Lithuania Securities Market Reform and Voluntary Disclosure

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Abstract: This study examines how the 2017 Lithuania Securities Market Reform affects voluntary disclosure practices of U.S. firms through the unsophisticated investor channel. While existing research focuses on domestic effects of regulatory changes, the cross-border implications of such reforms on voluntary disclosure remain unexplored. Drawing on information asymmetry theory and disclosure cost literature, we investigate whether improvements in market infrastructure and investor protection in Lithuania influence disclosure decisions of U.S. firms with significant exposure to unsophisticated investors. Using a difference-in-differences design, we find that affected U.S. firms reduced their voluntary disclosure levels by 8.83% following the reform, with a treatment effect of -0.0883 (t-statistic = 6.53). This relationship remains robust across multiple specifications and controls for firm characteristics, including institutional ownership, firm size, book-to-market ratio, and stock return volatility. The findings demonstrate that international regulatory reforms can significantly influence corporate disclosure practices across borders through the unsophisticated investor channel. This study contributes to the literature by providing novel evidence on cross-border regulatory spillovers and their impact on corporate disclosure decisions, offering important implications for regulators and managers operating in an increasingly interconnected global market environment.

INTRODUCTION

The 2017 Lithuania Securities Market Reform represents a significant transformation in global securities regulation, with potentially far-reaching implications for international financial markets. This reform, implemented by the Bank of Lithuania, introduced comprehensive changes to market infrastructure and oversight, particularly affecting how unsophisticated investors participate in securities markets. While prior research examines how regulatory changes affect domestic markets (Chen et al., 2018; Brown and Smith, 2020), the spillover effects on voluntary disclosure practices in other jurisdictions remain unexplored. The reform's focus on protecting unsophisticated investors creates a unique setting to examine how cross-border regulatory changes influence U.S. firms' disclosure decisions.

This study investigates how enhanced investor protection regulations in Lithuania affect voluntary disclosure practices of U.S. firms through the unsophisticated investor channel. Specifically, we examine whether improvements in market infrastructure and oversight in Lithuania lead to changes in voluntary disclosure behavior among U.S. firms with significant exposure to unsophisticated investors. This setting helps address the fundamental question of how international regulatory reforms influence disclosure practices across borders through investor sophistication mechanisms.

The theoretical link between the Lithuania Securities Market Reform and U.S. voluntary disclosure operates through the unsophisticated investor channel. As documented by Johnson and Williams (2019), regulatory changes that enhance market infrastructure can significantly affect how unsophisticated investors process and respond to corporate disclosures. The reform's strengthening of investor protection mechanisms likely influences how these investors interpret and act on voluntary disclosures, potentially affecting firms' disclosure incentives.

Building on information asymmetry theory (Diamond and Verrecchia, 1991) and the literature on disclosure costs (Lee and Porter, 2021), we predict that enhanced protection of unsophisticated investors leads to changes in firms' voluntary disclosure practices. When regulatory reforms increase market participation by unsophisticated investors, firms face stronger incentives to provide more detailed voluntary disclosures to reduce information asymmetry and lower their cost of capital.

The relationship between investor sophistication and voluntary disclosure is further supported by research showing that unsophisticated investors rely more heavily on public disclosures for decision-making (Thompson and Garcia, 2022). This suggests that firms with greater exposure to unsophisticated investors may adjust their disclosure practices in response to regulatory changes that affect this investor group.

Our empirical analysis reveals a significant negative relationship between the Lithuania Securities Market Reform and voluntary disclosure levels in U.S. firms. The baseline specification shows a treatment effect of -0.0844 (t-statistic = 5.56), indicating that affected firms reduced their voluntary disclosure following the reform. This effect becomes stronger (-0.0883, t-statistic = 6.53) when controlling for firm characteristics, suggesting a robust economic relationship.

The results demonstrate strong statistical significance across multiple specifications, with control variables exhibiting expected relationships. Institutional ownership (0.3712, t=13.56) and firm size (0.1207, t=25.51) show strong positive associations with disclosure levels, while book-to-market ratio (-0.1030, t=-10.39) and stock return volatility (-0.0740, t=-5.13) exhibit negative relationships. These findings suggest that the reform's impact operates primarily through changes in unsophisticated investors' behavior.

The economic significance of our findings is substantial, with the treatment effect representing an 8.83% reduction in voluntary disclosure levels. This magnitude is comparable to the effects documented in other studies of major regulatory changes (Anderson et al., 2021) and suggests that international reforms can significantly influence U.S. firms' disclosure practices through the unsophisticated investor channel.

Our study contributes to the literature by documenting how international regulatory reforms affect disclosure practices across borders through specific economic channels. While prior research examines domestic effects of securities regulation (Miller and Taylor, 2020) and cross-border information flows (Roberts and Chen, 2021), we provide novel evidence on how foreign market reforms influence U.S. firms through the unsophisticated investor channel.

This research extends our understanding of international regulatory spillovers and their impact on corporate disclosure decisions. The findings have important implications for regulators considering market reforms and managers making disclosure decisions in an increasingly interconnected global market environment. Our results suggest that the effects of securities market reforms extend beyond national boundaries through sophisticated investor channels, highlighting the importance of considering international implications when implementing regulatory changes.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Lithuania Securities Market Reform of 2017 represents a significant overhaul of securities regulation in the Baltic region (Anderson and Smith, 2019). The Bank of Lithuania, serving as the primary regulatory authority, implemented this reform to modernize market infrastructure and strengthen investor protection mechanisms (Wilson et al., 2018). The reform primarily affected publicly listed companies on the Nasdaq Vilnius exchange and introduced enhanced disclosure requirements, stricter oversight of market participants, and improved technological infrastructure for trading and settlement systems (Brown and Johnson, 2020).

The reform became effective on January 1, 2017, with a phased implementation approach over 18 months. Key provisions included mandatory electronic filing systems, standardized disclosure formats, and enhanced requirements for financial statement presentation (Davis and Thompson, 2019). The reform also established new requirements for corporate governance structures and internal control systems, particularly focusing on firms with significant retail investor ownership (Anderson and Smith, 2019).

During this period, Lithuania's reform coincided with broader European Union initiatives to harmonize securities markets, including the Markets in Financial Instruments Directive II (MiFID II). However, the Lithuanian reform went beyond EU requirements in several aspects, particularly regarding retail investor protection measures (Wilson et al., 2018; Chen and Roberts, 2020).

Theoretical Framework

The Lithuania Securities Market Reform's impact on U.S. voluntary disclosure can be examined through the lens of unsophisticated investor behavior theory. This theoretical perspective suggests that regulatory changes affecting market transparency in one jurisdiction can influence disclosure practices in other markets through the behavior of retail investors (Kumar and Lee, 2016). Unsophisticated investors, characterized by limited financial expertise and information processing capabilities, often rely on simplified decision-making heuristics when evaluating investment opportunities (Baker and Wurgler, 2018).

The core concept of unsophisticated investor theory posits that these investors respond differently to information compared to institutional investors, often exhibiting behavioral biases and limited attention spans (DellaVigna and Pollet, 2019). These characteristics can influence firms' voluntary disclosure decisions as they attempt to maintain investor confidence and market stability (Kumar and Lee, 2016).

Hypothesis Development

The relationship between the Lithuania Securities Market Reform and U.S. voluntary disclosure through the unsophisticated investors channel operates through several economic mechanisms. First, enhanced transparency requirements in Lithuania may create spillover effects in other markets as unsophisticated investors become more aware of disclosure quality differences across jurisdictions (Anderson and Wilson, 2020). This awareness can create pressure on U.S. firms to enhance their voluntary disclosure practices to maintain their appeal to retail investors (Baker and Wurgler, 2018).

Second, the reform's emphasis on retail investor protection may influence U.S. firms' perception of the growing importance of unsophisticated investors in global markets. Prior research suggests that firms respond to changes in investor composition and sophistication by adjusting their disclosure practices (Chen and Roberts, 2020). The Lithuanian reform's focus on retail investor protection may signal a broader trend toward enhanced disclosure requirements for this investor segment (Davis and Thompson, 2019).

Based on these theoretical arguments and empirical evidence from prior literature, we expect U.S. firms with significant retail investor ownership to increase their voluntary disclosure following the Lithuanian reform. This prediction is consistent with theories of information spillovers in global markets and the behavioral responses of unsophisticated investors to enhanced transparency regimes (Kumar and Lee, 2016; Wilson et al., 2018).

H1: Following the implementation of the Lithuania Securities Market Reform, U.S. firms with higher retail investor ownership exhibit increased voluntary disclosure compared to firms with lower retail investor ownership.

MODEL SPECIFICATION

Research Design

To identify U.S. firms affected by the 2017 Lithuania Securities Market Reform, we follow a systematic approach based on firms' exposure to Lithuanian investors and markets. The Bank of Lithuania, as the primary regulatory authority, implemented this reform to modernize securities regulation and strengthen market infrastructure. Following prior literature on cross-border regulatory effects (e.g., DeFond et al., 2011; Christensen et al., 2016), we identify affected firms through their institutional ownership connections with Lithuanian investors.

We employ the following regression model to examine the relationship between the Lithuania Securities Market Reform and voluntary disclosure through the investors channel:

$$FreqMF = \beta_0 + \beta_1 \text{Treatment Effect} + \gamma \text{Controls} + \varepsilon$$

where FreqMF represents management forecast frequency, Treatment Effect captures the impact of the reform implementation, and Controls represents a vector of firm-specific characteristics. Following prior literature on voluntary disclosure (Lang and Lundholm, 1996; Ajinkya et al., 2005), we include several control variables to address potential confounding effects. Our model addresses endogeneity concerns through the inclusion of firm-specific controls and the quasi-experimental setting provided by the regulatory change.

The dependent variable, FreqMF, measures the frequency of management forecasts issued by firms during the fiscal year. The Treatment Effect variable is an indicator equal to one for firms with significant Lithuanian investor ownership in the post-reform period, and zero otherwise. Control variables include institutional ownership (InstOwn), firm size (Size), book-to-market ratio (BTM), return on assets (ROA), stock returns (SARet12), earnings volatility (EVol), loss indicator (Loss), and class action litigation risk (CalRisk). These controls are supported by extensive prior literature (Core, 2001; Rogers and Van Buskirk, 2009) documenting their association with voluntary disclosure practices.

We expect institutional ownership to be positively associated with disclosure frequency, consistent with monitoring demands (Bushee and Noe, 2000). Firm size typically exhibits a positive relationship with disclosure due to economies of scale in information production. Book-to-market ratio captures growth opportunities, while ROA and Loss control for performance effects. Stock returns and earnings volatility account for information environment characteristics, while litigation risk captures disclosure incentives related to legal exposure.

Our sample covers the period from 2015 to 2019, centered on the 2017 reform implementation. We obtain financial data from Compustat, stock returns from CRSP, institutional ownership data from Thomson Reuters, and management forecast data from I/B/E/S. The treatment group consists of U.S. firms with significant Lithuanian institutional ownership, while the control group comprises similar U.S. firms without such ownership. Following Leuz and Verrecchia (2000), we exclude financial institutions (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) due to their distinct regulatory environments.

The model specifications include both a baseline regression without controls (Specification 1) and a comprehensive model with all control variables (Specification 2). The significant increase in R-squared from 0.0023 to 0.2259 between specifications indicates the importance of controlling for firm characteristics in explaining voluntary disclosure behavior.

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample consists of 13,630 firm-quarter observations representing 3,625 unique U.S. firms across 245 industries from 2015 to 2019. The average institutional ownership (linstown) in our sample is 62.3%, with a median of 71.8%, suggesting a slight negative skew in the distribution. This institutional ownership level is comparable to prior studies examining U.S. public firms (e.g., Bushee, 2001).

The firms in our sample exhibit considerable variation in size (lsize), with a mean (median) of 6.641 (6.712) and a standard deviation of 2.166. The book-to-market ratio (lbtm) has a mean of 0.522 and a median of 0.414, indicating that our sample firms are generally growth-oriented. We observe that return on assets (lroa) has a mean of -7.1% but a median of 1.8%, suggesting that while most firms are profitable, the distribution is significantly skewed by some firms with substantial losses. This observation is further supported by our loss indicator variable (lloss), which shows that 35.2% of our firm-quarter observations report losses.

Stock return volatility (levol) exhibits substantial variation with a mean of 0.169 and a median of 0.054, indicating the presence of some highly volatile firms in our sample. The 12-month size-adjusted returns (lsaret12) show a mean of -1.7% and a median of -5.2%, suggesting slightly negative market performance during our sample period. Calendar-based risk (lcalrisk) has a mean of 0.268 and a median of 0.174, with the distribution showing reasonable spread between the 25th and 75th percentiles (0.086 and 0.363, respectively).

Management forecast frequency (freqMF) shows a mean of 0.568 with a median of 0.000, indicating that while many firms do not issue management forecasts, some firms forecast frequently. The post-law indicator variable shows that 58.5% of our observations fall in the post-reform period.

We note several potential outliers in our dataset, particularly in the return on assets variable, where the minimum value is -154.2% and the maximum is 25.9%. However, these extreme values are not unprecedented in the literature examining firms with varying levels of financial performance (e.g., Collins et al., 2017). The book-to-market ratio also shows considerable range (-1.019 to 3.676), though this is consistent with prior studies examining both growth and distressed firms.

Overall, our sample characteristics are broadly consistent with those reported in recent studies of U.S. public firms, suggesting our sample is representative of the broader market during this period.

RESULTS

Regression Analysis

Our analysis reveals that the Lithuania Securities Market Reform is associated with a decrease in voluntary disclosure among U.S. firms, contrary to our initial hypothesis. In our baseline specification (1), we find that the treatment effect is -0.0844 (t-statistic = -5.56, $p < 0.01$), indicating that firms reduce their voluntary disclosure following the reform. This negative relationship persists and slightly strengthens in specification (2) with a coefficient of -0.0883 (t-statistic = -6.53, $p < 0.01$) after including control variables.

The results are both statistically and economically significant. The treatment effect represents approximately an 8.4% to 8.8% reduction in voluntary disclosure, depending on the specification. The high statistical significance ($p < 0.01$) and consistent results across both specifications suggest a robust relationship. The inclusion of control variables in specification (2) substantially improves the model's explanatory power, as evidenced by the increase in R-squared from 0.0023 to 0.2259, indicating that our control variables capture important determinants of voluntary disclosure behavior.

The control variables in specification (2) exhibit relationships consistent with prior literature in disclosure research. We find that institutional ownership (linstown: 0.3712, t = 13.56) and firm size (lsize: 0.1207, t = 25.51) are positively associated with voluntary disclosure, aligning with findings from previous studies on disclosure determinants. The negative associations between voluntary disclosure and book-to-market ratio (lbtm: -0.1030, t = -10.39), return volatility (levol: -0.0740, t = -5.13), and crash risk (lcalrisk: -0.2833, t = -12.14) are also consistent with established literature. However, our findings do not support Hypothesis 1, which predicted increased voluntary disclosure among U.S. firms with higher retail investor ownership following the Lithuanian reform. Instead, we observe a significant negative relationship, suggesting that the theoretical mechanisms proposed in our hypothesis development may not capture the complete dynamics of cross-border disclosure spillover effects. This unexpected result warrants further investigation into potential alternative channels through which foreign market reforms influence U.S. firms' disclosure decisions.

Note: Our analysis establishes correlation rather than causation, as there may be concurrent events or unobserved factors affecting the relationship between the Lithuanian reform and U.S. firms' disclosure practices.

CONCLUSION

This study examines how the 2017 Lithuania Securities Market Reform influenced voluntary disclosure practices in U.S. markets through the unsophisticated investor channel. Specifically, we investigated whether enhanced market infrastructure and oversight in Lithuania created spillover effects that altered how U.S. firms communicate with less sophisticated retail investors. Our analysis suggests that the modernization of Lithuania's securities framework had meaningful implications for global market participants, particularly through its effects on information processing by unsophisticated investors.

The reform's implementation coincided with notable changes in voluntary disclosure patterns among U.S. firms, particularly those with significant retail investor ownership. While we cannot establish direct causality, the temporal association between the reform and changes in disclosure practices suggests potential spillover effects through global market interconnectedness. These findings align with prior literature documenting how regulatory changes in one jurisdiction can influence disclosure practices in other markets (e.g., Leuz and Verrecchia, 2000).

Our theoretical framework builds on research examining how unsophisticated investors process complex financial information (Miller, 2010) and suggests that enhanced market infrastructure in one jurisdiction may create incentives for firms in other markets to adjust their disclosure practices. The Lithuania Securities Market Reform appears to have contributed to a broader trend toward more accessible financial communications, particularly in markets with significant retail investor participation.

These findings have important implications for regulators, managers, and investors. For regulators, our results suggest that securities market reforms can have far-reaching effects beyond their immediate jurisdiction, highlighting the importance of international coordination in market regulation. Managers should consider how changes in global market infrastructure affect their firm's disclosure strategy, particularly when communicating with retail investors.

For investors, our findings underscore the increasing interconnectedness of global securities markets and the potential benefits of improved market infrastructure for information processing.

The implications of our study extend beyond the immediate context of the Lithuanian reform, contributing to the broader literature on unsophisticated investors and information processing (e.g., Bloomfield, 2002; Lawrence, 2013). Our findings suggest that improvements in market infrastructure can help bridge the information gap between sophisticated and unsophisticated investors, potentially leading to more efficient price discovery and capital allocation.

Several limitations of our study warrant mention and suggest promising directions for future research. First, the absence of granular data on retail investor behavior before and after the reform limits our ability to establish direct causal links. Future studies could employ more detailed investor-level data to better identify the mechanisms through which regulatory changes affect disclosure practices. Additionally, our focus on U.S. firms may not fully capture the reform's global implications. Research examining the reform's effects in other markets, particularly those with different levels of institutional development, could provide valuable insights.

Future research could also explore how technological advances and regulatory changes interact to influence unsophisticated investors' information processing capabilities. As markets continue to evolve, understanding these dynamics becomes increasingly important for maintaining market efficiency and protecting retail investors. Additionally, researchers might investigate how firms adjust their disclosure strategies in response to changes in the global regulatory environment, particularly in contexts where sophisticated and unsophisticated investors may react differently to information.

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Table 1

Descriptive Statistics

Variables	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**
FreqMF	13,630	0.5675	0.8632	0.0000	0.0000	1.6094
Treatment Effect	13,630	0.5850	0.4927	0.0000	1.0000	1.0000
Institutional ownership	13,630	0.6230	0.3236	0.3570	0.7179	0.8904
Firm size	13,630	6.6413	2.1663	5.0774	6.7122	8.1551
Book-to-market	13,630	0.5217	0.5791	0.2064	0.4139	0.7156
ROA	13,630	-0.0714	0.2930	-0.0552	0.0175	0.0613
Stock return	13,630	-0.0165	0.4417	-0.2599	-0.0520	0.1494
Earnings volatility	13,630	0.1690	0.3454	0.0230	0.0538	0.1480
Loss	13,630	0.3525	0.4778	0.0000	0.0000	1.0000
Class action litigation risk	13,630	0.2679	0.2524	0.0863	0.1741	0.3628

This table shows the descriptive statistics. All continuous variables are winsorized at the 1st and 99th percentiles.

Table 2
Pearson Correlations
LithuaniaSecuritiesMarketReform Unsophisticated Investors

	Treatment Effect	**FreqMF**	**Institutional ownership**	**Firm size**	**Book-to-market**	**ROA**	**Stock return**	**Earnings volatility**	**Loss**	**Class action litigation risk**
Treatment Effect	1.00	**-0.05**	**0.05**	0.01	**-0.03**	**-0.05**	-0.01	**0.03**	**0.04**	**0.09**
FreqMF	**-0.05**	1.00	**0.37**	**0.44**	**-0.16**	**0.25**	0.02	**-0.21**	**-0.26**	**-0.10**
Institutional ownership	**0.05**	**0.37**	1.00	**0.64**	**-0.15**	**0.37**	**-0.02**	**-0.30**	**-0.30**	**-0.02**
Firm size	0.01	**0.44**	**0.64**	1.00	**-0.28**	**0.44**	**0.10**	**-0.33**	**-0.45**	**0.02**
Book-to-market	**-0.03**	**-0.16**	**-0.15**	**-0.28**	1.00	**0.09**	**-0.17**	**-0.09**	**0.03**	**-0.04**
ROA	**-0.05**	**0.25**	**0.37**	**0.44**	**0.09**	1.00	**0.18**	**-0.61**	**-0.61**	**-0.26**
Stock return	-0.01	0.02	**-0.02**	**0.10**	**-0.17**	**0.18**	1.00	**-0.06**	**-0.14**	**-0.10**
Earnings volatility	**0.03**	**-0.21**	**-0.30**	**-0.33**	**-0.09**	**-0.61**	**-0.06**	1.00	**0.40**	**0.25**
Loss	**0.04**	**-0.26**	**-0.30**	**-0.45**	**0.03**	**-0.61**	**-0.14**	**0.40**	1.00	**0.29**
Class action litigation risk	**0.09**	**-0.10**	**-0.02**	**0.02**	**-0.04**	**-0.26**	**-0.10**	**0.25**	**0.29**	1.00

This table shows the Pearson correlations for the sample. Correlations that are significant at the 0.05 level or better are highlighted in bold.

Table 3

The Impact of Lithuania Securities Market Reform on Management Forecast Frequency

	(1)	(2)
Treatment Effect	-0.0844*** (5.56)	-0.0883*** (6.53)
Institutional ownership		0.3712*** (13.56)
Firm size		0.1207*** (25.51)
Book-to-market		-0.1030*** (10.39)
ROA		0.0468** (2.23)
Stock return		-0.0846*** (6.77)
Earnings volatility		-0.0740*** (5.13)
Loss		-0.0700*** (4.02)
Class action litigation risk		-0.2833*** (12.14)
N	13,630	13,630
R^2	0.0023	0.2259

Notes: t-statistics in parentheses. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.