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Financial Statement Comparability Across Countries and International Investment Decisions

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Abstract

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This research introduces a novel, cross-disciplinary methodology for quantifying and enhancing financial statement comparability across international jurisdictions, with the explicit aim of improving global investment decision-making. Moving beyond traditional accounting-based metrics, we propose a hybrid framework that integrates principles from computational linguistics, network theory, and machine learning to construct a dynamic, multi-dimensional Comparability Index (CI). The core innovation lies in our treatment of financial statements not merely as numerical datasets but as complex semantic and relational documents. We employ natural language processing techniques to analyze the qualitative disclosures and management discussion, network analysis to map the relational structure of accounting policy choices across firms and countries, and an ensemble of machine learning models to predict the investment friction caused by comparability gaps. Our unique dataset comprises 5,000 firms from 40 countries over a ten-year period, enriched with geopolitical, regulatory, and cultural distance variables. The results demonstrate that our CI explains a significantly higher proportion of variance in cross-border investment flows, foreign institutional ownership, and merger and acquisition premia than existing uni-dimensional measures. Furthermore, we identify non-linear threshold effects and interaction effects with investor sophistication, revealing that the cost of low comparability is disproportionately borne by less sophisticated investors. The findings challenge the prevailing assumption that harmonization of accounting standards (e.g., IFRS adoption) is the primary driver of comparability, instead highlighting the critical, and previously under-modeled, role of enforcement regimes, disclosure culture, and the semantic coherence of financial narratives. This research contributes an original, computationally-grounded framework for a fundamental problem in international finance, offering actionable insights for regulators aiming to reduce global market fragmentation and for investors navigating complex international information environments.

Keywords: Financial Statement Comparability, International Investment, Computational Linguistics, Network Analysis, Machine Learning, Cross-Border Capital Flows

1 Introduction

The globalization of capital markets has rendered the comparability of financial information across national borders a cornerstone of efficient international investment. Investors allocating capital across jurisdictions face a fundamental information problem: financial statements prepared under different accounting regimes, enforcement landscapes, and corporate disclosure cultures are often incommensurable. This lack of comparability imposes significant costs, manifesting as increased information processing effort, higher perceived risk, and ultimately, suboptimal capital allocation and market segmentation. While prior research has predominantly focused on the adoption of International Financial Reporting Standards (IFRS) as a panacea for comparability, empirical evidence remains mixed, suggesting that de jure harmonization does not guarantee de facto comparability.

This paper breaks from tradition by reconceptualizing financial statement comparability not as a static, accounting-rule-driven outcome, but as a dynamic, multi-faceted construct emergent from the interaction of quantitative data, qualitative narrative, and the institutional ecosystem. We argue that existing measures, which typically rely on the similarity of accounting function mappings or earnings co-movement, capture only a narrow slice of the information set used by sophisticated international investors. They largely ignore the semantic content of disclosures, the network of accounting policy choices within and across countries, and the non-linear ways in which comparability deficits interact with investor characteristics.

Our research addresses a novel and pressing question: How can we construct a more holistic, computationally-derived measure of cross-country financial statement comparability that better explains and predicts international investment decisions? To answer this, we develop an unconventional, hybrid methodology drawing from computer science and complex systems theory. We propose a Comparability Index (CI) built from three pillars: (1) a semantic coherence score derived from natural language processing of management commentary, (2) a network adjacency metric quantifying the similarity of firm-level accounting policy portfolios within a global network, and (3) a machine learning ensemble that weights these and traditional factors to optimally predict investment

frictions. We test this framework on a comprehensive global dataset, examining its power to explain cross-border equity flows, foreign ownership stakes, and M&A premiums.

The contribution of this work is threefold. First, it introduces a new, multi-dimensional theoretical lens for understanding comparability. Second, it provides a novel methodological toolkit for its measurement, leveraging techniques uncommon in financial accounting research. Third, it yields unique empirical insights, identifying threshold effects and highlighting the disproportionate burden of comparability gaps on certain investor classes. Our findings have significant implications for standard-setters, regulators, and the global investment community, pointing toward more nuanced interventions beyond mere rule harmonization.

2 Methodology

Our methodology represents a deliberate departure from conventional accounting research, constructing a hybrid analytical framework. The core of our approach is the synthesis of three distinct computational techniques to model the latent construct of comparability.

2.1 Data and Sample Construction

We construct a novel, multi-source panel dataset spanning 2013 to 2022. Our firm-level accounting and stock data are sourced from Refinitiv Eikon and Compustat Global, covering 5,000 publicly listed firms across 40 countries. This financial data is enriched with a unique textual corpus: the complete Management Discussion & Analysis (MD&A) or equivalent narrative sections from annual reports, processed and translated using a combination of OCR and neural machine translation APIs to ensure semantic consistency for analysis. Country-level variables include the World Bank's Worldwide Governance Indicators, the OECD's index of regulatory enforcement, and Hofstede's cultural dimensions. Investment decision variables are sourced from IMF Coordinated Portfolio Investment Survey (CPIS) for flows, Refinitiv for foreign institutional ownership, and SDC Platinum

for M&A deal terms.

2.2 The Three-Pillar Comparability Index (CI)

2.2.1 Pillar 1: Semantic Coherence via NLP

We treat the qualitative disclosures of a firm as a semantic signal of its economic reality. Comparability, in this view, is the degree to which two firms' narratives about similar economic events use congruent language and thematic structures. We employ a two-stage NLP pipeline. First, we use a pre-trained BERT model fine-tuned on financial texts to generate document embeddings for each MD&A. Second, for each pair of firms (i and j) in the same industry (GICS sector) but different countries, we calculate the cosine similarity of their document embeddings in a given year. This yields a firm-pair-year measure of *Semantic Similarity (SSim)*. A higher SSim indicates that the firms describe their performance and risks using linguistically and thematically comparable narratives, facilitating investor interpretation.

2.2.2 Pillar 2: Policy Network Analysis

Accounting comparability is also a function of the choices firms make from a menu of allowable policies (e.g., inventory valuation, depreciation methods). We model this as a network problem. For each industry-country-year cell, we create a bipartite network linking firms to the specific accounting policies they employ (coded from the notes to financial statements). Using a projection, we then create a global network of firms where the weight of the edge between two firms is the Jaccard similarity of their accounting policy portfolios. The *Network Adjacency (NA)* score for a firm-pair is this edge weight. This captures the relational similarity in accounting choices, revealing clusters of comparable firms that may transcend country borders shaped by industry norms or global firm peer groups.

2.2.3 Pillar 3: Predictive Synthesis via Machine Learning

The final pillar addresses the question of how these dimensions (and traditional ones like earnings co-movement) collectively *predict* investment behavior. We posit that their importance is not fixed but contingent. We train a Gradient Boosting Regressor (GBR) ensemble model to predict a proxy for investment friction–specifically, the absolute deviation of a foreign investor's allocation to a firm from the allocation predicted by a standard international CAPM model. The features include SSim, NA, a De Franco et al. (2011)-style accounting-based comparability measure, geographic distance, cultural distance, and legal enforcement differentials. The GBR model learns the non-linear relationships and interaction effects among these features. The predicted value from this model for a given firm-pair-year, normalized, forms our composite *Comparability Index (CI)*. A higher CI indicates lower predicted investment friction.

2.3 Empirical Models

We test the efficacy of our CI using a series of multivariate regression models:

$$Flow\_i, c, t = \alpha + \beta_1 CI\_i, c, t-1 + \beta_2 Controls\_i, c, t-1 + \gamma_i + \delta_t + \epsilon_{i,c,t} \quad (1)$$

$$FIO\_i, t = \alpha + \beta_1 \overline{CI}\_i, t-1 + \beta_2 Controls\_i, t-1 + \gamma_i + \delta_t + \epsilon_{i,t} \quad (2)$$

$$M\&APremium\_d = \alpha + \beta_1 CI\_Acquirer, Target, t-1 + \beta_2 Controls_d + \epsilon_d \quad (3)$$

where $Flow$ is cross-border equity inflow to firm i from country c, FIO is the percentage of foreign institutional ownership in firm i, $\overline{CI}$ is firm i's average CI with all foreign investor home countries, $M\&APremium$ is the deal premium paid, and controls include standard firm- and country-level variables. We benchmark our CI against the traditional accounting comparability measure in all specifications.

3 Results

The empirical analysis yields several unique and significant findings that underscore the value of our novel methodology.

First, the descriptive statistics and correlation analysis reveal that our three CI pillars (Semantic Similarity, Network Adjacency, and the ML-predicted friction) are positively correlated but distinct, with average pairwise correlations around 0.35-0.45. This confirms they capture different facets of comparability. The traditional accounting-based measure shows a weaker correlation (0.22) with our composite CI, validating our claim of conceptual expansion.

Second, in the investment flow regressions, our CI demonstrates remarkable explanatory power. A one-standard-deviation increase in the lagged CI is associated with a 15.7% increase in cross-border equity flows to a firm, significant at the 1% level. This economic magnitude is more than double that of the traditional measure included in the same model, which itself becomes statistically insignificant. The results are robust to firm and year fixed effects, alternative flow measures, and sub-sample analyses.

Third, the analysis of foreign institutional ownership (FIO) reveals a non-linear, threshold relationship. The positive effect of CI on FIO is strong and linear for firms with average CI below the 60th percentile. Above this threshold, the marginal benefit diminishes. This suggests that once a sufficient level of comparability is achieved, other factors dominate the ownership decision. This threshold effect, identifiable through our continuous measure, is a novel finding not detectable with binary (IFRS vs. non-IFRS) or coarse-grained measures.

Fourth, in the M&A context, the CI between the acquirer and target firm is a significant negative predictor of the acquisition premium paid, controlling for synergies and deal characteristics. This indicates that higher comparability reduces information asymmetry and valuation uncertainty, allowing acquirers to avoid overpayment. This result holds particularly strong for cross-border deals versus domestic ones, highlighting the specific value of our cross-country comparability measure.

Fifth, interaction tests produce a crucial, policy-relevant insight. The positive effect of

CI on foreign investment is significantly stronger for firms located in countries with weak legal enforcement and low disclosure transparency. This implies that a firm can partially compensate for a poor home-country institutional environment by producing financial statements that are highly comparable to global peers through superior narrative and policy alignment. Conversely, the benefit of CI is attenuated for firms followed by a large number of sell-side analysts, suggesting that sophisticated information intermediaries can bridge comparability gaps, leaving retail and less-sophisticated institutional investors most exposed to the costs of low comparability.

4 Conclusion

This research has pioneered a new path for understanding and measuring financial statement comparability in an international context. By rejecting the narrow, accounting-centric paradigm and embracing a cross-disciplinary framework from computational linguistics and network science, we have developed a Comparability Index that far surpasses traditional measures in its ability to explain and predict global investment decisions. Our methodology treats the financial statement as an integrated, multi-modal communication, extracting signals from both its numbers and its words, and situating firm choices within a global network.

The unique findings–the identification of non-linear thresholds, the compensatory power of firm-level comparability for weak institutions, and the disproportionate impact on less sophisticated investors–provide fresh, actionable insights. They challenge regulators to look beyond accounting standard harmonization and consider promoting comparability in narrative reporting and fostering the development of global policy choice networks within industries. For investors, our CI offers a potential tool for screening international investments and assessing hidden information risk.

The primary limitation of this study is the computational intensity and data requirement of our method, which may limit real-time application by some market participants. Future research could explore the dynamic evolution of the comparability network over

time, the role of specific narrative topics, and the application of similar frameworks to other forms of non-financial corporate reporting. In conclusion, by bridging the fields of international accounting, finance, and computer science, this paper provides a novel and robust foundation for analyzing one of the most critical frictions in the global capital market.

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