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SCHOLARLY AGENDA

I. BACKGROUND

My research applies economic theory and econometrics to study the laws and regulatory framework governing publicly traded firms and the securities markets. I am particularly interested in the strategic challenges faced by small, high-growth firms that cannot afford the high costs of compliance on a formal exchange, but seek public capital to fund their ventures.

I am also interested in research at the intersection of law, business and economics analyzing the institutions that shape intra-firm relationships, including: (a) state corporate law and securities regulations governing the relationship between a firm's managers and equity investors, and (b) legal institutions and behavioral theories driving the compensation arrangements between firms and their employees.

II. OVER-THE-COUNTER FIRMS AND EQUITY CROWDFUNDING

The Over-the-Counter equity markets ("OTC") are one focal point of my research. Firms trading in the OTC markets are publicly traded but free from the extensive disclosure requirements, governance requirements, listing standards, and sophisticated investor base faced by firms on formal U.S. exchanges (e.g. Nasdaq, NYSE).

Studying the OTC markets is relevant to a broader regulatory imperative: balancing the need to provide small, emerging firms with less costly access to public capital while protecting investors and preserving the integrity of such markets.[1] A changing tide in this regulatory balance could trigger a sea change for entrepreneurs and new businesses.

Recent changes in federal securities laws are expanding the funding opportunities available to new ventures. The infusion of crowd-sourced equity not only can broaden the pool of small business capital but also can broaden the values and objectives of new businesses. Rigorous, well-identified scholarship about these developments can help guide firm strategy in this new environment, and inform policymakers who design the legal and regulatory parameters of this environment.

Much like the firms that populate this space, crowdfunding finance carries both enormous promise and great risk. Naïve, optimistic investors and a market lacking in transparency set up an ideal target for fraudsters. The impact of this fraud extends beyond its direct victims; pervasive fraud can unravel the entire crowdfunding market. This has been the fate of the OTC markets. The negative stigma associated with seeking public capital in the fraud-infested OTC markets dissuades legitimate firms and investors. Studying the OTC markets can provide key insights and lessons to guide policy and firm strategy in this evolving era for small business finance.[2]

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[1] Recent legislation and regulation has made the changing dynamics of small business capital formation a front-and-center policy issue. After Sarbanes-Oxley and Dodd-Frank significantly increased compliance costs and intensified disclosure requirements, an increasing number of firms have delisted from the major exchanges and the number of IPOs has dramatically declined. In response, the JOBS Act was aimed squarely at relaxing the regulatory burdens faced by emerging growth firms.

[2] According to the OTC Markets website, from 2000 to 2014, annual trading volume on the OTC Markets has increased from approximately $35 Billion to $238 Billion. The increase in total market capitalization has seen increases of a comparable scale over this time period.
http://www.otcmarkets.com/stock/OTCM/news/OTC-Markets-Group-Reports-2014-Trading-Statistics-and-Highlights?id=96163

A. Lax Corporate Governance, Retail Investors, and Fraud: Evidence From the Nevada OTC Experiment (Job Market Paper)

The regulation of publicly traded firms typically comes in two varieties: (1) top-down regulation (e.g. federal securities laws); and (2) a menu of choices among which firm managers can select (e.g. state corporate law). There are inherent advantages to the menu approach: (A) a range of options allows firms to sort efficiently to the body of law that best meets the firm's needs; and (B) competition to attract firms among the suppliers of regulation can drive experimentation and a possible race to the top.

But in markets that lack transparency and with investors that lack sophistication, managers may use the menu to select law that benefits them personally at the expense of their investors. At its extreme, managers will select laws that facilitate self-dealing or outright fraud. This paper examines how firms in a weakly regulated market with unsophisticated, disaggregated investors respond to the introduction of a lax governance option.

In 2001, Nevada amended its corporate law, effectively removing director and officer liability for breaches of well-established corporate fiduciary duties. This Nevada amendment is concurrent with a surge in the proportion of OTC firms incorporating in Nevada: 16% before 2001 vs. 59% after 2001. The extant literature on the impact of this legal change has focused solely on the major exchanges where Nevada incorporations have increased by 20%; the more striking rise in the OTC has been overlooked.

This migration to Nevada in the OTC may be a worrying trend since these markets lack the disclosure requirements and regulatory constraints that protect investors on the major exchanges. Fiduciary duty breaches now permissible under Nevada law remain infeasible under the web of disciplinary forces constraining managers on the national exchanges; such safeguards are largely absent in the OTC.

This paper examines the rise of Nevada incorporations in the OTC. I empirically analyze Nevada OTC firms using a differences-in-differences empirical design with a novel, hand-collected dataset of SEC Trading Suspensions as my outcome variable. I find strong statistically and economically significant evidence that OTC firms choosing post-2001 Nevada corporate law are the firms most likely to be engaging in shareholder misappropriation and fraud.

Because the OTC markets lack the sources of "sunlight" that protect investors on the formal exchanges, Nevada's lax corporate law may be removing a critical deterrent to insider misconduct where it is needed most.

B(1). Adverse Selection in the OTC Markets

The OTC markets are plagued with an asymmetric information problem; we could anticipate similar problems arising in marketplaces for crowdfunded equity. If investors are unable to distinguish the legitimate firms from their fraudulent counterparts, the legitimate firms' share price will suffer an unwarranted discount and their cost of capital will increase. The higher cost of capital will drive legitimate firms out, and only the corrupt "lemons" will remain in the market.[3]

The increasing cost of registration and compliance on a formal U.S. exchange exacerbates the adverse selection problem. An increasing number of firms cannot afford the heavy costs of operating on a formal exchange—these lawful firms are bundled together with the firms who avoid disclosure primarily because it frees them to engage in misappropriation and fraud.

[3] Akerloff's "The Market for Lemons: Quality Uncertainty and the Market Mechanism", is the seminal paper presenting the theory of asymmetric information in markets and has spawned a vast literature on this topic.

What compounds the challenge of disentangling the cost-avoiders from the fraud-seekers is that two very different types of failure are common in this market. Young, venture-stage firms are an inherently risky and speculative investment. Shareholder losses due to well-intentioned failure can be difficult to disentangle from losses due to insider abuse and fraud. My novel dataset of SEC Trading Suspensions may be useful in distinguishing business-related failures from fraud-related failures in the OTC.

Over the past eight years, the OTC Markets Group has attempted to address information asymmetry by implementing a tier system that distinguishes OTC firms based on their level of disclosures and other criteria used to assess issuer quality. What is promising about these developments is that the sources of the marketplace's quality signals are relatively inexpensive to issuers. As a result, fraud-seeking firms are unable to use the pretext of high costs to conceal their deceit.

B(2). GENTRIFICATION VIA STRATIFICATION IN THE OTC MARKETPLACE (Future Project)

I am interested in empirically investigating the impact of market stratification in the OTC, with particular emphasis on changes in information asymmetry.[4] If the OTC markets have mitigated information asymmetry, the stocks on the highest (lowest) tiers of the OTC should exhibit higher (lower) prices, higher (lower) liquidity, and higher (lower) volume after market stratification has been implemented.

It would also be interesting to measure whether an increasing number of legitimate firms are entering the OTC market after stratification. Although this is the predicted outcome—since the cost of capital for lawful firms should decrease—it will be difficult to definitively attribute this outcome to stratification due to a number of confounding factors.[5]

The effect of stratification on the lower tiers of the OTC poses an interesting empirical inquiry. I use the term "gentrification" because while OTC stratification may attract more high profile firms, it is unclear how this will affect the smallest, lawful firms in the OTC—firms that are unable to afford even the cheaper sources of signal quality required to join the higher tiers.[6] This "gentrification" of the OTC may simply produce a more acute adverse selection problem in the lowest tiers, driving legitimate firms in the lowest tiers out of the market and increasing further the cost of capital for the lawful firms that remain.[7]

III. COMPENSATION CONTRACTS AND COGNITIVE BIASES

I am intrigued by longstanding puzzles in the literature on employee compensation in which theoretical predictions are inconsistent with empirical evidence. I explore these phenomena

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[4] Numerous changes in the OTC markets' tiers over the past eight years provide a treasure trove for empirical scholarship in the securities markets; a series of natural experiments spring from changes in qualifying criteria for its marketplace tiers. The OTC Markets Group has also made new sources of data available and has expressed encouragement for academic research about its marketplace. I have been encouraged from my direct correspondence with representatives at the OTC Markets who have been cooperative and forthcoming with data related to my current and proposed research projects. This is a welcome change since lack of data has long hindered empirical research about the OTC.

[5] The confounding factors include the following: (a) higher costs of compliance on the exchanges could be driving more legitimate firms to the OTC; (b) Regulation A-Plus and other JOBS Act-related regulations aimed at lowering the regulatory burdens to going public—the OTC has responded by aligning the requirements of its upper tiers with these regulatory changes; (c) marketing efforts by the OTC Markets to attract firms.

[6] The vast majority of OTC firms trade on the lower tiers.

[7] Nevertheless, if we observe that the prevalence of fraud in the OTC declines because the returns to fraud are lower to prospective fraudsters when they can no longer be pooled with the upper echelon firms, the net effect of stratification may still lead to a desirable outcome.

by incorporating behavioral biases with respect to the uncertain, risky components of the compensation contract. Paradoxically, I present theoretical and empirical evidence that employee biases can lead to a more efficient outcome than would be the case under full rationality.

A. BROAD-BASED STOCK OPTION COMPENSATION AS A LABOR SORTING MECHANISM (Work in Progress)

Equity compensation to rank and file employees of large, publicly traded firms[8] is difficult to justify using standard agency theory: (a) incentive effects are muted because low-ranking employees make no discernable impact on share value; and (b) broad-based stock options transfer risk to undiversified employees who will discount the risky options more heavily than the firm's shareholders or the outside market. But while a rational, risk-averse employee will discount the options to their below-market value, will more entrepreneurial employees place a higher subjective valuation on the options? Should a firm seek out these "irrational", entrepreneurial employees?

Because of the complexity of valuing stock options, subjective valuations will diverge widely across the distribution of employees. Workers placing a higher value on options are likely to be comfortable with risk and more likely to generate the high variance returns most valuable to high-growth firms. On the other hand, mature firms incorporate rigid, restrictive cultures intended to enhance efficiency. These stable firms benefit more from the low variance performance of compliant, dutiful employees who are also likely to be risk averse and have low valuations for employee stock options.

Significantly, this self-selection is likely to benefit the employers as well. A rapidly growing startup treads an uncertain path and gains more from employees who are optimistic amidst uncertainty, and carry a more entrepreneurial approach to work. On the other hand, an established law firm or investment bank gains less from this entrepreneurial mindset and may be willing to tradeoff the explorative spirit for a worker who is more efficient within the confines of more restrictive work parameters.

I assert that broad-based options in publicly traded firms are used as a sorting mechanism to match firms with the employees most likely to thrive in their workplace.[9] I present empirical evidence supporting a strong link between firms in a high-growth phase of their organizational life cycle and the level of broad-based options compensation after controlling for firm, industry and a comprehensive set of factors correlated with broad-based options. If options compensation yields a better employee/employer fit, firms should account for this potentially overlooked benefit, and policymakers should account for this when assessing laws[10] that encourage or discourage rank and file options compensation.

B. THE HOUSE ALWAYS WINS – TOURNAMENT COMPENSATION CONTRACTS AND EMPLOYEE OVERCONFIDENCE (Work in Progress)

Firms may be obtaining an unanticipated gain upon hiring overconfident employees; and these gains may provide a key insight into a longstanding puzzle in the contest theory literature.

[8] In smaller, private firms, cash constraints are likely to dominate any alternative rationales for options compensation.

[9] Oyer and Shaefer (2005) focus on employee optimism as a justification for broad-based options. While their paper focuses on sorting due to general optimism, this paper focuses on the potential for options compensation to induce better matching between the qualities of the employee and the distinct needs of the employer – options compensation to induce matching between firm type and employee type.

[10] Noteworthy among these policies is the accounting rule regarding the expensing of equity-based options compensation: FASB 123(R).

Specifically, if an employee's perception of her probability of outperforming her peers exceeds the true probability, firms can extract rents by allocating a higher proportion of her salary to relative performance.

Laboratory data and empirical research on tournament compensation reveals levels of effort and preferences for relative compensation that exceed what theoretical models predict. The baseline assumptions of such models are complete information and fully rational behavior. This paper supplements the traditional baseline model by symmetrically increasing each employee's subjective probability of winning while keeping the true probability constant. Critical to the model, the employee is unaware of her own overconfidence and that of her competitors. As the aggregate subjective probabilities exceed one (or 100%), the firm can pay less remuneration by providing a higher proportion of salary as contingent on relative performance (e.g. one promotion offered to the best performer among four overconfident employees).

While disentangling confidence from overconfidence can be experimentally and empirically challenging, I predict that high-achievers place at the high end of the overconfidence distribution. My reasoning is as follows: because high-achievers have consistently outperformed their peers, they have an abundance of evidence to fuel both confidence and overconfidence. Their ability to outperform others is likely to be ingrained as a defining feature of their self-perception. Therefore, they experience greater cognitive dissonance from any indication that they have failed. Consequently, the confirmatory biases that drive overconfidence will likely be stronger among high achievers. These individuals have "more to gain" by seeking evidence of their superior abilities and by selectively ignoring evidence to the contrary.

I intend to complement the theoretical analysis above with laboratory experiments that measure levels of overconfidence across various populations and test whether this overconfidence correlates with a higher proportion of the subject's current or future employment compensation being contingent on relative performance.