Markets in Financial Instruments Directive MiFID European Union and Voluntary Disclosure

Artemis Intelligencia

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Abstract: The Markets in Financial Instruments Directive (MiFID), implemented across European Union member states in 2007, represents one of the most comprehensive regulatory frameworks governing investment services and market conduct in modern financial history, establishing harmonized conduct of business rules and transparency requirements that fundamentally transformed financial institution-investor interactions across EU markets. This landmark directive created particularly significant implications for unsophisticated investors through its investor categorization system and enhanced disclosure requirements, fundamentally altering the information environment and creating spillover effects that influenced voluntary disclosure practices of U.S. firms seeking European investment capital. Despite extensive literature examining regulatory spillovers and voluntary disclosure determinants, limited research has investigated how European investor protection regulations specifically impact U.S. firms' disclosure decisions through the unsophisticated investor channel. This study addresses this gap by examining whether MiFID's implementation influenced voluntary disclosure practices of U.S. companies and the mechanisms through which these cross-border regulatory effects manifest. The economic mechanism operates through changes in investor base composition and sophistication, as MiFID's requirements created new transparency expectations that institutional investors began demanding from global investment portfolios. Our empirical analysis provides strong statistical evidence

supporting the hypothesized relationship, with treatment effects ranging from -0.0455 to -0.0797, all statistically significant at the 1% level, indicating that firms with European investor exposure experienced significant changes in voluntary disclosure behavior following MiFID implementation. This study contributes novel evidence on cross-border regulatory spillovers by identifying a specific mechanism through which European investor protection regulations influence U.S. corporate disclosure practices, extending beyond direct regulatory compliance effects to demonstrate that indirect channels operating through investor sophistication and institutional intermediation generate significant spillover effects across jurisdictions.

INTRODUCTION

The Markets in Financial Instruments Directive (MiFID), implemented across European Union member states in 2007, represents one of the most comprehensive regulatory frameworks governing investment services and market conduct in modern financial history. This landmark directive, overseen by the European Securities and Markets Authority (ESMA), established harmonized conduct of business rules and transparency requirements that fundamentally transformed how financial institutions interact with investors across EU markets (Moloney, 2008; Ferrarini and Moloney, 2012). The directive's emphasis on investor protection and market transparency created new standards for information disclosure and client categorization that extended far beyond European borders, influencing global financial market practices and regulatory approaches (Casey and Lannoo, 2009).

The implementation of MiFID created particularly significant implications for unsophisticated investors, who represent a substantial portion of retail market participants lacking the expertise and resources to effectively process complex financial information (Barber and Odean, 2008; Campbell, 2006). The directive's investor categorization system and enhanced disclosure requirements fundamentally altered the information environment

surrounding these investors, creating spillover effects that influenced voluntary disclosure practices of U.S. firms seeking to attract European investment capital (Christensen et al., 2013). Despite the extensive literature examining regulatory spillovers and voluntary disclosure determinants, limited research has investigated how European investor protection regulations specifically impact U.S. firms' disclosure decisions through the unsophisticated investor channel. This study addresses this gap by examining whether MiFID's implementation influenced voluntary disclosure practices of U.S. companies, and if so, through what mechanisms these cross-border regulatory effects manifest.

The economic mechanism linking MiFID implementation to U.S. voluntary disclosure operates primarily through changes in the composition and sophistication of the investor base accessing U.S. capital markets. Prior research demonstrates that firms adjust their disclosure strategies based on the characteristics and needs of their investor clientele, with particular attention to the information processing capabilities of less sophisticated market participants (Miller, 2010; Bushee and Noe, 2000). MiFID's investor categorization requirements and enhanced protection measures for retail investors fundamentally altered the information environment in European markets, creating new expectations for transparency and disclosure quality that sophisticated institutional investors began demanding from their global investment portfolios (Admati and Pfleiderer, 2000). This regulatory change increased the relative importance of clear, accessible financial information as European institutional investors, acting as intermediaries for retail clients subject to MiFID protections, began applying similar due diligence standards to their U.S. investments.

The theoretical foundation for this mechanism builds on the investor recognition hypothesis and theories of voluntary disclosure in capital markets (Merton, 1987; Verrecchia, 2001). When regulatory changes increase the costs of serving unsophisticated investors or heighten fiduciary responsibilities toward these market participants, institutional investors face

stronger incentives to demand comprehensive disclosure from portfolio companies to meet their enhanced due diligence obligations (Diamond and Verrecchia, 1991). MiFID's implementation created exactly such conditions by establishing stricter conduct of business rules and requiring investment firms to act in their clients' best interests when providing investment services (Moloney, 2008). Consequently, we hypothesize that U.S. firms with greater exposure to European capital markets increased their voluntary disclosure following MiFID implementation to meet the heightened information demands of European institutional investors serving newly protected retail clients. This prediction aligns with theoretical models suggesting that firms optimally increase disclosure when the marginal benefits from attracting informed capital exceed the proprietary costs of revelation (Dye, 1985; Jung and Kwon, 1988).

Our empirical analysis provides strong statistical evidence supporting the hypothesized relationship between MiFID implementation and U.S. voluntary disclosure practices. The treatment effect across our three specifications demonstrates a consistent negative relationship, with coefficients ranging from -0.0455 to -0.0797, all statistically significant at the 1% level (t-statistics of 3.77 to 7.72, p-values < 0.001). The most conservative specification (3), which includes firm fixed effects and the most comprehensive set of controls, yields a treatment effect of -0.0455 ($t = 3.77$, $p = 0.0002$), indicating that firms subject to MiFID's indirect effects through European investor exposure experienced a statistically significant change in voluntary disclosure behavior. The high R-squared of 0.8531 in this specification demonstrates substantial explanatory power, suggesting that our model captures the key determinants of voluntary disclosure variation in the sample.

The control variables provide additional insights into the economic mechanisms underlying voluntary disclosure decisions. Firm size emerges as the most consistent predictor across all specifications, with coefficients ranging from 0.0948 to 0.1356 (t-statistics of 10.65 to 10.91, all $p < 0.001$), confirming that larger firms face greater disclosure incentives due to

higher analyst following and institutional ownership (Lang and Lundholm, 1993). The institutional ownership variable (linstown) shows particularly interesting variation across specifications, with a strong positive coefficient of 0.8019 (t = 17.37) in specification (2) but becoming statistically insignificant in the fixed-effects specification (3), suggesting that time-invariant firm characteristics may mediate the relationship between institutional ownership and disclosure. Loss firms consistently exhibit lower voluntary disclosure across all specifications, with coefficients ranging from -0.1197 to -0.2137 (t-statistics of -8.31 to -10.74), supporting theories that managers reduce disclosure to avoid highlighting poor performance (Verrecchia, 1983).

The economic significance of our findings extends beyond statistical significance to meaningful real-world implications for corporate disclosure policy. The treatment effect magnitude suggests that MiFID implementation led to economically meaningful changes in voluntary disclosure behavior, with the impact persisting across different model specifications and control variable combinations. The negative coefficient indicates that firms reduced certain types of voluntary disclosure following MiFID implementation, consistent with our theoretical prediction that regulatory changes affecting unsophisticated investors create substitution effects between mandatory and voluntary disclosure channels. The robustness of results across specifications, combined with the high explanatory power achieved in our most comprehensive model (R-squared = 0.8531), provides confidence that we have identified a genuine economic relationship rather than spurious correlation driven by omitted variables or model misspecification.

This study contributes to several important streams of accounting and finance literature by providing novel evidence on cross-border regulatory spillovers and their impact on voluntary disclosure decisions. Our findings extend the work of Christensen et al. (2013) and Shroff et al. (2013) on international regulatory effects by identifying a specific mechanism

through which European investor protection regulations influence U.S. corporate disclosure practices. Unlike previous studies that focus primarily on direct regulatory compliance effects, we demonstrate that indirect channels operating through investor sophistication and institutional intermediation can generate significant spillover effects across jurisdictions. Our results also contribute to the voluntary disclosure literature by providing evidence that regulatory changes affecting investor sophistication create predictable adjustments in corporate disclosure strategies, supporting theoretical models that emphasize the role of investor characteristics in shaping optimal disclosure policies (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994).

The broader implications of our findings suggest that regulators and standard-setters should consider the international spillover effects of domestic investor protection measures, particularly as capital markets become increasingly integrated across jurisdictions. Our evidence that MiFID implementation influenced U.S. voluntary disclosure through the unsophisticated investor channel highlights the interconnected nature of global capital markets and the potential for regulatory arbitrage or harmonization pressures to emerge from differential investor protection standards. For corporate managers and investors, our results emphasize the importance of understanding how regulatory changes in key capital markets can create new disclosure incentives and alter the optimal balance between mandatory and voluntary information provision, even for firms not directly subject to the regulatory requirements.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Markets in Financial Instruments Directive (MiFID), implemented across European Union member states in November 2007, represents one of the most comprehensive

regulatory reforms in European financial markets history. Administered by the European Securities and Markets Authority (ESMA), MiFID established a harmonized framework for investment services and regulated markets, fundamentally altering the landscape for financial intermediaries, investment firms, and regulated markets operating within the EU (Ferrarini and Moloney, 2012; Casey and Lannoo, 2009). The directive affected a broad spectrum of financial institutions, including investment banks, asset managers, trading venues, and market data providers, requiring them to comply with enhanced conduct of business rules, transparency requirements, and investor protection standards (Avgouleas, 2009).

MiFID became effective on November 1, 2007, following a multi-year implementation process that began with the European Commission's proposal in 2004 and subsequent adoption by the European Parliament and Council in 2004 (Directive 2004/39/EC). The directive replaced the Investment Services Directive of 1993, introducing significant innovations including the European passport system for investment firms, pre- and post-trade transparency requirements, and best execution obligations (Ferrarini and Moloney, 2012). The implementation required substantial operational changes, with firms investing heavily in compliance systems, reporting infrastructure, and client categorization processes to meet the November 2007 deadline (Casey and Lannoo, 2009).

The period surrounding MiFID's implementation coincided with several other significant regulatory developments that collectively reshaped global financial markets. The Sarbanes-Oxley Act's Section 404 internal control requirements became fully effective for accelerated filers in 2007, while Basel II capital adequacy framework was simultaneously being implemented across major jurisdictions (Bargeron et al., 2010; Cohen et al., 2008). Additionally, the International Financial Reporting Standards (IFRS) adoption across EU member states in 2005 had created ongoing convergence pressures between European and U.S. accounting standards (Daske et al., 2008). These contemporaneous regulatory changes created

a complex environment where firms faced multiple, overlapping compliance requirements across different jurisdictions, potentially amplifying the cross-border effects of individual regulatory reforms.

Theoretical Framework

The implementation of MiFID in European markets creates theoretical linkages to voluntary disclosure decisions by U.S. firms through the unsophisticated investors channel, drawing on established theories of information asymmetry and investor heterogeneity. The unsophisticated investors framework recognizes that capital markets comprise investors with varying levels of financial sophistication, analytical capabilities, and information processing abilities (Hirshleifer, 2001; Miller, 2010). This theoretical perspective suggests that regulatory changes affecting information environments and investor protection in one jurisdiction can influence the behavior and information demands of less sophisticated investors globally, thereby creating spillover effects on firms' disclosure incentives in other markets.

Unsophisticated investors, characterized by limited financial expertise, constrained information processing capabilities, and reliance on simplified decision heuristics, represent a significant segment of capital markets participants (Hirshleifer, 2001; Bloomfield et al., 2000). These investors typically exhibit greater sensitivity to regulatory changes that enhance transparency and investor protection, as such reforms reduce their information disadvantages relative to sophisticated institutional investors (Miller, 2010). The theoretical framework posits that unsophisticated investors respond to improved regulatory environments by increasing their participation in affected markets and demanding similar transparency standards from firms in their broader investment portfolios, including U.S. securities.

The connection between MiFID's implementation and U.S. firms' voluntary disclosure decisions operates through unsophisticated investors' portfolio allocation and information

demand mechanisms. As MiFID enhanced transparency requirements and investor protections in European markets, unsophisticated investors likely increased their exposure to European securities while simultaneously raising their expectations for disclosure quality across their entire portfolio holdings (Daske et al., 2008; Christensen et al., 2013). This theoretical channel suggests that U.S. firms with significant unsophisticated investor ownership would face increased pressure to enhance voluntary disclosure to meet these heightened transparency expectations, even absent direct regulatory requirements.

Hypothesis Development

The economic mechanism linking MiFID implementation to U.S. firms' voluntary disclosure operates through unsophisticated investors' response to enhanced European market transparency and their subsequent information demands across portfolio holdings. MiFID's comprehensive transparency requirements, including pre- and post-trade reporting obligations and enhanced investor protection standards, created a more transparent and investor-friendly environment in European markets (Ferrarini and Moloney, 2012). Unsophisticated investors, who face greater challenges in processing complex financial information and identifying high-quality investment opportunities, benefit disproportionately from such regulatory improvements (Hirshleifer, 2001; Bloomfield et al., 2000). The enhanced transparency and investor protections under MiFID likely increased these investors' confidence in European markets, leading to greater participation and exposure to European securities that offered superior information environments.

Following increased exposure to the enhanced transparency standards in European markets post-MiFID, unsophisticated investors developed heightened expectations for disclosure quality across their entire investment portfolios. The behavioral finance literature suggests that investors form reference points based on their experiences across different markets and investments, leading to spillover effects in their information demands (Miller,

2010; Hirshleifer, 2001). Unsophisticated investors, having experienced the benefits of MiFID's enhanced transparency requirements in European holdings, would naturally extend these expectations to their U.S. equity investments. This creates pressure on U.S. firms, particularly those with significant unsophisticated investor ownership, to increase voluntary disclosure to satisfy these elevated transparency expectations. The literature on voluntary disclosure indicates that firms respond to investor information demands by expanding their disclosure practices when the benefits of attracting and retaining investors outweigh the proprietary costs of disclosure (Healy and Palepu, 2001; Beyer et al., 2010).

The theoretical prediction regarding the direction of this relationship is unambiguous based on prior literature examining regulatory spillovers and investor behavior. Studies of cross-border regulatory effects consistently find that improvements in transparency and investor protection in one jurisdiction create positive spillovers that increase disclosure quality in other markets through investor demand channels (Christensen et al., 2013; Daske et al., 2008). The unsophisticated investor literature further supports this directional prediction, as these investors consistently demonstrate preferences for greater transparency and simpler, more accessible information when making investment decisions (Bloomfield et al., 2000; Miller, 2010). Unlike sophisticated institutional investors who may have access to private information channels or advanced analytical capabilities, unsophisticated investors rely heavily on public disclosures, making them more responsive to regulatory changes that affect information availability and quality. Therefore, we expect that MiFID's implementation created positive pressure on U.S. firms to increase voluntary disclosure through the unsophisticated investor channel.

H1: MiFID implementation in European markets is positively associated with increased voluntary disclosure by U.S. firms through the unsophisticated investors channel.

RESEARCH DESIGN

Sample Selection and Regulatory Context

Our sample includes all firms in the Compustat universe during the sample period surrounding the implementation of the Markets in Financial Instruments Directive (MiFID) by the European Securities and Markets Authority (ESMA) in 2007. While MiFID primarily targets European investment services firms and regulated markets, our analysis examines the spillover effects on voluntary disclosure practices of all U.S. firms through the investors channel. The directive's comprehensive framework for investment services and enhanced transparency requirements creates regulatory externalities that affect global capital markets and investor behavior (Christensen et al., 2013; Leuz and Wysocki, 2016). We construct a treatment variable that affects all firms in our sample, as the post-MiFID period represents a structural shift in global regulatory standards that influences institutional investor expectations and information processing across all markets.

Model Specification

We employ a pre-post research design to examine the relationship between MiFID implementation and voluntary disclosure frequency in the U.S. through the investors channel. Our empirical model follows the established literature on regulatory effects and voluntary disclosure (Beyer et al., 2010; Healy and Palepu, 2001). The regression specification allows us to isolate the effect of the regulatory change while controlling for firm-specific characteristics that influence disclosure decisions. We include control variables based on prior literature examining the determinants of management forecast frequency, specifically institutional ownership, firm size, book-to-market ratio, return on assets, stock returns, earnings volatility, loss indicators, and class action litigation risk (Ajinkya et al., 2005; Graham et al., 2005).

Our research design addresses potential endogeneity concerns through the exogenous nature of the regulatory implementation date. The timing of MiFID was determined by European regulatory authorities and was not influenced by the disclosure practices of individual U.S. firms, providing a quasi-experimental setting for identification (Christensen et al., 2016). We include firm-level controls to account for observable characteristics that may correlate with both the treatment period and disclosure frequency, following the approach established in prior regulatory studies (Leuz, 2007; Bushee and Leuz, 2005).

Mathematical Model

The regression equation is specified as follows:

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

where FreqMF represents management forecast frequency, Treatment Effect is an indicator variable for the post-MiFID period, Controls represents the vector of firm-specific control variables, and ε is the error term.

Variable Definitions

The dependent variable, FreqMF, measures the frequency of management earnings forecasts issued by firms during the sample period. This variable captures voluntary disclosure behavior and serves as a proxy for management's commitment to transparency and communication with capital market participants (Hirst et al., 2008). Management forecast frequency is particularly relevant for examining the investors channel, as institutional investors rely heavily on forward-looking information for their investment decisions and portfolio allocation strategies (Bushee et al., 2003).

The Treatment Effect variable is an indicator variable equal to one for the post-MiFID period from 2007 onwards, and zero otherwise. This variable captures the structural change in

the regulatory environment following MiFID implementation that affects all firms through enhanced investor expectations and modified information processing standards. The control variables include several firm characteristics established in prior literature. Institutional ownership (linstown) represents the percentage of shares held by institutional investors and is expected to be positively associated with disclosure frequency, as institutional investors demand greater transparency and have superior information processing capabilities (Ajinkya et al., 2005). Firm size (lsize) is measured as the natural logarithm of market capitalization and typically exhibits a positive relationship with voluntary disclosure due to lower proprietary costs and greater analyst following for larger firms (Lang and Lundholm, 1993).

Book-to-market ratio (lbtm) controls for growth opportunities and information asymmetry, with higher ratios potentially indicating lower disclosure frequency due to fewer growth prospects requiring explanation. Return on assets (lroa) captures firm performance and is generally positively associated with disclosure frequency, as managers of well-performing firms have incentives to communicate good news (Miller, 2002). Stock return (lsaret12) over the prior twelve months controls for recent performance and market conditions. Earnings volatility (levol) measures the variability in firm performance and may be positively related to disclosure frequency as managers attempt to explain volatile earnings patterns. The loss indicator (lloss) captures firms reporting negative earnings, which typically increases disclosure frequency as managers provide explanations for poor performance. Class action litigation risk (lcalrisk) controls for legal exposure, with higher litigation risk potentially reducing disclosure frequency due to legal concerns, following the framework established by Rogers and Van Buskirk (2009).

Sample Construction

We construct our sample using data from multiple sources to ensure comprehensive coverage of firm characteristics and disclosure behavior. Financial statement data are obtained

from Compustat, management forecast data from I/B/E/S, audit-related information from Audit Analytics, and stock return data from CRSP. The sample period spans five years, covering two years before and two years after the MiFID implementation, with the post-regulation period defined as from 2007 onwards. This window allows us to capture both pre-regulation baseline behavior and post-regulation effects while minimizing contamination from other concurrent regulatory changes (Gao et al., 2020).

Our final sample consists of 18,045 firm-year observations representing all available U.S. firms in the Compustat universe during the sample period. We apply standard data filters to ensure data quality, including the requirement for non-missing values for key variables and the exclusion of financial firms due to their unique regulatory environment. The treatment group consists of all firms in the post-MiFID period, while the control group includes the same firms in the pre-MiFID period, providing a comprehensive examination of the regulatory spillover effects. We do not impose additional sample restrictions beyond standard data availability requirements, as our research question focuses on the broad impact of MiFID on the entire population of U.S. public firms rather than specific subsets (Christensen et al., 2013; Leuz and Wysocki, 2016).

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 18,045 firm-year observations from 4,856 unique U.S. firms spanning the period 2005 to 2009. This timeframe captures the implementation period of the Markets in Financial Instruments Directive (MiFID) in the European Union, allowing us to examine its effects on U.S. firms' institutional ownership patterns. The sample represents a diverse cross-section of publicly traded companies across multiple industries.

We examine several key variables related to firm characteristics and institutional ownership. Institutional ownership (linstown) exhibits substantial variation, with a mean of 54.6% and standard deviation of 32.1%. The distribution appears relatively symmetric, as evidenced by the close alignment between the mean and median (58.1%). The interquartile range spans from 25.7% to 82.3%, indicating considerable heterogeneity in institutional ownership across our sample firms.

Firm size (lsize) shows typical characteristics for U.S. public companies, with a mean of 5.976 and median of 5.906, suggesting a roughly normal distribution. The book-to-market ratio (lbtm) displays a mean of 0.579 and median of 0.477, with the positive skew indicating the presence of high book-to-market firms in our sample. Profitability, measured by return on assets (lroa), presents interesting patterns with a slightly negative mean (-0.038) but positive median (0.025), reflecting the inclusion of loss-making firms during this economically turbulent period.

Stock returns (lsaret12) exhibit negative performance on average (-1.5%), consistent with the challenging market conditions during our sample period, which encompasses the 2008 financial crisis. The substantial standard deviation (46.1%) reflects the high volatility characteristic of this era. Earnings volatility (levol) shows considerable dispersion, with a mean of 15.1% and standard deviation of 29.1%, indicating significant heterogeneity in earnings quality across firms.

Loss firms comprise approximately 30.2% of our sample (lloss), which aligns with expectations given the economic downturn during the latter part of our sample period. Idiosyncratic risk (lcalrisk) averages 25.6%, consistent with prior literature on U.S. equity markets. The mutual fund frequency variable (freqMF) exhibits substantial variation, with many firms showing zero frequency while others demonstrate high institutional trading activity.

Our treatment variables confirm the research design structure, with post_law indicating that 58.2% of observations occur in the post-MiFID period. The time_trend variable spans from 0 to 4, representing the five-year sample period. These descriptive statistics provide confidence in our sample's representativeness and suggest sufficient variation to identify the effects of MiFID implementation on institutional ownership patterns among U.S. firms.

RESULTS

Regression Analysis

We examine the association between MiFID implementation and U.S. firms' voluntary disclosure using a difference-in-differences research design with varying model specifications. Contrary to our hypothesis, we find a consistent negative association between MiFID implementation and voluntary disclosure by U.S. firms across all three specifications. The treatment effect ranges from -0.0797 in the baseline specification (1) to -0.0455 in the most restrictive specification (3) with firm fixed effects. These results suggest that MiFID implementation is associated with a decrease, rather than an increase, in voluntary disclosure by U.S. firms. This finding contradicts our theoretical prediction that enhanced European market transparency would create positive spillover effects through unsophisticated investor demand channels. The negative coefficient indicates that firms with greater exposure to unsophisticated investors who experienced MiFID's enhanced transparency requirements actually reduced their voluntary disclosure relative to firms with less such exposure.

The treatment effect demonstrates strong statistical significance across all specifications, with t-statistics ranging from -3.77 to -7.72 and p-values below 0.001, providing robust evidence against the null hypothesis of no association. The economic magnitude of the effect, while statistically significant, appears modest in absolute terms. The most conservative estimate from specification (3) suggests that MiFID implementation is

associated with a 4.55 percentage point decrease in voluntary disclosure for treated firms relative to control firms. However, the economic significance must be evaluated in the context of typical voluntary disclosure levels and the specific measurement scale employed. The progression across model specifications reveals important insights about model fit and robustness. The R-squared increases substantially from 0.19% in specification (1) to 25.47% in specification (2) with control variables, and dramatically to 85.31% in specification (3) with firm fixed effects, indicating that firm-specific characteristics explain considerable variation in voluntary disclosure practices. Importantly, the treatment effect remains negative and statistically significant across all specifications, though it attenuates from -0.0797 to -0.0455 as we include additional controls and fixed effects, suggesting that the core finding is robust to alternative model specifications.

The control variable effects in specifications (2) and (3) provide insights into the determinants of voluntary disclosure and largely align with prior literature. Institutional ownership (linstown) exhibits a positive and significant coefficient (0.8019) in specification (2), consistent with institutional investors demanding greater transparency, though this effect becomes insignificant when firm fixed effects are included. Firm size (lsize) consistently shows a positive association with voluntary disclosure across specifications, supporting the established finding that larger firms provide more voluntary disclosure. The negative coefficient on book-to-market ratio (lbtm) and the positive coefficient on ROA (lroa) in specification (2) align with theoretical predictions that growth firms and more profitable firms engage in greater voluntary disclosure, though these effects become insignificant with firm fixed effects. Notably, the loss indicator (lloss) consistently shows a strong negative association with voluntary disclosure, suggesting that loss-making firms reduce their disclosure, which contradicts some theoretical predictions about firms with bad news increasing disclosure to maintain credibility. These results fundamentally contradict our stated hypothesis (H1) that MiFID implementation would be positively associated with increased

voluntary disclosure by U.S. firms through the unsophisticated investor channel. Instead, we find robust evidence of a negative association that persists across multiple model specifications. This finding suggests that our theoretical mechanism may be incomplete or that alternative economic forces dominate the hypothesized spillover effect. Possible explanations for this unexpected result include substitution effects where improved European market transparency reduces the relative value of U.S. voluntary disclosure, competitive responses where firms strategically reduce disclosure when facing enhanced transparency elsewhere in investors' portfolios, or measurement issues in capturing the relevant treatment and control groups.

CONCLUSION

This study examines whether the implementation of the Markets in Financial Instruments Directive (MiFID) in the European Union influenced voluntary disclosure practices among U.S. firms through the investors channel. We investigate whether enhanced transparency requirements and investor protection measures in European markets created competitive pressures that induced U.S. firms to increase their voluntary disclosure to maintain access to global capital markets and attract international investors. Our empirical analysis employs a difference-in-differences research design comparing U.S. firms with varying degrees of exposure to European investors before and after MiFID's implementation in 2007.

Our findings reveal a statistically significant negative association between MiFID implementation and voluntary disclosure among U.S. firms, contrary to our initial expectations. Across all three specifications, we document consistent evidence that U.S. firms reduced their voluntary disclosure following MiFID's introduction. The treatment effect ranges from -0.0455 to -0.0797, with t-statistics between 3.77 and 7.72, indicating strong statistical significance at conventional levels. The magnitude of this effect suggests that firms most exposed to European investors through the investors channel decreased their voluntary

disclosure by approximately 4.6 to 8.0 percentage points relative to less exposed firms. The robustness of these results across specifications with varying control variables and the substantial increase in R-squared from 0.0019 in the baseline specification to 0.8531 in the most comprehensive model demonstrates the reliability of our findings.

These results suggest an unexpected substitution effect rather than the anticipated complementary relationship between regulatory-mandated transparency and voluntary disclosure. The negative treatment effect indicates that U.S. firms may have viewed the enhanced transparency requirements imposed by MiFID on European market participants as reducing the marginal benefit of voluntary disclosure. This finding aligns with theoretical predictions that mandatory disclosure can crowd out voluntary disclosure when the incremental information value diminishes (Dye, 1985; Verrecchia, 1990). The consistent significance of firm size, stock returns, and loss indicators across specifications reinforces the validity of our empirical approach and suggests that traditional determinants of voluntary disclosure remain important even in the presence of international regulatory changes.

Our findings carry important implications for regulators designing transparency frameworks in an increasingly interconnected global capital market environment. The evidence suggests that regulatory initiatives in one jurisdiction can have unintended spillover effects on disclosure practices in other markets through the investors channel. Regulators should consider these cross-border effects when implementing new transparency requirements, as the global optimization of disclosure may differ from domestic considerations alone. The substitution effect we document indicates that international regulatory coordination may be necessary to achieve desired transparency outcomes, as firms may strategically adjust their disclosure practices across jurisdictions in response to regulatory changes (Christensen et al., 2013; Shroff et al., 2013).

For corporate managers, our results highlight the importance of considering international regulatory developments when making disclosure decisions. The significant negative treatment effect suggests that managers perceived MiFID-induced transparency improvements in European markets as reducing the competitive advantage of voluntary disclosure. This finding implies that managers should adopt a global perspective when evaluating the costs and benefits of voluntary disclosure, particularly when their firms have significant exposure to international investors. For investors, our evidence indicates that regulatory changes in foreign markets can influence the information environment of domestic firms, potentially affecting investment decisions and portfolio allocation strategies.

Our study contributes to the growing literature examining the international spillover effects of financial regulation and extends prior research on the determinants of voluntary disclosure in global capital markets. The findings complement studies documenting how international regulatory harmonization affects firm behavior and information production (Leuz, 2010; DeFond et al., 2011). However, our evidence of a substitution rather than complementary effect between foreign regulatory requirements and domestic voluntary disclosure adds nuance to the understanding of how firms respond to changes in the global regulatory landscape.

Several limitations constrain the interpretation of our findings and suggest avenues for future research. First, our identification strategy relies on the assumption that treatment and control groups would have exhibited parallel trends in voluntary disclosure absent MiFID implementation. While our empirical design includes extensive controls and fixed effects, unobserved factors correlated with both European investor exposure and disclosure decisions could bias our estimates. Second, our measure of voluntary disclosure may not capture all dimensions of information provision that firms use to communicate with investors, potentially understating the full effect of MiFID on corporate transparency.

Future research should explore the mechanisms underlying the substitution effect we document, particularly examining whether the reduction in voluntary disclosure reflects changes in information demand from investors or strategic disclosure decisions by managers. Additionally, investigating the long-term effects of MiFID on U.S. disclosure practices and examining similar spillover effects from other major regulatory initiatives would enhance understanding of international regulatory interdependence. Research examining firm-level heterogeneity in responses to foreign regulatory changes could provide insights into which types of firms are most sensitive to international regulatory developments through the investors channel.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	18,045	0.6445	0.9100	0.0000	0.0000	1.6094
Treatment Effect	18,045	0.5823	0.4932	0.0000	1.0000	1.0000
Institutional ownership	18,045	0.5465	0.3208	0.2574	0.5809	0.8228
Firm size	18,045	5.9763	2.0179	4.5194	5.9058	7.3195
Book-to-market	18,045	0.5791	0.5635	0.2750	0.4769	0.7395
ROA	18,045	-0.0382	0.2507	-0.0220	0.0248	0.0702
Stock return	18,045	-0.0145	0.4614	-0.2780	-0.0879	0.1438
Earnings volatility	18,045	0.1509	0.2914	0.0227	0.0552	0.1498
Loss	18,045	0.3024	0.4593	0.0000	0.0000	1.0000
Class action litigation risk	18,045	0.2560	0.2575	0.0701	0.1561	0.3481
Time Trend	18,045	1.9447	1.4164	1.0000	2.0000	3.0000

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

Table 2
Pearson Correlations
Markets in Financial Instruments Directive MiFID European Union 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	**-0.04**	**0.12**	-0.01	**0.16**	**-0.05**	**-0.03**	0.01	**0.06**	**-0.15**
FreqMF	**-0.04**	1.00	**0.44**	**0.44**	**-0.13**	**0.23**	**-0.02**	**-0.14**	**-0.26**	0.00
Institutional ownership	**0.12**	**0.44**	1.00	**0.63**	**-0.07**	**0.26**	**-0.13**	**-0.20**	**-0.20**	0.01
Firm size	-0.01	**0.44**	**0.63**	1.00	**-0.30**	**0.35**	**0.02**	**-0.25**	**-0.38**	**0.07**
Book-to-market	**0.16**	**-0.13**	**-0.07**	**-0.30**	1.00	**0.03**	**-0.21**	**-0.12**	**0.12**	**-0.14**
ROA	**-0.05**	**0.23**	**0.26**	**0.35**	**0.03**	1.00	**0.19**	**-0.52**	**-0.62**	**-0.15**
Stock return	**-0.03**	**-0.02**	**-0.13**	**0.02**	**-0.21**	**0.19**	1.00	**-0.04**	**-0.20**	**-0.06**
Earnings volatility	0.01	**-0.14**	**-0.20**	**-0.25**	**-0.12**	**-0.52**	**-0.04**	1.00	**0.36**	**0.23**
Loss	**0.06**	**-0.26**	**-0.20**	**-0.38**	**0.12**	**-0.62**	**-0.20**	**0.36**	1.00	**0.18**
Class action litigation risk	**-0.15**	0.00	0.01	**0.07**	**-0.14**	**-0.15**	**-0.06**	**0.23**	**0.18**	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 Markets in Financial Instruments Directive MiFID European Union on Management Forecast Frequency

	(1)	(2)	(3)
Treatment Effect	-0.0797*** (7.72)	-0.0634*** (4.89)	-0.0455*** (3.77)
Institutional ownership		0.8019*** (17.37)	-0.0587 (0.93)
Firm size		0.0948*** (10.65)	0.1356*** (10.91)
Book-to-market		-0.0328** (2.29)	-0.0204 (1.51)
ROA		0.1178*** (3.68)	0.0275 (0.97)
Stock return		-0.0423*** (3.47)	-0.0376*** (4.06)
Earnings volatility		0.0816*** (2.66)	-0.1197*** (3.19)
Loss		-0.2137*** (10.74)	-0.1197*** (8.31)
Class action litigation risk		-0.0311 (1.04)	-0.0227 (1.16)
Time Trend		-0.0227*** (3.86)	-0.0016 (0.28)
Firm fixed effects	No	No	Yes
N	18,045	18,045	18,045
R^2	0.0019	0.2547	0.8531

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