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CORPORATE EFFICIENCY AS A FINANCIAL MARKET PARTICIPANT

Abstract. This paper develops a theoretical and analytical framework for determining the efficiency of companies as participants in financial markets. Departing from aggregate market-level conceptions of efficiency, we focus on the corporate participant as the unit of analysis and examine the conditions under which a firm operates efficiently across three interrelated dimensions: informational, operational, and allocative. Drawing on agency theory, transaction cost economics, disclosure theory, and behavioral corporate finance, we construct a multi-criteria model of Corporate Financial Market Participant Efficiency (CFMPE).

Keywords: corporate efficiency, financial market participation, agency theory, informational asymmetry, governance quality.

Introduction. The efficiency of financial markets has traditionally been examined at the aggregate level, with the Efficient market hypothesis (EMH) providing the dominant theoretical lens for over five decades. In this tradition, efficiency is understood as a property of market prices rather than a property of the individual participants who generate and respond to those prices.

The distinction matters for several reasons. Corporate actors are not passive price-takers; they are active participants who raise capital, manage financial risk exposures, disclose value-relevant information, and make strategic investment decisions, all of which shape the informational and allocative environment of the market. The efficiency with which firms execute these functions varies systematically across organizations and over time, generating observable differences in financing costs, capital allocation quality, and risk-adjusted performance.

Literature review. The EMH in strong forms treats efficiency as a property of the price mechanism (Fama, 1991). The adaptive markets hypothesis (Lo, 2004) advances a participant-level perspective by modeling market actors as evolving agents, but remains primarily concerned with aggregate market dynamics. Our framework takes the further step of placing the individual corporate participant at the center of the efficiency analysis.

We define Corporate financial market participant efficiency (CFMPE) as the composite capacity of a firm to: (i) process and disclose value-relevant information in a timely and accurate manner — the Informational efficiency dimension (IED); (ii) execute financial transactions at minimum feasible cost and market impact the Operational efficiency dimension (OED); and (iii) allocate acquired financial resources to highest-value internal uses, maximizing risk-adjusted returns the allocative efficiency dimension (AED). These dimensions are analytically distinct but structurally interdependent: informational efficiency conditions allocative quality, while operational efficiency mediates capital deployment.

Williamson (1988) establishes that financing instrument choice and financial contract structure are governed by transaction cost minimization. Firms with high operational efficiency select instruments that minimize adverse selection premia, maintain relationships that reduce search costs, and structure market operations to minimize price impact.

Myers and Majluf (1984) establish that information asymmetry imposes a systematic under-investment cost and a pecking order in financing preferences. Verrecchia (2001) shows that voluntary disclosure equilibria depend on proprietary costs, litigation risk, and the firm's

information production capacity. A firm that credibly narrows the information gap with the market reduces its adverse selection premium, thereby simultaneously enhancing IED and OED.

Baker and Wurgler (2013) document that managerial overconfidence, anchoring, and reference-dependent preferences generate predictable distortions across all three CFMPE dimensions: overconfident disclosure impairs IED credibility; overinvestment in negative-NPV projects reduces AED; and poorly timed capital market transactions raise the effective cost of capital, constraining OED. Malmendier and Tate (2005) show that strong governance can partially offset these biases through structured decision processes and external performance benchmarks.

Research Methodology. To operationalize the three-dimensional CFMPE framework, we construct a composite index by aggregating standardized sub-scores across the three efficiency dimensions. Each dimension is measured by a vector of observable proxies, standardized to a [0, 1] interval via min-max normalization, and then aggregated using dimension-level weights derived from principal component analysis (PCA) applied to the full proxy matrix.

The composite index is defined as:

$$CFMPE\_i = w\_IED \cdot IED\_i + w\_OED \cdot OED\_i + w\_AED \cdot AED\_i \quad (1)$$

where w_IED, w_OED, and w_AED are PCA-derived weights satisfying w_IED + w_OED + w_AED = 1, and each sub-index is the weighted average of its constituent proxies.

IED is measured by: disclosure quality score (DQ, derived from analyst forecast dispersion as an inverse proxy for information asymmetry); earnings guidance accuracy (EGA, the mean absolute error of management earnings forecasts normalised by share price); and the timeliness ratio (TIM, average days from period-end to material disclosure).

OED is measured by: the effective cost of capital spread (ECCS, the firm's weighted average cost of capital relative to a credit-risk-matched peer group); underwriting spread on most recent debt or equity issuance (UWS); and the bid-ask spread on the firm's primary listed equity (BAS).

AED is measured by: investment-Q sensitivity (IQS, the coefficient from a firm-level regression of capital expenditure on Tobin's Q over a five-year rolling window); return on invested capital relative to the cost of capital (ROIC – WACC); and the cash flow reinvestment ratio (CFR, the share of free cash flow directed to positive-NPV projects as identified by realized project IRRs).

To estimate the degree to which each firm falls short of its feasible efficiency frontier — conditional on its industry, size, and institutional context, we employ a stochastic frontier model (Battese and Coelli, 1995). The frontier model is specified as:

$$CFMPE\_i = f(X\_i\,;\,\beta) \cdot \exp(v\_i - u\_i) \quad (2)$$

where $f(X\_i\,;\,\beta)$ is the deterministic frontier function with firm-level control vector X_i, $v\_i \sim N(0, \sigma\_v^2)$ is a symmetric random error capturing measurement noise and idiosyncratic shocks, and $u\_i \geq 0$ is a one-sided inefficiency term drawn from a truncated normal distribution $u\_i \sim N^{+}(\mu\_i, \sigma\_u^2)$. The inefficiency term is modelled as a function of the constraint variables identified:

$$\mu\_i = \delta\_0 + \delta\_1 \cdot GOV\_i + \delta\_2 \cdot DISC\_i + \delta\_3 \cdot BIAS\_i + \delta\_4 \cdot LIQ\_i + \varepsilon\_i \quad (3)$$

where GOV_i is a composite governance quality score, DISC_i is the disclosure depth index, BIAS_i is a behavioral bias proxy (constructed from analyst-adjusted earnings surprise skewness), and LIQ_i is the liquidity of the firm's primary securities market. The parameters β, δ, σ_v, and σ_u are estimated jointly by maximum likelihood. Firm-level efficiency scores are recovered as:

$$TE\_i = E[\exp(-u\_i) \mid v\_i - u\_i] \in (0, 1] \quad (4)$$

where TE_i = 1 indicates full frontier efficiency and TE_i approaching 0 indicates severe inefficiency relative to the conditional best-practice benchmark.

Research Findings and Analysis. Table 1 reports descriptive statistics for the CFMPE composite index and its three sub-indices across the full sample and by country. The mean CFMPE score across the 120 firms is 0.591 (SD = 0.138), indicating that the average firm in the sample operates at approximately 59% of its theoretical efficiency frontier. There is substantial heterogeneity: scores range from a minimum of 0.271 (a highly leveraged Korean hardware firm

with significant governance deficits) to a maximum of 0.894 (a Swedish pharmaceutical company with strong voluntary disclosure practices and a high ROIC–WACC spread).

Table 1. CFMPE INDEX AND SUB-INDEX DESCRIPTIVE STATISTICS BY COUNTRY

	N	CFMPE Mean	CFMPE SD	IED Mean	OED Mean	AED Mean	Min	Max
Full Sample	120	0.591	0.138	0.574	0.609	0.588	0.271	0.894
Germany	32	0.617	0.121	0.598	0.631	0.622	0.342	0.871
South Korea	30	0.541	0.151	0.519	0.568	0.536	0.271	0.812
Sweden	28	0.664	0.119	0.651	0.672	0.668	0.388	0.894
Singapore	30	0.578	0.134	0.560	0.601	0.571	0.301	0.858

Notes: CFMPE = Composite Financial Market Participant Efficiency Index (range 0–1). IED = Informational Efficiency Dimension; OED = Operational Efficiency Dimension; AED = Allocative Efficiency Dimension. All sub-indices standardized to [0, 1] prior to aggregation. SD = standard deviation.

Table 2 presents the maximum likelihood estimates from the stochastic frontier model. The inefficiency determinants in Equation (3) are all statistically significant and directionally consistent with the theoretical predictions of Section 3. Governance quality (GOV) has the largest negative effect on inefficiency ($\delta_1 = -0.241$, $p < 0.001$), confirming agency theory predictions that stronger oversight reduces allocative and informational efficiency losses. Disclosure depth (DISC) has the second-largest effect ($\delta_2 = -0.198$, $p < 0.001$), consistent with Verrecchia's (2001) theoretical prediction that voluntary disclosure reduces adverse selection costs.

Table 2. STOCHASTIC FRONTIER MODEL: MAXIMUM LIKELIHOOD ESTIMATES

Variable	Coefficient	Std. Error	z-stat	p-value
Panel A: Frontier Function f(X; β)				
Firm Size (log total assets)	0.083	0.021	3.95	< 0.001
R&D Intensity (R&D / Revenue)	0.147	0.038	3.87	< 0.001
Leverage (Total Debt / Assets)	−0.094	0.029	−3.24	0.001
Panel B: Inefficiency Determinants μ(δ)				
Governance Quality (GOV) — δ_1	−0.241	0.048	−5.02	< 0.001
Disclosure Depth (DISC) — δ_2	−0.198	0.041	−4.83	< 0.001
Behavioral Bias Proxy (BIAS) — δ_3	0.164	0.053	3.09	0.002
Market Liquidity (LIQ) — δ_4	−0.112	0.044	−2.55	0.011
Constant — δ_0	0.412	0.071	5.80	< 0.001
Panel C: Variance Parameters				
$\sigma^2 = \sigma\_v^2 + \sigma\_u^2$	0.084	0.012	7.00	< 0.001
$\gamma = \sigma\_u^2 / \sigma^2$	0.713	0.061	11.69	< 0.001
Log-likelihood	148.3			

Observations	120			

Notes: Stochastic frontier model estimated following Battese and Coelli (1995). Panel A reports the deterministic frontier coefficients; Panel B reports the inefficiency determinants; Panel C reports variance parameters. $\gamma = \sigma_u^2/\sigma^2$ measures the proportion of total variance attributable to inefficiency: $\gamma = 0.713$ indicates that approximately 71% of the deviation from the frontier is due to firm-specific inefficiency rather than random noise.

The variance ratio $\gamma = 0.713$ indicates that the majority of the observed deviation from the efficiency frontier is attributable to firm-specific, systematically explainable inefficiency rather than random measurement error. This result validates the multi-determinant structure of the CFMPE framework and confirms that efficiency losses are not merely statistical artifacts.

Discussions. The findings carry several important implications. The dominance of governance quality and disclosure depth as efficiency determinants supports a view of CFMPE as fundamentally a governance phenomenon: firms that invest in transparent information architecture and well-designed incentive structures capture the largest efficiency gains, irrespective of market-level conditions. This finding is consistent with the theoretical predictions of Jensen and Meckling (1976) and Verrecchia (2001), and extends their insights to the composite, multi-dimensional efficiency construct.

The significant contribution of the behavioral bias to inefficiency has practical implications for board design and executive development. If overconfidence-induced distortions in earnings guidance and capital allocation are quantifiably linked to efficiency losses of the magnitude documented here, then structured debiasing processes — pre-mortem analysis, structured dissent in investment committees, systematic peer benchmarking of guidance accuracy — represent tractable interventions with measurable returns. This bridges the theoretical insights of Baker and Wurgler (2013) and Malmendier and Tate (2005) to concrete corporate governance practice.

The finding that operational efficiency contributes a smaller share of total inefficiency than informational or allocative gaps suggests that while fintech infrastructure and transaction cost reduction remain important policy objectives, the primary efficiency leverage point lies in the quality of the firm's information environment and internal capital allocation governance — areas where managerial choices are more directly malleable than structural market conditions.

Conclusion and Suggestions. This paper has developed a theoretically grounded and analytically operational framework for determining the efficiency of companies as financial market participants. The three-dimensional CFMPE construct, the composite index defined in Equation (1), the stochastic frontier model of Equations (2)–(4), and the illustrative cross-sectional findings converge on a consistent picture: corporate efficiency in financial markets is primarily determined by governance quality, disclosure depth, and behavioral constraints at the managerial level, with market-structural and macroeconomic factors playing an important but secondary moderating role.

Based on the conducted research we can provide some suggestions to improve efficiency of financial market participants. First of all, companies should go beyond standard financial reporting by publishing supplementary disclosures on intangible assets, R&D progress, and human capital, while replacing point forecasts with scenario-based guidance that shows probability ranges for key metrics. Annual capital allocation reports covering hurdle rates, investment criteria, and reviews of past decisions would further close the information gap between firms and investors. On the other side, finance teams need structured development through market simulations and investor mentoring, paired with systematic decision audits that track forecast accuracy and feed lessons back into future protocols. Operationally, firms should actively diversify their investor base toward long-term institutional capital, maintain at least two years of liquidity buffer to avoid forced market access, and adopt treasury tools for smarter cash management and hedging. At the regulatory level, mandatory intangible disclosure floors and updated governance codes requiring public capital allocation frameworks would address structural gaps that no single firm can fix alone, while exchange-level benchmarking tools would give listed companies a practical mirror to assess and improve their own efficiency.

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M.Hotamqulova

Moliya bozori ishtirokchisi sifatida korxonalarning faoliyat samaradorligi

Annotatsiya. Ushbu maqola moliyaviy bozorlar ishtirokchilari sifatida kompaniyalarning samaradorligini aniqlash uchun nazariy va analitik asosni ishlab chiqadi. Samaradorlikning umumiy bozor darajasidagi konsepsiyalaridan kelib chiqib, tahlil birligi sifatida korporativ ishtirokchiga e'tibor qaratilgan va firmaning samarali faoliyat ko‘rsatish shartlarini uchta o‘zaro bog‘liqlik bo‘yicha ko‘rib chiqilgan: axborot, operatsion va taqsimlash. Agentlik nazariyasi, tranzaksiya xarajatlari iqtisodiyoti, oshkor qilish nazariyasi va korporativ moliyaning xulq-atvoriga tayanib, ushbu maqolada korporativ moliyaviy bozor ishtirokchilari samaradorligining (CFMPE) ko‘p mezonli modeli tuzilgan.

Kalit so‘zlar: korporativ samaradorlik, moliyaviy bozor ishtiroki, agentlik nazariyasi, axborot assimetriyasi, boshqaruv sifati.

М.Хотамкулова

Корпоративная эффективность как участник финансового рынка

Аннотация. В данной статье разработана теоретическая и аналитическая основа для определения эффективности компаний как участников финансовых рынков. Отталкиваясь от агрегированных рыночных представлений об эффективности, мы фокусируемся на корпоративном участнике как единице анализа и исследуем условия, при которых фирма эффективно функционирует в трех взаимосвязанных измерениях: информационном, операционном и распределительном. Опираясь на теорию агентских отношений, экономику транзакционных издержек, теорию раскрытия информации и поведенческую корпоративную финансовую теорию, мы строим многокритериальную модель эффективности корпоративного участника финансового рынка (CFMPE).

Ключевые слова: корпоративная эффективность, участие в финансовых рынках, теория агентских отношений, информационная асимметрия, качество управления.

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