European Market Infrastructure Regulation EMIR European Union and Voluntary Disclosure

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Abstract: The European Market Infrastructure Regulation (EMIR), implemented in 2012, represents a significant regulatory reform in global derivatives markets following the 2008 financial crisis, mandating central clearing and imposing rigorous reporting requirements to reduce systemic risk and increase market transparency. EMIR's influence extends beyond European borders, creating spillover effects that impact U.S. financial markets through information asymmetry channels, as the regulation's transparency provisions fundamentally alter the information environment for multinational corporations operating across jurisdictions. This study investigates whether EMIR implementation led to increased voluntary disclosure among U.S. firms and examines the economic channels through which this effect operates. Building on information asymmetry theory and signaling theory, we predict that EMIR's transparency requirements create new benchmarks for information disclosure, reducing proprietary costs while increasing benefits of signaling superior risk management. Our empirical analysis provides robust evidence supporting the hypothesized relationship, with treatment effects ranging from 0.0409 to 0.0579 across specifications, all statistically significant at $p < 0.001$. The baseline specification yields a treatment effect of 0.0579, indicating that EMIR implementation led to a meaningful increase in voluntary disclosure measures among U.S. firms. These findings demonstrate that foreign regulatory changes can have substantial spillover effects on domestic corporate disclosure practices through

information asymmetry reduction mechanisms, contributing to literature on cross-border regulatory spillovers and extending understanding of voluntary disclosure determinants in an increasingly integrated global economy.

INTRODUCTION

The European Market Infrastructure Regulation (EMIR), implemented by the European Securities and Markets Authority (ESMA) in 2012, represents one of the most significant regulatory reforms in global derivatives markets following the 2008 financial crisis. This comprehensive regulation fundamentally transformed the landscape of over-the-counter derivatives trading by mandating central clearing, imposing rigorous reporting requirements, and establishing robust risk management standards for central counterparties and trade repositories (Duffie and Zhu, 2011; Acharya and Bisin, 2014). The regulation's primary objectives include reducing systemic risk, increasing market transparency, and enhancing the stability of financial markets through standardized clearing and comprehensive trade reporting mechanisms.

EMIR's influence extends far beyond European borders, creating spillover effects that impact U.S. financial markets through the information asymmetry channel. The regulation's mandatory reporting requirements and enhanced transparency provisions fundamentally alter the information environment for multinational corporations and financial institutions operating across both jurisdictions (Verrecchia, 2001; Dye, 2001). This cross-border regulatory influence raises critical questions about how European transparency mandates affect voluntary disclosure decisions by U.S. firms, particularly those with significant derivatives exposure or European operations. Despite extensive literature on regulatory spillovers and voluntary disclosure, limited research examines how foreign financial regulations specifically influence domestic disclosure practices through information asymmetry mechanisms. We address this gap by investigating whether EMIR implementation led to increased voluntary disclosure

among U.S. firms and through what economic channels this effect operates.

The theoretical foundation for EMIR's impact on U.S. voluntary disclosure rests on information asymmetry theory and its role in corporate disclosure decisions. When regulatory changes alter the information environment, firms face modified incentives to voluntarily disclose information to reduce information asymmetries with stakeholders (Healy and Palepu, 2001; Beyer et al., 2010). EMIR's comprehensive reporting requirements create a more transparent derivatives market, potentially reducing information asymmetries for firms with significant derivatives exposure. This enhanced transparency may incentivize U.S. firms to increase voluntary disclosure to maintain their competitive information advantage and signal their commitment to transparency to investors and creditors.

The cross-border nature of modern financial markets amplifies EMIR's influence on U.S. disclosure practices through several interconnected mechanisms. First, U.S. multinational corporations with European subsidiaries or significant European business operations face direct compliance requirements under EMIR, creating spillover effects on their overall disclosure strategies (Christensen et al., 2013; Shroff et al., 2013). Second, the regulation's impact on derivatives pricing and risk management practices affects the information content of financial statements, potentially motivating firms to provide additional voluntary disclosures to explain these changes to stakeholders. Third, competitive pressures within global financial markets may compel U.S. firms to match the enhanced transparency levels established by their European counterparts to maintain investor confidence and market access.

Building on signaling theory and proprietary cost considerations, we predict that EMIR implementation increases voluntary disclosure among U.S. firms through the information asymmetry channel (Verrecchia, 1983; Dye, 1985). The regulation's transparency requirements create new benchmarks for information disclosure in derivatives markets, reducing the proprietary costs associated with voluntary disclosure while simultaneously increasing the

benefits of signaling superior risk management and financial transparency. We hypothesize that firms with greater derivatives exposure or European market presence experience larger increases in voluntary disclosure following EMIR implementation, as these firms face stronger incentives to reduce information asymmetries created by the changing regulatory environment.

Our empirical analysis provides robust evidence supporting the hypothesized relationship between EMIR implementation and increased voluntary disclosure among U.S. firms. The treatment effect remains consistently positive and statistically significant across all specifications, with coefficients ranging from 0.0409 to 0.0579 (t-statistics between 4.21 and 6.18, $p < 0.001$). The baseline specification yields a treatment effect of 0.0579 ($t = 6.18$), indicating that EMIR implementation led to a statistically significant increase in voluntary disclosure measures. This effect persists when controlling for firm-specific characteristics, with the treatment coefficient of 0.0517 ($t = 4.24$) in the second specification, demonstrating the robustness of our findings to the inclusion of standard determinants of voluntary disclosure.

The control variables reveal important insights into the determinants of voluntary disclosure and validate our empirical approach. Institutional ownership (linstown = 0.5615, t = 11.47) and firm size (lsize = 0.1185, t = 12.32) exhibit the strongest positive associations with voluntary disclosure, consistent with prior literature on disclosure determinants (Bushee and Noe, 2000; Lang and Lundholm, 1993). Firms with losses (lloss = -0.1329, t = -6.12) and higher tail risk (lcalrisk = -0.1746, t = -5.40) demonstrate significantly lower voluntary disclosure levels, supporting theories that firms withhold information when it reflects poorly on management performance. The negative time trend coefficient (-0.0313, t = -6.72) suggests a general decline in voluntary disclosure over the sample period, making our positive treatment effect economically more meaningful.

The most comprehensive specification, including firm fixed effects, yields a treatment effect of 0.0409 ($t = 4.21$) with an R-squared of 0.9111, indicating substantial explanatory

power while maintaining statistical significance. The reduction in coefficient magnitude across specifications suggests that some of EMIR's effect operates through observable firm characteristics, yet a significant direct effect remains. The persistence of statistical significance across all specifications, combined with the economic magnitude of the coefficients, provides compelling evidence that EMIR implementation meaningfully increased voluntary disclosure among U.S. firms through the information asymmetry channel. These findings demonstrate that foreign regulatory changes can have substantial spillover effects on domestic corporate disclosure practices, operating through fundamental economic mechanisms such as information asymmetry reduction.

This study contributes to several streams of literature by documenting novel evidence of cross-border regulatory spillovers in corporate disclosure. Our findings extend the work of Christensen et al. (2013) and Shroff et al. (2013) on international regulatory influences by specifically examining how European derivatives regulation affects U.S. voluntary disclosure through information asymmetry channels. Unlike previous studies that focus primarily on direct regulatory compliance effects, we demonstrate that foreign regulations can influence domestic disclosure practices through indirect economic mechanisms. Our results also complement the voluntary disclosure literature by identifying a previously unexplored determinant of disclosure decisions—foreign regulatory changes in related markets (Healy and Palepu, 2001; Beyer et al., 2010).

The broader implications of our findings extend beyond the specific context of EMIR to inform understanding of global financial regulation and corporate disclosure strategies. Our evidence suggests that information asymmetry represents a crucial channel through which foreign regulations influence domestic corporate behavior, highlighting the interconnected nature of global financial markets. These findings have important implications for regulators designing cross-border coordination mechanisms and for firms developing disclosure

strategies in an increasingly integrated global economy. The documented spillover effects also contribute to the growing literature on the unintended consequences of financial regulation, demonstrating how regulatory changes can have far-reaching effects beyond their intended scope and jurisdiction.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The European Market Infrastructure Regulation (EMIR), implemented by the European Securities and Markets Authority (ESMA) in 2012, represents a comprehensive regulatory response to the systemic risks exposed during the 2008 financial crisis. EMIR primarily targets over-the-counter (OTC) derivatives markets, central counterparties, and trade repositories, establishing mandatory clearing requirements for standardized derivatives, imposing risk mitigation techniques for non-centrally cleared derivatives, and requiring comprehensive reporting to trade repositories (Duffie and Zhu, 2011; Acharya and Bisin, 2014). The regulation affects all financial and non-financial counterparties engaging in derivatives transactions within the European Union, including subsidiaries of U.S. multinational corporations operating in European markets (Loon and Zhong, 2014).

EMIR became effective on August 16, 2012, with a phased implementation approach extending through 2015. The clearing obligation for interest rate swaps and credit default swaps began in June 2016, while reporting requirements commenced earlier in February 2014 (Gregory, 2014). The regulation mandates that eligible derivatives contracts be cleared through authorized central counterparties, requires detailed transaction reporting to trade repositories, and imposes stringent risk management procedures including collateral requirements and daily mark-to-market valuations (Duffie, 2015). These requirements significantly increase compliance costs while simultaneously enhancing market transparency and reducing

counterparty risk (Acharya et al., 2009).

The implementation of EMIR occurred alongside other major regulatory initiatives following the financial crisis, including the Dodd-Frank Act in the United States (2010) and Basel III international banking regulations (2010-2019). However, EMIR's focus on derivatives market infrastructure distinguishes it from these contemporaneous regulations, creating unique cross-border compliance challenges for multinational corporations (Tett, 2009; Stulz, 2010). The extraterritorial reach of EMIR affects U.S. firms with European operations, potentially influencing their global disclosure strategies as they navigate increased regulatory scrutiny and transparency requirements in their derivatives activities (Coffee, 2007).

Theoretical Framework

EMIR's emphasis on transparency and standardization in derivatives markets creates a natural connection to information asymmetry theory, which examines how differences in information availability between market participants affect corporate behavior and market outcomes. Information asymmetry theory, rooted in the seminal work of Akerlof (1970) and further developed by Spence (1973) and Rothschild and Stiglitz (1976), posits that when some parties possess superior information relative to others, market inefficiencies and agency problems arise. In the context of corporate disclosure, managers typically possess private information about firm operations, future prospects, and risk exposures that outside investors cannot directly observe (Healy and Palepu, 2001).

The theory suggests that firms face strategic disclosure decisions when information asymmetries exist between management and external stakeholders. Diamond and Verrecchia (1991) demonstrate that voluntary disclosure can reduce information asymmetry by providing credible signals about firm quality and future performance. However, proprietary cost theory indicates that firms may withhold information when disclosure imposes competitive

disadvantages or reveals sensitive strategic information (Verrecchia, 1983). The tension between these forces creates an optimal disclosure equilibrium where firms balance the benefits of reduced information asymmetry against the costs of transparency.

EMIR's regulatory framework directly impacts this disclosure calculus for U.S. firms with European derivatives exposure by mandating unprecedented transparency in previously opaque OTC markets. The regulation's reporting requirements and standardization mandates reduce information asymmetries in derivatives markets while simultaneously increasing the information content available to market participants about firms' risk management practices (Bharath et al., 2008). This regulatory-induced transparency may influence U.S. firms' voluntary disclosure decisions as they respond to changing information environments and stakeholder information demands.

Hypothesis Development

The implementation of EMIR creates several economic mechanisms that theoretically link European derivatives regulation to voluntary disclosure decisions by U.S. firms through the information asymmetry channel. First, EMIR's comprehensive reporting requirements mandate that derivatives transactions be reported to trade repositories, creating a detailed audit trail of firms' risk management activities and exposures (Duffie and Zhu, 2011). For U.S. multinational corporations with European operations, this regulatory transparency requirement reduces information asymmetries between the firm and European regulators while simultaneously making derivatives-related information more accessible to sophisticated market participants. As information asymmetries decrease in one domain (derivatives activities), signaling theory suggests that firms may increase voluntary disclosure in other areas to maintain their reputation for transparency and to prevent adverse selection problems (Spence, 1973; Milgrom, 1981).

Second, EMIR's standardization requirements and central clearing mandates impose significant compliance costs and operational changes on affected firms, creating new information demands from investors and stakeholders seeking to understand the financial and operational implications of regulatory compliance (Acharya and Bisin, 2014). Information asymmetry theory predicts that when external information demands increase, firms face greater pressure to provide voluntary disclosure to satisfy stakeholder information needs and reduce the cost of capital (Diamond and Verrecchia, 1991). The complexity of EMIR compliance, particularly regarding collateral management and margin requirements, creates information gaps that firms may address through enhanced voluntary disclosure to maintain investor confidence and reduce uncertainty about regulatory compliance costs (Bharath et al., 2008). Additionally, the cross-border nature of EMIR regulation may increase coordination costs and operational complexity for U.S. multinationals, further amplifying information asymmetries that voluntary disclosure can help mitigate.

Third, EMIR's focus on systemic risk reduction and market stability may enhance the reputational benefits associated with voluntary disclosure for firms demonstrating proactive risk management and regulatory compliance (Coffee, 2007). Prior literature suggests that regulatory environments emphasizing transparency and risk management create incentives for firms to signal their commitment to these principles through voluntary disclosure (Healy and Palepu, 2001). The post-crisis regulatory environment, exemplified by EMIR's comprehensive approach to derivatives market regulation, increases the value of transparency-related reputational capital, making voluntary disclosure more attractive as a signaling mechanism. However, competing theoretical predictions emerge from proprietary cost theory, which suggests that increased regulatory scrutiny might incentivize firms to reduce voluntary disclosure to avoid revealing competitively sensitive information (Verrecchia, 1983). The empirical question becomes whether the information asymmetry reduction benefits of EMIR outweigh potential proprietary costs, with theory suggesting that the net effect depends on the

relative magnitude of these competing forces. Given EMIR's primary focus on standardization and transparency rather than competitive disclosure, we expect the information asymmetry reduction mechanism to dominate, leading to increased voluntary disclosure.

H1: The implementation of EMIR increases voluntary disclosure by U.S. firms with European derivatives exposure through the reduction of information asymmetries between management and external stakeholders.

RESEARCH DESIGN

Sample Selection and Regulatory Context

Our sample comprises all firms in the Compustat universe during the period surrounding the implementation of the European Market Infrastructure Regulation (EMIR) in 2012. EMIR, administered by the European Securities and Markets Authority (ESMA), represents a comprehensive regulatory framework designed to regulate over-the-counter derivatives, central counterparties, and trade repositories. While EMIR directly targets financial institutions and derivatives markets within the European Union, our analysis examines its spillover effects on voluntary disclosure practices across all U.S. firms in the Compustat universe. This broad sample approach allows us to capture the regulation's indirect effects through information asymmetry channels, as global regulatory changes can influence disclosure incentives even for firms not directly subject to the regulation (Leuz and Wysocki, 2016; Christensen et al., 2013). The treatment variable in our analysis affects all firms in the sample, reflecting the systemic nature of regulatory spillover effects in interconnected global markets.

Model Specification

We employ a pre-post regression design to examine the relationship between EMIR implementation and voluntary disclosure in the U.S. through the information asymmetry channel. Our primary regression model takes the form: $FreqMF = \beta_0 + \beta_1 Treatment\ Effect + \gamma Controls + \varepsilon$, where FreqMF represents management forecast frequency as our proxy for voluntary disclosure. The coefficient β_1 captures the treatment effect of EMIR implementation on voluntary disclosure practices. Following prior literature on voluntary disclosure determinants (Ajinkya et al., 2005; Bamber and Cheon, 1998), we include control variables that capture firm-specific characteristics known to influence management forecasting behavior: institutional ownership (linstown), firm size (lsize), book-to-market ratio (lbtm), return on assets (lroa), stock returns (lsaret12), earnings volatility (levol), loss indicator (lloss), and class action litigation risk (lcalrisk).

These control variables address potential confounding factors and help isolate the regulatory effect of interest. Institutional ownership and firm size control for monitoring intensity and information environment complexity, while book-to-market and profitability measures capture growth opportunities and performance incentives for disclosure (Waymire, 1985; Miller, 2002). The inclusion of stock return and volatility measures addresses market-based incentives for voluntary disclosure, and the litigation risk variable controls for legal considerations that may influence disclosure decisions (Skinner, 1994; Johnson et al., 2001). Our research design addresses potential endogeneity concerns through the exogenous nature of the regulatory shock, as EMIR implementation represents an external regulatory change unlikely to be influenced by individual U.S. firm disclosure decisions.

Variable Definitions

The dependent variable, FreqMF, measures the frequency of management earnings forecasts issued by each firm during the sample period, serving as our primary proxy for voluntary disclosure. This measure captures management's willingness to provide

forward-looking information to capital markets participants. The Treatment Effect variable is an indicator variable equal to one for the post-EMIR period from 2012 onwards, and zero otherwise, affecting all firms in our sample to capture the systematic impact of global regulatory changes on U.S. disclosure practices.

Our control variables follow established definitions from prior voluntary disclosure literature. Institutional ownership (linstown) represents the natural logarithm of the percentage of shares held by institutional investors, with higher institutional ownership expected to increase disclosure through enhanced monitoring (Ajinkya et al., 2005). Firm size (lsize) is measured as the natural logarithm of market capitalization, with larger firms typically providing more voluntary disclosure due to greater analyst following and investor demand (Bamber and Cheon, 1998). Book-to-market ratio (lbtm) captures growth opportunities, with growth firms having stronger incentives to communicate their prospects through voluntary disclosure. Return on assets (lroa) and stock returns (lsaret12) control for firm performance, as managers may have different disclosure incentives based on recent performance outcomes.

Earnings volatility (levol) measures the variability in quarterly earnings, with higher volatility potentially increasing information asymmetry and creating stronger incentives for voluntary disclosure to reduce uncertainty (Waymire, 1985). The loss indicator (lloss) equals one for firm-years with negative earnings, as loss firms may have different disclosure strategies compared to profitable firms. Class action litigation risk (lcalrisk) captures the legal environment facing each firm, as litigation concerns can both encourage disclosure for legal protection and discourage disclosure to avoid legal exposure (Skinner, 1994). These variables collectively address the key determinants of voluntary disclosure identified in prior research and help isolate the regulatory effect through the information asymmetry channel.

Sample Construction

We construct our sample using a five-year window centered on the 2012 EMIR implementation, spanning two years before and two years after the regulation. This event window allows us to capture both pre-regulation baseline disclosure patterns and post-regulation changes, with the post-regulation period defined as from 2012 onwards. We obtain financial statement data from Compustat, management forecast data from I/B/E/S, audit-related information from Audit Analytics, and stock return data from CRSP. The integration of these databases provides comprehensive coverage of firm characteristics, disclosure behavior, and market performance measures necessary for our analysis.

Our final sample consists of 15,115 firm-year observations after applying standard data availability requirements and outlier restrictions. We require firms to have complete data for all regression variables and exclude observations with missing values for key variables. Following standard practices in voluntary disclosure research, we winsorize continuous variables at the 1st and 99th percentiles to mitigate the influence of extreme observations (Hribar and Jenkins, 2004). In our research design, all firms serve as treated units in the post-EMIR period, reflecting our focus on systematic regulatory spillover effects rather than differential treatment based on firm characteristics. This approach allows us to examine how global regulatory changes influence voluntary disclosure practices across the entire population of U.S. public firms through information asymmetry channels, consistent with theories of regulatory spillovers in integrated capital markets (Coffee, 2007; Karolyi, 2012).

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 15,115 firm-year observations representing 3,878 unique U.S. firms over the period 2010 to 2014. This sample period captures the implementation of the European Market Infrastructure Regulation (EMIR) and allows us to examine its effects on

information asymmetry measures for U.S. firms with European market exposure.

We examine several key variables that capture firm characteristics and information asymmetry. Institutional ownership (linstown) exhibits substantial variation, with a mean of 55.6% and standard deviation of 33.3%. The distribution shows considerable heterogeneity, ranging from minimal institutional presence (0.1%) to concentrated institutional ownership exceeding 100%, likely reflecting overlapping holdings or measurement timing differences. The median institutional ownership of 62.7% aligns with prior literature documenting the prevalence of institutional investors in U.S. public firms.

Firm size (lsize) displays typical characteristics for publicly traded companies, with a mean log market value of 6.235 and standard deviation of 2.092. The interquartile range spans from 4.700 to 7.703, indicating our sample includes firms across the size spectrum from small-cap to large-cap companies. Book-to-market ratios (lbtm) average 0.654 with substantial cross-sectional variation (standard deviation of 0.621), consistent with diverse growth opportunities and valuation multiples across firms.

Profitability measures reveal interesting patterns. Return on assets (lroa) shows a slightly negative mean of -0.029, though the median of 0.024 suggests the distribution is left-skewed due to firms with substantial losses. This pattern is corroborated by the loss indicator (lloss), which shows 31.1% of firm-years report losses. Stock returns (lsaret12) average 1.2% with high volatility (standard deviation of 48.4%), reflecting the market conditions during our sample period.

Earnings volatility (levol) exhibits the expected right-skewed distribution with a mean of 0.132 and median of 0.053, indicating most firms maintain relatively stable earnings with some experiencing high volatility. Analyst coverage risk (lcalrisk) averages 0.366, suggesting moderate information asymmetry across our sample firms.

The management forecast frequency variable (freqMF) shows considerable variation, with a mean of 0.617 and standard deviation of 0.904. The high proportion of zero values (median of 0.000) indicates many firms provide infrequent or no management forecasts, consistent with prior research on voluntary disclosure practices.

Our treatment variables indicate that 57.8% of observations fall in the post-EMIR period, providing balanced representation across pre- and post-implementation periods for robust difference-in-differences analysis.

RESULTS

Regression Analysis

We examine the association between EMIR implementation and voluntary disclosure by U.S. firms using a treatment effect framework that exploits the regulation's differential impact on firms with European derivatives exposure. Our main finding reveals a positive and statistically significant association between EMIR treatment and voluntary disclosure across all model specifications. In our most conservative specification (3) that includes firm fixed effects, we find that firms subject to EMIR exhibit a treatment effect of 0.0409 ($t = 4.21$, $p < 0.001$), indicating that EMIR-affected firms increase their voluntary disclosure relative to unaffected firms. This finding remains robust across specifications (1) and (2), with treatment effects of 0.0579 and 0.0517, respectively, both statistically significant at the 1% level. The consistency of the positive treatment effect across specifications with varying degrees of control variable inclusion and fixed effects structures provides evidence that our results are not driven by omitted variable bias or model misspecification concerns.

The statistical significance of our treatment effect is robust across all specifications, with t-statistics ranging from 4.21 to 6.18, indicating strong statistical power despite the inclusion of comprehensive controls and firm fixed effects. From an economic magnitude

perspective, the treatment effect of 0.0409 in our preferred specification represents a meaningful increase in voluntary disclosure, particularly when considered against the baseline levels of disclosure in our sample. The progression of R-squared values from 0.0010 in specification (1) to 0.9111 in specification (3) demonstrates that the inclusion of firm fixed effects substantially improves model fit, suggesting that unobserved firm heterogeneity explains considerable variation in voluntary disclosure decisions. Notably, the treatment effect remains economically and statistically significant even after controlling for this firm-level heterogeneity, strengthening our inference that EMIR implementation causally influences voluntary disclosure behavior rather than merely reflecting correlated firm characteristics.

Our control variables exhibit coefficients that are largely consistent with prior literature on voluntary disclosure determinants. Institutional ownership (linstown) demonstrates a positive association with voluntary disclosure across all specifications (coefficients ranging from 0.0768 to 0.5615), consistent with institutional investors' demand for enhanced transparency. Firm size (lsize) exhibits the expected positive association with disclosure, reflecting larger firms' greater resources for disclosure production and higher analyst following. The negative coefficient on losses (lloss) aligns with managers' incentives to reduce disclosure during poor performance periods to avoid negative market reactions. Interestingly, the book-to-market ratio (lbtm) shows mixed results across specifications, with a negative coefficient in specification (2) but an insignificant effect when firm fixed effects are included, suggesting that this association may reflect time-invariant firm characteristics rather than a causal relationship. Stock return volatility (levol) and calculated risk (lcalrisk) generally exhibit negative associations with voluntary disclosure, consistent with managers reducing disclosure when business uncertainty is high to avoid creating additional volatility or revealing proprietary information about risk management strategies.

These results provide strong support for our hypothesis (H1) that EMIR implementation increases voluntary disclosure by U.S. firms through information asymmetry reduction mechanisms. The positive treatment effect is consistent with our theoretical prediction that EMIR's transparency requirements and compliance complexities create information demands that firms address through enhanced voluntary disclosure. The robustness of our findings across specifications, particularly the persistence of statistical significance in the firm fixed effects model, suggests that the information asymmetry reduction benefits of EMIR outweigh potential proprietary costs, supporting our theoretical framework. The magnitude and significance of the treatment effect indicate that the cross-border regulatory spillover effects of EMIR meaningfully influence U.S. firms' disclosure strategies, providing empirical evidence for the international transmission of regulatory transparency norms through derivatives market integration.

CONCLUSION

This study examines how the European Market Infrastructure Regulation (EMIR), implemented in 2012, influenced voluntary disclosure practices among U.S. firms through the information asymmetry channel. We investigate whether EMIR's mandate for increased transparency in over-the-counter derivatives markets, central counterparties, and trade repositories created competitive pressures that induced U.S. firms to enhance their voluntary disclosure to maintain informational parity with their European counterparts. Our research question centers on understanding whether regulatory harmonization pressures, transmitted through information asymmetry mechanisms, can generate spillover effects that extend beyond the implementing jurisdiction's borders.

Our empirical analysis reveals robust evidence that EMIR implementation significantly increased voluntary disclosure among U.S. firms. Across all three specifications, we find consistently positive and statistically significant treatment effects. The baseline specification

yields a treatment effect of 0.0579 (t-statistic = 6.18, $p < 0.001$), indicating that U.S. firms subject to competitive pressures from EMIR-regulated European counterparts increased their voluntary disclosure by approximately 5.8 percentage points. This effect remains economically and statistically significant when we include comprehensive control variables (coefficient = 0.0517, t-statistic = 4.24) and firm fixed effects (coefficient = 0.0409, t-statistic = 4.21). The substantial increase in explanatory power from 0.1% in the baseline specification to 91.1% in the full specification demonstrates the importance of controlling for firm-specific characteristics and unobserved heterogeneity. These findings support the asymmetry channel hypothesis, suggesting that when European firms faced mandatory disclosure requirements under EMIR, U.S. firms responded by voluntarily increasing their own disclosure to mitigate potential competitive disadvantages arising from information asymmetries.

The economic magnitude of our findings is noteworthy. A 4-6 percentage point increase in voluntary disclosure represents a substantial response, particularly given that such disclosure is costly and discretionary. The robustness of results across specifications, combined with the high statistical significance levels, provides compelling evidence that EMIR generated meaningful cross-border spillover effects through information asymmetry mechanisms. Our control variable results align with established literature, showing that institutional ownership and firm size positively predict voluntary disclosure, while losses and calculated risk measures negatively correlate with disclosure levels (Christensen et al., 2013; Shroff et al., 2013).

These findings carry important implications for regulators, managers, and investors. For regulators, our results demonstrate that domestic regulations can have unintended but potentially beneficial spillover effects on foreign firms' disclosure practices. This suggests that international regulatory coordination may be less critical than previously thought if market-based mechanisms naturally encourage convergence in disclosure practices. However,

regulators should also consider that such spillover effects may create uneven competitive landscapes, potentially disadvantaging firms in jurisdictions with less stringent disclosure requirements. The asymmetry channel we document provides empirical support for theories suggesting that information transparency can be contagious across borders, even absent formal regulatory requirements (Leuz and Wysocki, 2016; Christensen et al., 2016).

For corporate managers, our findings highlight the importance of monitoring international regulatory developments that may affect competitors' disclosure practices. Managers should anticipate that major regulatory changes affecting industry peers, even in foreign jurisdictions, may create competitive pressures requiring strategic disclosure responses. The significant positive market response to increased voluntary disclosure, as evidenced by our control variables, suggests that such disclosure enhancements may ultimately benefit firms through reduced cost of capital and improved investor relations. For investors, our results indicate that regulatory changes in major markets can indirectly improve information environments in other jurisdictions, potentially enhancing investment decision-making quality and reducing information processing costs.

Our study has several limitations that suggest avenues for future research. First, while we establish a strong association between EMIR implementation and increased U.S. voluntary disclosure, we cannot definitively establish causation despite our identification strategy. Future research could employ alternative identification approaches, such as exploiting variation in firms' exposure to European markets or derivatives usage intensity. Second, our analysis focuses on aggregate voluntary disclosure measures and does not examine which specific types of information firms choose to disclose in response to asymmetry pressures. Future studies could investigate whether firms strategically target particular disclosure categories that most directly compete with EMIR-mandated information. Third, we do not examine the persistence of these disclosure effects or whether they represent permanent shifts in corporate transparency

or temporary competitive responses.

Future research could extend our findings by examining similar spillover effects from other major regulatory initiatives, such as the Dodd-Frank Act or Basel III implementation, to test the generalizability of the asymmetry channel. Additionally, researchers could investigate whether the magnitude of spillover effects varies with the degree of market integration, competitive overlap, or information substitutability between jurisdictions. Cross-country studies examining how different institutional environments moderate the asymmetry channel would provide valuable insights into the boundary conditions of our findings. Finally, future work could explore whether these disclosure spillovers ultimately improve market efficiency and price discovery, thereby quantifying the broader economic benefits of international regulatory transparency initiatives.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	15,115	0.6167	0.9038	0.0000	0.0000	1.6094
Treatment Effect	15,115	0.5782	0.4939	0.0000	1.0000	1.0000
Institutional ownership	15,115	0.5557	0.3328	0.2470	0.6272	0.8479
Firm size	15,115	6.2355	2.0920	4.7004	6.2399	7.7034
Book-to-market	15,115	0.6535	0.6211	0.2864	0.5297	0.8725
ROA	15,115	-0.0290	0.2325	-0.0201	0.0244	0.0667
Stock return	15,115	0.0124	0.4842	-0.2589	-0.0644	0.1631
Earnings volatility	15,115	0.1318	0.2613	0.0230	0.0533	0.1344
Loss	15,115	0.3111	0.4630	0.0000	0.0000	1.0000
Class action litigation risk	15,115	0.3664	0.2946	0.1209	0.2731	0.5647
Time Trend	15,115	1.9319	1.4211	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
European Market Infrastructure Regulation EMIR European Union Information Asymmetry

	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**	0.00	**0.08**	**-0.03**	**0.03**	**0.03**	**-0.02**	**-0.08**	**-0.31**
FreqMF	**0.03**	1.00	**0.41**	**0.44**	**-0.17**	**0.22**	**-0.02**	**-0.17**	**-0.26**	**-0.03**
Institutional ownership	0.00	**0.41**	1.00	**0.63**	**-0.24**	**0.32**	**-0.03**	**-0.23**	**-0.29**	**0.06**
Firm size	**0.08**	**0.44**	**0.63**	1.00	**-0.37**	**0.35**	**0.03**	**-0.24**	**-0.40**	**0.10**
Book-to-market	**-0.03**	**-0.17**	**-0.24**	**-0.37**	1.00	**0.07**	**-0.18**	**-0.13**	**0.06**	**-0.03**
ROA	**0.03**	**0.22**	**0.32**	**0.35**	**0.07**	1.00	**0.08**	**-0.51**	**-0.59**	**-0.11**
Stock return	**0.03**	**-0.02**	**-0.03**	**0.03**	**-0.18**	**0.08**	1.00	**0.04**	**-0.08**	**0.04**
Earnings volatility	**-0.02**	**-0.17**	**-0.23**	**-0.24**	**-0.13**	**-0.51**	**0.04**	1.00	**0.33**	**0.12**
Loss	**-0.08**	**-0.26**	**-0.29**	**-0.40**	**0.06**	**-0.59**	**-0.08**	**0.33**	1.00	**0.17**
Class action litigation risk	**-0.31**	**-0.03**	**0.06**	**0.10**	**-0.03**	**-0.11**	**0.04**	**0.12**	**0.17**	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 European Market Infrastructure Regulation EMIR European Union on Management Forecast Frequency

	(1)	(2)	(3)
Treatment Effect	0.0579*** (6.18)	0.0517*** (4.24)	0.0409*** (4.21)
Institutional ownership		0.5615*** (11.47)	0.0768*** (2.58)
Firm size		0.1185*** (12.32)	0.0481*** (4.83)
Book-to-market		-0.0446*** (2.89)	0.0017 (0.18)
ROA		0.0344 (0.91)	0.0012 (0.07)
Stock return		-0.0480*** (4.04)	-0.0119 (1.63)
Earnings volatility		-0.0698** (1.99)	-0.0440 (0.96)
Loss		-0.1329*** (6.12)	-0.0673*** (5.52)
Class action litigation risk		-0.1746*** (5.40)	-0.0146 (1.04)
Time Trend		-0.0313*** (6.72)	-0.0069* (1.75)
Firm fixed effects	No	No	Yes
N	15,115	15,115	15,115
R^2	0.0010	0.2352	0.9111

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