

Research Statement

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My research asks how contracts and market mechanisms shape the incentives to produce information and to bear risk, and how capital structure and financial distress affect firms' operations, employment, and aggregate welfare. I combine models of contracting and market design with empirical analyses of corporate decisions. The applications range from credit ratings and managerial risk-taking to corporate hedging and labor markets, and most recently to automated market making in prediction markets and decentralized finance, where the same tools price the information that trading reveals.

1 Automated Market Making in Prediction Markets and DeFi

Prediction markets and decentralized exchanges increasingly clear trades against an automated market maker, a posted pricing rule that takes the other side of every order. Two papers characterize the price discovery such a rule supports and the cost it imposes on the party that funds it.

Rational Expectations Equilibrium with an Automated Market Maker solves the rational expectations equilibrium of Grossman and Stiglitz in the prediction market, with costly information acquisition, when the counterparty is an automated market maker. At a fixed share of informed traders, the market maker's liquidity cannot change what the price reveals; it affects price informativeness only through how many traders choose to become informed. Deeper liquidity draws more informed traders in, at the market maker's expense: it earns an expected profit in a shallow market and bears an expected loss in a deep one. Noise trading shelters informed traders only up to a point, because extreme noise carries the price to certainty and leaves the signal nothing to add.

Automated Market Making and Liquidity Provision in Prediction Markets treats liquidity as the price of information: under the logarithmic market scoring rule, the market maker pays that liquidity, in expectation, for each unit of uncertainty a trade resolves. As the sole buyer of information, the market maker prices like a monopsonist. Deeper liquidity buys more information but raises the payment on every unit, so it sets liquidity below the value it places on accuracy. When traders arrive in sequence, free entry determines when the market stops learning, and early arrival need not be rewarded.

2 Contracting for Information and Effort

Put Credit Rating Agency's Money Where Its Mouth Is (revise and resubmit, MS) asks how to pay a rating agency that must both exert effort to learn a bond's quality and report what it learns truthfully. The optimal contract involves no direct payment. It gives the agency the opportunity to profit from its own knowledge, so the agency earns only when its rating proves accurate against realized outcome. The contract can be implemented with a chooser option on credit default swaps, mediated by a clearinghouse, that lets the agency choose between buying and selling CDS on the rated bond.

Rare Disaster Information Paradox shows that better information about tail risk can hurt the principal. A manager with limited liability who is rewarded for higher performance can raise the profit by effort or by gambling on a rare disaster; when disaster losses are large enough and the manager can learn how likely the disaster is, favorable news invites the gamble, so the firm's expected value falls and the disaster becomes more likely, even when the signal is public. Regulations that mandate forward-looking risk assessment can therefore backfire. Two earlier papers concern executive compensation. **Executive Pay-for-Performance Sensitivity and Stochastic Volatility** builds a dynamic principal-agent model in which short-run and long-run volatility lower pay-for-performance sensitivity through distinct mechanisms, and tests it with option-implied volatilities. **The Contract Year Phenomenon in the Corner Office** shows that CEOs manage earnings and withhold negative news as fixed-term contracts approach expiration, and obtain better terms upon renewal.

Conflicts of interest also distort the information that intermediaries produce: mutual fund commission relationships bias sell-side analyst recommendations (*JAR*), and lending by China's state-owned banks reflects political connections as well as economic judgment (*JBFI*).

3 Financing, Operations, Workers and Welfare

Corporate Resiliency and the Choice between Financial and Operational Hedging (conditionally accepted, *JFQA*) investigates how firms manage financial default risk on debt obligations alongside operational default risk on delivery obligations. Financially constrained firms reduce operational hedging, through adjustments to inventory and supply chains, in favor of cash holdings; their markups therefore increase with financial default risk, and more so during adverse financing shocks.

How Does Health Insurance Affect Firm Employment and Performance? Evidence from Obamacare (forthcoming, *MS*) studies how the employer mandate of the Affordable Care Act, and the associated increase in premia, affects firm employment and performance. Exposed employers reduce enrollment in their health plans, and the evidence suggests that they do so by shifting employment from full-time employees toward part-time, temporary, and seasonal workers, with no evidence of deterioration in performance.

A Model of Capital Structure under Labor Market Search (single-authored) develops a competitive search equilibrium in which employers design capital structures and compete for workers subject to labor search frictions. Capital structure reflects the trade-off between the strategic benefit of debt in wage bargaining and its cost in hiring, a theory of leverage that does not rely on the tax benefit of debt. **Credit Risk in General Equilibrium** analyzes dynamic capital structure in general equilibrium when managers follow equity-maximizing debt policies and quantifies the private cost to firms and the aggregate welfare cost of the resulting default risk. Because expropriation incentives rise when valuations are low, leverage can be countercyclical and the social cost exceeds the private cost.

4 Research Agenda

I plan to apply contract theory and mechanism design to corporate finance and to digital financial markets alike. The organizing question is how financial arrangements pay for information by scoring a report or a trade against a realized outcome. My rating contract scores the agency against realized default; an automated market maker scores each trade at settlement, paying for the uncertainty it resolves beyond what the price already reflects; and my rare disaster model shows that greater access to information can itself induce excessive risk-taking. AI and big data widen what can be observed, automate inference from shared models and data, and place signals with machines rather than people. I intend to study how contracts and pricing rules should score information for the value it adds, net of what is already known and of the risk-taking it induces, in the compensation of intermediaries and managers, in disclosure and risk regulation, and in the design of trading mechanisms.