote on the acquisition proposal, Mylan prevented this by using a special voting mechanism which allowed its current directors to select new directors if shareholders successfully voted to remove the incumbents.

Mylan also used Netherland's stakeholder (not shareholder) focus to refuse Teva's offer. Stakeholders other than shareholders include employees, bondholders, customers, and the community in which a firm operates. Under Dutch law, directors owe fiduciary duties to all these parties apart from the shareholders. Mylan's board cited their expanded fiduciary duty as one of the reasons behind their refusal of the Teva offer. Almost concurrently with Teva's offer, Mylan also proposed its own hostile takeover bid of Perrigo. In its bid to acquire Perrigo, Mylan's board utilized the Dutch provision of a cutoff date whereby shareholders are required to inform the board of their intention to vote on a deal, either in person or by proxy, up to seven days beforehand. In addition, Mylan lowered its minimum threshold of needing 80% of Perrigo shares to close the transaction, to

50%. Since Irish law required 80% to take companies entirely private, this raised the possibility that Mylan would be a large shareholder in Perrigo with no certain path toward owning the rest. This would limit Mylan's ability to cut costs and use Perrigo's cash for other purposes weakening its own financial position.

Ultimately, faced with the provisions of stitching, Teva withdrew its offer while Mylan was unable to secure 50% of Perrigo's shares.

### 7.3 Analysis and results

The detailed chronology of events along with results of the event study for each date are presented in Table 5. From the results, Mylan's shareholders did not have any strong reaction to the closing of inversion. Stockholders did not have any significant reaction to the adoption of the poison pill either. Since at the time of inversion, stockholders only knew about the possibility of such an adoption, the stock reaction shows that either shareholders had already anticipated (and priced) this event or that the event was not material enough to cause a significant CAR.

**Table 5.** Abnormal return of Mylan's stock on important dates in chronology of events (year 2015)

Date	CAR	z-stat	p-value	Chronology of events
28-Jan.	-0.08%	-0.056	0.955	Acquisition of Abbott is approved by shareholders resulting in agreement to inversion
27-Feb	0.40%	0.274	0.784	M&A closes along with move of corporation
<b>12-Mar</b>	<b>3.58%<sup>***</sup></b>	<b>2.420</b>	<b>0.016</b>	<b>Initial rumors that Teva may bid for Mylan</b>
03-Apr	-0.48%	-0.327	0.744	Mylan adopts Dutch poison pill
<b>08-Apr</b>	<b>14.19%<sup>***</sup></b>	<b>9.701</b>	<b>0.000</b>	<b>Mylan announces bid for Perrigo</b>
<b>17-Apr</b>	<b>5.96%<sup>***</sup></b>	<b>4.024</b>	<b>0.000</b>	<b>Mylan announces pre-emptively that it would not accept bid from Teva</b>
<b>21-Apr</b>	<b>8.89%<sup>***</sup></b>	<b>6.078</b>	<b>0.000</b>	<b>Teva announces bid for Mylan</b>
<b>27-Apr</b>	<b>-5.27%<sup>***</sup></b>	<b>-3.598</b>	<b>0.000</b>	<b>Mylan rejects Teva's offer</b>
28-Apr	0.81%	0.551	0.581	Mylan increases offer price for Perrigo. Perrigo responds by refusing immediately
22-Jun	-1.34%	-0.912	0.362	Teva announces acquisition of 4.6% of Mylan's shares
23-Jul	-1.31%	-0.896	0.370	Mylan's poison pill activated
<b>27-Jul</b>	<b>-13.84%<sup>***</sup></b>	<b>-9.431</b>	<b>0.000</b>	<b>Teva withdraws acquisition proposal</b>
05-Aug	-0.75%	-0.514	0.607	Perrigo announces that it is looking for other bidders
13-Aug	-2.04%	-1.396	0.163	Mylan lowers threshold of votes needed to acquire Perrigo
<b>28-Aug</b>	<b>-2.43%<sup>*</sup></b>	<b>-1.664</b>	<b>0.096</b>	<b>Mylan shareholders approve bid to acquire Perrigo</b>
08-Sep	-2.44%	-1.584	0.113	Mylan announces plan to launch tender offer for Perrigo
14-Sep	1.27%	0.867	0.386	Mylan launches tender offer
17-Sep	0.94%	0.641	0.521	Perrigo recommends shareholders to reject Mylan's offer
<b>13-Nov</b>	<b>14.38%<sup>***</sup></b>	<b>9.720</b>	<b>0.000</b>	<b>Mylan fails in its hostile bid for Perrigo</b>

The CAR of the inverting firm, Mylan, is estimated using daily closing prices from Bloomberg using a market model estimated prior to the event window while each event window consists of a single trading day.

Standard errors are computed as described in Patell (1976). Asterisks <sup>\*\*\*</sup>, and <sup>\*</sup> indicates that the average is significantly different from zero (using a two-sided t-test) at the 1% and 10% level, respectively.

In contrast, every announcement regarding Teva's interest (or subsequent lack thereof) led to a significant stock price effect. Starting with the date on which rumors circulated (+3.6%) to the date on which Teva made the offer publicly (+9%), equityholders recorded large gains. In contrast, when Teva withdrew its offer, equityholders recorded their lowest CAR (-14%). Even when Mylan announced that it was uninterested in being taken over by Teva, its stock went up significantly. This could indicate that stockholders were in favor of Mylan's decision of not becoming a target for Teva or they thought that Mylan's preemptive announcement indicated that an offer would likely arise in future. Since reaction is negative to Teva's final decision, it is more likely that stockholders interpreted it as the latter of the two possibilities. Perrigo's takeover by Mylan seems to have been more ambiguous in terms of stockholder wealth creation. The first announcement led to 14% CAR indicating that stockholders saw benefits in the purchase. However, shareholders also experienced negative CAR (less than -2%) when Mylan's shareholder approved its bid to acquire Perrigo. When Mylan finally ended up failing to own the number of Perrigo stocks needed to close the acquisition, stockholders benefited: the CAR was over +14%.

The question that consequently arises is why Mylan's shareholders approved the original inversion. Following the reincorporation, stockholders would anticipate the effect of such laws and discount the stock price. Day (2016) explores the possibility of investor irrationality as a potential reason for approving such inversions but concludes that investors are cognizant of the demerits of weaker corporate governance. It is likely that while Mylan's shareholders knew about the differences between Dutch regulations and US regulations as well the potential consequences of the weaker regulations, the certain benefits of tax gains simply outweighed the potential future losses due to weaker governance.

Teva's offer did not materialize until the inversion had been completed and there was no guarantee that such an offer would ever be made. Further, there was no guarantee that Mylan would indeed put in place the poison pill that it did since the legal disclosure at the time of the inversion merely indicated the possibility, but not with certainty, that it could be created.

## 8. Conclusion

To summarize, changes in the strength of governance plays an important role in determining stockholder wealth effects during inversion announcement period. Investors gain more if the firm moves to a country with stronger shareholder protection and better rule of law. These gains are lower if the inversion is pure, i.e. done purely for tax benefits without any other associated benefits like synergy. While the effects of tax benefits are not econometrically clear from this study, the existence of governance-related costs is clear. This conclusion is further bolstered from Mylan's case. From a stockholder wealth perspective, Mylan destroyed value by not entering into an M&A agreement with Teva and the failure of Teva's takeover offer to materialize lies, at least, to some extent on the antitakeover measures that Mylan was able to put in place. In addition, Mylan did not take decisions to maximize (only) stockholder wealth as per its own management's announcement. The weakening of stockholder rights led to negative wealth effects.

Therefore, clearly corporate governance effects are an important consideration in the future performance of an inverting firm. The benefit of a lower effective tax rate may be outweighed by the potential weaker protection afforded by the new country of reincorporation.



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