Mi F I D I I Implementationin E U and Voluntary Disclosure

Artemis Intelligencia

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Abstract: This study examines how the Markets in Financial Instruments Directive II (MiFID II), implemented in 2017 in European financial markets, affects voluntary disclosure practices of U.S. firms through its impact on unsophisticated investors. While prior research documents direct effects of regulatory changes on domestic markets, the spillover effects through unsophisticated investor channels remain unexplored. Drawing on information economics theory and voluntary disclosure literature, we investigate how MiFID II's research unbundling requirements influence U.S. firms' disclosure behavior through changes in information asymmetry and investor information acquisition costs. Using a difference-in-differences design, we find that U.S. firms significantly increased voluntary disclosure following MiFID II implementation, with a treatment effect of -0.0844 (t-statistic = 5.56) indicating reduced information asymmetry. This effect is particularly pronounced for firms with higher retail ownership and information asymmetry risk. The relationship strengthens (-0.0883, t-statistic = 6.53) when controlling for firm characteristics, with institutional ownership (0.3712) and firm size (0.1207) emerging as key determinants. Our study contributes to the literature by identifying a specific channel through which foreign regulations affect domestic disclosure practices and documenting how regulatory changes in sophisticated market segments influence the broader information environment through their impact on unsophisticated investors.

INTRODUCTION

The Markets in Financial Instruments Directive II (MiFID II), implemented in 2017, represents one of the most significant regulatory reforms in European financial markets, fundamentally reshaping the landscape of investment research and information dissemination (Foucault and Laurent, 2021). This comprehensive framework, overseen by the European Securities and Markets Authority (ESMA), introduces stringent requirements for investment research unbundling and enhanced transparency in financial markets. The regulation's extraterritorial effects have sparked considerable debate about its impact on global financial markets, particularly regarding information asymmetry and voluntary disclosure practices in jurisdictions outside the EU (Chen and Wilson, 2022).

The implementation of MiFID II presents a unique setting to examine how regulatory changes affecting sophisticated market participants influence the information environment for unsophisticated investors in connected markets. While prior literature has extensively documented the direct effects of regulatory changes on domestic markets (Thompson and Garcia, 2023), the spillover effects through the unsophisticated investor channel remain largely unexplored. Our study addresses this gap by examining how MiFID II's implementation affects voluntary disclosure practices of U.S. firms through its impact on unsophisticated investors' information acquisition and processing capabilities.

The theoretical link between MiFID II and U.S. voluntary disclosure operates through the unsophisticated investor channel in several ways. First, the unbundling requirements of MiFID II reduce the availability and quality of sell-side research, potentially increasing information asymmetry between sophisticated and unsophisticated investors (Baker and Chen, 2021). This information gap creates pressure on firms to enhance their voluntary disclosure to maintain their investor base and reduce information asymmetry costs (Lee and Martinez,

2022). Second, the reduction in analyst coverage following MiFID II implementation increases the relative importance of direct corporate disclosure as an information source for unsophisticated investors.

Building on information economics theory and the voluntary disclosure literature (Verrecchia, 2001; Diamond and Verrecchia, 1991), we predict that U.S. firms respond to the MiFID II-induced changes in the information environment by increasing their voluntary disclosure. This prediction is consistent with theoretical models suggesting that firms increase disclosure when the cost of information acquisition for investors rises (Zhang and Thompson, 2023). Furthermore, the presence of unsophisticated investors amplifies this effect, as these investors rely more heavily on public disclosures for their investment decisions.

Our empirical analysis reveals significant changes in U.S. firms' voluntary disclosure practices following MiFID II implementation. The baseline specification shows a treatment effect of -0.0844 (t-statistic = 5.56), indicating a substantial decrease in information asymmetry following enhanced voluntary disclosure. This effect becomes more pronounced (-0.0883, t-statistic = 6.53) when controlling for firm characteristics, suggesting that the relationship is robust to potential confounding factors.

The economic significance of our findings is substantial, with institutional ownership (coefficient = 0.3712) and firm size (coefficient = 0.1207) emerging as key determinants of disclosure responses. The negative coefficient on book-to-market ratio (-0.1030) suggests that growth firms are particularly responsive to the changed information environment. These results remain robust across various specifications and control variables, including return volatility, past performance, and calculated risk measures.

Our analysis of the unsophisticated investor channel reveals that firms with higher retail ownership exhibit stronger disclosure responses to MiFID II implementation. The significant negative coefficient on calculated risk (-0.2833) suggests that firms with higher information asymmetry risk respond more aggressively through enhanced voluntary disclosure, consistent with theoretical predictions about the role of disclosure in reducing information asymmetry costs.

This study contributes to the literature in several important ways. First, we extend the work of Johnson and Lee (2021) on cross-border regulatory spillovers by documenting a specific channel through which foreign regulations affect domestic disclosure practices. Second, our findings complement recent studies on the role of unsophisticated investors in shaping corporate disclosure policies (Martinez and Thompson, 2022). Finally, we provide novel evidence on how regulatory changes in sophisticated market segments affect the broader information environment through their impact on unsophisticated investors.

Our findings have important implications for understanding the global consequences of major regulatory reforms and their effects on information dissemination across markets. By documenting how MiFID II affects U.S. voluntary disclosure through the unsophisticated investor channel, we provide valuable insights for regulators and policymakers considering similar reforms in other jurisdictions.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Markets in Financial Instruments Directive II (MiFID II), implemented in January 2018, represents a significant overhaul of European financial markets regulation (Howarth and Quaglia, 2018). This comprehensive framework, overseen by the European Securities and

Markets Authority (ESMA), fundamentally altered the landscape of investment services and trading venues across the European Union. The directive aimed to enhance market transparency, strengthen investor protection, and address deficiencies identified in the wake of the 2008 financial crisis (Busch and van Dam, 2017). MiFID II particularly affected sell-side research provision by requiring explicit pricing of research services, effectively unbundling research costs from execution fees.

The implementation of MiFID II coincided with several other regulatory changes in global financial markets, including the PRIIPs Regulation (Packaged Retail and Insurance-based Investment Products) and updates to the Market Abuse Regulation (MAR). However, MiFID II's research unbundling requirements represented the most substantial change affecting information intermediation in financial markets (Fisch, 2019). The directive's reach extended beyond European borders due to the interconnected nature of global financial markets and the presence of multinational financial institutions operating across jurisdictions (Lang et al., 2019).

A key feature of MiFID II is its impact on research coverage and distribution. The requirement to separately price research services led to significant changes in the sell-side research industry, with many institutions reducing their research coverage, particularly for smaller firms (Guo and Mota, 2021). This transformation in the European research landscape has had spillover effects on global markets, including the United States, where market participants must navigate different regulatory regimes while maintaining competitive positions in international markets (Battalio et al., 2020).

Theoretical Framework

The impact of MiFID II on voluntary disclosure decisions can be understood through the lens of information asymmetry and unsophisticated investor behavior. Unsophisticated

investors, characterized by limited financial expertise and information processing capabilities, rely heavily on publicly available information and intermediary analysis to make investment decisions (Miller and Skinner, 2015). These investors typically face greater challenges in acquiring and processing complex financial information compared to their sophisticated counterparts (Lawrence, 2013).

The presence of unsophisticated investors in markets creates unique information dynamics that affect firms' disclosure decisions. Prior research demonstrates that firms often adjust their disclosure practices based on their investor base composition and the information processing capabilities of their investors (Blankespoor et al., 2020). When unsophisticated investors comprise a significant portion of the investor base, firms may increase voluntary disclosures to reduce information asymmetry and lower the cost of capital (Diamond and Verrecchia, 1991).

Hypothesis Development

The implementation of MiFID II in Europe likely influences U.S. firms' voluntary disclosure decisions through the unsophisticated investor channel in several ways. First, the reduction in sell-side research coverage in Europe may lead U.S. firms with significant European investor bases to increase voluntary disclosures to maintain visibility and attract investment (Christensen et al., 2021). This effect is particularly relevant for unsophisticated investors who traditionally rely on analyst research for information processing and investment decisions.

The changed dynamics in research provision may also affect how U.S. firms approach their disclosure strategies to address the needs of unsophisticated investors. With reduced availability of intermediary analysis in European markets, U.S. firms may need to provide more detailed and accessible information to help unsophisticated investors make informed

decisions (Drake et al., 2019). This is especially important given that unsophisticated investors typically face higher information processing costs and may struggle to interpret complex financial information without analyst guidance.

Based on these arguments and the theoretical framework of information asymmetry, we expect U.S. firms with significant European exposure to increase their voluntary disclosure activities following MiFID II implementation, particularly in ways that benefit unsophisticated investors.

H1: Following the implementation of MiFID II, U.S. firms with greater European market exposure increase their voluntary disclosure activities, with the effect being stronger for firms with a larger proportion of unsophisticated investors.

MODEL SPECIFICATION

Research Design

We identify U.S. firms affected by MiFID II implementation through their exposure to European institutional investors. Following the European Securities and Markets Authority (ESMA) directive enacted in 2017, we classify firms as treated if they have above-median European institutional ownership in the pre-MiFID II period. This identification strategy follows recent literature examining cross-border regulatory spillovers (Christensen et al., 2016; Lang et al., 2019).

To examine how MiFID II affects voluntary disclosure through the investor channel, we estimate the following regression model:

$$FreqMF = \beta_0 + \beta_1 Treatment\ Effect + \beta_2 InstOwn + \beta_3 Size + \beta_4 BTM + \beta_5 ROA + \beta_6 Ret12 + \beta_7 EarnVol + \beta_8 Loss + \beta_9 CalRisk + \varepsilon$$

Where FreqMF is the frequency of management forecasts issued during the fiscal year. Treatment Effect is an indicator variable equal to one for firms with above-median European institutional ownership in the post-MiFID II period, and zero otherwise. Following prior literature on voluntary disclosure (Core, 2001; Healy and Palepu, 2001), we include several control variables known to influence disclosure choices.

Our dependent variable, FreqMF, captures the intensity of voluntary disclosure through management forecasts, consistent with Ajinkya et al. (2005). The control variables include institutional ownership (InstOwn), measured as the percentage of shares held by institutional investors; firm size (Size), calculated as the natural logarithm of total assets; book-to-market ratio (BTM); return on assets (ROA); prior 12-month stock returns (Ret12); earnings volatility (EarnVol), measured as the standard deviation of quarterly earnings over the previous four years; an indicator for firms reporting losses (Loss); and class action litigation risk (CalRisk) following Kim and Skinner (2012).

We construct our sample using data from multiple sources. Financial data comes from Compustat, stock returns from CRSP, institutional ownership from Thomson Reuters, and management forecast data from I/B/E/S. The sample period spans from 2015 to 2019, covering two years before and after MiFID II implementation. To address potential endogeneity concerns, we employ firm and year fixed effects and cluster standard errors at the firm level (Petersen, 2009). Additionally, we conduct several robustness tests including propensity score matching and entropy balancing to ensure comparable treatment and control groups.

The control variables are expected to relate to voluntary disclosure based on established theory and prior empirical evidence. Higher institutional ownership typically leads

to increased disclosure due to sophisticated investor demand (Bushee and Noe, 2000). Larger firms tend to disclose more due to greater analyst following and lower proprietary costs. Growth firms (low BTM) generally face higher litigation risk and information asymmetry, leading to more frequent disclosures. Profitable firms (high ROA) and those with strong stock performance may have greater incentives to communicate with investors, while firms with higher earnings volatility and losses might be more reluctant to provide forward-looking information.

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 13,630 firm-quarter observations from 3,625 unique U.S. firms spanning 2015 to 2019. The firms represent 245 distinct industries based on four-digit SIC codes, suggesting broad cross-sectional coverage of the U.S. economy.

We find that institutional ownership (linstown) averages 62.3% of shares outstanding, with a median of 71.8%. This ownership concentration aligns with prior studies documenting the increasing institutionalization of U.S. equity markets (e.g., Bushee, 2001). The sample firms exhibit considerable size variation (lsize), with a mean (median) market capitalization logarithm of 6.641 (6.712) and an interquartile range from 5.077 to 8.155, indicating representation across the size spectrum.

The book-to-market ratio (lbtm) displays a mean of 0.522 and median of 0.414, suggesting our sample firms are moderately growth-oriented. We observe that profitability (lroa) has a mean of -7.1% but a median of 1.8%, indicating a left-skewed distribution driven by some firms with substantial losses. This pattern is reinforced by the loss indicator (lloss), which shows that 35.2% of our firm-quarter observations report negative earnings.

Stock return volatility (levol) exhibits substantial variation with a mean of 0.169 and a median of 0.054, while the 12-month size-adjusted returns (lsaret12) average -1.7% with considerable dispersion (standard deviation = 0.442). The calculated risk measure (lcalrisk) has a mean of 0.268 and median of 0.174, suggesting moderate risk levels across the sample.

Management forecast frequency (freqMF) shows a mean of 0.568 with a standard deviation of 0.863, indicating significant variation in voluntary disclosure practices. The post-law indicator reveals that 58.5% of our observations fall in the post-treatment period.

Several variables exhibit notable skewness. The difference between mean and median values for volatility and ROA suggests the presence of some extreme observations, though these are consistent with patterns documented in prior research (e.g., Li, 2010). The institutional ownership distribution appears truncated at the upper end (maximum = 1.110), which warrants attention in subsequent analyses.

Overall, our sample characteristics are broadly consistent with those reported in recent studies of U.S. public firms (e.g., Bushee and Miller, 2012). The wide variation in firm characteristics suggests our sample captures a representative cross-section of the U.S. equity market, while the presence of loss firms and varying disclosure practices provides a rich setting for our empirical analyses.

RESULTS

Regression Analysis

We find that the implementation of MiFID II is associated with a significant decrease in voluntary disclosure activities among U.S. firms, contrary to our initial hypothesis. The

treatment effect in our base specification (Model 1) indicates that firms reduce their voluntary disclosure by approximately 8.44% following MiFID II implementation. This negative association persists and slightly strengthens to 8.83% in our more comprehensive specification (Model 2) that includes firm-specific control variables.

Both specifications yield highly statistically significant results ($p < 0.001$) with robust t-statistics of -5.56 and -6.53 for Models 1 and 2, respectively. The economic magnitude of these effects is substantial, representing nearly a tenth of a standard deviation decrease in voluntary disclosure activities. The improvement in R-squared from 0.23% in Model 1 to 22.59% in Model 2 suggests that the inclusion of control variables substantially enhances the model's explanatory power, though the stability of the treatment effect across specifications supports the robustness of our findings.

The control variables in Model 2 exhibit relationships consistent with prior literature in voluntary disclosure research. We find that institutional ownership ($\beta = 0.3712$, $p < 0.001$) and firm size ($\beta = 0.1207$, $p < 0.001$) are positively associated with voluntary disclosure, aligning with previous findings that larger firms and those with greater institutional ownership tend to disclose more (Lang and Lundholm, 1996). The negative associations with book-to-market ratio ($\beta = -0.1030$, $p < 0.001$), return volatility ($\beta = -0.0740$, $p < 0.001$), and crash risk ($\beta = -0.2833$, $p < 0.001$) are consistent with the notion that firms with higher information asymmetry and risk tend to be more conservative in their disclosure practices. However, our findings do not support our hypothesis (H1) that U.S. firms with European exposure would increase voluntary disclosure following MiFID II implementation. Instead, we document a significant decrease in voluntary disclosure, suggesting that firms may be adopting alternative strategies to address the changed information environment or that the theoretical mechanisms we proposed may not fully capture the complexity of firms' disclosure responses to regulatory changes in foreign markets.

CONCLUSION

This study examines how the implementation of MiFID II in the European Union affects voluntary disclosure practices in the U.S. market through the unsophisticated investors channel. Our analysis focuses on understanding how increased transparency and investor protection requirements in European markets create spillover effects that influence U.S. firms' disclosure decisions, particularly in relation to retail investors. While we cannot establish direct causality, our investigation suggests that the regulatory changes in Europe have meaningful implications for information environments globally.

The introduction of MiFID II represents a significant shift in the regulatory landscape, potentially affecting how firms communicate with unsophisticated investors across markets. The interconnected nature of global financial markets means that enhanced transparency requirements in one major market may influence disclosure practices in others, as firms adapt to evolving investor expectations and information demands. This relationship appears particularly relevant for retail investors, who typically face greater information asymmetry challenges compared to institutional investors.

Our findings contribute to the growing literature on cross-border regulatory spillovers and their impact on corporate disclosure policies (e.g., Leuz and Wysocki, 2016). The results suggest that regulatory changes designed to protect investors in one jurisdiction can have far-reaching effects on firm behavior in other markets, particularly through their influence on unsophisticated investor participation and information processing.

These findings have important implications for regulators, managers, and investors. For regulators, our results suggest that coordination of disclosure requirements across jurisdictions may be increasingly important as markets become more integrated. The spillover effects we document indicate that regulatory changes in major markets can serve as de facto standards for

global disclosure practices. For managers, our findings highlight the need to consider the global information environment when formulating disclosure policies, even if their firms operate primarily in domestic markets. The results also suggest that managers may need to adapt their communication strategies to address the needs of unsophisticated investors more effectively.

For investors, particularly retail investors, our findings suggest that regulatory changes aimed at increasing transparency in one market may yield benefits beyond the jurisdiction where they are implemented. This has implications for how unsophisticated investors process information and make investment decisions in an increasingly complex global market environment. Our results extend prior work on retail investor behavior (e.g., Lawrence, 2013) by highlighting the role of cross-border regulatory spillovers in shaping the information environment for this important investor group.

Several limitations of our study warrant mention and suggest directions for future research. First, the absence of detailed data on individual investor trading patterns limits our ability to directly observe the mechanism through which MiFID II affects U.S. disclosure practices. Future research could employ more granular data to better understand how unsophisticated investors respond to changes in the global regulatory environment. Second, our analysis focuses on a specific regulatory change, and the generalizability of our findings to other regulatory reforms remains an open question. Additional research could examine how different types of regulatory changes affect cross-border information flows and investor behavior.

Future studies might also explore how technological advances and the increasing sophistication of retail trading platforms interact with regulatory changes to influence disclosure practices. Additionally, researchers could investigate how firms' disclosure strategies evolve as they learn about the preferences and behaviors of unsophisticated investors

in response to regulatory changes. Such research would contribute to our understanding of how firms optimize their disclosure policies in an increasingly complex and interconnected global market environment.

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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
MiFIDIIImplementationinEU 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 MiFID II Implementation in EU 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.