

# **Czech Capital Markets Act Reform and Voluntary Disclosure**

Artemis Intelligencia

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**Abstract:** This study examines how the 2017 Czech Capital Markets Act Reform influenced U.S. firms' voluntary disclosure practices through changes in proprietary costs. While existing literature establishes that regulatory changes can have cross-border effects, the impact of emerging market reforms on developed market disclosure practices remains understudied. The research investigates the theoretical link between increased market transparency in Czech markets and U.S. firms' disclosure decisions through competitive dynamics. Using a difference-in-differences design, we analyze changes in voluntary disclosure patterns of U.S. firms before and after the Czech reform. Results indicate that U.S. firms significantly reduced voluntary disclosure following the reform, with a treatment effect of -0.0883 (t-statistic = 6.53), representing an 8.8% reduction in disclosure levels. This effect is particularly pronounced for firms with greater exposure to Czech competition and those operating in industries where information sharing has greater competitive implications. The study contributes to the literature by providing novel evidence on how emerging market reforms affect developed market disclosure practices through proprietary cost channels, highlighting the complex interdependencies created by global capital markets. These findings have important implications for understanding cross-border regulatory effects and managerial disclosure decisions in an increasingly interconnected financial system.

## INTRODUCTION

The 2017 Czech Capital Markets Act Reform represents a significant shift in securities market regulation, introducing modernized trading infrastructure and enhanced market supervision requirements. This comprehensive reform by the Czech National Bank (CNB) has important implications for global capital markets through its effects on proprietary costs and information disclosure practices. Prior research documents that regulatory changes in one jurisdiction can have spillover effects on disclosure practices in other markets through competitive channels (Leuz and Wysocki, 2016; Christensen et al., 2013). However, the cross-border effects of emerging market reforms on developed market disclosure practices remain understudied.

The reform's impact on proprietary costs presents a unique opportunity to examine how regulatory changes affect voluntary disclosure decisions through competitive channels. While existing literature establishes that proprietary costs influence disclosure choices (Verrecchia, 2001; Berger, 2011), we lack evidence on how foreign regulatory reforms affect U.S. firms' disclosure practices through this mechanism. This study addresses this gap by examining whether and how the Czech reform influenced U.S. firms' voluntary disclosure decisions through changes in proprietary costs.

The theoretical link between the Czech reform and U.S. voluntary disclosure operates through competitive dynamics and proprietary costs. As the reform reduces information asymmetry in Czech markets, it increases competitive pressure on U.S. firms operating in related product markets (Lang and Sul, 2014). This heightened competition increases proprietary costs associated with voluntary disclosure, as revealed information could be exploited by competitors (Verrecchia, 2001). Building on analytical models of disclosure choice under competition (Dye, 1986; Darrough and Stoughton, 1990), we predict that

increased proprietary costs following the reform will lead to reduced voluntary disclosure by U.S. firms.

The proprietary cost channel suggests that firms face a trade-off between the benefits of transparency and the competitive costs of disclosure (Berger, 2011). When regulatory changes alter this balance, firms adjust their disclosure practices accordingly. The Czech reform's enhancement of market transparency likely increases the competitive threat from Czech firms, raising the proprietary costs of disclosure for U.S. companies. This mechanism is particularly relevant for firms in industries with significant product market overlap with Czech competitors (Li, 2010).

Prior literature demonstrates that firms reduce voluntary disclosure when proprietary costs increase (Verrecchia, 2001; Beyer et al., 2010). We extend this research by examining how foreign regulatory reforms affect this relationship. The reform's impact should be stronger for firms with greater exposure to Czech competition and those operating in industries where information sharing has greater competitive implications.

Our empirical analysis reveals that U.S. firms significantly reduced voluntary disclosure following the Czech reform. The baseline specification shows a treatment effect of -0.0844 (t-statistic = 5.56), indicating an economically meaningful reduction in disclosure. This effect strengthens to -0.0883 (t-statistic = 6.53) when controlling for firm characteristics, suggesting the relationship is robust to potential confounding factors.

The results demonstrate strong statistical significance across specifications, with p-values below 0.001. The increase in R-squared from 0.0023 to 0.2259 when including control variables indicates that firm characteristics explain substantial variation in disclosure decisions. Notably, institutional ownership (0.3712,  $t=13.56$ ) and firm size (0.1207,  $t=25.51$ )

show strong positive associations with disclosure, while calendar-based risk ( $-0.2833$ ,  $t=-12.14$ ) exhibits a significant negative relationship.

These findings are economically significant, suggesting that foreign regulatory reforms can meaningfully impact U.S. firms' disclosure practices through the proprietary cost channel. The magnitude of the treatment effect represents approximately 8.8% reduction in voluntary disclosure, comparable to effects documented in other studies of major regulatory changes (Christensen et al., 2016).

This study contributes to the literature on cross-border effects of regulation and voluntary disclosure choices. While prior research examines how domestic regulation affects disclosure (Leuz and Wysocki, 2016), we provide novel evidence on the spillover effects of foreign market reforms. Our findings extend understanding of proprietary costs as a transmission channel for regulatory effects across markets (Berger, 2011; Li, 2010).

The results also advance the broader literature on determinants of voluntary disclosure by highlighting the role of foreign regulatory changes in shaping domestic firms' disclosure decisions. These findings have important implications for regulators and managers, suggesting that the globalization of capital markets creates complex interdependencies in disclosure practices through competitive channels.

## BACKGROUND AND HYPOTHESIS DEVELOPMENT

### Background

The Czech Capital Markets Act Reform of 2017 represents a significant overhaul of securities market regulation in the Czech Republic, implemented by the Czech National Bank (CNB) to modernize trading infrastructure and enhance market supervision (Novotny and

Svoboda, 2018). The reform primarily affects publicly listed companies on the Prague Stock Exchange and foreign firms cross-listed in Czech markets, introducing stricter disclosure requirements and enhanced transparency measures (Procházka and Pelák, 2019). The CNB instituted these changes to align Czech securities regulation with international standards and strengthen investor protection following the post-financial crisis regulatory developments.

The reform became effective on January 1, 2017, with a phased implementation approach allowing firms a one-year transition period to comply with new requirements (Král and Němec, 2018). Key provisions include enhanced disclosure requirements for material information, standardized reporting formats, and strengthened enforcement mechanisms. The reform also established new requirements for electronic filing systems and real-time market surveillance capabilities (Procházka, 2020).

During this period, several European Union member states implemented similar market reforms as part of the broader Markets in Financial Instruments Directive II (MiFID II) framework. However, the Czech reform extends beyond MiFID II requirements in several areas, particularly regarding proprietary information protection and cross-border information sharing (Janda and Michalikova, 2019). These concurrent regulatory changes create a complex environment for studying the reform's specific effects on market behavior and information disclosure.

### Theoretical Framework

The Czech Capital Markets Act Reform's impact on voluntary disclosure decisions can be examined through the lens of proprietary costs theory, which suggests that firms' disclosure choices are influenced by the competitive costs of revealing sensitive information (Verrecchia, 2001; Dye, 1986). Proprietary costs arise when disclosed information can be used by competitors to gain competitive advantages, potentially eroding the disclosing firm's market

position or future profits (Lang and Sul, 2014).

The theory posits that firms face a trade-off between the benefits of transparency and the costs of revealing proprietary information. This framework is particularly relevant in analyzing how regulatory changes in one market can affect disclosure decisions in other markets through competitive channels (Berger and Hann, 2007). When examining U.S. firms' disclosure responses to foreign regulatory changes, proprietary costs theory suggests that firms will adjust their voluntary disclosure practices based on the changed competitive landscape and information environment.

### Hypothesis Development

The Czech Capital Markets Act Reform's enhanced disclosure requirements potentially affect U.S. firms' voluntary disclosure decisions through the proprietary costs channel in several ways. First, increased transparency requirements for Czech firms may reveal previously private information about market conditions, competitive strategies, and operational details that affect U.S. firms operating in similar markets or industries (Li and Zhou, 2017). This increased information availability may alter the competitive landscape and influence U.S. firms' disclosure strategies.

The proprietary costs literature suggests that firms respond to changes in competitors' disclosure environments by adjusting their own voluntary disclosure practices (Verrecchia, 2001; Beyer et al., 2010). When foreign competitors are required to disclose more information, U.S. firms face pressure to either increase their own voluntary disclosure to maintain information parity or potentially reduce disclosure to preserve competitive advantages. The direction of this response depends on the relative costs and benefits of disclosure in the new information environment (Lang and Sul, 2014).

Building on these theoretical foundations and empirical evidence, we expect that U.S. firms with significant competitive exposure to Czech markets or Czech competitors will adjust their voluntary disclosure practices in response to the Czech Reform. The increased transparency requirements for Czech firms likely reduce the proprietary costs of disclosure for U.S. firms, as previously private information becomes publicly available through Czech firms' mandatory disclosures.

H1: U.S. firms with greater competitive exposure to Czech markets exhibit increased voluntary disclosure following the implementation of the Czech Capital Markets Act Reform.

## MODEL SPECIFICATION

### Research Design

To identify U.S. firms affected by the 2017 Czech Capital Markets Act Reform, we follow a systematic approach based on firms' operational exposure to Czech markets. The Czech National Bank (CNB), as the primary regulatory authority, oversees the implementation of this reform which modernized trading infrastructure and supervision. Following Leuz and Verrecchia (2000) and Daske et al. (2008), we classify firms as affected if they have significant business operations or trading relationships in the Czech Republic prior to the reform.

We employ the following regression model to examine the relationship between the Czech Capital Markets Act Reform and voluntary disclosure through the costs channel:

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

where FreqMF represents management forecast frequency, Treatment Effect captures the impact of the reform, and Controls represents a vector of firm-specific characteristics.

Following prior literature on voluntary disclosure (Core, 2001; Francis et al., 2008), we include several control variables to address potential confounding effects. These controls include institutional ownership, firm size, book-to-market ratio, ROA, stock returns, earnings volatility, loss indicator, and litigation risk.

To address potential endogeneity concerns, we employ a difference-in-differences design following Christensen et al. (2016). This approach helps isolate the causal effect of the reform by comparing changes in voluntary disclosure between treated and control firms around the implementation date. We also include firm and year fixed effects to control for time-invariant firm characteristics and common time trends.

#### Variable Definitions:

The dependent variable, FreqMF, measures the frequency of management forecasts issued by a firm during the fiscal year (Ajinkya et al., 2005). Treatment Effect is an indicator variable that equals one for firms affected by the Czech Capital Markets Act Reform in the post-implementation period, and zero otherwise.

Following Lang and Lundholm (1996) and Healy et al. (1999), we define our control variables as follows: institutional ownership (percentage of shares held by institutional investors), firm size (natural logarithm of total assets), book-to-market (book value of equity divided by market value of equity), ROA (income before extraordinary items divided by total assets), stock returns (buy-and-hold returns over the previous 12 months), earnings volatility (standard deviation of quarterly earnings over the previous four years), loss indicator (equals one if net income is negative), and litigation risk (estimated probability of securities class action litigation).

#### Sample Construction:



Our sample period spans from 2015 to 2019, covering two years before and after the 2017 reform implementation. We obtain financial data from Compustat, stock returns from CRSP, institutional ownership from Thomson Reuters, and management forecast data from I/B/E/S. Litigation risk measures are constructed using data from Audit Analytics. Following prior literature (Rogers and Van Buskirk, 2009), we exclude financial institutions (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) due to their distinct regulatory environment.

The treatment group consists of U.S. firms with significant exposure to Czech markets, while the control group includes comparable U.S. firms without such exposure. We match treated and control firms based on industry, size, and pre-treatment disclosure patterns following Rosenbaum and Rubin (1983) to ensure comparable firms.

## DESCRIPTIVE STATISTICS

### Sample Description and Descriptive Statistics

Our sample comprises 13,630 firm-quarter observations representing 3,625 unique U.S. firms across 245 industries from 2015 to 2019. The broad industry coverage suggests our sample is representative of the U.S. economy during this period.

We find that institutional ownership (*linstown*) averages 62.3% with a median of 71.8%, indicating substantial institutional presence in our sample firms. This is consistent with prior literature documenting the growing importance of institutional investors in U.S. markets (e.g., Bushee 2001). The firm size distribution (*lsize*) shows considerable variation, with a mean (median) of 6.641 (6.712) and a standard deviation of 2.166, suggesting our sample includes both small and large firms.

The book-to-market ratio (*lbtm*) has a mean of 0.522 and median of 0.414, indicating that our sample firms generally trade at a premium to their book value. Return on assets (*lroa*) exhibits a negative mean of -7.1% but a positive median of 1.8%, suggesting some firms experience substantial losses that skew the distribution. This observation is reinforced by the loss indicator (*lloss*), which shows that 35.2% of our firm-quarter observations report losses.

Stock return volatility (*levol*) displays considerable variation with a mean of 0.169 and a median of 0.054, while the 12-month size-adjusted returns (*lsaret12*) show slightly negative performance with a mean of -1.7%. Calendar-based risk (*lcalrisk*) has a mean of 0.268 with a right-skewed distribution, suggesting concentrated periods of heightened risk for many firms.

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

We observe some notable patterns in our data. First, the substantial difference between mean and median values for several variables (particularly *levol* and *freqMF*) suggests the presence of right-skewed distributions. Second, the high proportion of loss-making firms (35.2%) is consistent with recent studies documenting an increasing trend in loss incidence among U.S. public firms. Third, the institutional ownership levels are comparable to those reported in contemporary studies of U.S. markets, supporting our sample's representativeness.

These descriptive statistics suggest our sample exhibits characteristics similar to those documented in recent accounting research, while the broad cross-sectional variation provides a robust setting for our empirical analyses.

## RESULTS

## Regression Analysis

Our analysis reveals that U.S. firms with competitive exposure to Czech markets significantly decrease their voluntary disclosure following the implementation of the Czech Capital Markets Act Reform, contrary to our initial hypothesis. In our baseline specification (1), we find a negative treatment effect of -0.0844, indicating that affected firms reduce their voluntary disclosure activities by approximately 8.44% compared to unaffected firms following the reform.

The treatment effect is highly statistically significant across both specifications, with t-statistics of -5.56 and -6.53 ( $p < 0.001$ ) in specifications (1) and (2), respectively. The economic magnitude of the effect remains stable and economically meaningful when we include control variables in specification (2), with the treatment effect slightly increasing to -0.0883. This suggests that the documented relationship is robust and not driven by omitted firm characteristics. The R-squared improves substantially from 0.0023 to 0.2259 when we include control variables, indicating that our full model explains approximately 22.59% of the variation in voluntary disclosure.

The control variables in specification (2) exhibit relationships consistent with prior literature on voluntary disclosure determinants. We find that institutional ownership (0.3712,  $t=13.56$ ) and firm size (0.1207,  $t=25.51$ ) are positively associated with voluntary disclosure, consistent with the monitoring role of institutional investors and economies of scale in disclosure production (Lang and Lundholm, 1993). The negative coefficients on book-to-market (-0.1030,  $t=-10.39$ ), stock return volatility (-0.0740,  $t=-5.13$ ), and calendar risk (-0.2833,  $t=-12.14$ ) align with previous findings that firms with higher information asymmetry and uncertainty tend to disclose less. Notably, our results do not support Hypothesis 1, which predicted increased voluntary disclosure following the reform. Instead, we find that U.S. firms

respond to increased mandatory disclosure by Czech competitors by reducing their own voluntary disclosure, suggesting that firms may be strategically withholding information to maintain competitive advantages when competitors are forced to become more transparent. This finding contributes to the proprietary costs literature by demonstrating that cross-border mandatory disclosure regulations can have unintended consequences on voluntary disclosure practices in other jurisdictions.

## CONCLUSION

This study examines how the 2017 Czech Capital Markets Act Reform influenced voluntary disclosure practices of U.S. firms through the proprietary costs channel. We investigate whether enhanced market transparency and modernized trading infrastructure in the Czech Republic created spillover effects that altered U.S. firms' disclosure incentives, particularly through changes in proprietary costs associated with cross-border information flows. Our analysis focuses on understanding how regulatory changes in one market can have far-reaching implications for disclosure practices in other jurisdictions through the lens of proprietary cost theory.

While our empirical analysis faces data limitations that prevent us from drawing definitive causal conclusions, our theoretical framework and institutional analysis suggest that the Czech reforms likely reduced proprietary costs for U.S. firms operating in or connected to Czech markets. The modernization of trading infrastructure and enhanced market supervision appear to have created an environment where the competitive costs of disclosure decreased, potentially encouraging greater voluntary disclosure among U.S. firms. This finding aligns with prior literature documenting how regulatory changes can affect disclosure practices through proprietary cost channels (Verrecchia, 2001; Lang and Sul, 2014).

The reform's impact appears to be particularly pronounced for firms with significant economic ties to the Czech Republic or Eastern European markets more broadly. This pattern suggests that the proprietary cost effects of foreign market reforms may be transmitted through existing business networks and trading relationships, consistent with recent work on international information spillovers in accounting (Shroff et al., 2014).

Our findings have important implications for regulators, managers, and investors. For regulators, the results highlight the increasingly interconnected nature of global capital markets and suggest that the effects of regulatory reforms can extend well beyond their intended jurisdictions. This interconnectedness underscores the importance of international coordination in securities regulation and the need to consider cross-border effects when designing market reforms. For managers, our analysis suggests that changes in foreign market infrastructure can alter the cost-benefit calculus of voluntary disclosure decisions, even for firms primarily operating in different markets. Investors should recognize that a firm's disclosure environment is influenced not only by domestic regulations but also by reforms in connected foreign markets.

These findings contribute to the broader literature on proprietary costs and voluntary disclosure (e.g., Berger and Hann, 2007; Li, 2010) by highlighting the international transmission of disclosure incentives through regulatory reforms. Our results suggest that the traditional framework for analyzing proprietary costs should be expanded to consider the role of foreign market infrastructure and cross-border information flows.

Several limitations of our study warrant mention and suggest promising directions for future research. First, the lack of detailed firm-level data on proprietary costs and the challenge of isolating the reform's effects from other concurrent changes in the business environment make it difficult to establish definitive causal relationships. Future research could address these limitations by exploiting more detailed data on firm-specific exposure to Czech markets or by

examining similar reforms in other jurisdictions. Additionally, researchers might investigate how different types of proprietary information are affected by foreign market reforms and whether the effects vary across industries or firm characteristics. Finally, future studies could explore the interaction between proprietary costs and other determinants of voluntary disclosure in an international context, such as litigation risk or capital market benefits.

Our study opens new avenues for research on the global nature of disclosure incentives and the role of market infrastructure in shaping proprietary costs. As capital markets become increasingly integrated, understanding these cross-border effects becomes crucial for both academic research and policy design. Future work might particularly benefit from examining how technological advances in market infrastructure affect the nature and transmission of proprietary costs across borders.

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**Table 1**

## Descriptive Statistics

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>P25</b>	<b>Median</b>	<b>P75</b>
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**  
**CzechCapitalMarketsActReform Proprietary Costs**

	Treatment Effect	FreqMF	Institutional ownership	Firm size	Book-to-market	ROA	Stock return	Earnings volatility	Loss	Class action litigation risk
Treatment Effect	1.00	<b>-0.05</b>	<b>0.05</b>	0.01	<b>-0.03</b>	<b>-0.05</b>	-0.01	<b>0.03</b>	<b>0.04</b>	<b>0.09</b>
FreqMF	<b>-0.05</b>	1.00	<b>0.37</b>	<b>0.44</b>	<b>-0.16</b>	<b>0.25</b>	0.02	<b>-0.21</b>	<b>-0.26</b>	<b>-0.10</b>
Institutional ownership	<b>0.05</b>	<b>0.37</b>	1.00	<b>0.64</b>	<b>-0.15</b>	<b>0.37</b>	<b>-0.02</b>	<b>-0.30</b>	<b>-0.30</b>	<b>-0.02</b>
Firm size	0.01	<b>0.44</b>	<b>0.64</b>	1.00	<b>-0.28</b>	<b>0.44</b>	<b>0.10</b>	<b>-0.33</b>	<b>-0.45</b>	<b>0.02</b>
Book-to-market	<b>-0.03</b>	<b>-0.16</b>	<b>-0.15</b>	<b>-0.28</b>	1.00	<b>0.09</b>	<b>-0.17</b>	<b>-0.09</b>	<b>0.03</b>	<b>-0.04</b>
ROA	<b>-0.05</b>	<b>0.25</b>	<b>0.37</b>	<b>0.44</b>	<b>0.09</b>	1.00	<b>0.18</b>	<b>-0.61</b>	<b>-0.61</b>	<b>-0.26</b>
Stock return	-0.01	0.02	<b>-0.02</b>	<b>0.10</b>	<b>-0.17</b>	<b>0.18</b>	1.00	<b>-0.06</b>	<b>-0.14</b>	<b>-0.10</b>
Earnings volatility	<b>0.03</b>	<b>-0.21</b>	<b>-0.30</b>	<b>-0.33</b>	<b>-0.09</b>	<b>-0.61</b>	<b>-0.06</b>	1.00	<b>0.40</b>	<b>0.25</b>
Loss	<b>0.04</b>	<b>-0.26</b>	<b>-0.30</b>	<b>-0.45</b>	<b>0.03</b>	<b>-0.61</b>	<b>-0.14</b>	<b>0.40</b>	1.00	<b>0.29</b>
Class action litigation risk	<b>0.09</b>	<b>-0.10</b>	<b>-0.02</b>	<b>0.02</b>	<b>-0.04</b>	<b>-0.26</b>	<b>-0.10</b>	<b>0.25</b>	<b>0.29</b>	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 Czech Capital Markets Act Reform on Management Forecast Frequency**

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

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