What Do Certifications Certify?*

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Abstract

We study the market for professional certifications in the financial advisory industry, where more than 200 designations compete to signal adviser quality. Consistent with classic signaling models, certifications that are more costly to obtain are associated with substantially lower rates of adviser misconduct. Yet we also document a large number of low-cost, low-rigor certifications that are associated with higher rates of adviser misconduct. Strikingly, certifications that impose a fiduciary standard, which requires advisers to act in their clients' best financial interest, are associated with higher rather than lower misconduct, contrary to the assurance such standards are meant to provide. The prevalence of seemingly frivolous certifications is difficult to reconcile with traditional signaling models. We argue that this pattern arises from free entry among certifiers and limited consumer sophistication. In a structural model of certification demand and supply, we show that competition among certifiers creates incentives to lower standards when households struggle to distinguish between high- and low-quality certifications. Counterfactual simulations suggest that requiring certifications to meet standards similar to existing regulator-approved credentials could reduce misconduct among certified advisers by roughly 40 percent. Our findings suggest how unregulated certification markets can give rise to market failures in credentialing, with implications for disclosure, market design, and professional regulation.

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1 Introduction

In markets where verifying quality is difficult, third-party certifications often emerge to bridge the information gap. From organic food labels to financial adviser designations, these credentials are meant to signal trustworthiness, competence, or both. But when consumers cannot distinguish between rigorous and frivolous certifications, and when certification agencies face competitive pressures to attract paying members, the market for credentials may malfunction, undermining the very signals it is supposed to produce.

This paper examines such a breakdown in the U.S. financial advisory industry, where over 200 certifications compete to signal adviser quality and ethics. Although many advisers are certified and some high-quality certifications exist, many certifications function primarily as marketing tools: they are not costly for advisers to obtain, largely unregulated, and potentially harmful for consumers who rely on them. We document that low-rigor certifications are both widespread and linked to higher rates of adviser misconduct, despite their claims of promoting ethical standards. This raises a puzzle: if certification is a costly signal in the Spence (1973) tradition, why do advisers adopt signals that correlate with lower quality?

We argue that this coexistence of high- and low-quality certifications arises from two forces: free entry among certifying bodies and limited consumer sophistication. In markets with unsophisticated consumers who struggle to differentiate between certifications, certifying agencies face downward pressure on standards as they compete for members. The result is a proliferation of low-quality signals that may harm rather than help consumers, a dynamic reminiscent of the broader argument in Shleifer (2004) that competition, under certain frictions, can erode ethical conduct. Our paper brings these ideas to the market for professional certification, developing a structural model to unpack how informational frictions and competitive forces interact to produce signaling equilibria in which certifications lose their informational value.

We assemble new data on adviser certifications and misconduct. Approximately 25% of financial advisers hold at least one certification. These certifications are not legally required but are intended to signal higher adviser quality. For instance, the Certified Financial Planner (CFP) designation requires candidates to "meet rigorous education, examination, experience, and ethical requirements."[1] Given the prevalence of misconduct in financial advising—7% of advisers have a documented misconduct record—many certifications aim to signal ethical behavior and trustworthiness. Nearly all include an ethics component, and about 70% impose a fiduciary standard, requiring advisers to act in their clients' best financial interests.

Given the strong emphasis certifications place on ethics, and the fact that many focus exclusively on it, we begin by examining how adviser quality, proxied by misconduct, varies across certification holders. Misconduct rates differ markedly across certifications: in the top decile, around 5% of advisers have a misconduct record, compared to 15% in the bottom decile. While

[1] https://www.cfp.net/why-cfp-certification/the-standard-of-excellence

some certifications are indeed associated with lower misconduct, the majority are linked to above-average rates. These differences persist even after controlling for variation across firms, job roles, locations, and time by including firm-by-city-by-year-by-job fixed effects.

Anecdotal evidence from regulators reinforces the view that low-quality or frivolous certifications are widespread. FINRA refers to the "alphabet soup of professional designations" and warns that "not all financial designations are created equally... and can be used fraudulently." It further notes that such titles "often imply special training or experience of some extent, [but] can also be used as a marketing or self-promotional hook." Similar concerns are echoed by state regulators. The North American Securities Administrators Association (NASAA) cautions: "Titles may be simply purchased, or even made up by financial professionals hoping to imply that they have certain expertise or qualifications; such titles are generally marketing tools and are not granted by a regulator."

We find that certification quality is correlated with several observable characteristics. For instance, state regulators have granted special status to five certifications, exempting their members from taking the Series 65 (Investment Adviser) exam. These "regulator-approved" certifications are associated with lower misconduct rates, suggesting that regulators can distinguish higher-quality credentials.

Surprisingly, we find the opposite for fiduciary-related certifications. Certifications that impose a fiduciary standard, purporting to ensure that advisers act in their clients' best interests, are associated with higher rates of misconduct, not lower. The very designations that make the strongest ethical claims are, on average, held by advisers more likely to have a misconduct record, suggesting that these claims often fail in practice.

We also find that more costly certifications tend to signal higher adviser quality, consistent with standard signaling models. While most certifications require coursework and exams, the intensity of these requirements varies widely. For example, the Chartered Financial Analyst (CFA) designation requires over 900 hours of study, whereas many other certifications impose no classroom or testing requirements at all. We estimate that a 100% increase in required study hours is associated with a 2% reduction in adviser misconduct.

Why would an adviser choose to obtain a certification that signals lower quality? The proliferation of certifications, combined with limited consumer sophistication, helps sustain an equilibrium in which frivolous certifications persist. Consumers often struggle to distinguish between credentials, especially when many have similar-sounding names or acronyms. We find that low-quality certifications are more common in counties with less educated or older populations, consistent with the idea that consumer naivete supports their continued use. Additionally, in markets with greater competition among certifying bodies, adviser misconduct is more frequent – evidence of a "race to the bottom" in standards.

To interpret these findings, we build and estimate a structural model of certification demand and supply. Advisers choose whether to obtain a certification, and with which agency, based on

the costs and expected returns from signaling to their clientele. Consumers, in turn, vary in their sophistication: some can discern signal quality; others treat all credentials as equal. Certification agencies compete by setting standards (study hours) to balance attracting more members with maintaining reputational quality. The model helps explain key empirical patterns, including why consumers may select advisers with low-quality certifications and why advisers opt into them. It also provides a quantitative framework to evaluate policy counterfactuals related to certification regulation.

In the model, financial advisers differ in their underlying ability and their propensity to engage in misconduct. Advisers choose whether to obtain a certification and, if so, which one, to maximize profits net of certification costs. Certification can increase advisers' profits through attracting more assets from households, but the size of this benefit depends on how households perceive the certification's value. These perceptions, in turn, depend on household sophistication. Certification costs reflect the effort required to satisfy certification standards, with higher-ability advisers incurring lower costs. The model also allows adviser ability to be correlated with misconduct propensity.

On the supply side, certification agencies compete for members by setting standards within a Nash-Bertrand framework, balancing the dual goals of adviser quality and membership size. On the one hand, higher standards attract higher-ability advisers and enhance the agency's reputation. On the other hand, lower standards broaden the pool of potential members. As a result, agencies face a fundamental trade-off between maintaining certification quality and maximizing membership.

We estimate and calibrate the supply and demand for certifications using our data on financial advisers. On the demand side, we estimate advisers' certification choices using a mixed multinomial logit model, where demand depends on the expected profit from obtaining a certification relative to its cost. On the supply side, we recover each certification agency's preference parameters, which reflect how the agency trades off attracting more members versus maintaining certification quality. Agencies set standards, such as required study hours, to optimize this trade-off. Our estimates reveal meaningful heterogeneity across certification agencies, captured by a single preference parameter that explains why some agencies impose higher standards than others.

We use our quantitative model to study how consumer sophistication, market competition, and regulatory interventions shape the certification market. Our empirical findings suggest that limited consumer sophistication sustains an equilibrium in which low-quality, or frivolous, certifications persist. While one might expect households to eventually learn the reputations of different certifications and adjust their behavior accordingly, our results suggest otherwise. If all households were as sophisticated as those at the top of the distribution, the average misconduct rate among certified advisers would decline by nearly 30%.

We also find that increased competition among certification agencies leads to lower certifi-

cation quality. In markets where consumers struggle to differentiate between credentials, certifying bodies serve as the primary gatekeepers of quality. However, as competition for members intensifies, agencies face pressure to lower their standards to expand membership. Consistent with the logic in Shleifer (2004), maintaining high standards in such environments requires some degree of market power or rents. In their absence, certification markets devolve into a "race to the bottom." In addition, the market for certifications can also be considered as one with advantageous selection. Advisers who are less capable of meeting certification standards are potentially more likely to commit misconduct, making them more costly for certifiers to attract. In markets with advantageous selection, perfect competition can lead to excess supply (Mahoney and Weyl, 2017).[2]

Lastly, we examine the impact of regulatory interventions that mandate certification standards. In our model, policies that promote high-rigor certifications, such as those already endorsed by public authorities, can improve the quality of certified advisers. Indeed, our counterfactual simulations suggest that adopting standards based on these regulator-approved credentials could reduce misconduct rates among certified advisers by 40%.

More broadly, our findings have implications beyond the financial advice industry. In any market where quality is opaque and consumers struggle to evaluate signals, unchecked competition among certifiers can degrade the value of those signals. The result is not only worse outcomes for consumers, but also a systematic misallocation of effort and investment toward low-value credentials. This underscores a central insight from Shleifer (2004), that when ethical behavior is a public good threatened by market forces, institutional design—including regulation—plays a crucial role in preserving credibility and trust in professional markets.

The paper proceeds as follows: Section 2 describes the institutional setting and the data used in our analysis. In Section 3, we present some basic facts about certifications, and in Section 4, we explore why frivolous certifications survive in equilibrium. In Sections 5 and 6, we develop and estimate a model of supply and demand for certifications, and we explore the quantitative implications of the model in Section 7. Section 8 concludes.

Related Literature

Our paper relates to the literature on professional licensing and certifications. The economic debate over occupational licensing and regulations dates back to Adam Smith's *Wealth of Nations* (Kleiner, 2000). On the one hand, governments can maintain minimum quality standards by implementing occupational licensing requirements. On the other hand, occupational licensing requirements inherently restrict entry. Economists have often argued that certifications may be a preferable way of signaling quality without restricting entry.[3] However, Berk and Van Bins-

[2]This result is also an illustration of the theory of the second best (Lipsey and Lancaster, 1956). In the presence of multiple frictions (market power and selection), reducing one does not necessarily lead to a more efficient outcome.

[3]See Kleiner (2000) and Kleiner (2006) for a discussion of the literature and policy.

bergen (2022) show certifications and disclosure requirements may not be optimal either. Berk and Van Binsbergen (2022) show that, like licensing requirements, certifications and other disclosure requirements, through their impact on equilibrium prices, can make consumers worse off while benefiting providers.

Our paper contributes to this debate by providing new insight into the link between occupational certifications and quality. Much of the existing literature has focused on the relationship between occupational licensing and quality, and in general, it has found mixed results. Evidence from the education literature finds that occupational licensing requirements have little impact on average teacher quality but potentially increase the quality of the left-tail of the distribution (Angrist and Guryan, 2004, 2008; Larsen et al., 2020). In other settings, such as certified public accountants, dentists, and home repairs, researchers have found that licensing requirements have little impact on service/product quality but lead to a decrease in competition and supply (Kleiner and Kudrle, 2000; Farronato et al., 2024; Barrios, 2022). However, Kowaleski et al. (2020) find that the ethics training, as part of licensing requirements for financial advisers, reduces adviser misconduct.

In light of this previous literature, our paper focuses on occupational certifications rather than licensing requirements, which, distinct from licensing requirements, do not restrict entry. This distinction is important because professional certifications are often considered preferable to licensing. We also have the added benefit that quality, which we measure as misconduct, is relatively well-defined and measured in our setting. Lastly, we can understand how occupational certifications impact both the demand for and supply of financial advice.

Our paper relates to the literature on misconduct in the financial advisory industry (Dimmock et al., 2018; Gurun et al., 2018; Charoenwong et al., 2019; Egan et al., 2019; Gurun et al., 2021) and the financial advisory literature more generally (Foerster et al., 2017; Chalmers and Reuter, 2020; Linnainmaa et al., 2021). Several important themes emerge from this literature. First, accounting for consumer sophistication is important. Egan et al. (2019) find that misconduct is relatively common among financial advisers, especially in areas with less sophisticated households, and accounting for heterogeneous consumer sophistication is important for designing optimal financial regulations (Egan et al., 2025). Another important theme is the role of trust (Gennaioli et al., 2015; Gurun et al., 2018). Financial certifications are often considered a solution to adviser misconduct and a way of building trust in the system. Several popular financial planning websites advocate that households choose a certified financial adviser.[4] We show that certifications may exacerbate rather than alleviate information frictions and lead to elevated adviser misconduct.

To this end, our results suggest that the proliferation of designations may create strategic

[4]For example, see https://www.investopedia.com/updates/find-financial-advisor-planner/, https://www.bankrate.com/investing/how-to-choose-a-financial-advisor/, https://www.nerdwallet.com/article/investing/how-to-find-a-financial-advisor-near-you, https://www.wsj.com/buyside/personal-finance/how-to-choose-financial-advisor-01664977079.

complexity in the financial advisory industry. Theory suggests that firms may increase product complexity to obfuscate quality and increase market power (Gabaix and Laibson, 2006; Carlin, 2009; Carlin and Manso, 2011). Empirical evidence from Célérier and Vallée (2017) suggests that complexity in the retail structured product market is a by-product of banks competing for yield-chasing investors. Furthermore, competition may exacerbate incentives to create strategic complexity (Carlin, 2009), and could destabilize ethical behavior in the industry overall (Shleifer, 2004).

Lastly, our paper also relates to the growing literature at the intersection of industrial organization and finance. Several recent papers have used tools from the industrial organization literature to assess counterfactual financial regulations quantitatively. For example, researchers have used these types of IO frameworks to study regulatory issues in mortgage markets (Allen et al., 2014; Robles-Garcia, 2019; Agarwal et al., 2020; Benetton, 2021; Benetton et al., 2025), credit markets (Nelson, 2025; Galenianos and Gavazza, 2022; Cuesta and Sepúlveda, 2021; Allcott et al., 2022), insurance markets (Koijen and Yogo, 2016, 2022; Bhattacharya et al., 2025; Egan et al., 2022), and banking markets (Egan et al., 2017; Xiao, 2020; Wang et al., 2022) among others. Our paper is specifically related to the IO of selection markets (Einav et al., 2021), since we model how a certification agency's standard affects its misconduct rates (and also the misconduct rates of its competitors) by attracting different types of advisers.[5] A distinct feature of our setting is that misconduct rates also affect household demand for advisers, which in turn influences advisers' demand for certifications. To capture this effect, we extend traditional selection market models with an additional stage to model households' perception of adviser quality in a Bayesian Nash Equilibrium, which can be useful in other contexts.

2 Data and Institutional Details

2.1 Data

Our base data set comes from FINRA's BrokerCheck database. BrokerCheck contains the complete registration, employment, qualification, and disclosure history for the universe of individuals registered with FINRA (i.e., Registered Representatives). We refer to these registered representatives as "Financial Advisers" because it is typically how these individuals refer to themselves. We study the cross-section of financial advisers employed in 2016, 2020, and 2026. We focus on these three cross-sections because we have certification data for these years.

Importantly, BrokerCheck contains data on each adviser's regulatory qualifications and licenses. There are 61 different regulatory licenses a financial adviser may hold. These regulatory licenses allow us to control for a financial adviser's job function. For example, an individual must hold a Series 57 License to be a NASDAQ and OTC equity trader. Conversely, a Series

[5]Other finance papers that study the interaction of market power and selection include Cuesta and Sepúlveda (2021); Crawford et al. (2018)

11 allows an individual to work as a Sales Assistant and process unsolicited securities orders. These licenses are in sharp contrast to the professional certifications we discuss below, which are neither sufficient nor required for working in the different areas of the financial services industry.

Given that most certifications advertise that their advisers adhere to higher ethical standards, one of the key variables we examine is adviser misconduct. Following Egan et al. (2019), we define misconduct as any criminal offense, regulatory offense, customer dispute or civil case resolved in favor of the client, and any case where the adviser was fired for cause. It is crucial to note that FINRA mandates financial advisers and firms to report these types of offenses to BrokerCheck within thirty days.[6]

Table 1 displays the summary statistics corresponding to our base data set. We have 2,069,105 adviser-by-year observations for the years 2016, 2020, and 2026. The average adviser in our sample has 14 years of experience and 2 regulatory licenses. Roughly 47% of the advisers in the sample are dually registered as investment advisers.[7] Consistent with Egan et al. (2019), 7% of the advisers in our sample have a misconduct record.

For 259,505 adviser-by-year observations in 2016 and 2026, we observe the amount of assets advisers manage. The median adviser manages $50 million in assets.

2.2 What are Financial Adviser Certifications?

We collect data on certification membership from various sources, including Meridian IQ, the SEC IAPD database, and online public membership data for 100 of the most common certifications. Around 25% of advisers in our sample hold any certification, and the average adviser has 0.32 certifications. Table 2 displays the most common certifications in our sample, and Figure 1a shows a histogram of the size of each certification in terms of the number of active members. The distribution is skewed to the right. The Certified Financial Planner (CFP) designation is the most common designation; roughly 10% of the advisers in our sample are CFPs.

A natural question is, what are these financial certifications, and why do they exist? Nearly all certifications include an ethical component, aiming to certify that designees adhere to higher ethical standards. For instance, according to its website, the Certified Kingdom Advisor (CKA) certification is "the standard of excellence for biblically wise financial advice. As part of that mission, we require all Certified Kingdom Advisor designees to remain in compliance with a set of ethical principles, rules, and standards in order to use or to continue to use the Certified Kingdom Advisor designation."[8] Roughly 42% of certifications (weighted around 70%

[6]FINRA classifies disclosures into 23 categories. We classify the following disclosures as adviser misconduct: Customer Dispute-Settled, Regulatory-Final, Employment Separation After Allegations, Customer Dispute - Award/Judgment, Criminal - Final Disposition, Civil-Final.

[7]We identify whether an adviser is registered as an investment adviser based on whether they have passed an investment adviser exam (i.e., Series 65 or Series 66 Licensing exam).

[8]Source: https://kingdomadvisors.com/get-certified

by membership) require their advisers to adhere to a fiduciary standard, meaning these advisers must act in their clients' best financial interests. Examples of designations that explicitly mention the term fiduciary in their titles include Accredited Investment Fiduciary (AIF), Board Certified Fiduciary, Certified Financial Fiduciary (CFF), Certified Plan Fiduciary Advisor (CPFA), and Registered Fiduciary (RF). According to its website, the Accredited Investment Fiduciary (AIF) Designation is "a professional certification that demonstrates an advisor or other person serving as an investment fiduciary has met certain requirements to earn and maintain the credential."[9] This distinction is important for potential clients when considering an adviser's service standard, as a fiduciary standard is significantly higher than the legal requirement for most financial advisers in the US, who are typically held to a lower suitability standard.[10]

One concern with these certifications is whether they can credibly signal that they hold their advisers to higher ethical and legal standards. To help credibly signal standards, national accreditation agencies provide accreditation for some certifications. Six designations (23% weighted by membership) in our sample are accredited by either the ANSI National Accreditation Board (ANAB) or the National Commission for Certifying Agencies (NCCA). The ANSI and NCCA are non-governmental organizations providing independent recognition and certification evaluation.

While many certifications emphasize ethical standards, some also indicate specialized training. For example, some advisers may be Certified Public Accountants (CPA), which signals skill and specialization in accounting practices. However, most states require CPA candidates to pass an ethics exam at the state level.[11] Our data include information on advisers' regulatory licenses, allowing us to control for their job functions and ensuring that the heterogeneity we observe across certifications is not driven by differences in advisers' roles. We also conduct several robustness checks that restrict the sample to certifications focused on ethics and financial advising more generally, excluding certifications related to specialized skills or training.

In general, certifications do not serve as substitutes for licensing requirements. However, state regulators have granted special status to five certifications that exempt certificate holders from taking the Series 65 (Investment Adviser) exam. Advisers holding the Certified Financial Planner (CFP), Chartered Financial Analyst (CFA), Chartered Financial Consultant (ChFC), Personal Financial Specialist (PFS), or Chartered Investment Counselor (CIC) designations are typically exempt from the Series 65 exam. Advisers typically need a Series 65 license to work as an investment adviser representative (e.g., work as an "investment adviser") and provide

[9] Source: https://www.fi360.com/what-we-do/learning-development/aif-training/aif-designation.

[10] Under the suitability standard, advisers are obligated to recommend products that are "suitable" for their clients based on their risk tolerance and objectives (See Egan et al. (2024) for a further description of the industry). In 2019, the Securities and Exchange Commission (SEC) introduced Regulation Best Interest. This regulation mandates that broker-dealers must create and uphold "policies and procedures reasonably designed to identify and fully and fairly disclose material facts about conflicts of interest, and in instances where we have determined that disclosure is insufficient to reasonably address the conflict, to mitigate or, in certain instances, eliminate the conflict." Source: https://www.govinfo.gov/content/pkg/FR-2019-07-12/pdf/2019-12164.pdf

[11] Source: https://beatthecpa.com/ultimate-guide-to-the-aicpa-ethics-exam/

investment-related advice to their clients.

Most certifications include some form of education and testing requirements. Approximately 75% of certifications have an education requirement, while 80% require passing a test. Figure 1b displays the distribution of estimated hours required to earn each certification in our sample, showing a right-skewed distribution. For example, completing a CFA requires over 900 hours of study and can take 4-5 years. In contrast, other certifications may only require taking an online test or course. Additionally, most certifications have an initial fee and an annual renewal fee. Figure 1c displays the distribution of annual renewal fees.

3 What do Certifications Signal?

3.1 Certifications and Adviser Quality

We examine whether advisers with certifications have higher professional and ethical standards. We focus on ethics because there have long been concerns about ethical standards in the financial industry, and they are the motivation for many of the existing regulations and certifications. Nearly all certifications include an ethical component. Moreover, 70% of certificate holders claim to act as fiduciaries, which means they must look out for their client's best financial interests.

Given that certifications emphasize higher professional and ethical standards, financial misconduct is a natural starting point for evaluating certifications. As mentioned, adviser misconduct includes regulatory violations, financial crimes, and customer disputes resulting in a settlement. We also find that our results are robust when we examine more stringent measures of professional standards, such as whether the adviser has ever engaged in outright fraud.

We start with several simple cuts of the data. For each certification j, we compute the $Misconduct\,Rate_j$ as the share of certification holders with a past misconduct record, pooling data in all three years. Figure 2a displays the $Misconduct\,Rate_j$ for the certifications in our data set. The results suggest that there is substantial heterogeneity in misconduct across certifications. The red-dashed line displays the share of advisers with a record of misconduct among those who do not hold certifications. Thus, the misconduct rate for many of the certifications is higher than the misconduct rate for advisers without certifications.

To make this comparison starker, Figure 2b displays the distribution of certification misconduct rates for those certifications that claim to hold their advisers to a higher fiduciary standard. While most certifications emphasize ethical conduct, fiduciary certifications explicitly require advisers to act in their clients' best interests. Consistent with our results for the full sample, we find substantial heterogeneity in misconduct rates among fiduciary certifications, and many have elevated (above average) rates of misconduct.

One potential concern in our analysis is that certifications may be correlated with other adviser characteristics, such as firm or job function. As documented in Egan et al. (2019) the

rate of misconduct varies substantially across firms. An advantage in our setting is that we can control for the branch an adviser works in (i.e., firm-by-city fixed effects) and include license fixed effects for each of the 61 licenses an adviser might hold. These fixed effects allow us to control for where an adviser works and what she does. Using these additional control variables, we examine the relationship between misconduct and certifications in the following regression specification:

$$Misconduct_{ijkt} = \sum_{l \in \mathcal{L}} \gamma_l Certification_{ijlkt} + \beta X_{ijkt} + \mu_{jkt} + \epsilon_{ijkt}. \quad (1)$$

Observations are at the adviser-by-year level. The dependent variable $Misconduct_{ijkt}$ is a dummy variable indicating whether adviser i at firm j in city k in year t has a record of misconduct. The vector X_{ijkt} is a vector of adviser characteristics, including their experience, regulatory licenses, and the number of states they are licensed to operate in. We include firm-by-city-by-year fixed effects in μ_{jkt}. In our most stringent specifications, we also include firm-by-city-by-year-by-licenses fixed effects. These fixed effects allow us to compare advisers working for the same firm, in the same location, and holding the same set of regulatory licenses, thereby controlling for differences in job responsibilities and functions.

We include a dummy variable $Certification_{ijklt}$ for each certification l, which indicates whether adviser i holds certification l in year t. The coefficients of interest in Eq. (1) are the set of fixed effects γ corresponding to each certification. In Figure 3, we report the distribution of misconduct rates across certifications, measured by fixed effects (γ) plus the misconduct rates among advisers with no certifications. Among advisers without any certifications, roughly 7% have a record of misconduct (red-dashed line in Figure 3). Thus, if γ_l=2%, we would expect 9% (=2%+7%) of advisers holding certification l to have a record of misconduct. The results suggest that there is substantial heterogeneity in misconduct rates across certifications, even after accounting for differences in the job functions of certification holders, and that many certifications are associated with elevated rates of misconduct relative to the average adviser. In other words, many certifications signal lower adviser quality, as measured by higher rates of misconduct.

3.2 Heterogeneity Across Certifications

In this section, we explore what drives the heterogeneity in certification quality and which characteristics predict it. Certifications differ on several observable dimensions, and we focus on three of the most salient features.

First, we examine whether the certification requires holders to act as fiduciaries. Advisers held to a fiduciary standard are required to act in the best financial interests of their clients, which is a much higher standard than the suitability standard that financial advisers have traditionally been held to. Even though a certification agency may require its members to act as

fiduciaries, it is unclear whether and how certification agencies enforce this.

Second, advisers holding a CFA, ChFC, CFP, CIC, or PFS designation are exempt from the Investment Adviser Representative (IAR) Exam (Series 65 Exam). By definition, regulators never require advisers to hold certifications in order to work as financial advisers; however, in this special case, states generally treat these five certifications as substitutes for the Series 65 exam. Given that regulators treat these certifications as substitutes for licensing exams, one might expect these regulator-approved certifications to be a signal of higher quality.

Lastly, a certification may or may not be accredited. Six of the certifications we study are accredited by private nonprofit organizations, either the ANAB or NCCA. One might expect these accredited certifications to signal higher quality.

Building on our previous regression specification in Eq. (1), we examine which certification characteristics are associated with higher/lower professional standards in the following regression specification:

$$\begin{aligned} Misconduct_{ijkt} =& \gamma_1 Cert_{ijkt} + \gamma_2 Accredited\, Cert_{ijkt} + \gamma_3 IAR\, Cert_{ijkt} + \gamma_4 Fiduciary\, Cert_{ijkt} \\ &+ X'_{ijkt}\beta + \mu_{jkt} + \epsilon_{ijkt}. \end{aligned} \tag{2}$$

Observations are at the adviser-by-year level. The dependent variable $Misconduct_{ijkt}$ is a dummy variable indicating whether adviser i at firm j in city k in year t had a record of misconduct. The variable $Cert_{ijkt}$ indicates whether the adviser holds at least one certification. The variables $Accredited\, Cert_{ijkt}$, $IAR\, Cert_{ijkt}$, and $Fiduciary\, Cert_{ijkt}$ are dummy variables indicating whether the adviser holds a certification that is accredited, holds a certification that exempts the adviser from the IAR Exam, and holds a certification that states that the holder must act as a fiduciary. We again control for our baseline set of adviser characteristics in X_{ijkt} and include firm-by-city-by-year fixed effects in our baseline specification and firm-by-city-by-year-by-license fixed effects in our most stringent specification.

We report the estimates in Table 3. The results indicate that those five "regulator-approved" certifications are associated with lower misconduct rates. The results in column (1) suggest that advisers holding a regulator-approved certification are 1.25 percentage points (18%) less likely to have a misconduct record. Conversely, those advisers holding an accredited certification are 1 percentage point (15%) more likely to have a misconduct record (column 1). We also find some evidence that advisers holding a certification that requires them to act as fiduciaries are 0.55 percentage points (8%) more likely to have misconduct records.

The results indicate that regulator-approved certifications signal higher quality, as measured by lower rates of misconduct, suggesting that regulators are able to distinguish between high- and low-quality credentials. In contrast, we find that accredited certifications are associated with lower adviser quality. Likewise, advisers holding certifications that emphasize a fiduciary standard of care are more likely to engage in misconduct, a pattern that runs counter to the

standards these designations claim to uphold.

3.3 Certification Standards and Costly Signaling

We next examine the relationship between certification quality and standards. Certifications typically have an education component ranging from taking one-time online classes to years of coursework. For example, becoming a Chartered Financial Analyst (CFA), one of the oldest and most prestigious certifications, requires over 900 hours of study. In contrast, one can obtain other certifications by taking an online course that takes 10 hours to complete. Here, we examine the relationship between certification standards, measured by the estimated hours required to obtain the certification, and certification quality.

We start with a simple cut of the data. Figure 5 displays a binned scatter plot of the relationship between certification misconduct and the hours required to obtain the certification. Observations are at the certification level. The results indicate a negative relationship between hours and misconduct. Those certifications that are more costly to obtain, as measured by hours, signal higher adviser quality, as measured by lower misconduct rates. The negative relationship between the cost of obtaining the certification and misconduct is consistent with a Spence-type signaling model where advisers with higher quality acquire more costly certifications.

More formally, we extend our previous specification in Eq. (1) where we control for an adviser's cost of obtaining certifications. We estimate the regression specification:

$$Misconduct_{ijkt} = \gamma Certification_{ijkt} + \theta \ln(1 + Hours_{ijkt}) + \beta X_{ijkt} + \mu_{jkt} + \epsilon_{ijkt} \quad (3)$$

Observations are at the adviser-by-year level, and the dependent variable indicates whether the adviser has a record of misconduct. The variable $Certification_{ijkt}$ indicates whether the adviser holds at least one certification, and the variable $Hours_{ijkt}$ measures the total estimated hours the adviser spent obtaining certifications. We again control for our baseline set of adviser characteristics in X_{ijkt} and include firm-by-city fixed effects in our baseline specification and firm-by-city-by-year-by-license fixed effects in our most stringent specification.

Table 4 displays the corresponding estimates. Consistent with Figure 5, we find a negative and significant relationship between adviser misconduct and hours in each specification. The results in column (1) indicate that a 100% increase in the time spent obtaining a certification is associated with a 0.14 percentage point (2%) decrease in misconduct, a meaningful effect given the substantial heterogeneity in certification requirements. Overall, our results suggest considerable heterogeneity in certification quality. Certifications that are more costly to obtain are associated with lower misconduct rates, consistent with a signaling interpretation. Regulator-approved certifications signal higher quality, whereas many accredited and fiduciary-related

certifications are associated with elevated misconduct rates.

3.4 Robustness

Our baseline results indicate substantial heterogeneity in certification quality. Here, we explore several robustness checks related to our measure of certification quality.

3.4.1 Other Measures of Quality

Our baseline analysis measures certification quality based on whether the holder has a misconduct record. As a robustness check, we consider three alternative measures of quality. We measure quality based on whether the certification holder has a criminal history, whether the certification holder has a record of fraud, and whether the certification holder previously engaged in unauthorized activity. These three alternative measures indicate potentially more egregious behavior of the financial adviser. For example, fraud means that the adviser intentionally deceived their client for the adviser's gain. Roughly 2% of advisers in our sample have a criminal history, 0.4% have a record of fraud, and 0.9% have a record of engaging in unauthorized activity.

We re-estimate three versions of Eq. (1) where we replace the dependent variable, whether the adviser has a record of misconduct, with each of our three alternative measures of quality (i.e., criminal activity, fraud, and unauthorized activity). The regressions are of the form:

$$\begin{aligned} Criminal\,Activity_{ijkt} &= \sum_{l \in \mathcal{L}} \gamma_l^{Crime} Certification_{ijlkt} + \beta^{Crime} X_{ijkt} + \mu_{jkt}^{Crime} + \epsilon_{ijkt}^{Crime}, \\ Fraud_{ijkt} &= \sum_{l \in \mathcal{L}} \gamma_l^{Fraud} Certification_{ijlkt} + \beta^{Fraud} X_{ijkt} + \mu_{jkt}^{Fraud} + \epsilon_{ijkt}^{Fraud}, \\ Unauthorized\,Activity_{ijkt} &= \sum_{l \in \mathcal{L}} \gamma_l^{Unauth.} Certification_{ijlkt} + \beta^{Unauth.} X_{ijkt} + \mu_{jkt}^{Unauth.} + \epsilon_{ijkt}^{Unauth.}. \end{aligned} \tag{4}$$

Observations are at the adviser-by-year level. The dependent variables are whether the adviser has a criminal history, record of fraud, and record of unauthorized activity. The object of interest in these regression specifications are the certification fixed effects corresponding to criminal activity, fraud, and unauthorized activity (i.e. $\boldsymbol{\gamma}^{Crime}$, $\boldsymbol{\gamma}^{Fraud}$, $\boldsymbol{\gamma}^{Unauth.}$). We again control for adviser characteristics in X_{ijkt} and include firm-by-city-by-year-by-licenses fixed effects.

We report the corresponding certification fixed effects for our three alternative measures of quality in Figure 4 in terms of the expected share of advisers with a criminal history, record of fraud, and record of unauthorized activity. As before, we find substantial heterogeneity in certification quality across all three different measures of quality/misconduct.

We also replicate our analysis from Section 3.2 where we examine the relationship between

the type of certification (e.g., accredited, fiduciary, regulator approved, etc.) and whether it is associated with our other measures of quality in Eq. (2). We report the estimates in Table 5. The dependent variable in column (1) is whether the adviser has a criminal history, the dependent variable in column (2) is whether the adviser has a record of fraud, and the dependent variable in column (3) is whether the adviser has a record of engaging in unauthorized activity. The results are broadly consistent with our earlier findings. We find that regulator-approved certifications are associated with lower rates of criminal history and unauthorized activity, although the fraud coefficient is positive. Accredited certifications are associated with elevated rates of criminal history and unauthorized activity. We also find that advisers holding fiduciary-related certifications are more likely to have a criminal history.

3.4.2 Misconduct Reported by Certification Agencies vs. FINRA

Four of the certifications in our sample reported the disciplinary history of their members as of 2020 and 2026. As another robustness check, we examine how the disciplinary histories reported by these certification agencies compare with the disciplinary histories reported by FINRA. Although positive and statistically significant, the correlation between FINRA-reported and certification agency-reported disciplinary histories is quite weak. The correlation between our measure of FINRA-reported misconduct and certification agency-reported discipline is 0.1. Among advisers that hold these certifications, 10% have a record of misconduct; however, only 0.18% have a disciplinary history reported by the certification agency. Furthermore, among those with a past misconduct record, as per FINRA, only 1.42% have a disciplinary history reported by the certification agency. We find similar results when we look at advisers with a history of criminal activity, fraud, and unauthorized activity. Only 0.56% of advisers with a criminal record have a disciplinary history reported by the certification agency. Similarly, only 2.99% (4.42%) of advisers with a record of fraud (unauthorized trading) have a disciplinary history reported by the certification agency. The results suggest that some certification agencies may dramatically underreport misconduct among their certification holders.

3.4.3 Future Misconduct

In our baseline analysis, we examine whether certified advisers are more likely to have a record of past misconduct. We also test whether certifications predict future misconduct. Column (4) of Table 5 reports results from re-estimating Eq. (1) with future misconduct as the dependent variable, where we control for whether the adviser has a record of past misconduct. Even after controlling for past misconduct, holding a certification is associated with higher rates of misconduct in the future. Hence, it appears that certification choices also reflect advisers' persistent propensity to engage in misconduct.

3.4.4 Treatment vs Selection

The relationship between certification and misconduct could reflect either treatment or selection. Does obtaining certain frivolous certifications make advisers more likely to engage in misconduct (treatment), or do such certifications simply attract advisers already prone to misconduct (selection)? While everyday investors and even policymakers may not care about the distinction, it has modest quantitative implications for the counterfactuals we explore in our structural model.

We argue, and provide some evidence, that the effects we document are more likely to be driven by selection than by treatment, although disentangling these two channels is challenging. In Appendix Section C, we show that advisers with a past record of misconduct are more likely to obtain frivolous certifications and less likely to obtain reputable certifications such as the CFA in the future relative to those without such a record. This finding is consistent with the selection mechanism, although we cannot completely rule out treatment effects.

4 Motivating Evidence: Why Do Frivolous Certifications Survive?

A natural question is why frivolous certifications survive in equilibrium. Why doesn't competition drive frivolous certifications out of the market? We argue that the mechanism is largely similar to why advisers persistently engage in misconduct: heterogeneity in consumer sophistication. Competition can exacerbate some of these frictions. There are over 200 certifications in the marketplace, many with nearly identical names and acronyms, making it difficult for investors to discern and assess the quality of certifications. We find suggestive evidence that frivolous certifications thrive in areas with less sophisticated populations and more intense competition among certification agencies.

4.1 Consumer Sophistication and Certification Quality

We examine the relationship between adviser misconduct and certifications and how the relationship varies with consumer sophistication in the following specification:

$$Misconduct_{ijkt} = \gamma_1 Cert_{ijkt} + \gamma_2 Sophistication_{kt} \times Cert_{ijkt} + X'_{ijkt}\beta + \mu_{jkt} + \epsilon_{ijkt}. \quad (5)$$

Observations are at the adviser-by-year level, and the dependent variable indicates whether the adviser holds a misconduct record. The key independent variable of interest is the interaction term between consumer sophistication and whether the adviser has a certification, $Sophistication_{kt} \times Cert_{ijkt}$. We measure consumer sophistication at the county level using census data on the share of the population with a college education, the share of the population

over 65, and log income. In our baseline specification, we include firm-by-county-by-year fixed effects, which absorb the level effect that consumer sophistication has on misconduct. The interaction term then measures how the quality of certifications, as measured by the misconduct rate, varies with consumer demographics. We also include our baseline set of adviser controls X_{ijkt}.

We report the corresponding estimates in Table 6. We find that the positive relationship between certifications and misconduct is larger in areas with a greater share of people over 65. The results suggest that in younger regions where the share of people over 65 is one standard deviation below the mean, advisers with certifications are 5.8 bps (0.151 - 0.209 = -0.058 percentage points) less likely to have a misconduct record than advisers without certifications. In contrast, advisers in older regions where the share over 65 is one standard deviation above the mean are 36 bps (0.151 + 0.209 = 0.360 percentage points) more likely to have a misconduct record than advisers without certifications. We also find evidence that misconduct is more common among certified advisers in areas where the population is less educated, although the point estimates are statistically insignificant.

4.2 Information Frictions

Information frictions can prevent unsophisticated households from assessing the quality of certifications. There are over 200 certifications and many with similar acronyms. For example, Chartered Financial Analyst (CFA) is one of the oldest and most prestigious certifications. It requires over 900 hours of study and fewer than 5% of advisers with CFA have a misconduct record. However, many other certifications have similar acronyms as CFA, making it difficult for unsophisticated households to distinguish quality differences. In Figure 6, we plot the average misconduct rates among certified advisers and the string differences between the certification acronyms and CFA. We show that advisers holding certifications that appear to be similar to CFA have higher misconduct rates. Advisers holding certifications whose acronyms differ from CFA by only one character have a probability of misconduct that is 3 percentage points higher than that of advisers whose certifications are completely different from CFA.

4.3 Competition among Certifications

A unique feature of certifications, as opposed to regulatory licenses, is that there is scope for competition among certification agencies. Competition for certification members could result in a race to the bottom in terms of certification standards. To explore this possibility, we estimate the following regression specification:

$$Certification\,Misconduct\,Rate_{kt} = \gamma HHI_{kt} + X'_{kt}\beta + \mu_t + \mu_{s(k)} + \epsilon_{kt}. \quad (6)$$

Observations are at the county-by-year level. The dependent variable $Certification\ Misconduct\ Rate_{kt}$ measures the share of advisers with a record of misconduct among those holding at least one certification in county k at time t. We measure competition among certification agencies at the county-by-year level using the Herfindahl–Hirschman Index (HHI_{kt}). We calculate market shares for HHI_{kt} based on the share of advisers holding each certification. A higher HHI_{kt} indicates a more concentrated (less competitive) market for certifications. We control for the share of advisers in each county and year that have any certifications, and also include time (μ_t) and state $(\mu_{s(k)})$ fixed effects.

We report the corresponding estimates in Table 7. The results indicate a negative relationship between certification concentration and the certification misconduct rate. In other words, certified advisers are more likely to have a record of misconduct when there is more competition among certification agencies (low HHI).

Overall, we find suggestive evidence that the interaction between households' limited understanding of certification differences (i.e., heterogeneity in household sophistication and information frictions) and competition among certification agencies can lead to lower certification standards and quality. Building on these findings, in the next section we develop and estimate a structural model that illustrates how these forces shape equilibrium certification standards.

5 Model

We next develop and estimate a quantitative model of the demand for and supply of financial-adviser certifications. The model has two sets of agents: financial advisers, who decide whether to obtain a certification and, if so, which one; and certification agencies, which choose the standards required to obtain their certifications.

Advisers value certifications because they can help attract household assets. We model an adviser's certification decision as a discrete-choice problem in which she maximizes profits net of acquisition costs. Certifications differ in their standards, such as required study hours, and in their quality, measured by the average misconduct rate among their members. Higher standards are more costly for advisers to satisfy, but they can also improve certification quality by screening out lower-quality advisers. We allow advisers to differ in ability, which determines the cost of meeting certification standards, and we allow ability to be correlated with misconduct. This generates a signaling mechanism similar to Spence (1973): higher-ability, lower-misconduct advisers are more likely to select into certifications with higher standards.

On the supply side, certification agencies choose standards to maximize an objective function that trades off membership against certification quality. Raising standards improves the average quality of certified advisers, but it also makes the certification more costly to obtain and may reduce membership as advisers substitute toward less demanding alternatives. Certification agencies compete in a Nash-Bertrand standard-setting game, taking the standards of

other agencies as given.

The quantitative model allows us to separate the forces underlying the empirical patterns: adviser selection into certifications, household responses to certification quality, and certification agencies' incentives to set standards. We estimate the model in Section 6 and use it to evaluate policy counterfactuals in Section 7.

5.1 Advisers

Financial advisers choose certifications to maximize profits and may also commit misconduct. Their certification decisions and propensity to engage in misconduct depend on three dimensions of heterogeneity: their ability γ which determines their marginal cost of obtaining certification, their latent preference for certification η, and their propensity to engage in misconduct q. Advisers provide services to households in their local market m, and the benefit of obtaining certifications depends in part on how households perceive those certifications.

5.1.1 Certification Choice

Each financial adviser j decides whether to obtain a certification and which certification c to obtain from the set $\mathcal{C} \cup \{0\}$.[12] A financial adviser's payoff from certification c is given by:

$$\delta_c(\gamma_j, \eta_j; m) + \epsilon_{jc} = \gamma_j \tau_c + \eta_j + \theta \pi_c(\gamma_j; m) + \xi_c + \epsilon_{jc}, \tag{7}$$

where we normalize the payoff from not obtaining any certification to zero. The term $\gamma_j \tau_c$ measures the adviser's cost of obtaining certification c, which depends on the standard τ_c (required study hours) set by the certification agency and on adviser j's ability, which determines the marginal cost of satisfying the standard $\gamma_j (< 0)$. Advisers with lower ability (more negative γ_j) face higher marginal costs of studying for certifications and are more sensitive to certification standards. The term η_j is a latent preference for holding any certification.

The term $\pi_c(\gamma_j; m)$ captures how certification c contributes to adviser j's profit (relative to no certification), which varies across markets m where households have different levels of sophistication and also depends on the adviser's ability. We model $\pi_c(\gamma_j; m)$ using an adviser production function in Section 5.1.2. We also incorporate unobserved certification heterogeneity ξ_c and a Type-1 Extreme Value distributed idiosyncratic shock ϵ_{jc}. We normalize the payoff from not obtaining any certification to zero.

The probability that an adviser with type (γ, η) from market m chooses certification c is:

$$s_c(\gamma, \eta; m) = \frac{\exp\left(\delta_c(\gamma, \eta; m)\right)}{1 + \sum_{l \in \mathcal{C}} \exp\left(\delta_l(\gamma, \eta; m)\right)} \tag{8}$$

[12] In the data, an adviser can have multiple certifications. If an adviser holds certifications A and B, we create two synthetic advisers each with weight 1/2, where one chooses A and the other chooses B.

The market share of certification s_c among financial advisers across types and markets is given by:

$$s_c = \sum_m \underbrace{\int_{\gamma,\eta} s_c(\gamma, \eta; m) dF(\gamma, \eta; m)}_{s_{mc}} \tag{9}$$

where we integrate over the distribution of adviser ability (γ) and preference for any certification (η).

5.1.2 Adviser Production Function

An adviser's certification affects her profits through the assets she manages. Households allocate more assets to certified advisers, but the magnitude of this response depends on their perceived quality of certifications, which varies with household sophistication. We capture this with a production function for assets under management rather than microfounding household demand directly; in Appendix D we microfound household preferences and obtain similar results.

The log of assets collected by adviser j is given by:

$$\ln aum_j = \phi_{m(j)} \bar{q}_{c(j)} + \lambda_{m(j)} Certified_j + \nu \gamma_j + \epsilon_j \tag{10}$$

The term $\phi_{m(j)} \bar{q}_{c(j)} + \lambda_{m(j)} Certified_j$ captures the contribution of certification c to adviser j's assets under management. This contribution depends on certification quality, proxied by the average misconduct rate among certification members $\bar{q}_{c(j)}$. The sensitivity $\phi_{m(j)}$ to certification quality depends on household sophistication in market m. For example, less sophisticated households may not distinguish between certifications, implying $\phi \approx 0$, whereas more sophisticated households may be more sensitive to misconduct, implying $\phi < 0$. We measure sophistication using demographics such as age and education. The term $\lambda_{m(j)}$ captures household perceptions of certification quality more broadly, which may be biased. For instance, households might incorrectly believe that all certifications have high quality, leading to a large λ. Like $\phi_{m(j)}$, $\lambda_{m(j)}$ depends on household demographics in market m. Advisers without certification have $Certified_j = 0$ and $\bar{q}_{c(j)}$ equal to the average misconduct rate among uncertified advisers.

An adviser's assets also depend on the adviser's ability γ_j. The term $\nu \gamma_j$, with $\nu \geq 0$, captures how higher-ability advisers are able to attract more assets.[13] Lastly, ϵ_j represents an idiosyncratic adviser-specific shock. This term can be interpreted as capturing an adviser's skill in attracting additional assets that is orthogonal to her ability (i.e., the cost of obtaining

[13] We assume that an adviser's latent preference for certification η_j and misconduct propensity q_j affect assets under management only through the certification dummy and certification-level average misconduct rates. We do not have sufficient variation in the data to identify the effects of multiple sources of adviser heterogeneity on assets under management. Replacing ability γ_j with η_j yields similar results.

certification) γ_j.

An adviser's choice to become certified in Eq. (7) depends on the incremental profits from obtaining certification $\pi_c(\gamma_j; m)$, which in turn depend on how certification affects the adviser's total assets. Because we observe assets rather than profits in the data, we assume that advisers charge markups μ as a constant fraction of assets. Under this assumption, the incremental profits from certification c are given by:

$$\pi_c(\gamma_j; m) = \mu \left(\phi_{m(j)} \bar{q}_{c(j)} + \lambda_{m(j)} Certified_j + \nu \gamma_j \right).$$

Since how $\pi_c(\gamma_j; m)$ affects adviser certification choice in Eq. (7) depends on parameter θ, we will only identify the product of $\theta\mu$.

5.1.3 Adviser Misconduct

Each adviser has a certain propensity to commit misconduct q_j, which may correlate with ability γ_j and latent preference for certification η_j.[14] Although we do not restrict the sign of this correlation in our model, the motivating evidence presented previously suggests that advisers with higher ability are less likely to commit misconduct. This relationship could be driven by an inherent connection between ability and scruples. Alternatively, high-ability advisers who expect longer careers may perceive a greater loss from disciplinary actions following misconduct. In the context of our model, the negative correlation between ability and misconduct allows certification agencies to use certification standards to screen for advisers. By setting higher standards, certification agencies make their certifications less attractive to low-ability advisers, who are ultimately more likely to engage in misconduct.

In addition, we allow an adviser's misconduct propensity to be correlated with her latent preference for certification η_j. Incorporating this heterogeneity is important to rationalize observed misconduct rates among advisers without any certification.

Specifically, we model adviser misconduct propensity $q_j = q(\gamma_j, \eta_j) + \epsilon_j$ as a function of adviser ability and latent certification preference, using the following logistic regression:

$$\ln \frac{q(\gamma_j, \eta_j)}{1 - q(\gamma_j, \eta_j)} = \rho_0 + \rho_\gamma \gamma_j + \rho_\eta \eta_j. \tag{11}$$

We do not impose any sign restrictions on parameters ρ_γ and ρ_η. In Section 6, we estimate a negative relationship between γ_j and q_j. Hence, certification agencies set higher standards to screen for advisers with higher ability who are less likely to commit misconduct.

Based on observed certification choices, we use Bayes' rule to compute the probability that an adviser in market m with certification commits misconduct ($\bar{q}_{mc}$) as the following.

[14] We do not directly model the decision to commit misconduct from a profit-maximization framework, for example, the trade-off between gains from misconduct and potential punishment.

$$\bar{q}_{mc} = \frac{\int_{\gamma,\eta} q(\gamma,\eta) s_c(\gamma,\eta;m) dF(\gamma,\eta;m)}{\int_{\gamma,\eta} s_c(\gamma,\eta;m) dF(\gamma,\eta;m)}$$

We then aggregate across markets to obtain the average misconduct rates $\bar{q}_c$ among advisers holding each certification. It is important to emphasize that, in our baseline model, the relationship between misconduct and certification standards is driven entirely by the selection of advisers (i.e., the estimated correlation parameter ρ_γ), rather than by treatment effects. In practice, however, the negative relationship between γ_j and q_j could also reflect treatment. Certifications with higher standards attract high-ability advisers (i.e. selection), and the standards themselves (e.g., training or education) may reduce an adviser's propensity to engage in misconduct (i.e. treatment).

In Appendix Section C, we discuss how we bound potential treatment effects and examine how incorporating them affects our results. In general, accounting for treatment effects does not materially change our estimates, but it tends to increase the magnitudes of our counterfactual results, since raising certification standards would directly reduce the probability that a certified adviser engages in misconduct through treatment.

5.2 Certification Agencies: Supply of Certifications

5.2.1 Certification Agency's Objective Function

On the supply side, we model how certification agencies set their standards and compete for members. A certification agency is an industry group that sponsors a certification. There is a set of certification agencies $\mathcal{C}$, and each $c \in \mathcal{C}$ issues one certification. Each certification agency c determines its standards τ_c to maximize its objective function, which is increasing in the certification's market share s_c among advisers and decreasing in the misconduct generated by its members $s_c\bar{q}_c$. We write the certification agency's problem as the following:

$$\max_{\tau_c} \underbrace{s_c(\tau_c, \bar{q}_c; \boldsymbol{\tau_{-c}}, \bar{\boldsymbol{q}}_{\boldsymbol{-c}})\omega_c}_{\text{Membership}} - \underbrace{s_c(\tau_c, \bar{q}_c; \boldsymbol{\tau_{-c}}, \bar{\boldsymbol{q}}_{\boldsymbol{-c}})\bar{q}_c(\tau_c; \boldsymbol{\tau_{-c}})}_{\text{Misconduct}} \tag{12}$$

The parameter ω_c reflects the weight that the certification agency places on membership (s_c) relative to the total misconduct from its members $(s_c\bar{q}_c)$. Equivalently, the objective function can be written as $\mathcal{U}_c = s_c(\omega_c - \bar{q}_c)$. One interpretation of the parameter ω_c is that it reflects the minimum quality desired (or maximum allowed misconduct rates), such that $\omega_c - \bar{q}_c$ can be viewed as a "quality markup." In this context, certification agencies earn a constant marginal revenue ω_c from each member and internalize the average cost from misconduct $\bar{q}_c$.

As detailed in Section 5.1, a certification's market share s_c depends on its own standard (τ_c) and misconduct rate $(\bar{q}_c)$ as well as the standards and misconduct rates of competing certifications $(\boldsymbol{\tau_{-c}}, \bar{\boldsymbol{q}}_{\boldsymbol{-c}})$. All else equal, if households dislike misconduct (i.e., $\phi_i < 0$) and

advisers face positive costs of obtaining a certification (i.e., $\gamma_i < 0$), demand for certification c is decreasing in average misconduct rates ($\bar{q}_c$) and decreasing in standards (τ_c). Conversely, demand for certification c is increasing in the misconduct rates of other certifications ($\bar{\boldsymbol{q}}_{-\boldsymbol{c}}$) and the standards of other certifications ($\boldsymbol{\tau}_{-\boldsymbol{c}}$).

A certification's misconduct rate $\bar{q}_c$ depends both on its own standard and standards set by competing certifications through the selection of advisers. Under a negative relationship between advisers' ability to meet certification standards and advisers' quality, misconduct rates decrease in own standard ($\boldsymbol{\tau_c}$) and generally increase in the standard of competing certifications ($\boldsymbol{\tau}_{-\boldsymbol{c}}$).[15]

The corresponding first-order condition (FOC) for the certification agency's objective function is:

$$\frac{ds_c}{d\tau_c}(\omega_c - \bar{q}_c) - s_c \frac{\partial \bar{q}_c}{\partial \tau_c} = 0 \tag{13}$$

The total derivative of market shares with respect to standards depends on both the direct effect that higher standards increase the costs of obtaining the certification ($\frac{\partial s_c}{\partial \tau_c} < 0$), and the indirect effect that higher standards reduce certification misconduct rates, which in turn attract more advisers ($\frac{\partial s_c}{\partial \bar{q}_c} < 0$). Hence, the indirect effect through certification quality dampens the direct effect of standards on the costs of obtaining the certification.

$$\frac{ds_c}{d\tau_c} = \frac{\partial s_c}{\partial \tau_c} + \sum_{l \in \mathcal{C} \cup \{0\}} \frac{\partial s_c}{\partial \bar{q}_l} \frac{\partial \bar{q}_l}{\partial \tau_c}$$

5.2.2 Implications of Household Sophistication and Competition

The first-order condition illustrates how household sophistication and competition impact certification standards. To see this, we can rewrite the FOC as follows.

$$\underbrace{\omega_c - \bar{q}_c}_{\text{Quality markups}} = \underbrace{-\frac{\partial \bar{q}_c}{\partial \tau_c}}_{\text{Misconduct sensitivity}} \times \underbrace{\frac{s_c}{-\frac{ds_c}{d\tau_c}}}_{Inverse semi-elasticity} \tag{14}$$

Equation (14) is one of the central results of the model. It expresses the agency's quality markup as the product of two forces. The first is misconduct sensitivity, which measures how much higher standards reduce member misconduct through selection. The second is the inverse semi-elasticity of certification demand with respect to standards, which captures how costly higher standards are in terms of lost membership.

Household sophistication affects certification standards through the demand semi-elasticity. Suppose households are unsophisticated and do not respond strongly to differences in certi-

[15] For an alternative certification c' that has a much higher standard, an increase in its standard $\tau_{c'}$ can also steer relatively higher ability advisers to certification c and can reduce $\bar{q}_c$.

fication quality, as measured by the misconduct rate ($\bar{q}_c$). In this case, raising standards has little indirect benefit through improved perceived certification quality. Instead, higher standards primarily reduce demand by increasing advisers' costs of obtaining the certification. As a result, certification demand becomes more elastic with respect to standards, and the inverse semi-elasticity falls. This reduces the quality markup agencies are willing to sustain and leads them to set lower standards, resulting in higher misconduct rates.

Competition among certification agencies can also reduce quality markups. Under perfect competition, agencies would set marginal revenue equal to average misconduct rates, (i.e. $\bar{q}_c = \omega_c$) so the quality markup would be zero. In this sense, competition can generate a race to the bottom in certification standards.[16] We also graphically illustrate certification agencies' marginal revenues, marginal costs, and average costs in Appendix Figure A-1. To the extent that advisers with lower certification acquisition costs are less likely to commit misconduct, the market for certifications features advantageous selection. Competition in markets with advantageous selection can lead to excess supply (i.e., lower certification standards with elevated rates of misconduct), which also explains the race to the bottom.

At the same time, competition can also improve certification quality through misconduct sensitivity, $\partial \bar{q}_c / \partial \tau_c$. Agencies have stronger incentives to impose higher standards when those standards more effectively screen out advisers with higher misconduct propensities. In our model, the absolute value of misconduct sensitivity tends to increase with competition among certifications. When there are more certification agencies with heterogeneous values of ω_c, each agency targets advisers within a narrower range of quality. In that case, the misconduct propensity of marginal advisers has a larger effect on the average misconduct rate among certification holders, $\bar{q}_c$. This force can increase quality markups and lead to lower misconduct rates.

It is worth noting that competition may lead to other benefits, such as the variety of certifications. We abstract from the broader welfare implications of competition among certifications and only focus on the effect on misconduct.

6 Estimation

We jointly estimate parameters governing adviser certification choices, misconduct propensity, and the adviser production function using the Generalized Method of Moments. As we discuss further below, joint estimation is important because advisers' outcomes and decisions are interconnected. Given the estimated preference and profit parameters, we invert certification agencies' objective functions to recover their preferences over membership.

We estimate advisers' preferences for certification from revealed choices, their misconduct propensity from observed misconduct, and their production function from observed assets un-

[16] Since we only allow selection effects, certification agencies may not be able to raise misconduct rates to $\bar{q}_c = \omega_c$ by varying standards, but the perfect competition setting is useful to understand the effect of competition.

der management. The data are aggregated at the certification c by market m (county $\times$ year) level. The observed outcome variables we target are: certification choice shares in each market s_{mc}, misconduct propensity q_{mc} among advisers in market m holding certification c, and log assets $\ln aum_{mc}$ among advisers in market m holding certification c. To capture adviser heterogeneity, we assume that ability and latent preference for certifications (γ, η) follow independent normal distributions.

In our estimation and counterfactual, we restrict to advisers who either hold certifications related to managing client assets or hold no certifications. Some certifications, such as the Certified Public Accountant (CPA), are not directly related to asset management and imply specialized training and a different job function. We therefore exclude these highly specialized certifications from our analysis and focus on more general certifications that are fungible across asset-management roles.

Table 8 reports the estimation results. Column (1) presents estimates of the production function. Columns (2)–(4) report certification-choice estimates. Column (5) jointly estimates certification choices and misconduct. Our preferred estimates are in column (6), where we jointly estimate parameters driving all three outcomes, since adviser heterogeneity affects all of them. In the following subsections, we discuss the moments, identification, and estimation results in detail.

6.1 Adviser Preference for Certifications

We estimate an adviser's certification choice parameters in Eq. (7) by matching advisers' observed certification choices with shares simulated from the model based on Eq. (8). The associated moments in our GMM objective function are the score of the log-likelihood, where the likelihood is computed based on Eq. (8). We integrate over adviser types numerically using Monte Carlo with 500 Sobol draws.

Adviser preference parameters are identified based on the sensitivity of an adviser's certification choices with respect to certification characteristics. For example, the average disutility an adviser gets from study hours (i.e., average adviser ability γ), is identified based on how the share of advisers becoming certified changes as the associated study hours change, and the associated standard deviation of ability is identified by the variation of this sensitivity across advisers in different markets. Similarly, we identify the average and standard deviation of preference for certification η through the average and dispersion of the probability of choosing any certification.

One concern in estimating Eq. (7) is that the study hours set by certifications τ_c are endogenous and correlated with unobserved certification characteristics $\xi_{c.}$ For example, a certification with desirable unobserved characteristics may set higher study hours. To address this endogeneity, we instrument for hours using certification average misconduct rates $\bar{q}_c$. Specifically, we estimate the following control function at the certification level by regressing hours

on average misconduct:

$$\tau_c = \beta \bar{q}_c + \tilde{\xi}_c$$

We use the residual of this regression $\tilde{\xi}_c$ as a proxy for the unobserved certification characteristics ξ_c. The exclusion restriction is satisfied under the assumption that advisers' certification choices do not depend on misconduct rates beyond their impact on adviser payoffs.

Table 8, column (2), presents a simple logit estimate that ignores the potential endogeneity of certification hours. In column (3), we introduce our control function; column (4) adds random coefficients for η_j and γ_j; and columns (5) and (6) report our joint estimates. Once we account for the endogeneity of study hours, we find a positive relationship between certification choice and associated profits, and a negative relationship between certification choice and study hours. We also find substantial heterogeneity in adviser ability: the cost of obtaining certification for an adviser at the 10th percentile of the ability distribution is about 70% higher than for an adviser at the 90th percentile.

6.2 Adviser Misconduct

We estimate the relationship between adviser misconduct and ability in Eq. (11) by matching observed and predicted misconduct rates across advisers holding each certification, $E[q_{mc} - \bar{q_{mc}} \mid c] = 0$. The relationship between ability and misconduct, ρ_γ, is identified from the correlation between study hours and certification misconduct rates. The relationship between latent preferences for certification and misconduct, ρ_η, is identified from the difference in misconduct rates between advisers with and without certifications.

In the middle panel of Table 8, columns (5) and (6), we report estimates of the parameters governing adviser misconduct propensity. We find that higher-ability advisers are less likely to commit misconduct ($\rho_\gamma < 0$), consistent with a Spence signaling model and the motivating evidence discussed in Section 3.3. Conceptually, this result is intuitive: higher-ability advisers may avoid misconduct because it could jeopardize future career prospects, which are better than those of lower-ability advisers. Additionally, we estimate that advisers with stronger preferences for certification are more likely to commit misconduct ($\rho_\eta > 0$). Both parameters are statistically significant.

6.3 Adviser Production Function

We estimate the parameters in the adviser production function based on Eq. (10) using observed assets under management among advisers. We incorporate moment conditions, $E[\epsilon_{mc} Z_{mc}] = 0$ between residuals in Eq. (10) and covariates $Z_{mc} = \{Certified \times X_m, \bar{q}_c \times X_m, \tau_c \times X_m\}$ into our GMM objective function. We use the same demographic variables X_m as in Section 4.1, which include a constant, the fraction of the population in market m with some college education, and the fraction of the population above 65.

The production function parameters are identified based on how an adviser's choice to become certified and the associated misconduct rate of her chosen certification affect her assets under management, and how that effect varies across demographic variables as proxies for the level of sophistication in her market.

Households may also form some perception of advisers' ability beyond certification misconduct rates. To address this concern, we control for perceived adviser ability using the posterior mean of ability, γ_{mc}, conditional on certification choices. Since γ_{mc} is an endogenous outcome in our model, we use study hours in the moment conditions instead of γ_{mc}.

$$\gamma_{mc} = \frac{\int_{\gamma,\eta} \gamma s_c(\gamma, \eta; m) dF(\gamma, \eta; m)}{\int_{\gamma,\eta} s_c(\gamma, \eta; m) dF(\gamma, \eta; m)}$$

We report production function estimates in the bottom panel of Table 8. All demographic variables are standardized. In column (1), we estimate the production function parameters separately, without controlling for adviser ability γ_{mc}. In column (6), we estimate them jointly to account for the selection of ability among advisers holding different certifications. We find that certifications increase an adviser's assets under management. The results in column (6) indicate that becoming certified leads to a 21% increase in assets under management.

Certifications that are associated with elevated rates of misconduct are less effective, as households appear to discount these certifications. However, for the average market, the effect of misconduct is modest. A certification with a misconduct rate up to 13 percentage points higher than average (among those advisers without misconduct) would still generate weakly positive payoffs to advisers. In markets with potentially more sophisticated households (i.e., those that are younger and more educated), households appear more discerning of misconduct. Still, even in markets where educational attainment is two standard deviations above the average, a certification with 8 percentage points higher misconduct rate than average still generates weakly positive payoffs.

For robustness, we also estimated household demand for financial advice in Appendix Section D using standard discrete-choice frameworks (Berry, 1994; Berry et al., 1995). We find similar results that households do not sufficiently discount certifications with high misconduct rates, and the sensitivity to misconduct rates is related to demographics such as education.

6.4 Certification Agencies: Supply of Certifications

Lastly, we estimate the preference parameters of the certification agencies. Certification agencies may have heterogeneous preferences, denoted by ω_c, regarding how they trade off the number of certificate holders versus the level of certification misconduct.

Having solved for advisers' demand for certifications s_c and misconduct rates $\bar{q}_c$, we invert the certification agencies' objective functions to recover ω_c according to Eq. (14). All else equal, a certification agency with a greater preference for increasing membership will set lower

required study hours.

The resulting estimates are reported in Figure 7. Certification agencies exhibit substantial heterogeneity in how they balance certification market share against quality. Interpreting ω_c as a measure of the importance placed on certification quality, we find that the most reputable certification agencies effectively target misconduct rates below 7 percent among their members, whereas some agencies appear willing to tolerate misconduct rates as high as 20 percent. Consistent with this interpretation, agencies with lower ω_c—that is, agencies that place greater weight on quality—tend to impose more demanding study-hour requirements.

As an external validation, we examine the relationship between ω_c and certification founding years, which are not targeted in the estimation. Figure 7b illustrates a strong positive relationship between ω_c and founding year. This relationship implies that older certifications tend to place greater weight on certification quality relative to membership growth (i.e., have lower values of ω_c), whereas more recently established certifications place greater weight on expanding membership. Because founding year is not used in the estimation, this result provides an untargeted moment of the recovered preference parameters. It suggests that older certifications place greater value on maintaining their reputations and that increasing competitive pressures may have contributed to a race to the bottom in certification standards.

7 Counterfactuals

We use our quantitative model to analyze how underlying economic forces influence the demand and supply of certifications. First, we examine how household sophistication affects advisers' certification choices, as well as the resulting certification standards and quality. Second, we explore the impact of regulatory-mandated certification standards. This counterfactual scenario is partly inspired by the U.S. government's standardization of organic food certification through the National Organic Program in 2000. Lastly, we assess the equilibrium effects of competition among certification agencies. Unlike occupational licensing, which is typically government regulated, occupational certifications are managed by private third-party organizations. This free-entry characteristic fosters competition among certification agencies.

To solve for these counterfactuals, we simulate model outcomes under a Bayesian Nash Equilibrium, where (i) each certification agency sets study hours τ_c as a best response to the study hours set by other agencies, and (ii) households, advisers, and certification agencies have rational expectations of certification misconduct rates.[17] To solve for the equilibrium, we find $(\tau_c, \bar{q}_c)$ for each certification agency, such that the first-order conditions (FOCs) of agencies' objective functions in Eq. (13) are set to zero and certification misconduct rates $\bar{q}_c$ in adviser production function are equal to the weighted average misconduct rates of their members.

[17] We assume households form the correct expectation of certification misconduct rates but can be insensitive to these misconduct rates.

7.1 Outcomes under the Status Quo

To evaluate different counterfactual scenarios, we compare certification market shares, standards, and misconduct rates. Column (1) of Table 9 reports the outcomes under the status quo. 14 percent of advisers hold certifications. Advisers with certifications studied over 500 hours, and 6.47 percent of advisers commit misconduct. Since we assume no treatment effects of certifications on misconduct, this unconditional average misconduct rate remains constant across all counterfactuals. As a comparison, the average misconduct rate for certified advisers under the status quo is 10.22 percent, indicating that many certifications are associated with even higher rates of misconduct than advisers without any certifications. Weighted by the amount of assets advisers manage, the average misconduct rate is 6.56 percent among all advisers including those without certifications. This is higher than the unconditional average because households tend to value any certifications without distinguishing certification quality.

7.2 Household Sophistication

We examine how household sophistication affects certification quality by incentivizing advisers to obtain higher-quality certifications and prompting certification agencies to set higher standards. In this scenario, we assume that households become more sophisticated in distinguishing between certification quality, which makes the adviser production function more sensitive to certification misconduct rates.

We implement this counterfactual as follows. First, sophisticated households do not hold the biased belief that all certifications represent higher quality; they prefer a certification only if it genuinely certifies higher quality. Therefore, we set the coefficient on any certification λ in Eq. (10) to be zero. Second, sophisticated households are more critical of certifications with high average misconduct rates. We set the coefficient on misconduct corresponding to the highest level of sophistication based on our adviser production function estimates. This level is based on a hypothetical market where 100% of the population has some college education and 0% is over age 65.

Table 9 shows that certification agencies respond to sophisticated households by setting higher standards, requiring advisers to study for more than 800 hours on average. With higher acquisition costs, only 6 percent of advisers choose to obtain certifications, a reduction of over 50 percent compared to the status quo. Through selection, the advisers still choosing to obtain certifications have higher quality. 7.39 percent of advisers holding certifications commit misconduct, lower than 10.22 percent under the status quo. This corresponds to a 28% decline in the misconduct rates among advisers with certifications. The misconduct rate among all advisers weighted by household assets managed also decreases from 6.56 to 6.36 percent, reflecting how sophisticated households value advisers holding certifications with lower misconduct rates.

Overall, this counterfactual underscores the distortion caused by potentially unsophisticated

household preferences. If households were sufficiently sophisticated, they could incentivize certification agencies to impose higher standards and attract high-quality advisers.

7.3 Regulator-Mandated Certification Standards

Second, we consider the impact of financial regulators, such as FINRA or the SEC, imposing standard requirements for certifications. We model this counterfactual by assuming that each certification agency balances certification quality against the number of certified members (ω_c) according to regulatory standards. One advantage of our data, as discussed in Section 3.2, is that a few certifications have been effectively granted special status by regulators, allowing advisers to substitute these certifications for licensing requirements. We cap each certification agency's ω_c at the median value among these "regulator-approved" certifications.

Table 9 shows that certification agencies set higher standards, requiring advisers to study for over 900 hours on average. With more stringent standards, 5 percent of advisers obtain certifications, and the average certification misconduct rate decreases to 5.83 percent, a 40% reduction from the status quo. Misconduct rates among certified advisers are lower than unconditional average, so certifications are able to signal high quality. The asset-weighted misconduct rate decreases from 6.56 to 6.45%. Because households tend to value any certifications but cannot distinguish between high and low quality certifications, mandating certification standards can mitigate potential harms to households from low quality advisers. Overall, this counterfactual suggests that stronger regulation could potentially eliminate frivolous certifications.

7.4 Effects of Competition on Certification Standards

Lastly, we examine the effects of competition on certification standards by simulating counterfactuals with a smaller number of certification agencies. To avoid confounding the impact of certification agencies' preferences for quality, we rank certifications by their ω, and keep every other certification. Then, there are half as many certifications as the status quo, while the average preference for certification quality is roughly the same.

The last column of Table 9 shows that certification agencies set higher standards, requiring around 700 study hours. Meanwhile, the average certification misconduct rate decreases by 0.66 percentage points. With reduced competition, certification agencies face lower elasticities and set higher quality markups, imposing higher standards that result in lower misconduct rates.

Figure 8 illustrates how certification standards and quality change with the number of certifications. We vary the number of competing certifications from three, five, nine, to 18 under the status quo. Again, to select the subset of certifications, we rank certifications by their preference for quality ω and keep every Nth certification. As the number of certifications increases, certifications impose lower standards, reducing the required study hours from 1100 to around

550. Concurrently, certification quality declines, with misconduct rates among certified advisers increasing from 7.58 to 10.22 percent, an increase of about 35%. Asset-weighted misconduct rates also reduce from 6.56 to 6.5 percent. These results again suggest that competition among certifications can lead to lower standards and quality.

As discussed in Section 5.2.2, how competition affects misconduct rates is theoretically ambiguous in our model. On the one hand, reducing the number of certifications increases inverse elasticity, leading to higher quality markups. On the other hand, reducing the number of certifications can also reduce misconduct sensitivity, which measures how much incrementally higher certification standards can reduce misconduct rates among certification members, resulting in lower quality markups. Our counterfactual results suggest the effect of elasticity dominates. One reason why the elasticity effect dominates is that the negative correlation between adviser ability and misconduct propensity is not strong enough. In other words, when certification agencies impose higher standards, they risk losing many members but only achieve small gains in terms of lower misconduct rates. In Appendix Section B, we show that competition can also lead to higher certification quality (lower misconduct rates) under different parameter values.

Overall, our counterfactual results suggest that free competition among certifications can lead to a race to the bottom, where frivolous certifications do not certify higher quality.

7.5 Robustness with Treatment Effects

In our model, we rule out treatment effects when higher certification standards directly reduce advisers' misconduct propensity. While our data on adviser certifications do not allow us to directly measure treatment effect, we follow the approach of Oster (2019) in Appendix Section C and find that the treatment effects of many certifications are likely small. We re-estimate the parameters governing the correlation between adviser heterogeneity and misconduct propensity, assuming treatment effects explain 10% or 20% of the variation in misconduct rates across certifications. Then, we simulate counterfactuals using these revised parameters accordingly.

When we allow some treatment effects, misconduct rates among certification members decrease more under all counterfactuals. When certification agencies set higher standards, they not only screen for high-ability advisers, but also impose stronger treatment effects on their members, further reducing their misconduct propensity. However, due to longer study hours, some advisers no longer obtain certifications and lose their treatment effects, albeit small, under the status quo. As a result, unconditional misconduct rates among all advisers tend to increase slightly. If frivolous certifications still exert some positive treatment effects on advisers, policies aimed at removing such certifications may not generate a Pareto improvement in terms of adviser misconduct.

8 Conclusion

We examine the supply and demand for certifications in the financial advisory industry. We find that certifications more costly to obtain tend to signal higher quality. However, we also observe an abundance of frivolous certifications. Despite claims that these certification agencies uphold higher standards, advisers holding these certifications are more likely to have a record of misconduct than advisers without certifications.

A natural question arises: why doesn't competition eliminate these frivolous certifications from the industry? We argue that information frictions allow frivolous certifications to persist in equilibrium. These certifications thrive in areas with less sophisticated consumers who may struggle to differentiate between certifications. Given these frictions, we also demonstrate how, consistent with Shleifer (2004), competition can lead to a race to the bottom in certification standards, as agencies compete for new members. Our quantitative model shows how certification agencies set standards to attract new members while attempting to maintain a certain level of quality.

Certifications have become a growing area of policy interest, with general bipartisan support. While certifications can be beneficial, we show that information frictions—often the reason certifications are needed in the first place—limit their effectiveness. We demonstrate that both limited consumer sophistication and competition lead to lower certification standards in equilibrium, potentially falling below what regulators would deem desirable. Although many support certifications, comments from regulators, such as FINRA and NASAA, suggest an anecdotal awareness of these shortcomings.

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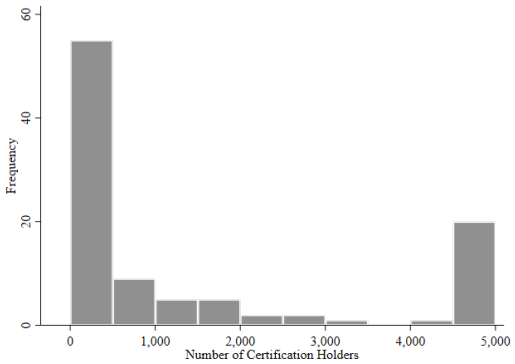
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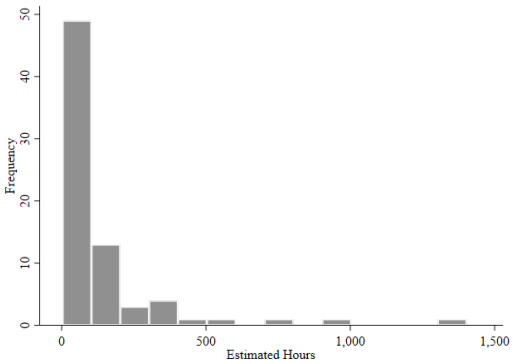
Tables and Figures

Figure 1: Certifications

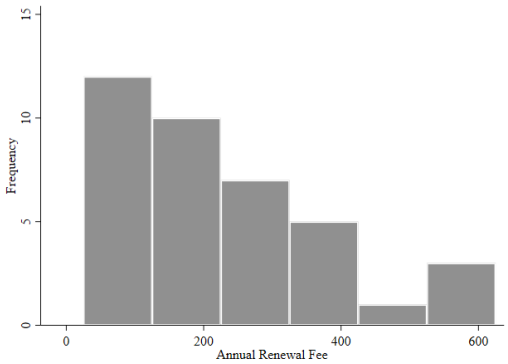
(a) Certification Membership



(b) Hours Required to Obtain Each Certification



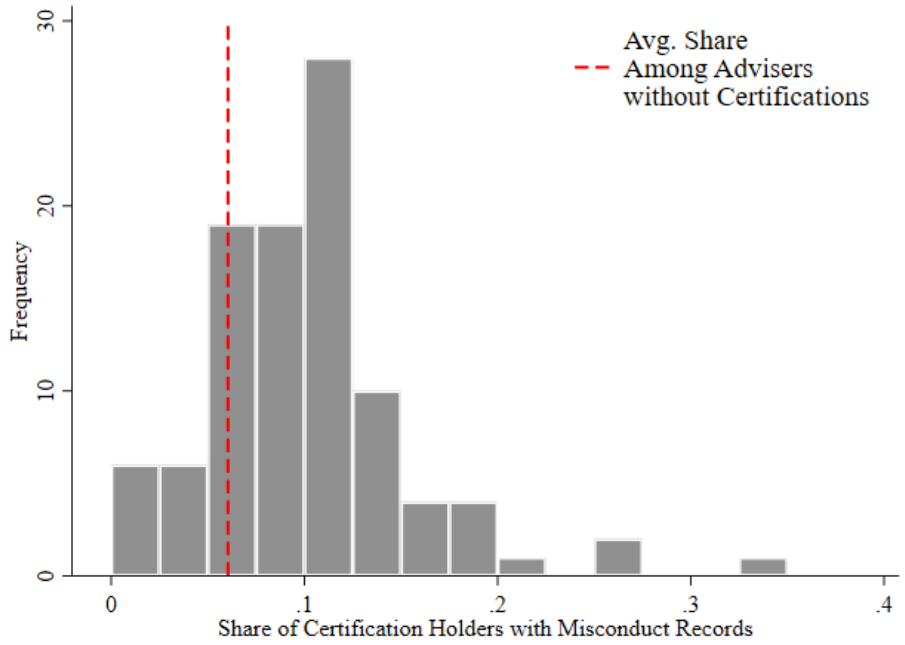
(c) Annual Renewal Fees



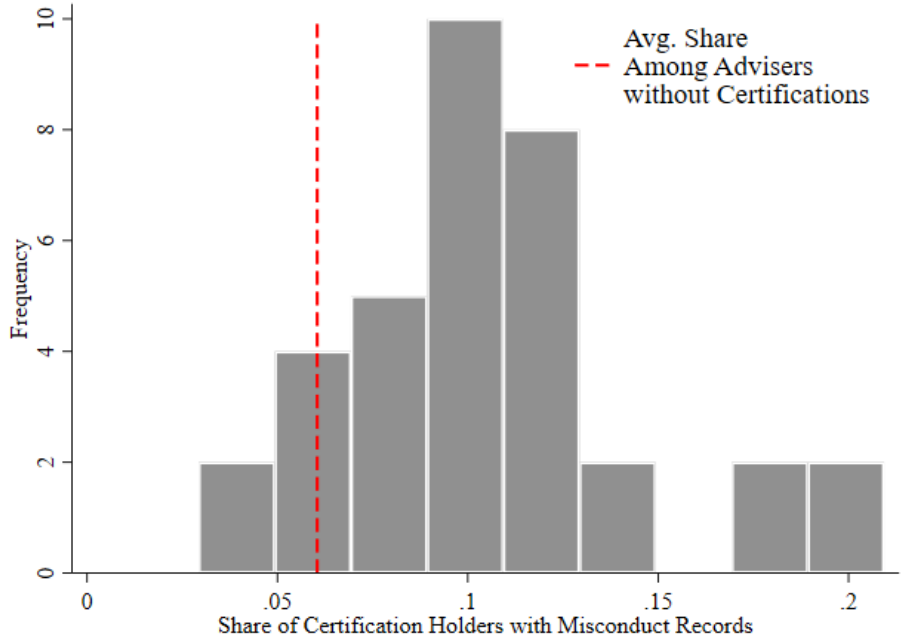
Notes: Figure 1a displays the distribution of membership size across certifications. Figure 1b displays the distribution of hours required to obtain each certification. Figure 1c displays the distribution of annual renewal fees across certifications. Observations in panels (a)-(c) are at the certification level as of 2020.

Figure 2: Misconduct by Certification

(a) Misconduct Rate

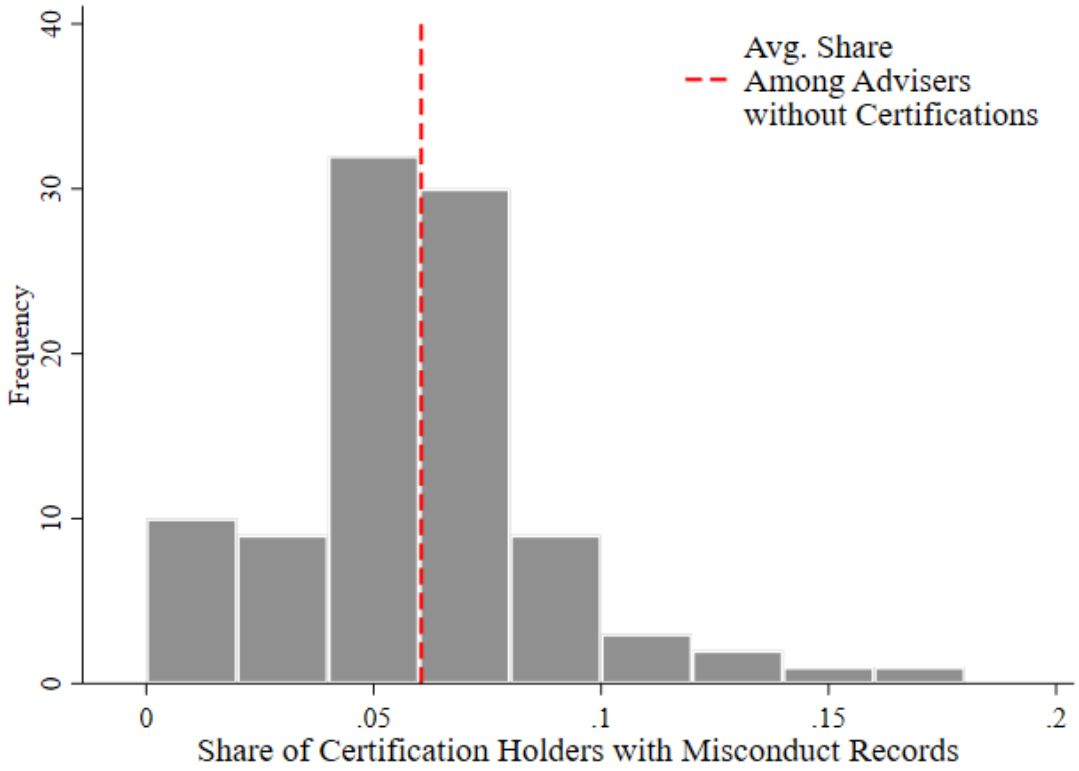


(b) Misconduct Rate - Fiduciary Certifications



Notes: Figure 2 displays the *Misconduct Rate* for each certification. The *Misconduct Rate* reflects the share of advisers holding a certification that have a past record of misconduct. Observations are at the certification level. The red-dashed line reflects the average misconduct rate among advisers without any certifications.

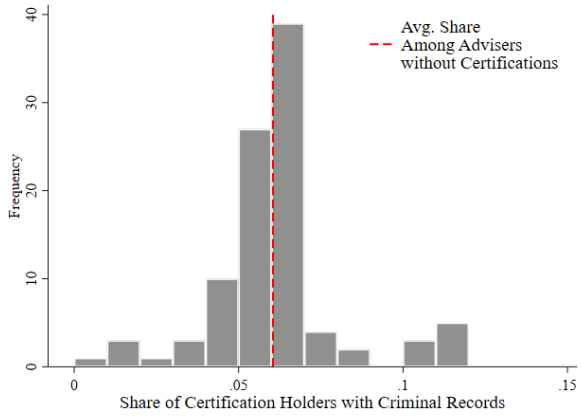
Figure 3: Certification Misconduct Fixed Effects



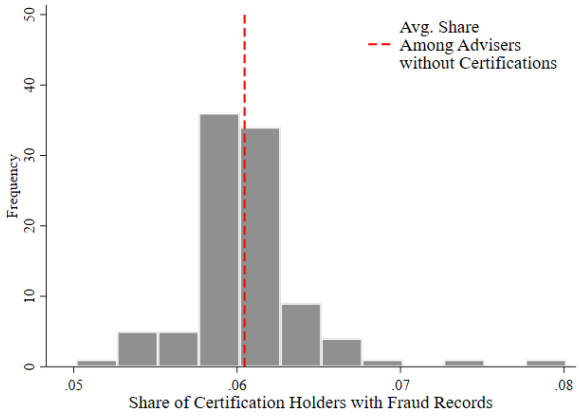
Notes: Figure 3 displays the certification fixed effects corresponding to Eq. (1). The red-dashed line reflects the average misconduct rate among advisers without any certifications.

Figure 4: Certification Misconduct Fixed Effects - Alternative Measures of Misconduct

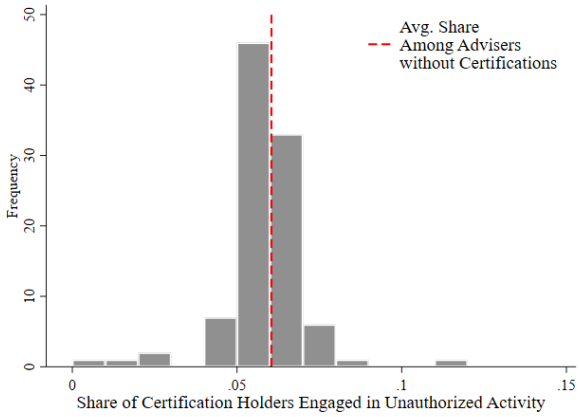
(a) Criminal Activity



(b) Fraud

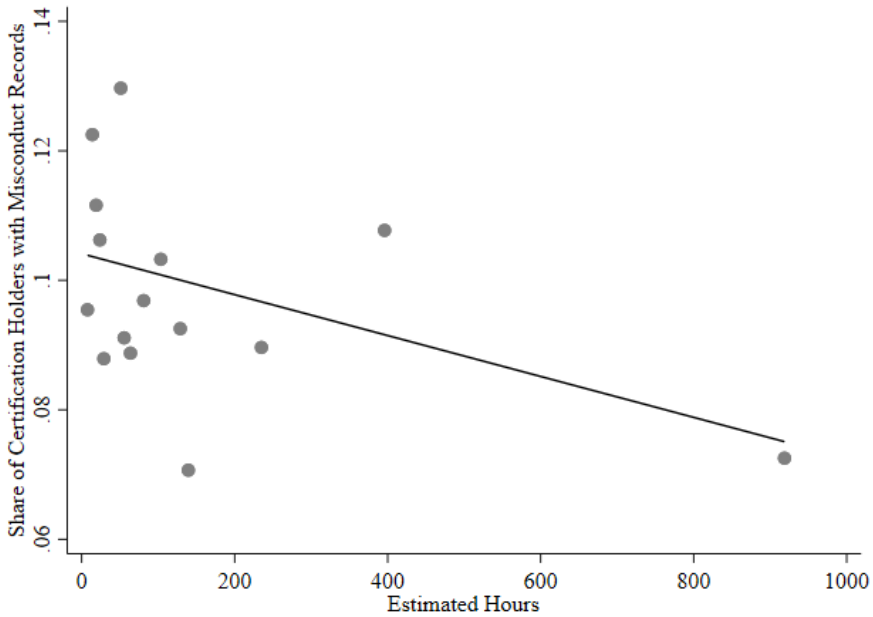


(c) Unauthorized Activity



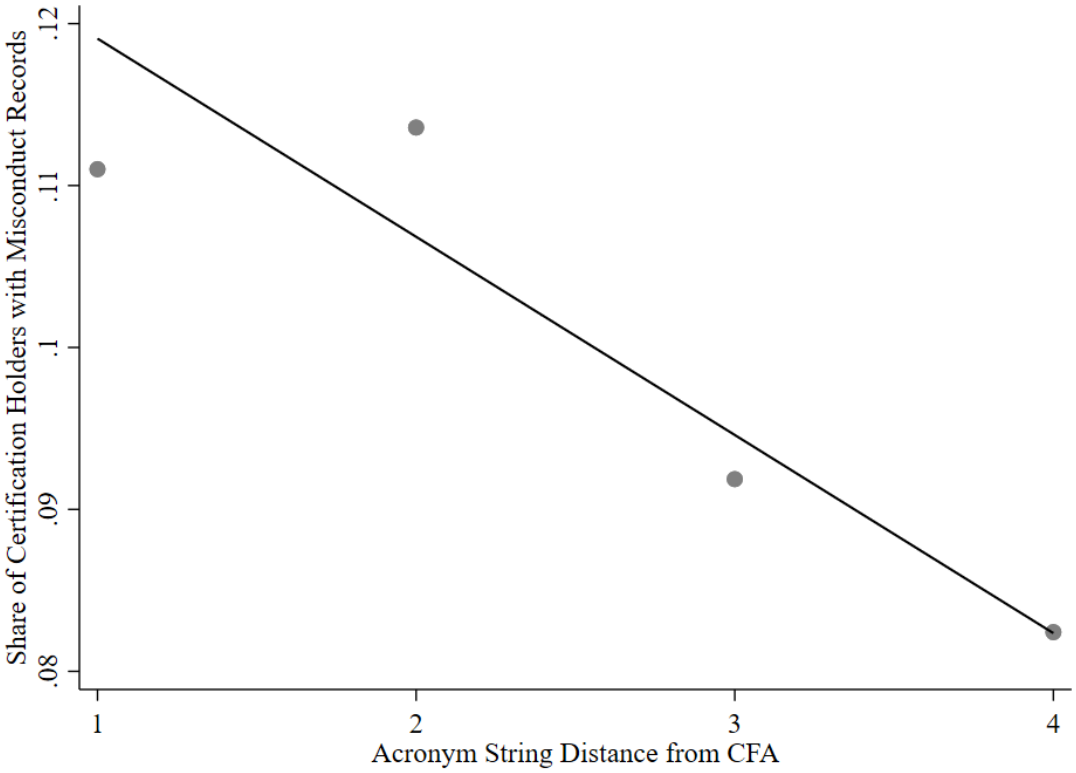
Notes: Figure 4 displays the certification fixed effects corresponding to Eq. (4). Observations are at the certification level. The red-dashed line reflects the average misconduct rate among advisers without any certifications.

Figure 5: Misconduct by Certification vs. Hours



Notes: Figure 5 displays a binned scatter plot of the *Misconduct Rate* versus the estimated number of hours required to complete each certification. Observations are at the certification level.

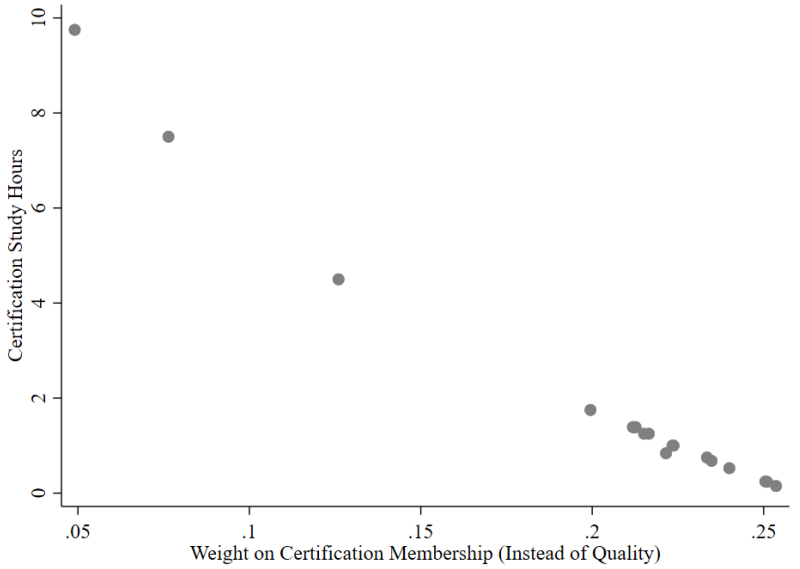
Figure 6: Misconduct by Certification vs. Acronym Differences from CFA



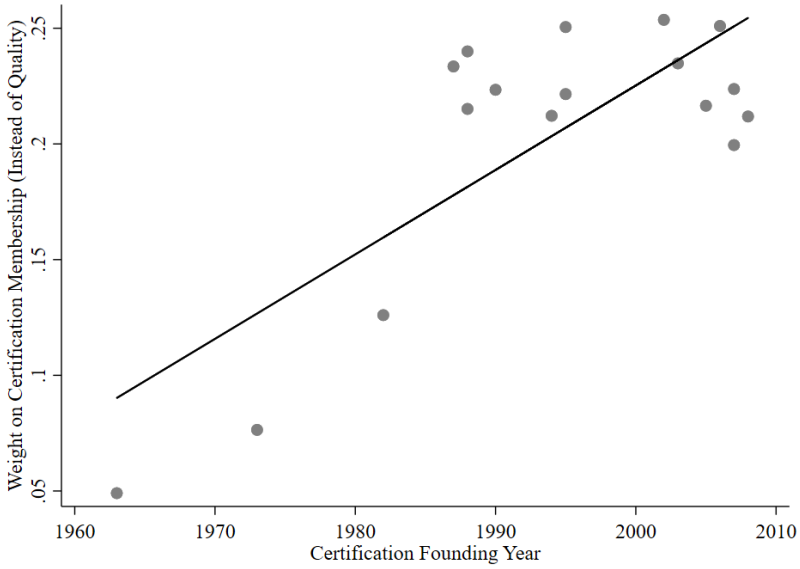
Notes: Figure 6 displays a binned scatter plot of the *Misconduct Rate* versus the string distance between certification acronyms and CFA. Observations are at the certification level.

Figure 7: Calibrated ω_c of Certification Agencies

(a) ω vs Hours



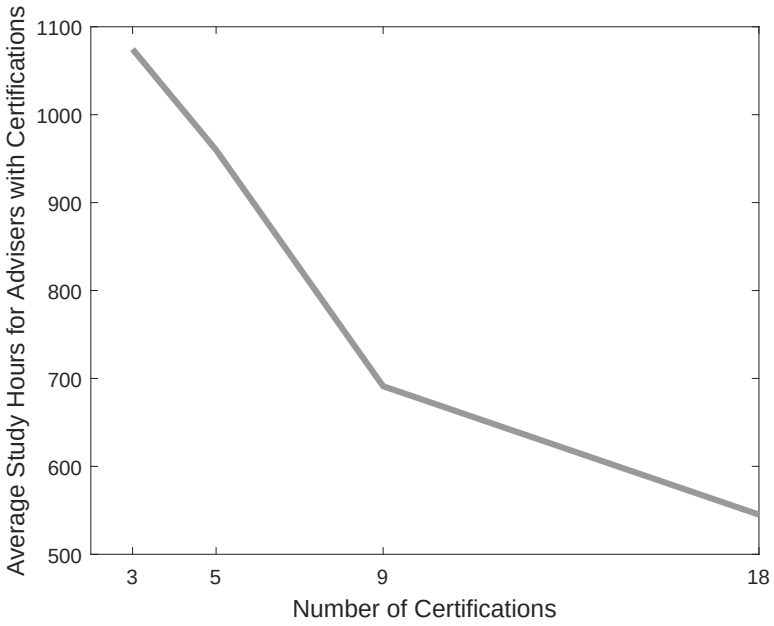
(b) ω vs Founding Year



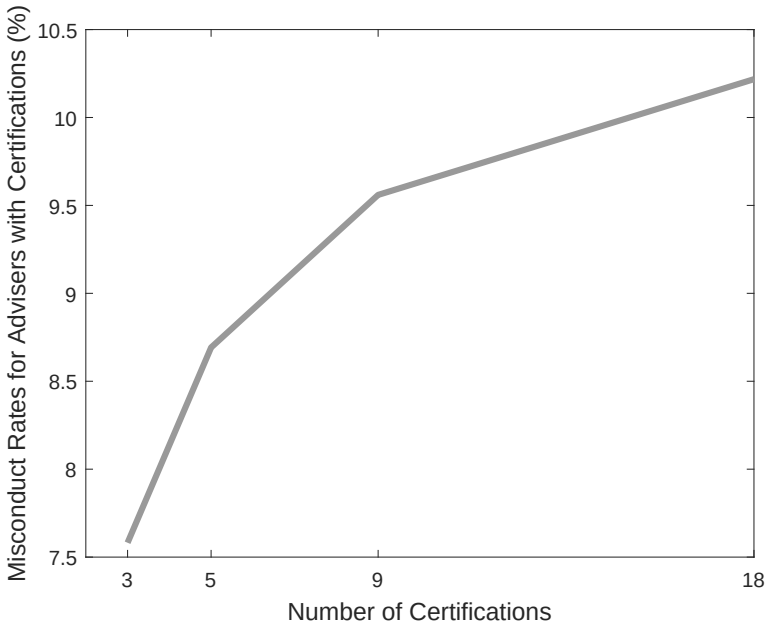
Notes: Figure 7, Panel (a), displays a scatter plot of the required study hours for each certification on the y-axis versus the calibrated ω_c for each certification agency. Certification agencies with higher ω_c place greater weight on expanding membership rather than maintaining certification quality.
Panel (b) displays a scatter plot of the estimated ω_c parameter versus the year in which each certification was founded, restricting the sample to certifications established before the first year of our data, 2016. The figure illustrates that newer certifications tend to have higher values of ω_c, indicating that they place greater weight on expanding membership rather than maintaining certification quality.

Figure 8: Counterfactuals with Different Number of Certification Agencies

(a) Hours



(b) Misconduct Rates



Notes: Figure 8 displays certification standards in terms of required study hours in panel (a) and certification quality in terms of misconduct rates among certified advisers in panel (b) across counterfactuals with different numbers of competing certification agencies.

Table 1: Summary Statistics

	(1)			
Variables	Obs	Mean	Std. Dev.	Median
Experience	2,066,558	14.35	11.34	12.00
Investment Adviser	2,069,105	0.47	0.50	0.00
Number of Licenses	2,069,105	2.39	1.22	2.00
Hold Any Certification	2,069,105	0.25	0.43	0.00
Number of Certifications	2,069,105	0.32	0.72	0.00
Misconduct (Any)	2,069,105	0.07	0.25	0.00
Managed Assets ($ million)	259,505	79.93	179.42	50.00

Table 1 displays the adviser summary statistics corresponding to our base data set. Observations are at the adviser-by-year level.

Table 2: Most Common Certifications

Certification	Number of Certificate Holders
CFP	78,789
CMA	49,985
CRPC	32,229
CHFC	25,104
CFA	22,615
CLU	20,931
AAMS	16,984
AIF	12,709
CPA	11,758
CPFA	9,368
CPCU	9,037
RICP	7,864
CIMA	7,744
CLTC	6,772
CRPS	6,025
CEPA	5,733
AINS	5,311
CDFA	5,124
APMA	4,927
LUTCF	4,629
AWMA	4,163
CPWA	3,006
AIS	2,887
CRC	2,761
CFS	2,348
CASL	2,046
FIC	1,946
CMFC	1,921
CWS	1,856
FPQP	1,665

Table 2 displays the most common certifications held by advisers as of 2026.

Table 3: Misconduct vs. Certifications

VARIABLES	(1)	(2)	(3)
Certifications	-0.502***	-0.146**	-0.093
	(0.068)	(0.072)	(0.079)
SEC Approved Certifications	-1.249***	-0.937***	-0.707***
	(0.108)	(0.115)	(0.139)
Accredited Certifications	1.010***	0.861***	0.166
	(0.107)	(0.113)	(0.136)
Fiduciary Certifications	0.548***	0.514***	0.593***
	(0.094)	(0.101)	(0.117)
Constant	0.910***	0.923***	1.470***
	(0.055)	(0.061)	(0.038)
Observations	2,066,389	1,916,533	1,322,029
R-squared	0.087	0.193	0.288
Controls	X	X	X
Firm FE	X		
City-Firm-Year FE		X	
City-Firm-Year-License FE			X

Table 3 displays the regression results corresponding to a linear probability model Eq. (2). Observations are at the adviser-by-year level. The dependent variable ($Misconduct$) is a dummy variable indicating whether an adviser has a record of misconduct. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 4: Misconduct vs. Certification Cost - Spence Signaling

VARIABLES	(1)	(2)	(3)
Certifications	0.464**	0.498**	0.756***
	(0.214)	(0.228)	(0.270)
ln(Hours)	-0.139***	-0.072*	-0.124***
	(0.036)	(0.038)	(0.046)
Constant	0.915***	0.928***	1.476***
	(0.055)	(0.061)	(0.038)
Observations	2,066,389	1,916,533	1,322,029
R-squared	0.087	0.193	0.288
Controls	X	X	X
Firm FE	X		
City-Firm-Year FE		X	
City-Firm-Year-License FE			X

Table 4 displays the regression results corresponding to a linear regression model Eq. (3). Observations are at the adviser-by-year level. $Hours$ measures the number of hours an adviser spent obtaining certifications. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 5: Misconduct vs. Certifications - Alternative Measures of Misconduct

VARIABLES	(1) Criminal History	(2) Fraud	(3) Unauthorized Activity	(4) Future Misconduct
Certifications	-0.054	-0.070***	-0.098***	0.148***
	(0.040)	(0.018)	(0.028)	(0.032)
SEC Approved Certifications	-0.378***	0.065**	-0.284***	
	(0.056)	(0.030)	(0.043)	
Accredited Certifications	0.095*	0.007	0.073*	
	(0.055)	(0.030)	(0.043)	
Fiduciary Certifications	0.102**	0.003	0.054	
	(0.051)	(0.026)	(0.039)	
Misconduct Records				2.555***
				(0.078)
Constant	1.516***	0.032**	-0.095***	0.420***
	(0.036)	(0.015)	(0.022)	(0.037)
Observations	1,916,533	1,916,533	1,916,533	918,062
R-squared	0.099	0.158	0.151	0.175
Controls	X	X	X	X
City-Firm-Year FE	X	X	X	X

Table 5 displays the regression results corresponding to a linear probability model Eq. (2). Observations are at the adviser-by-year level. The dependent variable in column (1) is whether the adviser has a criminal history, the dependent variable in column (2) is whether the adviser has a record of fraud, and the dependent variable in column (3) is whether the adviser has a record of engaging in unauthorized activity. Lastly in column (4), we predict whether advisers engage in misconduct in the future. Specifically, we predict whether advisers engage in misconduct between 2017 and 2020 (2021 and 2026) based on observables as of 2016 (2020). Robust standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 6: Misconduct vs. Demographics

VARIABLES	(1)	(2)	(3)	(4)
Certifications	0.151***	0.163***	0.122**	0.140**
	(0.054)	(0.055)	(0.062)	(0.064)
Certifications × Pct 65 or Older	0.209***	0.250***	0.034	0.066
	(0.060)	(0.061)	(0.074)	(0.077)
Certifications × Pct College	-0.159***		-0.075	
	(0.054)		(0.061)	
Certifications × ln(Income)		-0.267***		-0.147**
		(0.054)		(0.062)
Constant	0.950***	0.952***	1.320***	1.319***
	(0.065)	(0.065)	(0.040)	(0.040)
Observations	1,569,044	1,569,044	1,107,256	1,107,256
R-squared	0.185	0.185	0.287	0.287
Controls	X	X	X	X
City-Firm-Year FE	X	X		
City-Firm-Year-License FE			X	X

Table 6 displays the regression results corresponding to a linear regression model Eq. (5). Observations are at the adviser-by-year level. The dependent variable ($Misconduct$) is a dummy variable indicating whether an adviser has a record of misconduct. Demographic variables are at county-by-year level and are standardized. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 7: Misconduct vs. Certification Competition

VARIABLES	(1) Misconduct
HHI: Certifications	-48.912***
	(5.373)
Share of Advisers with Certifications	0.232***
	(0.022)
Constant	3.765***
	(0.533)
Observations	6,675
R-squared	0.391
Year FE	X
State FE	X

Table 7 displays the regression results corresponding to a linear regression model Eq. (6). Observations are at the county-by-year level. The dependent variable measures the share of advisers with a past record of misconduct among those advisers that hold at least one certification. We measure competition among certification agencies at the county-by-year level using the Herfindahl Hirschman Index (HHI). Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 8: Structural Estimation

	(1) Asset Production	(2) Simple Logit	(3) Mixed Logit	(4) Mixed Logit	(5) Mixed Logit & Misconduct	(6) Mixed Logit Misconduct & Asset Production
Certification Choices						
Payoff $\pi(c)$		-4.16	0.73	0.61	0.59	0.68
		(0.02)	(0.02)	(0.02)	(0.08)	(0.51)
Any Certification		-4.33	-4.70	-5.35	-4.99	-4.94
		(0.01)	(0.01)	(0.04)	(0.32)	(0.34)
Hours		0.35	-0.51	-0.50	-0.97	-0.96
		(0.00)	(0.00)	(0.00)	(0.09)	(0.06)
Control Function			0.95	0.94	1.35	1.34
			(0.00)	(0.00)	(0.05)	(0.03)
Std Any Certification				1.53	2.01	2.06
				(0.05)	(0.28)	(0.29)
Std Hours				0.00	0.19	0.20
				(0.00)	(0.04)	(0.04)
Misconduct						
Constant					-3.99	-4.06
					(0.45)	(0.33)
Preference for Certification					1.21	1.27
					(0.03)	(0.05)
Ability					-1.56	-1.50
					(0.50)	(0.41)
Production Function						
Certification	0.48					0.21
	(0.00)					(0.01)
Certification $\times$ college	-0.10					-0.02
	(0.00)					(0.01)
Certification $\times$ 65+	0.00					-0.04
	(0.01)					(0.02)
Δ Misconduct	-2.30					-1.59
	(0.06)					(0.22)
Δ Misconduct $\times$ College	1.73					-0.33
	(0.08)					(0.31)
Δ Misconduct $\times$ 65+	0.45					1.38
	(0.10)					(0.46)
Ability						0.05
						(0.01)

Notes: Table 8 displays estimates of structural parameters. Observations are at certification $\times$ market level. Column (1) shows estimates of adviser production function without considering the selection of adviser ability. We use certification payoff based on estimates in column (1) when running estimations shown in columns (2) to (5). Columns (2) and (3) estimate adviser certification choices using simple logit. From (3) to (6), we include a control function to address the endogeneity of hours. Column (4) includes random coefficients on any certification and study hours. Column (5) jointly estimates adviser certification choices and misconduct. Column (6) jointly estimates adviser certification choices, misconduct, and production function. Standard errors are shown in parentheses. We compute standard errors using the GMM asymptotic variance expression.

Table 9: Counterfactual

	Status quo	Sophisticated Households	Regulatory Standards	Reduced Competition
Percentage of Advisers with Certifications (%)	13.72	6.44	5.05	4.49
Average Study Hours				
Unconditional	75	53	47	31
Conditional on Certifications	545	819	931	691
Misconduct Rates (%)				
Unconditional	6.47	6.47	6.47	6.47
Conditional on Certifications	10.22	7.39	5.83	9.56
Wtd by AUM	6.56	6.36	6.45	6.50

Notes: Table 9 displays counterfactual outcomes.

A Solving Certification Agencies' Optimal Strategy

In this Appendix section, we discuss how we solve for certification agencies' FOC in Eq. (14). The derivative of certification market shares with respect to study hours or certification misconduct rates is straightforward. When solving the derivative of misconduct rates with respect to study hours $\partial\bar{q}_c/\partial\tau_c$, we need to take into account selection across advisers with different propensities to commit misconduct. Going from individual adviser j's misconduct propensity $q_j$to overall misconduct rates among certification members $\bar{q}_c$:

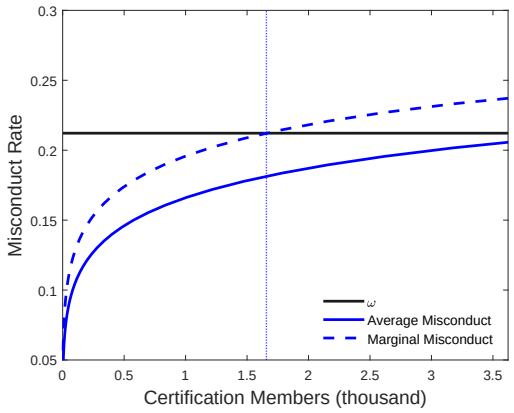
$$\bar{q}_c = \frac{\sum_j s_{jc}(\tau_c, \bar{q}_c) q_j}{\sum_j s_{jc}(\tau_c, \bar{q}_c)} \tag{15}$$

Eq. (15) has $\bar{q}_c$ on both sides. At the equilibrium with rational expectations, the perceived misconduct rate of each certification at the left-hand-side should match the weighted average misconduct rate across members of certification c. We use the implicit function theorem to solve for $\partial\bar{q}_c/\partial\tau_c$. Let function $F_c = \bar{q}_c \sum_j s_{jc}(\tau_c, \bar{q}_c) - \sum_j s_{jc}(\tau_c, \bar{q}_c) q_j = 0$. We solve for $\partial\bar{q}_c/\partial\tau_c$ using implicit function theorem. As the certification agency raises the required study hours τ_c, the advisers who obtain certification c will have higher ability and are less likely to commit misconduct. In addition, higher certification quality will attract advisers with lower ability into studying for c, which partially offsets the immediate selection effect. In the expression below, the numerator should be positive due to the negative correlation between ability γ_j and misconduct propensity q_j. The second term in the denominator generally has a small magnitude based on our estimates, and so the denominator is positive. Overall, higher standard τ_c results in lower misconduct rates among certified members.

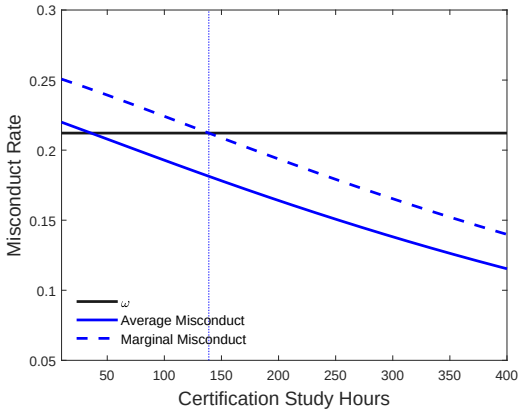
$$\frac{\partial\bar{q}_c}{\partial\tau_c} = -\frac{\partial F_c/\partial\tau_c}{\partial F_c/\partial\bar{q}_c} = -\frac{\sum_j s_{jc}(1-s_{jc})\gamma_j(\bar{q}_c - q_j)}{\sum_j s_{jc} + \sum_j s_{jc}(1-s_{jc})\theta\frac{\partial \ln \pi_j(c)}{\partial\bar{q}_c}(\bar{q}_c - q_j)}$$

Figure A-1: Advantageous Selection

(a) Misconduct vs Memberships



(b) Misconduct vs Standards



Notes: Figure A-1 displays certification agencies' marginal revenues, residual marginal costs and average costs as certifications relax standards to increase membership. We generate these curves by varying the standard set by a given certification, while holding constant the standards of other certifications. Panel (a) plots misconduct rates against certification members and panel (b) plots misconduct rates against required study hours. The black lines correspond to marginal revenues, which are constant and depend on certifications' ω_c. Residual marginal and average costs capture marginal and average misconduct rates, which increase in memberships and decrease in standards. Certification agencies set optimal standards such that marginal revenues equal marginal misconduct rates, captured by the vertical lines. Misconduct rates slope upward because we estimate that advisers with lower costs of obtaining are less likely to commit misconduct. As certification agencies relax standards, marginal advisers have higher propensity to commit misconduct than average.

B Additional Results on the Effects of Competition

In this Appendix Section, we discuss additional counterfactual results on the effect of competition. In Section 7 of the main text, we display results when we reduce the number of competing certifications by half. In Table A-1, we further reduce the number of certifications to five and then three. We rank certifications by their preference for quality ω and keep every Nth certification, such that the average preference ω is similar to the status quo. As we further reduce competition, certification agencies set even higher standards and misconduct rates among certified advisers decline further. These additional counterfactual results reinforce our finding that competition can lead to a race to the bottom in terms of certification quality. However, we do not take a strong stance on the quantitative outcomes with few certifications, since these counterfactuals are too out of sample and the results depend strongly on the tail of the distribution of advisers' ability.

As discussed in Section 5.2.2, how competition affects misconduct rates is theoretically ambiguous in our model. On the one hand, reducing the number of certifications increases the inverse elasticity, leading to higher quality markups. On the other hand, reducing the number of certifications reduces misconduct sensitivity, which measures how much higher certification standards can reduce misconduct rates among certified members. Lower misconduct sensitivity can also lead to lower quality markups and higher misconduct rates. Our counterfactual results in the main text suggest the elasticity effect dominates, suggesting that competition leads to a race to the bottom.

However, our model is flexible enough such that competition can also lead to higher quality under certain parameter values. In the bottom panel of Table A-1, we simulate counterfactuals where the correlation between ability and misconduct propensity is stronger. Setting higher standards has a larger impact on the misconduct propensity of marginal advisers due to a stronger correlation, so the misconduct sensitivity is larger. In addition, we also increase the dispersion of ω among certifications to increase their local market power, which further dampens how the reduction in the number of competing certifications affects elasticity. In this case, reducing the number of certifications can lead to higher certification misconduct rates than under the status quo. The final two rows report changes in average misconduct sensitivity and inverse semi-elasticity from the status quo. Compared to changes based on estimated parameters in the top panel, the reduction in misconduct sensitivity is larger. Hence the effect of misconduct sensitivity dominates and competition leads to certifications with higher quality.

Table A-1: Counterfactual with Different Number of Certifications

Number of Certifications	18	9	5	3
Baseline Estimates				
Misconduct rates (%)				
Unconditional	6.47	6.47	6.47	6.47
With Certifications	10.22	9.56	8.69	7.58
$\Delta \log(\lvert$misconduct sensitivity $\rvert)$		-0.10	-0.33	-0.53
$\Delta \log(\lvert$inverse semi-elasticity$\rvert)$		0.08	0.15	0.23
Adviser abilities more correlated with misconduct				
Misconduct rates (%)				
Unconditional	8.89	8.89	8.89	8.89
With Certifications	10.79	11.35	15.71	14.84
$\Delta \log(\lvert$misconduct sensitivity $\rvert)$		-0.14	-0.37	-0.75
$\Delta \log(\lvert$inverse semi-elasticity$\rvert)$		0.06	0.12	0.23

Notes: Table A-1 displays counterfactual outcomes with different number of certifications. The top panel is based on estimated parameters. The bottom panel is based on alternative parameters with higher correlation between adviser ability and misconduct propensity. We also set certification ω to be more dispersed. Since the quality markups depend on the multiple of misconduct sensitivity and inverse semi-elasticity, we report the changes in log of absolute value of misconduct sensitivity and inverse semi-elasticity.

C Treatment Effects of Certifications

In the model we introduced in Section 5, we rule out any treatment effects of certifications. For example, we assume longer study hours required to obtain certifications do not reduce advisers' misconduct propensity. This assumption is partially driven by the lack of time-series variation in certification data to measure misconduct propensity before and after advisers obtain certifications. This Appendix section includes three sets of analyses. First, we show that past misconduct records predict future certification choices. Combined with how certifications predict future misconduct rates in Section 3.4.3, these pieces of evidence suggest the relationship between misconduct and certification likely captures selection. Second, we perform an exercise in the spirit of Oster (2019) to bound treatment effects. Third, we impose different levels of treatment effects within our bounds and compare counterfactual outcomes. Overall, we find that treatment effects are likely to be small in our setting. With modest treatment effects, our counterfactual outcomes are qualitatively similar. In terms of misconduct rates among certification members, the effects are stronger because higher standards both select advisers who are

less likely to commit misconduct and directly reduce advisers' misconduct propensity.

C.1 Misconduct and Future Certification Choice

We assume that advisers with certifications are more likely to have records of misconduct due to selection rather than treatment. Empirically, it can be difficult to rule out treatment effects using our data. We do not have random assignment of certifications. With only three periods of data, it is also difficult to analyze how the propensity to commit misconduct differs before and after advisers obtain their certifications. In this section, we show that past misconduct records predict future certification choices among advisers without any certifications. In particular, advisers with past misconduct records are less likely to obtain the CFA and more likely to obtain frivolous certifications.

Since treatment and selection effects can be either positive or negative, in Table A-2 we separately look at how misconduct rates predict whether advisers obtain the CFA, which is the most reputable, and certifications that are potentially frivolous. To determine frivolous certifications, we select certifications with $\gamma_l > 0$ and statistically significant according to Eq. (1). Columns (1) and (2) of Table A-2 show that advisers with past records of misconduct as of 2016 (2020) are less likely to obtain the CFA between 2016 and 2020 (2020 and 2026). Columns (3) and (4) show that advisers with past records of misconduct are more likely to obtain frivolous certifications. One could argue that advisers with misconduct records may have additional incentives to obtain certifications in order to recover their reputations, but it is unlikely that they obtain certifications with low quality based on misconduct rates among members.

In Section 3.4.3, we also show that certification choices predict future misconduct. Together, these patterns suggest adviser-specific heterogeneity drives both certification choices and misconduct, which supports the selection mechanism we assume in our model.

Table A-2: Misconduct and Future Certification Choice

VARIABLES	(1) CFA	(2) CFA	(3) High Misconduct Certification	(4) High Misconduct Certification
Certification at $t+1$	0.113***	0.131***	0.885***	0.868***
	(0.001)	(0.001)	(0.001)	(0.001)
Misconduct Records	-0.184***	-0.126**	0.254***	0.200***
	(0.041)	(0.055)	(0.043)	(0.057)
Constant	-0.145***	-0.509***	0.134***	0.449***
	(0.043)	(0.058)	(0.044)	(0.058)
Observations	782,678	782,678	782,678	782,678
R-squared	0.128	0.244	0.875	0.893
Controls	X	X	X	X
Firm FE	X		X	
City-Firm-Year FE		X		X

Notes: Table A-2 displays results of regressing whether an adviser obtains a certain certification between 2016 and 2020 (2020 and 2026) on whether the adviser has a record of misconduct as of 2016 (2020). We restrict to advisers without any certification as of 2016 and those without any certifications as of 2020. The dependent variable in columns (1) and (2) is whether the adviser obtains the CFA. The dependent variable in columns (3) and (4) is whether the adviser obtains any certification with high misconduct rates. We consider a certification's misconduct rate to be high if the certification has $\gamma_l > 0$ and statistically significant according to Eq. (1). Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

C.2 Bounding Treatment Effects

Oster (2019) proposes a method to bound treatment effects based on how coefficients and R^2 change as we saturate the regression with more covariates that help control for selection. If an OLS coefficient mostly captures treatment effects, adding more covariates to control for selection will improve R^2 but not change the magnitude of the coefficient. Conversely, if the OLS coefficient mostly reflects selection, its magnitude can vary substantially as we saturate the regression with more covariates. Following this method, we use the regression from Eq. (1) repeated below, where the main treatment effect of interest is the effect of certification l on misconduct γ_l. In our setting, treatment and selection likely move in the same direction. A certification that sets a higher standard will have a stronger treatment effect to reduce misconduct propensity. Similarly, advisers who choose this certification have higher ability and are less likely to commit misconduct. Without controlling for selection, the measured γ_l will be stronger than the true treatment effect. As we incorporate richer sets of fixed effects to control for selection, for example the sorting between advisers and firms documented in Egan et al. (2019), the absolute value of γ_l should become smaller.

$$Misconduct_{ijkt} = \sum_{l \in \mathcal{L}} \gamma_l Certification_{ijlkt} + \beta X_{ijkt} + \mu_{jkt} + \epsilon_{ijkt}. \tag{16}$$

We use the approximation method suggested by Oster (2019) to bound the treatment effect. Let $\dot{\gamma}$ and $\dot{R}$ denote the coefficient and R^2 from a short regression, and let $\hat{\gamma}$ and $\hat{R}$ denote the coefficient and R^2 from a long regression with more saturated covariates. The true treatment effect is bounded between the coefficient from the long regression and an extrapolation using the changes between the two coefficients $(\dot{\gamma}, \hat{\gamma})$ to a hypothetical regression with an R^2 of 1. We consider three sets of fixed effects μ_{jkt}, 1) year-by-city, 2) year-by-firm-by-city, and 3) firm-by-city-by-year-by-licenses. We extrapolate from the coefficients estimated using the first and third sets of fixed effects, and coefficients estimated using the second and third sets of fixed effects.

$$\gamma \in \left[\hat{\gamma}, \hat{\gamma} - (\dot{\gamma} - \hat{\gamma}) \frac{1 - \hat{R}}{\hat{R} - \dot{R}} \right]$$

We construct the bounds for the effect γ_l for each certification l. First, we find that around 50 percent of bounds contain zero. Hence, we cannot rule out zero treatment effects and that γ_l is entirely driven by selection. Next, for each γ_l, we pick a conservative measure of the treatment effect $\gamma^\dagger$ following a few steps. 1) if the bound contains zero, we set $\gamma^\dagger$ as zero. 2) if the bounds exclude zero, we select the bound closer to zero as $\gamma^\dagger$ (the upper bound for negative values and the lower bound for positive values). 3) if the estimates of long and short regression have different signs, we drop this $\gamma^\dagger$. Then, we regress our measure of treatment effect $\gamma^\dagger$ on estimates from the long regression $\hat{\gamma}$. Table A-3 displays the regression estimates, which indicate that approximated treatment effects are 20 percent of the estimated coefficients $\hat{\gamma}$. [18] These results all suggest that treatment effects are likely weak and most of the effect of certifications on misconduct corresponds to selection.

[18] The number of observations indicates that we have to drop many certifications, because their $(\dot{\gamma}, \hat{\gamma})$ have different signs.

Table A-3: Extrapolation of Treatment Effects

VARIABLES	(1) Joint FE 13	(2) Joint FE 23	(3) Individual FE 13	(4) Individual FE 23
$\tilde{\gamma}$	0.345***	0.028*	0.226***	0.234***
	(0.068)	(0.016)	(0.057)	(0.051)
Constant	0.001	-0.000	-0.002	0.002
	(0.002)	(0.000)	(0.002)	(0.001)
Observations	35	43	36	46
R-squared	0.440	0.069	0.316	0.325

Notes: Table A-3 displays regression of treatment effect approximated following the method proposed by Oster (2019), and estimated effect of coefficient on misconduct. The first two columns use jointly estimated coefficients for all certifications. In the third and fourth columns, we estimate the effect of one certification at a time. In "Joint FE 13" we approximate treatment based on coefficients estimated using year-by-city FE and firm-by-city-by-year-by-licenses FE. In "Joint FE 23", we use coefficients estimated using year-by-firm-by-city FE and firm-by-city-by-year-by-licenses FE. Similar pairs of FEs are used when we estimate certification's effect individually. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

C.3 Incorporating Treatment Effects

Based on the bounding exercise, we incorporate modest treatment effects into our estimates of adviser misconduct propensity. We start by regressing estimated certification average misconduct rates $\bar{q}_c$ on study hours

$$\bar{q}_c = \beta_0^T + \beta^T \tau_c + \epsilon_c$$

Then, we assume the treatment effect from study hours on misconduct propensity is $\beta^T \times T$ where $T = \{0.1, 0.2\}$. With treatment effects, the selection of advisers generates a smaller variation of misconduct rates across certifications. Effectively, we decompose the variation of $\bar{q}_c$ into treatment $T\beta^T\tau_c$ and selection $\bar{q}'_c$.

$$\bar{q}'_c = \beta_0^T + (1-T)\beta^T \tau_c + \epsilon_c$$

Next, we re-estimate $\rho_0, \rho_\gamma, \rho_\eta$ in Eq. (11) that govern the misconduct propensity based on adviser types to minimize the squared distance between posterior misconduct probabilities conditional on certification choices and $\bar{q}'_c$. Table A-4 displays revised estimates under different treatment effects. As expected, the relationship between adviser ability and misconduct becomes weaker given smaller selection effects. [19]

[19] Alternatively, we could assume a certain fraction of the variation of observed certification average misconduct rate across study hours is driven by treatment effect and re-estimate all parameters. Across different treatment effect

Table A-4: Misconduct Propensity Estimates with Treatment Effects

Misconduct	(1) Pure Selection	(2) 10% Treatment	(3) 20% Treatment
Constant	-4.06	-3.75	-3.57
Preference for Certification	1.27	1.21	1.19
Ability	-1.50	-1.21	-1.02

Notes: Table A-4 displays estimates of misconduct propensity when we include various magnitudes of treatment effects. "Pure selection" assumes no treatment effects and is the same as column (6) in Table 8. In columns (2) to (3), we assume 10% and 20% of the estimated correlation between certification average misconduct rates and study hours in column (1) is due to the treatment effect that study hours reduce advisers' misconduct propensities.

Table A-5: Counterfactual with Treatment Effects

	Status Quo		Sophisticated Households		Regulatory Standards		Reduced Competition	
Treatment effect (T)	10%	20%	10%	20%	10%	20%	10%	20%
Fraction of Advisers with Certifications	13.74	13.77	6.19	6.06	5.09	5.15	3.78	3.13
Average Study Hours								
Unconditional	75	75	53	53	48	48	28	25
Cond'l on Certifications	546	547	849	873	934	935	747	809
Misconduct Rates (%)								
Unconditional	6.42	6.33	6.46	6.42	6.47	6.44	6.51	6.54
Cond'l on Certifications	9.91	9.51	6.56	5.62	5.24	4.56	8.82	7.83
Wtd by AUM	6.49	6.39	6.33	6.24	6.44	6.39	6.52	6.53

Notes: Table A-5 displays counterfactual outcomes where we impose different levels of treatment effects of certification required study hours on advisers' misconduct propensity.

We then simulate counterfactuals under different treatment effects T using re-estimated $\rho_0, \rho_\gamma, \rho_\eta$. Table A-5 displays counterfactual results. Similar to outcomes shown in Table 9, in all three counterfactuals, certifications require longer study hours, and fewer advisers obtain certifications. The effect on misconduct rates becomes more nuanced. On one hand, misconduct rates among certification members decrease more, through both selection (advisers with lower ability no longer obtain certifications) and treatment (longer study hours directly reduce advisers' propensity to commit misconduct).

assumptions, we may fit data differently, and so it becomes harder to compare results.

On the other hand, unconditional misconduct rates can increase slightly up to 0.1 percentage points with 10 percent treatment effects and 0.2 percentage points with 20 percent treatment effects. In the status quo, although some certifications require short study hours, advisers obtaining these frivolous certifications still receive some modest treatment effects. In these counterfactuals, although advisers who obtain certifications receive stronger treatment effects thanks to longer study hours, advisers who no longer obtain certifications lose their treatment effect, albeit modest, under the status quo. With these two opposing effects, the overall misconduct rates among all advisers can become slightly higher.

We are assuming certifications that impose short study hours still have positive treatment effects on advisers, in terms of reducing their misconduct propensity. There is a somewhat unlikely case where advisers become more likely to commit misconduct after realizing the standards set by certain frivolous certifications are lower than their prior, and these certifications would have negative treatment effects. We do not consider this case, because we would have to introduce another parameter to capture the prior belief which can also change across different counterfactuals.

Taken together, when we allow for some modest treatment effects of certification standards on misconduct rates, our counterfactual outcomes are qualitatively similar. In terms of misconduct rates among certification holders, the effects are stronger because both selection and direct treatment effects lead to lower misconduct rates among certification members.

D Household Demand for Advisers

To compare with the adviser production function in Section 5.1.2, we model household demand for financial advisory services as a discrete choice problem. Each household i selects the financial adviser j from the set $\mathcal{J}$ that maximizes their indirect utility, which depends on adviser j's quality and fee, denoted u_{ij}. We express household i's indirect utility of working with adviser j as:

$$u_{ij} + \epsilon_{ij} = \alpha fee_j + \underbrace{\phi_i \bar{q}_{c(j)} + \lambda_i Certified_j}_{\text{Certification-specific signal of quality}} + \underbrace{\beta' X_j + \xi_j + \epsilon_{ij}}_{\text{Adviser-specific signal of quality}} \tag{17}$$

The first term, αfee_j, captures the disutility of paying the fee charged by adviser j. The second term, $\phi_i \bar{q}_{c(j)} + \lambda_i Certified_j$, represents household i's certification-specific signal of quality for an adviser holding certification c. We allow household sensitivity ϕ_i to certification quality to depend on household sophistication. The term λ_i captures any potential bias households may have regarding certifications in general. For instance, a household might incorrectly believe that all certifications are of high quality, leading to a large λ_i.

The third term is the adviser-specific signal of quality. The adviser-specific signal is given by $\beta' X_j + \xi_j + \epsilon_{ij}$. X_j include observed adviser characteristics, including licenses (Series 7, 63,

65 and 66) and years of experience. ξ_j represents adviser-specific characteristics, and ϵ_{ij} is an idiosyncratic noise term. Households choose the financial adviser generating the highest utility. Following the industrial organization literature, we assume the idiosyncratic error term ϵ_{ij} is distributed as Type-1 Extreme Value. Consequently, the probability that household i chooses financial adviser j is given by:

$$p_{ij} = \frac{\exp(u_{ij})}{1 + \sum_{l \in \mathcal{J}} \exp(u_{il})} \tag{18}$$

We estimate the utility parameters following Berry (1994) by regressing the log of adviser assets under management on the right-hand side variables from Eq. (17), along with a market fixed effect $\xi_{m(i)}$ to absorb the nonlinear terms in the demand function and the total assets from households in each market. Observations are at the adviser level as of 2016 and 2026 when we have some data on assets under management and fees.

Table A-6 presents the estimation results. We consistently find a negative and significant coefficient on fees across all specifications. In specifications (3) and (4), we instrument for fees using the average fees charged by advisers who entered the advisory industry in the same year and county. This instrument captures exogenous market conditions when advisers began their careers, which influenced the initial level of fees. Since fees can be sticky, these past market conditions may continue to affect current fees, but they are unlikely to be related to current household demand. Using this instrument, we find a slightly more negative coefficient on fees. Given that the average fee is approximately 0.01, the estimates suggest a demand elasticity of -0.5, indicating that demand with respect to fees is relatively inelastic. This is consistent with the previous evidence suggesting that demand for financial products is relatively inelastic to fees (Hortaçsu and Syverson, 2004; Choi et al., 2010).

Similar to estimates shown in Table 8, we also find that households do not discount certifications associated with higher rates of misconduct. While households value certifications in general, the coefficient on misconduct is also positive and significant. In addition, households with higher education attainment are more sensitive to misconduct rates. In a previous version of the model, we derived the contribution of certifications to assets under management using this household demand and obtained qualitatively similar estimates for adviser certification choices and similar counterfactual outcomes.

Table A-6: Household Demand Estimation

VARIABLES	(1) OLS	(2) OLS	(3) IV	(4) IV
Fee	-46.30***	-46.30***	-53.12***	-53.12***
	(0.14)	(0.14)	(1.33)	(1.33)
Misconduct	1.24***	1.14***	1.24***	1.13***
	(0.25)	(0.26)	(0.26)	(0.27)
Misconduct × frac college		-0.32		-0.39
		(0.29)		(0.30)
Misconduct × frac 65+		0.13		0.13
		(0.21)		(0.22)
Any certification	0.03**	0.03**	0.03*	0.03**
	(0.01)	(0.02)	(0.01)	(0.02)
Any certification × frac college		0.02		0.02
		(0.02)		(0.02)
Any certification × frac 65+		-0.01		-0.01
		(0.01)		(0.01)
TS IA (series 65 or 66)	0.05***	0.05***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)
Series 7	0.10***	0.10***	0.05***	0.05***
	(0.01)	(0.01)	(0.02)	(0.02)
Series 63	0.24***	0.24***	0.22***	0.22***
	(0.01)	(0.01)	(0.01)	(0.01)
Ln Years of experience	0.08***	0.08***	0.08***	0.08***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	93,702	93,702	90,661	90,661
R-squared	0.56	0.56	0.53	0.53
Market FE	X	X	X	X
Fee IV			X	X

Notes: Table A-6 displays household demand estimates according to Eq. (17). Observations are at the adviser level as of 2016 and 2026. The dependent variable is the log of assets under management of each adviser. Covariates include adviser's fee, certification misconduct rates interacted with county level demographics (fraction of the population over 65 and with some college education), any certifications interacted with demographics, adviser characteristics including licenses obtained and experience, and market (county) fixed effects. In specifications (3) and (4), we instrument fees using the average fees in the year advisers first registered with regulatory agencies which capture exogenous market conditions when advisers started their careers. Standard errors clustered at the market (county) level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.