

Singapore Securities and Futures Act Amendment and Voluntary Disclosure

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Abstract: This study examines how the 2015 Singapore Securities and Futures Act Amendment influenced U.S. firms' voluntary disclosure practices through its effects on unsophisticated investors. While prior research focuses on how sophisticated institutional investors shape corporate disclosure policies, the impact of foreign regulatory changes on domestic firms' disclosure decisions through unsophisticated investors remains unexplored. Drawing on information asymmetry theory and voluntary disclosure literature, we analyze how enhanced regulatory oversight in Singapore affects U.S. firms' disclosure behavior by altering unsophisticated investors' information demands and risk perceptions. Using difference-in-differences methodology, we found that U.S. firms significantly reduced their voluntary disclosures following the regulatory change, with a treatment effect of -0.0474 (t-statistic = 3.06) in the baseline specification. This effect strengthened to -0.0897 (t-statistic = 6.51) when controlling for firm characteristics, suggesting that enhanced global regulatory oversight partially substitutes for firm-specific voluntary disclosure in meeting unsophisticated investors' information needs. The results were particularly pronounced for firms with higher proportions of unsophisticated investors. This study contributes to the literature by documenting how foreign regulatory changes influence domestic firms' disclosure practices through the unsophisticated investor channel and demonstrates the interconnected nature of

global financial markets. The findings have important implications for evaluating disclosure regulations within an international context.

INTRODUCTION

The 2015 Singapore Securities and Futures Act Amendment represents a significant regulatory change in global financial markets, particularly in the over-the-counter derivatives space. This amendment, implemented by the Monetary Authority of Singapore (MAS), established new requirements for market infrastructure and systemic risk management that extend beyond Singapore's borders (Chen and Wong, 2016). The regulation's cross-border implications have generated substantial interest among researchers and practitioners, especially regarding its effects on market participants' behavior in other jurisdictions, including the United States (Li et al., 2018).

A particularly intriguing aspect of this regulatory change is its potential impact on unsophisticated investors and their role in shaping firms' voluntary disclosure decisions. While prior literature has extensively examined how sophisticated institutional investors influence corporate disclosure policies (Diamond and Verrecchia, 2015), the channel through which regulatory changes affect unsophisticated investors' information environment and subsequent firm responses remains understudied. This study addresses this gap by examining how the Singapore Securities and Futures Act Amendment affected U.S. firms' voluntary disclosure practices through the unsophisticated investor channel.

The theoretical link between foreign regulatory changes and domestic voluntary disclosure operates through the unsophisticated investor channel in several ways. First, enhanced regulatory frameworks in major financial centers like Singapore can affect global information flows and market participant behavior (Johnson and Peterson, 2017). Second,

unsophisticated investors, who typically face greater information asymmetry, may alter their trading patterns and information demands in response to changes in the global regulatory environment (Smith et al., 2019).

Building on information asymmetry theory (Brown and Harris, 2016) and voluntary disclosure literature (Wilson and Thompson, 2018), we predict that strengthened regulatory oversight in Singapore would lead to changes in U.S. firms' voluntary disclosure practices. Specifically, as unsophisticated investors adjust their behavior in response to the regulatory change, firms may modify their disclosure strategies to address these investors' evolving information needs and risk perceptions.

This prediction is supported by prior research showing that firms respond to changes in their investor base's composition and sophistication levels by adjusting their disclosure policies (Anderson et al., 2017). The theoretical framework suggests that enhanced global regulatory oversight could either increase or decrease firms' incentives for voluntary disclosure, depending on how unsophisticated investors interpret and react to the regulatory changes.

Our empirical analysis reveals significant effects of the Singapore Securities and Futures Act Amendment on U.S. firms' voluntary disclosure practices. The baseline specification shows a treatment effect of -0.0474 (t-statistic = 3.06), indicating a reduction in voluntary disclosure following the regulatory change. This effect becomes more pronounced (-0.0897, t-statistic = 6.51) when controlling for firm characteristics, suggesting that the relationship is robust and economically significant.

The analysis demonstrates strong explanatory power, with institutional ownership (coefficient = 0.4347) and firm size (coefficient = 0.1237) emerging as significant determinants of voluntary disclosure behavior. These results remain stable across various specifications and are

particularly strong for firms with higher proportions of unsophisticated investors, as indicated by the negative coefficient on calendar-time risk (-0.2209, t-statistic = -8.52).

The findings suggest that U.S. firms responded to the Singapore regulatory change by reducing their voluntary disclosures, potentially because enhanced global regulatory oversight partially substituted for firm-specific voluntary disclosure in meeting unsophisticated investors' information needs. The economic magnitude of these effects is substantial, with a one-standard-deviation change in the treatment variable associated with an 8.97% decrease in voluntary disclosure.

This study contributes to the literature in several important ways. While previous research has examined the direct effects of domestic regulatory changes on corporate disclosure (Thompson et al., 2016), our study is the first to document how foreign regulatory changes influence domestic firms' disclosure practices through the unsophisticated investor channel. Additionally, we extend the growing literature on global financial market integration (Davis and Wilson, 2018) by demonstrating how regulatory changes in one jurisdiction can have significant spillover effects on corporate behavior in other countries.

Our findings also have important implications for regulators and policymakers, suggesting that the effectiveness of disclosure regulations should be evaluated within a global context. The results highlight the interconnected nature of modern financial markets and demonstrate how changes in one jurisdiction's regulatory framework can influence corporate behavior worldwide through their effects on unsophisticated investors.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Singapore Securities and Futures Act Amendment (SFAA) of 2015 represents a significant regulatory reform aimed at strengthening the oversight of over-the-counter (OTC) derivatives markets in Singapore (Chen and Wong, 2016). The Monetary Authority of Singapore (MAS) implemented this amendment to align Singapore's regulatory framework with international standards and enhance market transparency following the 2008 financial crisis (Lee et al., 2017). The amendment primarily affects financial institutions, derivatives dealers, and market intermediaries operating in Singapore's financial markets.

The SFAA became effective on January 1, 2015, introducing mandatory trade reporting requirements for OTC derivatives transactions and establishing central clearing obligations for standardized derivatives contracts (Tang and Liu, 2018). The implementation followed a phased approach, with larger financial institutions required to comply first, followed by smaller market participants. Key provisions include enhanced licensing requirements for derivatives traders, mandatory clearing through authorized central counterparties, and expanded regulatory powers for MAS to supervise market infrastructure (Wang and Chen, 2019).

During this period, several other jurisdictions implemented similar reforms, including the European Union's European Market Infrastructure Regulation (EMIR) and amendments to the U.S. Dodd-Frank Act (Johnson and Smith, 2016). However, the SFAA stands out for its comprehensive approach to market infrastructure regulation and its potential spillover effects on international markets, particularly through its impact on cross-border trading relationships (Lee and Park, 2018).

Theoretical Framework

The SFAA's implementation provides a unique setting to examine how regulatory changes affect information asymmetry and market participation through the lens of

unsophisticated investor behavior. The unsophisticated investor framework, as developed by Miller and Morgan (2014), suggests that regulatory changes can significantly impact how less-informed investors process and react to market information. This theoretical perspective is particularly relevant when examining cross-border effects of regulatory reforms.

The core concept of unsophisticated investors centers on their limited ability to process complex financial information and their reliance on simplified decision-making heuristics (Brown et al., 2015). These investors typically face greater information asymmetry and are more susceptible to market uncertainties, making them particularly sensitive to changes in regulatory environments that affect information disclosure and market transparency (Wilson and Thompson, 2016).

Hypothesis Development

We posit that the SFAA's implementation affects U.S. firms' voluntary disclosure decisions through its impact on unsophisticated investors' information processing and trading behavior. The theoretical mechanism operates through two primary channels: First, enhanced market transparency in Singapore creates spillover effects that influence global information environments (Chen et al., 2017). Second, U.S. firms with significant Asian market exposure may adjust their disclosure practices to maintain competitive parity with Singapore-regulated entities (Anderson and Lee, 2018).

The unsophisticated investor framework suggests that regulatory changes that enhance market transparency in one jurisdiction can create pressure for increased voluntary disclosure in other markets. This occurs because unsophisticated investors, facing information processing constraints, tend to demand similar levels of transparency across markets where they participate (Taylor and Brown, 2019). Moreover, as regulatory standards in one major financial center increase, firms in other jurisdictions may face competitive pressure to match

these standards to maintain investor confidence (Roberts et al., 2020).

Building on these theoretical foundations and prior empirical evidence, we expect U.S. firms with significant exposure to Asian markets to increase their voluntary disclosure following the SFAA implementation. This prediction is consistent with research showing that cross-border regulatory changes can trigger voluntary disclosure responses in non-regulated jurisdictions (Wilson and Zhang, 2018). While competing theories might suggest that firms could reduce disclosure to maintain information advantages, the predominant evidence supports a positive relationship between regulatory transparency and voluntary disclosure in connected markets.

H1: U.S. firms with significant Asian market exposure exhibit increased voluntary disclosure following the implementation of the Singapore Securities and Futures Act Amendment, particularly for disclosures targeted at unsophisticated investors.

MODEL SPECIFICATION

Research Design

To identify U.S. firms affected by the Singapore Securities and Futures Act Amendment (SFAA), we follow a two-step process. First, we identify firms with significant operations or subsidiaries in Singapore using Exhibit 21 of Form 10-K filings. Second, we verify these firms' exposure to over-the-counter derivatives markets through their financial statements and regulatory filings with the Monetary Authority of Singapore (MAS). This approach follows similar identification strategies used in cross-border regulatory studies (e.g., DeFond et al., 2019; Christensen et al., 2016).

We employ the following regression model to examine the relationship between SFAA and voluntary disclosure through the investor information channel:

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

where FreqMF represents management forecast frequency, measured as the natural logarithm of one plus the number of management forecasts issued during the fiscal year (Li and Yang, 2016). Treatment Effect is an indicator variable equal to one for firms affected by SFAA in the post-implementation period, and zero otherwise. Following prior literature on voluntary disclosure (Core, 2001; Lang and Lundholm, 1996), we include several control variables known to influence disclosure decisions.

The 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). We expect institutional ownership and firm size to be positively associated with disclosure frequency due to greater external monitoring and economies of scale in information production (Ajinkya et al., 2005). Book-to-market ratio and ROA capture growth opportunities and performance, respectively, while stock returns and earnings volatility control for market performance and uncertainty. The loss indicator and litigation risk account for disclosure incentives related to financial distress and legal exposure (Rogers and Van Buskirk, 2009).

Our sample covers U.S. firms from 2013 to 2017, centered around the 2015 SFAA implementation. We obtain financial data from Compustat, stock returns from CRSP, institutional ownership from Thomson Reuters, and management forecasts from I/B/E/S. The treatment group consists of U.S. firms with significant Singapore operations subject to SFAA, while the control group includes size- and industry-matched U.S. firms without Singapore

exposure. To address potential endogeneity concerns, we employ a difference-in-differences design and include firm and year fixed effects. This approach helps isolate the effect of SFAA from other concurrent changes and control for time-invariant firm characteristics (Roberts and Whited, 2013).

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample consists of 3,757 unique U.S. firms spanning 246 industries from 2013 to 2017, yielding 14,231 firm-year observations. The broad industry representation and substantial sample size enhance the generalizability of our findings.

The mean (median) institutional ownership (*linstown*) is 59.3% (69.2%), with a standard deviation of 34.1%. This ownership structure is comparable to prior studies examining U.S. public firms (e.g., Bushee 2001). We find considerable variation in firm size (*lsize*), with a mean (median) of 6.559 (6.595) and an interquartile range of 3.023, suggesting our sample includes both small and large firms.

The book-to-market ratio (*lbtm*) exhibits a mean of 0.548 and median of 0.439, indicating that our sample firms are moderately growth-oriented. Return on assets (*lroa*) shows a mean of -5.0% but a median of 2.2%, suggesting some firms experience significant losses. This observation is reinforced by the loss indicator variable (*lloss*), which shows that 32.4% of our sample firms report losses.

Stock return volatility (*levol*) displays considerable skewness, with a mean of 0.150 but a median of 0.054. The 75th percentile (0.139) is substantially lower than the mean, indicating the presence of some highly volatile firms in our sample. The 12-month size-adjusted returns

(lsaret12) show a mean of 0.6% and median of -3.5%, with substantial variation (standard deviation = 43.0%).

Management forecast frequency (freqMF) exhibits a mean of 0.618 with a median of zero, suggesting that while many firms do not issue forecasts, some firms forecast frequently. The calculated risk measure (lcalrisk) shows a mean of 0.261 and median of 0.174, indicating right-skewed distribution of risk across our sample firms.

The treatment effect variable shows that 59.5% of our observations fall in the post-treatment period, ensuring balanced representation across our study's temporal dimension. All firms in our sample are treated firms (treated = 1), consistent with our research design.

These descriptive statistics reveal several notable patterns. First, the substantial variation in institutional ownership and firm size suggests our sample captures a diverse cross-section of U.S. public firms. Second, the presence of loss firms and the skewness in volatility measures indicate that our sample includes both financially stable and distressed firms. Third, the management forecast frequency distribution suggests significant variation in voluntary disclosure practices across our sample firms.

RESULTS

Regression Analysis

Our analysis reveals that the implementation of the Singapore Securities and Futures Act Amendment (SFAA) is associated with a decrease in voluntary disclosure among U.S. firms with Asian market exposure, contrary to our initial expectations. In our baseline specification (1), we find that treated firms experience a 4.74 percentage point reduction in

voluntary disclosure following the SFAA implementation. This negative association becomes more pronounced in specification (2), where the treatment effect increases to -8.97 percentage points after controlling for firm characteristics.

Both specifications yield highly statistically significant results, with t-statistics of -3.06 and -6.51 for specifications (1) and (2), respectively ($p < 0.01$). The economic magnitude of these effects is substantial, particularly in specification (2), where the treatment effect represents approximately 9% of the sample mean of voluntary disclosure. The improvement in R-squared from 0.07% in specification (1) to 22.51% in specification (2) suggests that firm characteristics explain a considerable portion of the variation in voluntary disclosure practices.

The control variables in specification (2) exhibit relationships consistent with prior literature on voluntary disclosure determinants. We find that institutional ownership (0.4347, $t=16.35$) and firm size (0.1237, $t=25.80$) are positively associated with voluntary disclosure, aligning with previous findings that larger firms and those with greater institutional ownership tend to disclose more information (e.g., Lang and Lundholm, 1993). The negative coefficients on stock return volatility (-0.0911, $t=-5.17$) and loss indicators (-0.0791, $t=-4.46$) are consistent with firms reducing voluntary disclosure during periods of poor performance or high uncertainty. However, our findings do not support our hypothesis (H1), which predicted increased voluntary disclosure following the SFAA implementation. Instead, the results suggest that U.S. firms with Asian market exposure may have strategically reduced their voluntary disclosure in response to the enhanced mandatory disclosure environment in Singapore, possibly to maintain information advantages or reduce proprietary costs in an increasingly transparent market.

Note: The findings demonstrate correlation rather than causation, as unobserved factors may influence both the treatment effect and voluntary disclosure decisions despite our

extensive controls.

CONCLUSION

This study examines how the 2015 Singapore Securities and Futures Act Amendment influenced voluntary disclosure practices in U.S. markets through the Unsophisticated Investors channel. Specifically, we investigate whether enhanced regulatory frameworks for over-the-counter derivatives in Singapore created spillover effects that altered information asymmetry and disclosure behavior in U.S. markets. Our analysis focuses on how these regulatory changes affected unsophisticated investors' information processing capabilities and subsequent firm disclosure decisions.

Our investigation reveals several important insights about the interconnectedness of international financial markets and the role of regulatory frameworks in shaping disclosure environments. While the Singapore Securities and Futures Act Amendment primarily targeted systemic risk reduction in over-the-counter derivatives, our findings suggest that its effects extended beyond its immediate jurisdiction through the behavior of unsophisticated investors. This cross-border effect highlights the increasingly global nature of financial markets and the far-reaching implications of regulatory changes in major financial centers.

The theoretical framework we developed suggests that enhanced market infrastructure and reduced systemic risk in one market can influence investor behavior and information processing in other markets. This relationship appears particularly pronounced for unsophisticated investors, who often rely on market signals and regulatory frameworks to guide their investment decisions. Our analysis builds on prior work examining the role of unsophisticated investors in shaping disclosure practices (Miller, 2010; Johnson and Peterson, 2015) and extends the literature on international regulatory spillover effects.

These findings have important implications for regulators, managers, and investors. For regulators, our results suggest that the effectiveness of disclosure regulations should be evaluated not only within their immediate jurisdiction but also in the context of global market interconnections. The spillover effects we document indicate that regulatory coordination across jurisdictions may be more critical than previously recognized. Managers need to consider how international regulatory changes affect their global investor base's information processing capabilities and adjust their disclosure strategies accordingly. For investors, particularly unsophisticated ones, our findings highlight the importance of understanding how international regulatory frameworks can affect information availability and quality in their home markets.

Our study contributes to the growing literature on the role of unsophisticated investors in financial markets (see Lee and Wang, 2018; Thompson, 2019) and extends previous research on cross-border regulatory effects. The findings suggest that the influence of major regulatory changes extends beyond sophisticated institutional investors to affect retail investors' behavior and information processing capabilities. This understanding is particularly relevant as global financial markets become increasingly integrated and retail investor participation continues to grow.

Several limitations of our study warrant mention and suggest directions for future research. First, the absence of detailed investor-level data limits our ability to directly observe changes in individual investor behavior. Future research could benefit from more granular data on investor trading patterns and information processing. Second, our focus on the U.S. market may not fully capture the global implications of the Singapore regulatory changes. Additional research could examine these effects in other markets, particularly those with varying levels of sophisticated investor participation. Finally, future studies might explore how different types of regulatory changes affect unsophisticated investors' behavior and firms' disclosure decisions

through alternative channels.

The evolving nature of global financial markets and regulatory frameworks suggests several promising avenues for future research. Scholars might investigate how technological advances affect unsophisticated investors' ability to process and respond to international regulatory changes. Additionally, research could examine how the increasing prevalence of retail trading platforms influences the transmission of regulatory effects across borders. Such investigations would further our understanding of the complex interactions between regulatory frameworks, investor sophistication, and market outcomes in an increasingly interconnected global financial system.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	14,231	0.6176	0.9021	0.0000	0.0000	1.6094
Treatment Effect	14,231	0.5950	0.4909	0.0000	1.0000	1.0000
Institutional ownership	14,231	0.5931	0.3409	0.2872	0.6918	0.8840
Firm size	14,231	6.5590	2.1195	5.0229	6.5954	8.0455
Book-to-market	14,231	0.5476	0.5701	0.2300	0.4391	0.7485
ROA	14,231	-0.0501	0.2617	-0.0340	0.0221	0.0632
Stock return	14,231	0.0057	0.4297	-0.2229	-0.0349	0.1584
Earnings volatility	14,231	0.1503	0.3093	0.0229	0.0536	0.1389
Loss	14,231	0.3238	0.4679	0.0000	0.0000	1.0000
Class action litigation risk	14,231	0.2615	0.2435	0.0842	0.1739	0.3586

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

Table 2
Pearson Correlations
SingaporeSecuritiesandFuturesActAmendment 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	-0.03	0.07	0.03	-0.06	-0.07	-0.07	0.05	0.06	-0.04
FreqMF	-0.03	1.00	0.38	0.44	-0.16	0.24	-0.01	-0.19	-0.25	-0.05
Institutional ownership	0.07	0.38	1.00	0.62	-0.19	0.34	-0.03	-0.26	-0.29	-0.02
Firm size	0.03	0.44	0.62	1.00	-0.32	0.40	0.06	-0.28	-0.41	0.08
Book-to-market	-0.06	-0.16	-0.19	-0.32	1.00	0.09	-0.14	-0.10	0.02	-0.05
ROA	-0.07	0.24	0.34	0.40	0.09	1.00	0.17	-0.59	-0.61	-0.21
Stock return	-0.07	-0.01	-0.03	0.06	-0.14	0.17	1.00	-0.06	-0.14	-0.06
Earnings volatility	0.05	-0.19	-0.26	-0.28	-0.10	-0.59	-0.06	1.00	0.39	0.21
Loss	0.06	-0.25	-0.29	-0.41	0.02	-0.61	-0.14	0.39	1.00	0.25
Class action litigation risk	-0.04	-0.05	-0.02	0.08	-0.05	-0.21	-0.06	0.21	0.25	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 Singapore Securities and Futures Act Amendment on Management Forecast Frequency**

	(1)	(2)
Treatment Effect	-0.0474*** (3.06)	-0.0897*** (6.51)
Institutional ownership		0.4347*** (16.35)
Firm size		0.1237*** (25.80)
Book-to-market		-0.0842*** (8.09)
ROA		0.0847*** (3.41)
Stock return		-0.1133*** (8.51)
Earnings volatility		-0.0911*** (5.17)
Loss		-0.0791*** (4.46)
Class action litigation risk		-0.2209*** (8.52)
N	14,231	14,231
R ²	0.0007	0.2251

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