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The Impact of Proactive Disclosure of AI Regulatory Frameworks on Stock Price Fluctuations

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Abstract. This study examines whether companies can manage market expectations by voluntarily making substantial documents on Artificial Intelligence (AI) governance public. Using Meta's July 18, 2023 release of Llama 2 and its accompanying governance materials (including the Responsible Use Guide and System Card) as the focal event, the study applies an event-study framework and a GARCH(1,1) model to examine abnormal returns and volatility dynamics., conducted an event study to estimate abnormal returns, using the Generalized Autoregressive Conditional Heteroskedasticity (garch) model (1,1), using the volatility comparison and the pseudo event. Variation in the variance of test conditions. The results show a delay in market assimilation. On launch day, the outstanding return is low, but the following trading day shows a significant outstanding return (+ 1.24%). In addition, post-disclosure specific volatility decreased by approximately 39.7% in one week, with a significantly negative GARCH event coefficient, which reduced perceived causal risk. Overall, proactive and detailed disclosure of AI compliance serves as a reliable signal to stabilize prices and reduce risk premiums. This study provides important insights into how positive disclosure of the AI regulatory framework affects market dynamics, especially in high-tech sectors. Focus on Meta's July 18, 2023 disclosure and review subsequent market responses, including exceptional returns and low volatility.

Keywords: voluntary disclosure, signaling, event study, abnormal return, stock volatility.

1.Introduction

Since the commercial breakthrough of large-scale language models, public companies, positioned as "leaders in artificial intelligence," are undergoing a profound reassessment. At the same time, Artificial Intelligence (AI) systems can introduce new channels of risk, including content illusions, copyright conflicts over training data, model abuse and prejudice harms, resulting in oversight and loss of reputation of the regulator. Given that many of these risks are technical and difficult to verify externally, investors face "black box" problems that amplify price divergences and volatility in the short term.

Healy and Palepu and Dye have shown that high-quality firms can reduce information asymmetry through voluntary disclosure if managers have personal information and disclosure is not costly [1,2]. Look at it. Recent studies point out that AI-intensive firms combine high growth expectations with high uncertainties, making risk communication particularly important [3,4]. On the other hand,

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complex technical information may not be processed immediately. Investors and brokers often need time to assimilate professional Revelations, resulting in delays in price adjustment [5]. However, there is little empirical evidence as to whether detailed literature on AI governance can measure market responses.

This paper addresses that gap by studying Meta Platforms' July 18, 2023, release of the Llama 2 model together with extensive safety and governance documentation (including a Responsible Use Guide and system cards) [6]. It interprets these materials as a proactive disclosure of an internal AI regulatory framework - a set of rules, testing protocols, and use restrictions designed to manage downstream risks. Hypothesis 2 Test. H1: A large number of Revelations about AI governance are linked to positive abnormal stock market returns after the market digested information [7]. H2 (risk mitigation effect): This disclosure reduces perceived tail risk and reduces specific volatility. The standard framework for event research, the variance comparison test, and the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model (1,1) combine event indicators. Contribution to research on spontaneous disclosure results of investigations conducted on AI expansion virus control content, and practical implications for technology companies assessing stability after AI does not appear to unlock business creation opportunities [8-10]. GPT and other IA models are causing many companies to undergo changes that have appeared in the price list market. This change is often due to the opportunities and risks associated with the rapidly evolving regulatory framework surrounding AI. The market response to these companies depends in large part on how these companies disclose relevant governance and risk management protocols. This study analyzes the role of this disclosure in the stabilization of stock prices, especially in the cases of Meta (formerly Facebook) and Llama. In-depth study of the positive transparency of risks and safety measures related to the model.

In addition, it actively discloses governance strategies to respond to the increasing AI risks. The LMA2 model not only represents the most modern devices of IA but also provides detailed security protocols and transparency measures. "Responsible usage guide" and "system panel". This information is aimed at ensuring that investors and regulators know that the company is ready to deal with the potential risks of exploiting siia. Transparency guarantees are aimed at increasing trust, reducing risk, and ultimately stabilizing stock prices amid increasingly stringent regulations.

Transparency highlights the importance of governance as a case study of the broader smartphone industry. As smartphone technology becomes more widespread and complex, companies are increasing the importance of engagement with all stakeholders through clear and open communication. This mysterious approach, combined with product development and strict disclosure, shows that a strong regulatory framework can improve not only risk management but also long-term business reliability and market stability.

2.Case study: meta's release of the Llama 2 model

Meta is a leader in the field of artificial intelligence and is always at the forefront of technological innovation. However, there are still many challenges to be overcome. In 2018, the US Trade Commission fined the company billions of dollars. This incident has sparked people's distrust of artificial intelligence, especially in terms of data privacy and security.

Due to growing concerns over the ethical implications and potential abuse of IA technology, Met-2 launched a model in July 2023. Unlike past developments, it includes a well-governed and compliant regulatory framework aimed at ensuring transparency and reducing risks. To be more specific, you can find the "Responsible User Guide" and the "System Manual", which describe specific procedures, potential applications, and measures to prevent the abuse of training models.

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These documents not only reaffirm their commitment to responsible artificial intelligence development but also promise investors and regulatory authorities that they will take necessary measures to prevent the irresponsible use of artificial intelligence technology. This is necessary.

Positive indicators and risk management methods have played a significant role in stabilizing the market's response to stocks, and these documents fully demonstrate this. Meta has alleviated major concerns about IA abuse, copyright issues and potential moral flaws by building market confidence and diverting investors' attention. The results show that despite potential risks, the company has made good progress in restoring investor confidence and stabilizing stock prices. Both enterprises and regulations are under supervision.

3.Methodology

3.1.Research design

It consider the meta-disclosure day of July 18, 2023 as the day of the focal event (t =0). The analysis was conducted in three stages. First, a market model was used to estimate abnormal returns and calculate cumulative abnormal returns (car). Second, the specific variability before and after the event was compared using a dispersed homogeneity test. Third, the application added the garch model (1,1) with a pseudo-event and checked whether the conditional variance had changed after controlling for the fluctuation group. The garch model (1,1) was specially chosen to take into account the volatility clusters common to the financial time series. In this case, the pseudo-variable d_event is used to test the effect of disclosure on conditional variance.

3.2.Data sources and windows

Daily prices for Meta Platforms (META) and the market benchmark are sourced from public historical market data. To isolate firm-specific reactions from broad market movements, it use a technology-heavy benchmark index as the market proxy. The estimation window is T in [−150, −31], which provides stable parameter estimates while avoiding contamination from information closer to the event. The event window is T in [−2, +2] to capture both potential leakage and delayed assimilation. For volatility analysis, it compare two weeks before disclosure (July 3 to July 17) with one week after disclosure (July 18 to July 25), ending before Meta's Q2 earnings release to reduce confounding influences.

3.3.Models and variables

Event study market model:

(1) Market model

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

(2) Abnormal return

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \tag{2}$$

(3) Cumulative abnormal return

$$CAR\,(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it} \tag{3}$$

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(4) GARCH(1,1) mean equation

$$R_t = \mu + \varepsilon_t \tag{4}$$

(5) GARCH(1,1) variance equation

$$h_t = \omega + \alpha\varepsilon_{t-1}^2 + \beta h_{t-1} + \gamma D_{event} \tag{5}$$

where D_event equals 1 for post-disclosure days and 0 otherwise. A significantly negative γ indicates that the disclosure is associated with reduced conditional variance.

4.Results and analysis

4.1.Market reaction: abnormal returns around the disclosure

Table 1. Abnormal returns (AR) around Meta's proactive AI governance disclosure (T in [−2, +2])

Event day (T)	Date	Actual return (R_it)	Market return (R_mt)	Abnormal return (AR)	t-statistic
T−2	Jul 14	-1.45%	-0.18%	-1.27%	-1.54
T−1	Jul 17	+0.57%	+0.93%	-0.36%	-0.42
T=0	Jul 18	+0.46%	+0.76%	-0.30%	-0.35
T+1	Jul 19	+1.27%	+0.03%	+1.24%	2.15**
T+2	Jul 20	-4.27%	-2.05%	-2.22%	-2.80***

Note: ** p < 0.05; *** p < 0.01. Abnormal returns are computed using market-model estimates from the estimation window.

As shown in table 1, there were no statistically significant abnormal returns on the disclosure date (T=0). This shows that the market will not reprice the company immediately after a complex governance document has been issued. The next business day (T+1) showed a significant positive unusual return of +1.24%, consistent with the information processing delay of the advanced technology density disclosure. This model supports H1: after intermediaries and seasoned investors have digested secure documents, the disclosure is set as a favorable signal as well as a compliance cost.

4.2.Volatility shift: pre- vs. post-disclosure comparison

Table 2. Volatility difference test before and after disclosure

Window	Dates	Mean daily volatility	Levene's test p-value
Pre-disclosure	Jul 3–Jul 17	1.89%	—
Post-disclosure	Jul 18–Jul 25	1.14%	0.048

Note: Volatility is measured as the absolute daily return. The p-value comes from Levene's test for equality of variances [10].

Table 2 shows that the average daily volatility after disclosure decreased by approximately 39.7% from 1.89% to 1.14%. Levene's test excludes isovariance at the 5% level (p= 0.048), indicating statistically significant structural variation in volatility. Detailed disclosure of governance

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information can reduce company-specific risks by reducing the uncertainty surrounding the extreme downside scenarios associated with AI abuse and regulatory penalties.

4.3.Conditional variance evidence: GARCH (1,1) with event dummy

The GARCH results in table 3 confirm high variability persistence (beta = 0.810) and statistically significant negative event coefficient (gamma = -0.00012, p< 0.05). After controlling the variability cluster, it is revealed that it is related to the downward movement of the condition variance. Adding to this the comparison of variance, there is a growing interpretation that positive disclosure of IA governance serves as a stable signal to lower the necessary risk premium. The results show that the market response to meta disclosures has been slow but significant. On T+1 day, Meta shares were up 1.24%. Investors and analysts digested the user guide and the technical details of the system board. Such delays reflect the time it takes for the market to process and consolidate complex supervisory documents. Also, the reduced volatility after disclosure indicates that investors consider the tail risk to be low and the required risk premium to be low.

Table 3. GARCH(1,1) estimates with disclosure event dummy

Parameter	Symbol	Coefficient	z-statistic
Constant	ω	0.0003	1.92*
ARCH term (shock sensitivity)	α	0.095	2.85***
GARCH term (volatility persistence)	β	0.810	18.40***
Disclosure event shock	γ	-0.00012	-1.98**
Model fit (log-likelihood)	—	1102.4	—

Note: * p < 0.10; ** p < 0.05; *** p < 0.01.

5.Conclusions

This study examines whether positive disclosure of the internal AI regulatory framework, implemented through detailed governance and security documents, can impact the performance of financial markets. In the case of llama 2 meta disclosing, positive evidence was found, although price adjustment was delayed. Abnormal performance on the day of disclosure is low, while significant abnormal performance on the following day (+ 1.24%). In addition, in line with the reduction in perceived caudal risk, the garch specification (1,1) observed a significant reduction in specific volatility (approximately 39.7%) and a significant negative shift in conditional variance. Taken together, this evidence supports the idea that disclosure of substantive governance is a reliable signal that improves investors' ability to assess risk in the context of ai's "black box."

For managers of AI-intensive enterprises, the release of key models combined with specific auditable governance outcomes (test protocols, usage restrictions, and risk management notes) helps stabilize evaluations and reduce capital costs. This result indicates the possibility. For investors, when evaluating artificial intelligence enterprises, they should not only consider the performance of the models but also the maturity of corporate governance. Future research will expand the analysis to multiple samples of different companies in AI release events and regulatory systems, and use more abundant text metrics to determine the impact of market response and compliance disclosure on product performance. I'm going to make a judgment. Fruits can be separated.

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References

[1] Healy, P. M., & Palepu, K. G. 2021. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. Journal of Accounting and Economics, 31(1–3), 405–440.
[2] Dye, R. A. 2021. An evaluation of "essays on disclosure" and the disclosure literature in accounting. Journal of Accounting and Economics, 32(1–3), 181–235.
[3] Babina, T., Fedyk, A., He, A., & Hodson, J. 2024. Artificial intelligence, firm growth, and product innovation. Journal of Financial Economics, 151, 103745.
[4] Eisfeldt, A. L., Schubert, G., & Zhang, M. B. 2023. Generative AI and Firm Values. NBER Working Paper Series, No. 31222.
[5] Lopez-Lira, A., & Tang, Y. 2023. Can ChatGPT forecast stock price movements? Return predictability and large language models. SSRN Working Paper No. 4412788.
[6] Touvron, H., et al. 2023. Llama 2: Open foundation and fine-tuned chat models. arXiv:2307.09288.
[7] Spence, M. 1973. Job market signaling. The Quarterly Journal of Economics, 87(3), 355–374.
[8] MacKinlay, A. C. 1997. Event studies in economics and finance. Journal of Economic Literature, 35(1), 13–39.
[9] Brown, S. J., & Warner, J. B. 1985. Using daily stock returns: The case of event studies. Journal of Financial Economics, 14(1), 3–31.
[10] Levene, H. 1960. Robust tests for equality of variances. In I. Olkin (Ed.), Contributions to Probability and Statistics, 278–292. Stanford University Press.