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Poison Pills and Their Effect on Shareholder Return

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"The threat of hostile takeover plays a vital role in keeping management on its toes...All this Sturm and Drang seems a high price to pay for fending off a change of corporate control that may, for all that appears, benefit the shareholders greatly."[2]

Key Words: Hostile Takeover, Anti-Takeover Defense, Shareholder Rights Plan, Poison Pills, Event Study, Shareholder Wealth Effects

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[1] The author would like to thank Dr. Laura Cole, who served as Thesis Advisor, and the Masters Investment Learning Center for the use of Bloomberg terminals to obtain proprietary data.

[2] Judge Richard A. Posner. Article by Greenhouse, Steven. "Business and the Law; If 'Poison Pill' Is Too Strong." *The New York Times,* The New York Times, 17 June 1986, www.nytimes.com/1986/06/17/business/business-and-the-law-if-poison-pill-is-too-strong.html.

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I. Introduction

Anti-takeover strategies have long been in place to prevent hostile takeovers. One such method, the poison pill, effectively makes shares unattractive to the potential buyer by raising the cost of acquisitions. There are two types of poison pills: a flip-in plan and a flip-over poison pill. The flip-in plan, when triggered, offers company shares at a discount to all shareholders except for the potential acquirer. This dilutes the percentage ownership that the potential buyer has in the company, and makes it more expensive for him to acquire. The other type of poison pill plan is called a flip-over poison pill. This strategy, when triggered allows shareholders of the target company to purchase shares of the acquiring company at a steep discount if the takeover is successful. This will dissuade potential buyers if they believe that their own company value will be affected post-takeover. Poison pills were at their heyday in the 1980s, but it is still used by companies today to prevent hostile takeovers.

Though the first poison pill was invented in 1982, there remains discussion about its effects on shareholders. Hitzelberger (2017) explains that poison pills in the U.S. can be passed by the board of directors without consulting the shareholders in some states. In other countries, however, such as Europe, poison pills cannot be passed unless the shareholders vote to ratify it. This creates some curiosity, whether the board of directors is acting in the best interest of the shareholders, or whether they are simply protecting their own positions on the board. This question is the basis for two hypothesis that currently exist surrounding poison pills: the Shareholder Maximization Theory and the Management Entrenchment Theory. Both are explained in further detail in the literature review.

The purpose of this study is to determine whether more recent poison pill data supports the Shareholder Maximization Theory or the Management Entrenchment Theory. In sum, this is

an event study in which I will explore whether the stock price for a company goes abnormally up or down immediately following a poison pill announcement. I examine the cumulative abnormal returns of 28 companies within the following event windows: the event itself (0, 0), the preceding day (-1, 0), the following day (0, +1), periods of three (-1, +1), five (-2, +2) and seven (-3, +3) days, longer periods of pre-adoption (-15, -4) and post-adoption (+4, +15) which represent "neutral" times, and periods (0, +10) and (0, +30). I then compare these returns to the S&P 500 returns, the CRSP value-weighted returns, and the CRSP equal-weighted returns for the same time period. My alternative hypothesis is that there will be abnormal cumulative returns, and my null hypothesis is that there is no relation between poison pill announcements and shareholder return. If there are positive abnormal returns I will attribute it to the Shareholder Maximization Theory. If there are negative abnormal returns, I will attribute it to the Management Entrenchment Theory. If there are no abnormal results, I will contribute this to market efficiency and recognize that poison pills have no effect on shareholder returns.

This research is important due to a lack of recent literature on poison pills. Poison pills were most popular in the 1980s, but there was also more negative sentiment surrounding them, which could have affected market opinion, and thus shareholder return. This study aims to shed further light on this hostile takeover strategy. The rest of the paper is presented as follows: Section II reviews recent literature and prior results, Section III describes the sample construction and data collection processes; Section IV discusses the event study approach, Section V reviews the results; Section VI concludes the paper; and finally, Section VII explores areas for future research.

II. Literature Review

Multiple studies have been done on the topic of poison pills before. The most recent is Simon Hitzelberger's 2017 "What Effect do Poison Pills have on Shareholder Value?" which uses data up until December 22, 2015. My study will be a compiled continuation of these prior studies, testing an updated time period. In this way I will be able to compare my results with prior results to determine if the conclusions hold true for more recent years. The first paper, Hitzelberger (2017), outlines the two major existing stances on the subject. The first is the Managerial Hypothesis, which states that hostile takeovers could be to the benefit of the shareholder, but managers act in their own interests by enacting poison pills, and this causes the stock price to decline. The other existing opinion about poison pills is the Shareholder Wealth Maximization Hypothesis, which states that managers know the value of the company better than the shareholders, and managers are acting in shareholders' best interests when they enact poison pills. As a result, the stock price would go up if this hypothesis were supported.

Hitzelberger (2017) studied 4,479 recorded poison pills between 1997 and 2016 to answer the question: "Does the effect of poison pills on stock price support the managerial entrenchment hypothesis or the shareholder wealth maximization hypothesis?" 854 events were dropped due to not having adequate financial information available, giving him a total of 3,625 events included in the study. He compared these companies' returns against three index variations (the S&P 500, the CRSP database value-weighted, and the CRSP database equally-weighted). The three-day event window that Hitzelberger examined showed a 3.67% abnormal return versus the S&P 500. He also benchmarked against the Carhart four-factor model and found similar, but slightly lower results. These positive abnormal results following the announcement of the poison pill support the Shareholder Wealth Maximization Hypothesis.

Larcker, Reiss, and Xiao (2017) also studied the effects of corporate governance provisions on shareholder return in their paper "Corporate Governance Data and Measures Revisited." Larcker et al. (2017) revised the data used in prior literature, to adjust for discrepancies between two non-conforming data sources.

Gompers, Ishii, and Metrick (2003) used 28 IRRC corporate governance provisions and compared them across 24 variables to create a "Governance" index. Bebchuk, Cohen, and Ferrell (2009) used the same information but focused on six governance provisions to create an "Entrenchment" index. These two studies found that holding a long (short) position in a firm with few (many) shareholder takeover provisions provided monthly risk-adjusted excess returns of 0.50% to 1.00% from 1990 to 1999, beating the market average and supporting the idea that weak corporate governance is in the benefit of the shareholder, and strong corporate governance is successful in entrenching the management, and maintaining low firm valuation.

When Larcker et al. (2017) reviewed the IRRC data compared with SharkRepellent data, they found some discrepancies. The team compared the two data sources, focusing on six Entrenchment provisions: the presence of a staggered board, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. They were able to find and check 50-75% percent of market capitalization covered in IRRC.

Their research revealed that IRRC data said 307 firms (19%) in 1998 did not have golden parachute provision when they did, and 488 firms in 1998 (29%) did require a supermajority to amend a charter that IRRC said did not. In addition, the definition of "supermajority requirements" differed for IRRC (firms were only coded if they exceeded 50% and state law of 70%). Both IRRC and SharkRepellent ignored the supermajority requirement if there was a "fair

price exception" mentioned—that is, the supermajority voting requirement is lessened to a simple majority if the bidder agrees to pay at least fair market value for the stock. When Larcker et al. (2017) adjusted the corporate governance "scores" for the various firms, many of them moved towards the worst governance category and the returns dropped from 0.61% to 0.34% for equal-weighted portfolios. When the team re-coded the E index, many firms moved towards higher entrenchment scores. This also resulted in returns dropping, to around 0.24% for equal-weighted portfolios. These results support the idea that the Governance ("G") index, and the Entrenchment ("E") index are more fragile constructs and less conclusive than they were once believed to be, suggesting that there is still room for additional research to be done on the effects of corporate governance provisions like poison pills, on shareholder value.

Cain, McKeon, and Solomon's (2016) study, "Do Takeover Laws Matter? Evidence from Five Decades of Hostile Takeovers" is another paper that contributes to poison pill research. It fills in the gaps of prior research by studying 17 takeover laws and their long-term impact on hostile takeovers between 1965 and 2014. They constructed a "Takeover Index" from three sources: 1) legal determinants, 2) capital liquidity, and 3) a firm-specific factor that is not subject to firm choice (firm age).

They then looked at firm-level economic outcome relative to this index and discovered stronger takeover protection is positively correlated with lower firm value. They also found that firm value is positively associated with susceptibility to hostile takeovers, and this finding is significant across the entire sample. These findings support the management entrenchment hypothesis, and signify that as hostile takeover rates decline, agency problems may be sustained. Though these results signify that having weaker takeover protection means higher firm value, the team also found a negative result. As firms became more susceptible to a takeover as measured

by the takeover index, their takeover premiums decreased. This means that when a firm was faced with a hostile takeover situation, they were less equipped to handle it and management operates with less bargaining power in those instances.

Poison pills were coded ("S") for strong if they showed that a board could incorporate dead-hand or no-hand poison pills, which allow the pill to survive for a certain period of time, regardless of whether or not the directors remain on the board. Overturned poison pills were coded with an ("N") for no, though these were often overruled by later courts. These Ns were only coded after being reinstated by the courts. After 1990 and the *Georgia-Pacific Corp. v. Great Northern Nekoosa Corp.* case the team assumed all states had normal strength poison pills and coded accordingly, unless the state explicitly allowed strong-form ("S") poison pills.

Cain et al. (2016) noted the significance of some takeover laws, yet they found that poison pill laws had no real impact on hostile activity. They believe that acquirers often are able to work around the poison pill anti-takeover barrier by running parallel proxy contests and this is why it is often ineffective. This study mentions that though hostile activity was at its heyday in 1967 at 40% it still exists today at around 8.6%. Though lessened in popularity, its effects are still pertinent and relevant to today's times, making it an exciting area for research.

For this research paper I will be conducting an event study to test my hypothesis. S.P Kothari and Jerold B. Warner (2016) discuss the value of event studies in their paper "Econometrics of Event Studies" as, "In a corporate context, the usefulness of event studies arises from the fact that the magnitude of abnormal performance at the time of an event provides a measure of the (unanticipated) impact of this type of even on the wealth of the firms' claimholders." Therefore they are useful in the realm of corporate finance for understanding

policy decisions, and what their effects will be on shareholder value. Event studies are discussed further in this paper, in the Event Study Methodology portion.

III. Data and Summary Statistics

III.A. Sample Construction

To construct my sample, I utilized Bloomberg to identify companies from the S&P 500, the NASDAQ, and the Russell 1000 that currently had a poison pill in place. This resulted in a list of 25 companies. I then went through their 10K company filings to search for an explicit date on which they announced the poison pill. From that list of 25, 14 companies were eliminated due to vague information about poison pill announcement date. I then sought out prior research to supplement my data. Hurt (2016) had over 150 companies dating back to 1998 that had enacted poison pills. I selected 17 of those companies from that sample with the criteria that they had passed a poison pill in 2011 or later, and were still publicly owned companies that had not been acquired. All of the companies from Hurt (2016) had passed a specific type of poison pill called an NOL pill. This type of poison pill is put in place to protect a company's tax assets, namely Net Operating Loss carryforwards. Companies are unable to hold on to their NOLs if a significant ownership change occurs. Though they are NOL poison pills, the data supplied from these companies however, should still support the overall effect of poison pills on shareholder value. In total, my sample consists of 28 companies.

III.B. Database Collection

EVENTUS

In order to analyze stock price reaction to poison pill announcements, I used Wharton Research Data Services (WRDS) Eventus software. The Eventus software uses historical stock price data from the Center for Research in Security Prices (CRSP) and is vital for conducting event studies. For each company within my sample of 28 I found the corresponding PERMNO identifying code using the company lookup tool in WRDS. I also used Eventus to translate the dates of poison pill announcement from Excel into CRSP trading day numbers. I then used SAS software to extract the Eventus corresponding shareholder returns for the event windows specified: (-15, -4), (+4, +15), (-3, +3), (-2, +2), (-1, +1), (-1, 0), (0, 0), (0, +1), (0, +10), and (0, +30). The event's impact is then measured by the abnormal return (return relative to expected return). Expected return can be modelled via the Market Model—which assumes a stable linear relationship between market return and company return and uses each company's individual beta, or the Market Adjusted Model—which uses actual market return to "control" for potential effects of the event on the general market and does not include company-specific beta. These models are included in Section VIII Tables. Of the companies that were entered into Eventus, six were dropped because of invalid PERMNO codes, leaving me with a total final sample of 22 companies. A portion of the SAS code entered into Eventus can be viewed in **Appendix A.**

IV. Event Study Methodology

Studying stock price reaction to poison pill announcements will help further predict how firm value will be affected by future shareholder rights plans. This could provide future opportunities for investors.

An event study is performed by creating windows of time surrounding an announcement date (termed date 0). For this study I have created 10 separate event windows surrounding the announcement of a poison pill. I compare the results of these windows with the corresponding S&P 500 returns, the CRSP value-weighted returns, and the CRSP equally-weighted returns to see if there are any statistically significant abnormal returns. I used an estimation window that starts 255 active trading days prior to the event and ends 46 days before the event window takes place. I also have 10 short-term event windows. Both are listed as follows:

Event Window	**Estimation Window**
(-15, 14)	(-255, -46)
(+4, 15)	(-255, -46)
(-3, +3)	(-255, -46)
(-2, +2)	(-255, -46)
(-1, +1)	(-255, -46)
(-1, 0)	(-255, -46)
(0, 0)	(-255, -46)
(0,+1)	(-255, -46)
(0,+10)	(-255, -46)

(0,+30)	(-255, -46)

This study employs both the **Market Model** and the **Market Adjusted Model**. The equal-weighted index is included for both, but the value-weighted index was included only for the Market Model, as the value-weighted Market Adjusted Model was not found to be statistically significant.

Model	**Index**
Market Adjusted Model	Equally-Weighted
Market Model	Equally-Weighted
Market Adjusted Model	Value-Weighted

V. Results

Null Hypothesis: "The announcement of shareholder rights plans (poison pills) does not have any effect on shareholder return. There are no abnormal cumulative returns."

Alternative Hypothesis: "The announcement of shareholder rights plans (poison pills) has an effect on shareholder return. There are either positive or negative abnormal cumulative returns."

Table Results

Table 1 is a **Market Adjusted** model with an **equally-weighted** index**.** It displays the results of all 22 companies: the number of companies with positive versus negative returns for the event window, the mean cumulative abnormal return, as well as the various Z-tests for statistical significance with the p-values in parentheses underneath. The event window (-2, +2) is highly significant with a mean cumulative abnormal return of -1.95%. This runs counter to Hitzelberger (2017), which found a positive mean cumulative abnormal return for the market model of about 3.59%. It is also interesting to note that 30 days post-poison pill announcement date (0, +30) according to the standard cross-section Z-test there is a statistically significant return of 7.89%. We will see this trend continue in several of the other models.

Table 2 is a **Market Model** with an **equally-weighted** index. It is formatted in the same way as Table 1. Similar to Table 1, the event window (-2, +2) tested highly significant. The mean cumulative abnormal return was -1.82%, also running counter to the findings of Hitzelberger (2017). All three Z-tests found the results of this event window to be significant. The period (+4, +15) (post-poison pill) was also significant according to both the standard cross-section Z-test and the signed rank test. The mean cumulative abnormal return for this event window was 4.85%.

Table 3 is a **Market Model** with a **value-weighted** index. It is formatted in the same way as prior tables, with the number of companies of positive versus negative returns, the mean cumulative abnormal return, and the three standard Z-tests for statistical significance with the corresponding p-values. The window (+4, +15) has a statistically significant return by all three Z-tests of 4.59%. This is in line with the findings of Table 2 as well as Hitzelberger (2017), which found high positive abnormal return post poison pill announcement. Hitzelberger (2017)

however, had higher mean cumulative abnormal return for the period (0, +1) versus my findings of a high return for event window (+4, +15). The value-weighted Market Model also showed a significant return for standard cross section Z-test of 6.32% for (0, +30). This high return post-poison pill announcement is similar to the findings in Table 1.

VI. Conclusion

Some of the results of this study are in line with prior research, notably Hitzelberger's (2017) "What Effect do Poison Pills have on Shareholder Value." This study found positive mean cumulative abnormal return for the periods (0, +30) and (+4, +15) of roughly 7.10% and 4.72%. Hitzelberger also found positive mean cumulative abnormal returns post-poison pill announcement date.

My findings differ from Hitzelberger (2017) in some ways, particularly surrounding the event window (-2, +2). He found highly significant positive abnormal returns, yet I found significant negative returns of -1.95% and -1.82%. When I adjust the event window to see if these negative returns are due simply to the aftermath of the announcement (period (0, +2)) I find no significant results. Thus, the negative returns must be spread amongst the entirety of the event window (-2, +2). This could be an area for future research.

VII. Areas for Future Research

As previously mentioned, delving deeper into the event window (-2, +2) could be an area for future research, since the findings differed from some previous literature. Perhaps the

findings were skewed due to the addition of the NOL poison pills from Hurt (2016). Dividing the sample into subsets based on the type of shareholder rights plans might lead to some fascinating results.

Additionally, two of the tables found significant returns (6.32% and 7.89%) for the period (0, +30). These high returns imply significant shareholder wealth that could be obtained for the investor who buys shares on the day of a poison pill announcement and holds for approximately a month's time. Many prior studies did not examine event windows this wide, yet they may provide valuable information to the investor.

VIII. Tables

Table 1: Market Adjusted Returns, Equally-Weighted Index

Market Adjusted Returns, Equally-Weighted Index					
Days	N + : -	Mean Cumulative Abnormal Return	Std Csect Z	Generalized Sign Z	Signed Rank
(-15, -4)	22 10:12	-1.75%	-0.663 (0.507)	-0.260 (0.795)	-23.500 (0.458)
(+4, +15)	22 13:9	4.77%	1.548 (0.122)	1.020 (0.308)	44.500 (0.153)
(-3, +3)	22 10:12	-1.69%	-1.700 (0.089)	-0.260 (0.795)	-31.500 (0.318)
(-2, +2)	22 5:17<	-1.95%	-1.835 (0.066)	-2.393 (0.017)	-70.500 (0.018)
(-1, +1)	22 9:13	-1.84%	-1.204 (0.228)	-0.687 (0.492)	-27.500 (0.384)
(-1, 0)	22 13:9	-0.78%	-0.295 (0.768)	1.020 (0.308)	8.500 (0.790)
(0, 0)	22 9:13	-0.49%	-0.183 (0.855)	-0.687 (0.492)	-10.500 (0.742)
(0, +1)	22 7:15	-1.54%	-1.252 (0.211)	-1.540 (0.124)	-41.500 (0.184)
(0, +10)	22 11:11	-0.21%	0.194 (0.846)	0.167 (0.868)	2.500 (0.938)
(0, +30)	22 12:10	7.89%	1.977 (0.048)	0.593 (0.553)	42.500 (0.173)
P-values are in parenthesis. The symbols (,<,<<,<<< or),>,>>,>>> show the direction and significance of a generic one-tail generalized sign test at the 0.10, 0.05, 0.01, and 0.001 levels, respectively.					

Table 2: Market Model Abnormal Returns, Equally-Weighted Index

Market Model Abnormal Returns, Equally-Weighted Index					
Days	N + : -	Mean Cumulative Normal Return	Std Csect Z	Generalized Sign Z	Signed Rank
(-15, -4)	22 11:11	-2.51%	-0.806 (0.420)	0.200 (0.842)	-31.500 (0.318)
(+4, +15)	22 13:9	4.85%	1.627 (0.104)	1.053 (0.292)	51.500 (0.095)
(-3, +3)	22 8:14	-1.54%	-1.519 (0.129)	-1.081 (0.280)	-25.500 (0.420)
(-2, +2)	22 6:16(	-1.82%	-1.751 (0.080)	-1.934 (0.053)	-55.500 (0.070)
(-1, +1)	22 11:11	-1.75%	-1.178 (0.239)	0.200 (0.842)	-23.500 (0.458)
(-1, 0)	22 13:9	-0.70%	-0.128 (0.898)	1.053 (0.292)	18.500 (0.560)
(0, 0)	22 10:12	-0.48%	-0.163 (0.871)	-0.227 (0.820)	-0.500 (0.988)
(0, +1)	22 7:15	-1.52%	-1.323 (0.186)	-1.508 (0.132)	-41.500 (0.184)
(0, +10)	22 13:9	0.13%	0.279 (0.780)	1.053 (0.292)	14.500 (0.649)
(0, +30)	22 12:10	6.83%	1.563 (0.118)	0.626 (0.531)	29.500 (0.350)
P-values are in parenthesis. The symbols (,<,<<,<<< or),>,>>,>>> show the direction and significance of a generic one-tail generalized sign test at the 0.10, 0.05, 0.01, and 0.001 levels, respectively.					

Table 3: Market Model Abnormal Returns, Value-Weighted Index

Market Model Abnormal Returns, Value-Weighted Index					
Days	N + : -	Mean Cumulative Abnormal Return	Std Csect Z	Generalized Sign Z	Signed Rank
(-15, -4)	22 10:12	-1.74%	-0.132 (0.895)	-0.210 (0.833)	-25.500 (0.420)
(+4, +15)	22 15:7)	4.59%	2.113 (0.035)	1.924 (0.054)	51.500 (0.095)
(-3, +3)	22 11:11	-1.21%	-1.144 (0.253)	0.216 (0.829)	-11.500 (0.718)
(-2, +2)	22 8:14	-1.45%	-1.279 (0.201)	-1.064 (0.287)	-34.500 (0.272)
(-1, +1)	22 12:10	-1.59%	-0.711 (0.477)	0.643 (0.520)	-14.500 (0.649)
(-1, 0)	22 13:9	-0.66%	0.065 (0.948)	1.070 (0.285)	15.500 (0.626)
(0, 0)	22 11:11	-0.45%	-0.054 (0.957)	0.216 (0.829)	5.500 (0.863)
(0, +1)	22 8:14	-1.38%	-0.913 (0.361)	-1.064 (0.287)	-34.500 (0.272)
(0, +10)	22 12:10	0.13%	0.574 (0.566)	0.643 (0.520)	18.500 (0.560)
(0, +30)	22 11:11	6.32%	1.671 (0.095)	0.216 (0.829)	22.500 (0.478)
P-values are in parenthesis. The symbols (,<,<<,<<< or),>,>>,>>> show the direction and significance of a generic one-tail generalized sign test at the 0.10, 0.05, 0.01, and 0.001 levels, respectively.					

Appendix A
SAS Code for Eventus

```
/*************************************************************************************************************
  EVENTUS 9.0
   USING PC SAS CONNECT
   ENVIRONMENTAL EVENT STUDY, DAILY RETURNS
*************************************************************************************************************
   AUTHOR: Dr. Laura Cole, University of Tennessee
   This information was compiled by the author and is provided as a public service. The author is not
   responsible for any errors or omissions, or for any consequential problems that might result.
   USE AT YOUR OWN RISK.

*************************************************************************************************************
   GLS THESIS FOR KATIE FOWLKES
*************************************************************************************************************/

/*************************************************************************************************************
 STEP 1:
   You will need to use PROC IMPORT to transfer your Excel spreadsheet into a SAS Dataset.
    Set LIBNAME to your local windows directory.
If working from APPS@UT then you need to assign your H: drive to READ & WRITE, and then the libname is:
'\\Client\H$\Documents\ .... '
*************************************************************************************************************/

libname edata '\\Client\C$\Users\lscole\Dropbox\THESES\KATIE FOWLKES\Eventus';
proc import
  datafile = '\\Client\C$\Users\lscole\Dropbox\THESES\KATIE FOWLKES\Eventus\Thesis Data'
  dbms = xlsx
  out = edata.eventus replace;
  *The SAS dataset created is now in your temporary WORK directory.
  *Also, issues with SAS 9.4 and Windows 64, need to use XLS filetype instead of XLSX.
   You could change this to a local directory.;
run;

/*************************************************************************************************************
 STEP 2:
   You need to subset and "clean" your SAS dataset and format it for Eventus.
   The general variable order should be:

    PERMNO (or 8-digit CUSIP) EVENTDAT EVENTDAT2 ID GROUP GRPWEIGHT

   In the following datastep, you need to complete the following:
     (1) EVENTDAT & EVENTDAT2 will need to be in the format YYMMDD6.
     (2) DELETE variables other than those above.
     (3) Variables should be in the order above.
     (4) If either PERMNO (or CUSIP) or EVENTDAT is missing, the observation needs to be DELETED.

   However, when uploading a SAS dataset the variable names do matter, but the EVENTDAT format can be
   relaxed.  As of Eventus 9.0, we CAN upload a SAS dataset using PC SAS Connect.

/*************************************************************************************************************/
/*  EVENTUS_ANNOUNCE:  Base model includes all data for Announce Dates for Poison Pill Adoption*/
/*  EVENTUS1:  ALL DATA + ANNOUNCE_DATE */
*************************************************************************************************************/

* This will reorder the variables (not necessary, but makes it easier to analyze);
data edata.eventus_announce (RENAME= (announce_date=event));
  retain permno announce_date;
  set edata.eventus;  *the SAS dataset of the original Excel spreadsheet;
run;

/*************************************************************************************************************/
/*  EVENTUS1:  ALL DATA + ANNOUNCE_DATE */

data edata.eventus1 (KEEP = newpermno event RENAME= (newpermno=permno event=eventdat));
set edata.eventus_announce;
  format event YYMMDD6.;
  if permno = . or event=. then delete;
```

```
  newpermno = permno*1;  *Or you can add 0;
run;

/*************************************************************************************************************
**************************************************************************************************************
 STEP 3:
   Run the EVENTUS program through PCSASConnect which allows us to avoid UNIX programming.  You will be
prompted for your WRDS username and password.
**************************************************************************************************************

Please consult the EVENTUS manual for specific options.

REQUEST Statement:
  AUTODATE Specifies that a calendar date in the request file that is not a trading day thus be converted
           to the following trading day.

  EST The absolute value of the argument of EST determines how many trading periods (days, months, etc.)
      the estimation period is offset from the event date.  The sign of the argument determines whether the
      estimation period is pre-event or post-event.
           EST=SPECIFIC selects an estimation period ending on the calendar or trading date specified
           in the estimation date column of the request file (immediately after the event date in an ASCII
           request file, e.g. EVENTDAT2), of length ESTLEN.

  ESTLEN  Specifies the length of the estimation period in trading days, weeks, months, quarters, or years,
          depending on the return interval being used for estimation in the current run. Default=255.

  MINESTN  Specifies the minimum number of usable trading days in the estimation period (default=3).
           Will remove firm if fewer than n days of return data.

WINDOWS Statement:
  For a single event date event study, use WINDOWS to list up to 200 event windows for which cumulative/
  compounded abnormal returns and test statistics are to be reported on the output.  The earliest and
  latest possible dates are determined by the value of the PRE and POST options respectively.

  If WINDOWS statement is omitted, Eventus reports 3 windows: (-PRE, -2), (-1,0), (+1, +POST)

EVTSTUDY Statement:
  PRE  Specifies the number of trading days or months immediately preceding the event date for which to
       compute abnormal returns.

  POST  Specifies the number of trading days or months immediately following the event date for which
        to compute abnormal returns.

  MAR Market-adjusted returns benchmark method.  The default is not to compute MAR.

  MM  Market-model benchmark method.  This is the default (because it's the most popular method
      used in the literature).

  STACK Selects an alternative event study report format in which medians are printed below means and
        numeric p-values are printed below test statistics.

  VALUE|BOTH By default, Eventus uses only equally weighted market index returns in MM and MAR.
             Specify VALUE to change to value-weighted index or BOTH to produce separate event studies
             using both indexes.

Statistical Tests (PATELL and GENSIGN are default):

  PATELL  Specifies the Patell (1976) test.  The Patell Z test is an example of a standardized abnormal
          return approach, which estimates a separate standard error for each security-event and assumes
          cross-sectional independence.

  GENSIGN  The generalized sign test is a nonparametric test that adjusts the fraction of positive
           abnormal returns in the estimation period instead of assuming 0.5.  The null hypothesis
           for this test is that the fraction of positive returns is the same as in the estimation
           period.
 STDCSECT  Specifies the standardized cross-sectional test (Boehmer, Musumeci, and Poulsen 1991).

WSR  The Wilcoxon signed-rank test for medians.

  TAIL=1|2  Specifies the significance levels of the reported test statistics is based on 1 or 2-tailed
            tests.  The default is TAIL=1.
```

```
/*************************************************************************************************************/
/*  EVENTUS1:  ALL DATA + ANNOUNCE_DATE */
/*************************************************************************************************************/

%let wrds=wrds.wharton.upenn.edu 4016;
options comamid=TCP remote=WRDS;
signon username="lwallis" password="1f2fRfBf";

libname edata '\\Client\C$\Users\lscole\Dropbox\THESES\KATIE FOWLKES\Eventus';

rsubmit;
options fullstimer ps=60;
libname mywrds '/home/utk/lwallis';

proc upload data=edata.eventus1 out=mywrds.eventus1;
eventus;
  title1  'EVENTUS1:  ALL DATA + ANNOUNCE_DATE';
request insas=mywrds.eventus1 autodate est=46 estlen=255 minestn=3 ;
windows (-15,-4) (4,15) (-3,3) (-2,2) (-1,1) (-1,0) (0,0) (0,1) (0,10) (0,30);
evtstudy noplist pre=15 post=30 mm mar both stack stdcsect patell wsr gensign tail=2;
run;

endrsubmit;
```

References

Bebchuk, Lucian A., Cohen, Alma, and Allen Ferrell. "What Matters in Corporate Governance?" *Review of Financial Studies*, Vol. 22, No. 2, pp. 783-827. February 2009.

Cain, Matthew D., McKeon, Stephen B., and Steven Davidoff Solomon. "Do Takeover Laws Matter? Evidence from Five Decades of Hostile Takeovers." 12 July 2016. *SSRN Electronic Journal*, 2016, doi:10.2139/ssrn.2517513.

Gompers, Paul A., Ishii, Joy L., and Andrew Metrick, "Corporate Governance and Equity Prices." *Quarterly Journal of Economics*, Vol. 118, No. 1, pp. 107-155. February 2003.

Hitzelberger, Simon. "What Effect Do Poison Pills Have on Shareholder Value." 1 May 2017, pp. 1–50., run.unl.pt/bitstream/10362/26192/1/Hitzelberger_2017.pdf.

Hurt, Christine. "The Hostile Poison Pill." 29 February 2016. *SSRN Electronic Journal*, 2016, doi:10.2139/ssrn.2739843.

Kothari, S P., and Jerold B. Warner. "Econometrics of Event Studies." 19 May 2006, pp. 1–54.

Larcker, David F., Reiss, Peter C., and Youfei Xiao. "Corporate Governance Data and Measures Revisited." 24 November 2015. *SSRN Electronic Journal*, 2015, doi:10.2139/ssrn.2694802.