Towards A Cross-Sector Moral Hazard Index: Theory, Evidence and Practical Application

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.915EC00770

Received: 10 November 2025; Accepted: 20 November 2025; Published: 28 November 2025

ABSTRACT

The moral hazard phenomenon, whereby agents do not internalise all the implications of their actions, has far-reaching macro-economic stability, contract, efficiency and regulatory implications in financial systems. This study suggests a cross sector Moral Hazard Index (MHI) which is based on the classical agency theory, which is adjusted to modern empirical data. The index is structured in four pillars, Agency -Theoretic Core (AIC), Governance Architecture (GA), Safety-Net and Insurance Design (SID) and Market -Based Indicators (MBI), thus providing effective principles in its framework construction in banking, corporate, agricultural and financial market sectors. The suggested framework will allow standardisation and stay sensitive to the sector-specific features thereby aiding policymakers, regulators and market participants. Lastly, the paper outlines example MHI estimates and evaluates its cross-sector applicability, hence highlighting its real-world applicability to decision-makers and investors.

Keywords: Moral Hazard, Agency Theory, Market Indicators, Index Construction, Cross-Sector Measurement

INTRODUCTION

The moral hazard occurs within the framework of situations when the actions of agents are hard to monitor or control and when the agents are also not responsible to the full extent to the outcomes of their choice. Classical agency theory stresses that the world has conflict of interests, monitoring costs and contractual limitations that lead to sub optimality (Jensen and Meckling 1976; Holmstrom 1979). Although this theory has reached at least some level of maturity, there is no standardised index of moral hazard at the present across all economic sectors. This gap remains due to the fact that measurement proxies vary and empirical procedures usually confound adverse selection and moral hazard (Chiappori & Salanié, 2000; Einav, Finkelstein, & Levin, 2010).

Ownership and governance structure affect risk-taking behaviour in banking and the effect of regulatory interventions and deposit insurance is heterogeneous in terms of its effect on institutions (Laeven and Levine, 2009; Demirguc-Kunt and Kane, 2002). Effective governance in the business world reduces the opportunism of managers and financialisation, but the signs are still heterogeneous (Liu, Tang and Zhang, 2023). Index insurance can affect the behaviour of borrowers in agricultural credit in a different way compared to indemnity insurance (Dougherty, Gallenstein and Mishra, 2021). And lastly, the market-based indicators, including abnormal returns, reveal morphine channels not completely modeled by operational metrics (Blonski and von Lilienfeld-Toal, 2023).

The goal of this article is to offer a rigorous basis to the design of a cross-sector Moral Hazard Index (MHI) through the synthesis of theoretical knowledge, empirical data and apparent, replicable construction guidelines.

LITERATURE REVIEW

Agency-Theoretic Core

Agency theory recognizes the costs that occur as a result of the agency problem of ownership and control such as

monitoring costs, bonding expenditures and residual losses (Jensen, 1976). Holmström (1979), illustrates that imperfect signals may be used to enhance incentive contracts via trade-offs between risk-sharing and efforts provision. This model forms the basis of measuring moral hazard based on three key constructs, which are information asymmetry (A), hidden actions (H) and incentive misalignment (I).

Empirical Problems and Recognition

Coverage–claims correlation is commonly used to test the existence of asymmetric information in insurance markets, but when there is no variation in the exogenous design, the correlations are not in a position to determine whether it is a case of adverse selection or moral hazard (Chiappori & Salanié, 2000). As evidenced by Einav et al (2010) price, quantity and cost data can be combined to estimate welfare losses and can be used to avoid the mixing channel of information. Field experiments can increase external validity but require a special design in terms of tasks and incentives (Harrison & List, 2004).

As highlighted by Mohd Ali et al. (2024), the period between 2016 and 2021 witnessed a substantial expansion of scholarly work examining the nature, determinants and preventive mechanisms associated with moral hazard across multiple domains. Despite this growing body of research, the field still lacks a standardized index that can serve as a uniform reference point for measuring or assessing moral hazard within economic contexts.

Evidence from a Cross-Section to Induce MHI

Banking

Regulation and deposit insurance have contrary impacts on risk-taking, which are mediated by ownership and governance, despite having the same rules (Laeven, 2009). Market discipline is influenced by deposit insurance characteristics such as limits of coverage, co-payment and risk-based premiums (Demirguc-Kunt, 2002). Recent findings indicate that exposure to government protection can be associated with a reduced risk in some situations (Lazear & Jung, 2024).

Corporate & Labor Markets

Well-developed governance minimizes opportunism among managers and heavy financialization (Liu, Tang, and Zhang, 2023), whereas the remuneration based on performance enhances the work effort of workers (Lazear, 2000).

Agricultural Credit & Insurance

Index insurance changes the behaviour of borrowers unlike the indemnity products; both theoretical and field data show that moral hazard is reduced (Dougherty, Gallenstein, & Mishra, 2021). Mohd Ali et. al (2025) used principal component analysis to measure the moral hazard index of subsidised cooking oil. Their findings offer empirical evidence of moral hazard behaviour within the subsidy scheme, indicating potential incentive misalignment in its implementation.

Financial Markets

Disciplined actor abnormal returns (e.g., owner-CEOs and activists) are a matter indicating the moral hazard channel that cannot be completely measured using accounting measures (Blonski & von Lilienfeld-Toal, 2023). Taken together, these results confirm the need to have a context-based cross-sector Moral Hazard Index.

Four-Pillar Model of the Index of the Moral Hazard

Agency-Theoretic Core (AIC)

Definition:

Captures A, H and I as moral hazard core drivers.

Rationale:

Based on agency theory (Jensen & Meckling, 1976; Holmström, 1979).

Proxies:

A: Transparency/disclosure scores, audit frequency, data visibility indices

H: Risk-weighted assets/leverage (banking), service utilization rates (health), discretionary accruals (corporate), borrower effort proxies (credit)

I: Prevalence of pay-for-performance, clawbacks, deferred bonuses, managerial equity holdings.

Governance Architecture (GA)

Definition:

Within quality of oversight and control, there is independent board, ownership concentration and internal controls.

Rationale:

Governance intermediates between regulatory and safety-net effects on risk (Laeven & Levine, 2009; Liu, Tang, & Zhang, 2023).

Proxies:

The board independence ratio, predominant ownership, the presence of the institutional investors and internal control scores.

Safety-Net- &-Insurance Design (SID)

Definition:

Features of systemic protection and insurance contract design, including deposit insurance and index versus indemnity.

Rationale:

Design has an effect on the sphere of discipline, incentives and moral-hazard channels (Demirgüç-Kunt & Kane, 2002; Dougherty, Gallenstein, & Mishra, 2021).

Proxies:

Coinsurance, coverage limits, premiums based on risk, index insurance penetration as well as pay out parameters.

Market-Based Indicators (MBI)

Definition:

Price-based signals, such as abnormal returns and valuation discounts, which are indicators of unpriced discretion or effort.

Rationale:

Markets do not necessarily fully compensate effort or unobservable risks; anomalies arise amongst disciplined players (Blonski & von Lilienfeld-Toal, 2023).

Proxies:

Post-ownership or post-activism events abnormal returns and valuation discounts that are related to discretion.

Table 1 outlines the four pillars of the MHI, including their definitions, key proxies and example sectors, offering a concise reference for understanding the structure and application of the index.

Table 1. Four-Pillar Framework of the Moral Hazard Index (MHI)

Pillar	Definition	Key Proxies	Sector Examples
AIC	Core drivers of moral hazard: A, H, I	Transparency/disclosure, audit frequency, risk- weighted assets, service utilization, pay-for- performance	Banking, corporate, health, credit
GA	Governance structure, oversight, ownership	Board independence, ownership concentration, institutional investor presence, internal controls	Corporate, banking
SID	Safety-net & insurance design	Deposit insurance coverage, coinsurance, risk- based premiums, index insurance penetration	Banking, agriculture
MBI	Market-based indicators of unpriced discretion	Abnormal returns, valuation discounts	Financial markets, corporate

To provide a clear overview of the proposed framework, the following tables summarize the key components of the MHI. Table 2 presents representative proxy variables for each pillar across different sectors, illustrating how the index can be operationalized in practice.

Table 2. Proxy Variables for Moral Hazard Pillars Across Sector

Pillar	Sector	Proxy Variable	Source/Measure
AIC	Banking	Risk-weighted assets	Regulatory filings
GA	Corporate	Board independence ratio	Annual reports
SID	Agriculture	Index insurance coverage	Field surveys
MBI	Financial Markets	Post-ownership abnormal returns	Market data

MHI Construction Protocol: Data to Index

A. Step 1: Proxy Selection and Normalization

- Collect sector-specific proxies for each pillar.
- Normalize data (e.g., z-scores) and handle outliers.

B. Step 2: Formation of Pillar Sub-Indices

- Compute average normalized scores within each pillar to form sub-indices: AIC, GA, SID, MBI.

C. Step 3: Aggregation into MHI

- Combine sub-indices using empirically derived weights from panel regressions or quasi-experimental methods.

D. Step 4: Identification Safeguards

- Apply fixed effects, instrumental variables, difference-in-differences or event studies to isolate causal effects.

E. Step 5: Validation and Reporting

- Validate MHI against policy interventions, governance reforms and index insurance adoption.
- All steps including data definitions, normalization methods, empirical weights, sensitivity tests and validation outcomes should be reported transparently to ensure replicability. This protocol links the theoretical pillars (AIC, GA, SID, MBI) to empirical measurement, making the MHI a replicable and actionable tool for researchers, regulators and investors.

F. Step 6: Data Limitations and Cross-Sector Challenges

- Differences in data availability and quality across sectors and countries.
- Normalization and weighting may introduce bias if proxies are heterogeneous.
- Comparability between sectors may be limited; MHI should be interpreted within context.

Application and Research Agenda

A. Practical Applications

- Bank Regulators: Identify institutions or segments with high moral hazard.
- Corporate Boards & Management: Focus on GA and AIC to reduce managerial opportunism and financialization.
- Agricultural Credit Designers: Capture SID to evaluate borrower behavior and default risk.
- Institutional Investors: Combine MBI with GA/AIC to detect residual moral hazard.

B. Research Agenda

- Refine empirical weights using quasi-experimental causal methods.
- Expand micro-level supervisory or transaction data.
- Validate across countries and over time.
- Develop dynamic updates as governance, policy and markets evolve.

CONCLUSION

The article highlights cross-sector MHI that is based on agency theory but is sensitive to the context of sectors. The four-pillar construct (AIC, GA, SID, MBI) and transparent building procedure gives a standardised measure that has a moderate level of comparability and contextual relevance. The MHI can offer support to policy judgment, enhance the contractual designing and it can be used as a practical guide to regulators, firms and investors who have to deal with the issue of moral hazard in the modern economy.

ACKNOWLEDGEMENT

The authors gratefully acknowledge the financial and institutional support provided by Universiti Teknikal Malaysia Melaka. Sincere appreciation is also extended to all individuals who contributed valuable insights, constructive feedback and suggestions that have enriched the development of this paper.

Conflict of Interest

The authors declare that there are no conflicts of interest associated with this publication.

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