

Entry in Local Audit Markets*

Abstract

We study the consequences of entry in local audit markets for incumbent audit office client retention, fees, and product offerings. For each incumbent, the average entrant is associated with approximately \$165,000 in lost fees in the first post-entry year. Incumbents respond by offering fewer products and focusing on their core audit business. Entry by Big 4 audit firms is disproportionately disruptive, but less so for incumbent Big 4 offices, consistent with some degree of market segmentation. Nevertheless, entry by non-Big 4 audit firms delivers economically significant competitive pressure for incumbent Big 4 auditors. Entry effects are moderated by the pre-existing state of local market competition and audit office entrenchment. We employ shift-share instruments as in Bartik (1991) to support a causal interpretation of our estimates. Overall, our findings are consistent with significant and vigorous competition in local audit markets.

1. Introduction

The organization of the public audit industry is special (Gerakos and Syverson 2015; Watts and Zimmerman 1983; Black 2000, 2001; Ball 2001), not only because of the role that audit firms play in assurance services, but also because of extensive capital markets regulation that may provide protection from external competition (Stigler 1974). Furthermore, the industry is increasingly segmented (DeFond, Francis, and Wong 2000; Choi et al. 2008; Lawrence, Minutti-Meza, and Zang 2011; Aobdia, Enache, and Srivastava 2016), has varying substitution across industry specialization (Balsam, Krishnan, and Yang 2003; Casterella et al. 2004; Knechel, Naiker, and Pacheco 2007), and the primary unit of organization is the audit office (Francis and Yu 2009; Choi et al. 2010). Since the early 2000s, a group of four audit firms has dominated the industry, and the concentration of the industry has been a focal point for policymakers.²

In this paper, we study how the entry of a new audit office affects the competitive landscape of local audit markets through the impact on incumbent offices. To do so, we build a panel of auditor entry from 2000 to 2017 using Audit Analytics, and examine how these shocks to competition affect local incumbent client retention and fees. We find that an additional entrant into a local market reduces client retention by incumbents, and we find that this result is robust to several alternative measures of local market entry. Further, total audit fees for incumbents fall, and this effect is due both to the loss of clients and to reduced fees per client.

² See <https://www.ft.com/content/f660b6a2-8b75-11e8-bf9e-8771d5404543>; <https://hbswk.hbs.edu/item/are-the-big-four-audit-firms-too-big-to-fail>. For example, the Sarbanes-Oxley Act of 2002 exemplifies this policy focus because it specifically incorporated elements to curb auditor entrenchment, namely by requiring public companies to rotate audit partners at prespecified intervals.

Together, this collection of findings suggests that entry shocks local competition through client acquisition and downward fee pressure. We contribute to a small but growing literature on competition among audit firms at the local level (Francis, Reichelt, and Wang 2005; Numan and Willekens 2012). While we know that geographic proximity to clients matters (Francis, Golshan, and Hallman 2017),³ there is limited work on the competitive effects of audit entry into a local market and what that means for client retention and total fees.

In our main tests, we control for local market, auditor, year, auditor by market, and auditor by year fixed effects. This fixed effects structure ensures that our findings are not driven by market or audit firm effects, or trends in auditor market share. The primary concern in estimating the causal impact of local market entry is that entry decisions are endogenous to local economic trends, for example the recent profitability of incumbents. To address this concern, we first provide a dynamic test of parallel trends that suggests incumbents facing entry do not have significantly different pre-trends in profitability or client growth, which narrows the possible set of identification concerns to unobservable factors. For example, entry decisions may be made using forecasts of expected future profitability based on unobservable characteristics of local markets. In this case, theoretically, we should expect our estimated entry effects to be attenuated as auditors should select into markets they expect to be profitable in the future.

One may be concerned that highly localized variation in unobservable economic trends is driving our findings. To address this issue, we introduce new shift-share instruments to isolate

³ Proximity is shown to increase forecast accuracy for equity analysts (Malloy 2005; O'Brien and Tan 2015)

variation in entry that cannot be driven by geographic market timing (Bartik 1991). Our first shift-share instrument isolates variation in entry that arises from the local market's exposure to aggregate entry trends, thus eliminating highly localized economic effects. Our second shift-share instrument is based on each audit firm's nationwide expansionary policies, which similarly cannot be driven by individual audit firm's selection of local markets. Our instrumental variables evidence is consistent with our baseline results and quantitatively confirms the attenuation bias introduced by endogenous entry decisions. These results also suggest that our baseline findings are likely to generalize to entry cases in which audit firms are restricted in geographic selection or market timing.

To better understand the mechanism through which entry shocks affect local audit markets, we study heterogeneity in entry effects based on entrant and market characteristics. The dominance of the Big 4 audit firms suggests that firms may be less willing to substitute audit services from a Big 4 firm with those from a non-Big 4 firm, calling into question whether non-Big 4 firms offer a competitive threat to the market leaders at all (Willenborg 1999; Ettredge, Kwon, and Lim 2009; Lennox, Francis, and Wang 2012; Guedhami, Pittman, and Saffar 2014).⁴ We find that Big 4 entrants have significantly larger effects on incumbents. In

⁴ Big 4 (historically, Big N) audit firms engage with a wide range of clients, but are often considered to perform audits of higher quality (Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis and Krishnan 1999; Francis, Maydew, and Sparks 1999; Francis 2004; Eshleman and Guo 2014; DeFond and Zhang 2014).⁴ The differences between Big 4 and non-Big 4 auditors creates what is referred to as a dual structure of the industry (Sirois and Simunic 2011) in which second tier auditors see more client switches on average (Hogan and Martin 2009), the Big 4 earn a fee premium (Ireland and Lennox 2002), lenders often demand Big 4 audits (Myers 1984; Long and Malitz 1985; Blackwell, Noland, and Winters 1998; Minnis 2011), Big 4 auditors are monitored differently (Hanson 2014), and the Big 4 itself selects clients

particular, the entry of a Big 4 firm into a market is four times as disruptive as entry by an average auditor. This is consistent with Big 4 auditors potentially having greater resources at the audit office level (Francis and Yu 2009). While these effects are substantial, they are predominantly isolated to non-Big 4 incumbent auditors. That is, non-Big 4 auditors are most affected by entry of a new Big 4 auditor into the market. However, we also find that entry by non-Big 4 auditors has significant incremental competitive effects on Big 4 incumbents. Our findings suggest that the markets for Big 4 vs. non-Big 4 auditors are not as segmented as previously thought (DeFond, Francis, and Wong 2000; Choi et al. 2008; Lawrence, Minutti-Meza, and Zang 2011). These findings provide nuance to our understanding of differentiation across audit firms, and in potential competitive effects (Aobdia, Enache, and Srivastava 2016).⁵

The market disruption that audit firm entry creates is likely highly related to the characteristics of the market leading up to entry of the new audit firm. We find that if the market is more concentrated, as measured by an above average HHI (Herfindahl 1950; Hirschman 1964), then entry is more disruptive, leading to a larger number of lost clients on average for incumbent auditors. Furthermore, if total fees per client in the market are higher, then entry has a larger effect on the number of clients lost. These two findings indicate that if there are more rents in a local market, then providing an outside option provides greater benefits (Bresnahan and Reiss 1991). We also investigate heterogeneity based on the average relationship length, i.e. auditor tenure, in the local market. We find that this also leads to more

based on their expected litigation risk (Simunic and Stein 1987; Krishnan and Kirshnan 1997; Shu 2000; Johnstone and Bedard 2003, 2004; Huang, Raghunandan, and Rama 2009).

⁵ See the literature on industry specialization (O’Keefe, King, and Gaver 1994; Craswell, Francis, and Taylor 1995; Hogan and Jeter 1999; Casterella, Francis, Lewis, and Walker 2004; Carson 2009).

disruption, consistent with these markets having few outside options. As a final test of how the effect of entry is driven by the existing market structure, we look at local markets characterized by high churn, in the sense of high turnover of auditors, and find that this limits the effects of entry, consistent with these markets already being highly contested, and so less subject to entry pressure.

In our final set of tests on the heterogeneous effects of entry on local audit markets, we focus on the characteristics of the incumbents themselves, rather than the characteristics of the markets. We find that entry is associated with *larger* declines in total fees for incumbent market leaders and entrenched auditors (measured by the number of years they have been active in the market). In line with our results on cross-sectional market heterogeneity above, we interpret these results as suggesting that where there is less competition, perhaps because of complacency or the problems of scale in relationship-oriented businesses, the effects of entry are more pronounced. On the contrary, entry yields *smaller* declines in total fees for incumbents with high fees per client, and those with higher than average client turnover. We interpret these two results in a similar way – incumbents that are more insulated from incremental competition are less affected by entry. In the former case, high fees per client may suggest some market power, such as through a strong relationship or a highly specialized audit technology, while for the latter, high turnover suggests that they are already accustomed to competing hard for engagements. These two results are theoretically connected, in the sense that a prospective entrant will be reluctant to challenge either of these two types of incumbents, despite the large apparent difference in their respective business models.

As we show, incumbent auditors lose clients to auditor entry and also experience downward pressure on audit fees. Due to these fee pressures, one may expect that entry changes the products that incumbent auditors are able to sell to their clients. The academic literature has long questioned the merits of non-audit services (Gigler and Penno 1995; Antle, Gordon, Narayanamoorthy, and Zhou 2006; Whisenant, Sankaraguruswamy, and Raghunandan 2003), yet clients often spend hundreds of thousands of dollars on additional advisory and compliance services (Harris 2014). We investigate the effect of entry on both the number of non-audit services products offered as well as the percentage of total fees allocated for the audit itself. We find that not only do firms reduce their product offerings following entry, but that the audit fee rises as a proportion of total fees. One could interpret this as renewed focus on the core audit, driven by the discipline of increased competition. However, given the literature finds evidence of positive spillovers to the audit (DeFond, Raghunandan, & Subramanyam 2002; Kinney, Palmrose, & Scholz 2004; Ashbaugh, LaFond, and Mayhew 2003; Knechel and Sharma 2012; Knechel, Sharma, and Sharma 2012; Lim & Tan 2008), the welfare effects of decreased product offerings by incumbent auditors is less clear.

The rest of the paper proceeds as follows: Section 2 describes the data and particularly how we measure entry into local audit markets, Section 3 presents our main results on total fees, client retention, and fees per client, Section 4 discusses the dynamics of entry and identification concerns related to the endogeneity of entry, Section 5 investigates cross-sectional heterogeneity in the effects of entry, and Section 6 concludes.

2. Data

We collect data on audit engagements from Audit Analytics for the period 2000 to 2017. We measure local audit markets using the city location of the client firm’s headquarters,⁶ which we supplement with headquarter location data collected from the Augmented 10-K Header Data file from Notre Dame’s Software Repository for Accounting and Finance.⁷ Throughout the paper, we will refer to audit offices. We define an audit office as audit firm-city pair in which the audit firm has at least one active audit engagement with a client in that city. We begin our data construction with the Audit Analytics fees dataset, dropping CIK-fiscal year duplicate observations (9,020 observations). We then merge in the 10-K header data file at the CIK-fiscal year level, which yields a final dataset of 206,352 observations at the client firm-fiscal year level. After calculating our main variables of interest, we collapse this dataset to the audit firm-market-year level (where market refers to the specific city), which produces our final dataset. In our empirical tests, we exclude entrants to focus identification on changes in market conditions for local incumbents as a function of entry. This restriction leads to a full test sample of 26,906 audit firm-market-year observations.

As shown in Figure 1, the number of audit firms that have at least one engagement with a publicly listed client peaked in 2002 and 2003 with over 700 audit firms. The number of such audit firms fell below 400 in 2017. The number of local audit offices, however, rose until it

⁶ We follow the literature (e.g., Francis, Stokes, and Anderson 1999) and use the city’s metropolitan statistical area to define local audit markets.

⁷ Specifically, we measure city location using the MSA of the business zip code for the entity. In the data set, the variable is “ba_zip”.

reached a peak in 2006 with over 3,500 offices, and then also fell to less than 2,000 by 2017. These trends may be related to the decline in the number of publicly listed companies in the U.S., consolidation in the audit industry, or other factors. When we decompose the number of audit offices into those affiliated with Big 4 and non-Big 4 audit firms in Figure 2, we find that office growth in the pre-2006 period was driven by expansion by non-Big 4 audit firms as during that period Big 4 audit firms were almost stagnant. Similarly, non-Big 4 audit firms experienced a larger decline in offices, falling almost by half between 2008 and 2017.

Figure 3 investigates geographic variation in the location of audit offices and net office growth across states. Panel A shows that audit offices tend to be located in populous areas. For example, California, Florida, Nevada, New York, Ohio, Texas, and Pennsylvania have the most audit offices. Panel B, however, shows the net influx of audit offices by state during our 2000 to 2017 sample period. Because population shares across states were relatively constant over this period, differences in audit office growth may reflect other factors. For example, although Ohio and Pennsylvania are among the states with the most offices, on average, during the sample period, Ohio welcomed a much larger net increase in audit offices during the sample period.

Table 1 shows summary statistics for this final dataset. Our main variable of interest is the number of entrants in local audit markets. We calculate the number of entrants in a local audit market as the number of new audit firm offices in that market, which we define based on the location of client firms.⁸ As shown in the summary statistics table, the average market has

⁸ Entry defined this way comprises any type of audit firm entry, which, in addition to including the opening of a new office by an established auditor, may range from the first office of a new audit firm to

9.7 entrants per year. This statistic is significantly higher than the median of five entrants, which combined with the interquartile range of 1 to 14, suggests that the distribution is highly skewed, which can be seen in a histogram of this entry distribution across auditor-market-year observations in Figure 4. Similarly, the average number of Big 4 entrants is 0.12, though even the 75th percentile of the Big 4 entrants distribution is 0. Only 35.0% of audit offices in our sample are operated by Big 4 audit firms. Figure 5 presents total entry (Panel A) and entry by Big 4 audit firms (Panel B) across states for the full sample period. Washington, for example, experienced a large increase in audit offices, but only a small increase in Big 4 presence, suggesting that the market structure in Washington changed in a way that contrasts with Ohio, which experienced more entry by Big 4 audit offices.

The local market structure is relatively concentrated; the average city has a Herfindahl-Hirschman Index (HHI) of 0.40, though even the 25th percentile is 0.25. The average number of clients per audit office is 3.3 and the average audit office yields total fees of \$3.5 million per year. As the mean exceeds the 75th percentile in each of these distributions, they are also highly skewed. We calculate the percentage of audit office fees from audit services and the number of non-audit products offered by the audit office (e.g., tax, IT, benefits). The average audit office makes 83.95% of its fees from core audit services and delivers 0.96 non-audit products. Additionally, to measure the extent of office-level entrenchment in local audit markets, we calculate the fraction of new clients for each office-year and the average length of each audit

acquisitions of audit firms or specific offices. Our findings are robust to alternative definitions of entry. For example, Table 8 investigates the effects of entry separately for Big 4 and non-Big 4 audit firms.

engagement. In our sample, audit offices have an average relationship length of 2.6 years and 26.0% of their clients are new each year.

Figure 6 presents the experience of audit offices following entry in year $t = 0$. These figures show the coefficient estimate of a regression of total fees, number of clients, or fees per client on indicator variables for each year of incumbency in the market from one to ten years. The figure shows that entrants gain clients and fees monotonically after entering, though the figure shows some evidence that fees rise at a faster rate than client counts, particularly after the first few post-entry years. This provides weak evidence in support of a low-balling mechanism in which entrants price audit and consulting services below market value to gain market share and attract relationship clients. The key takeaway from Figure 6 is that entrants continue to gain presence in local markets for up to a decade after entry.

3. Competitive effects of entry

To study the competitive effects of local audit market entry, we focus on three dependent variables; total fees, the number of clients served, and fees per client earned by the audit office. These measures are intended to capture aspects of the quantity and prices of audit engagements in each market and the relative standing of each office in the market. Our preferred specification is as follows:

$$Y_{ijt} = \alpha + \beta \ln \text{Number of Entrants}_{jt} + u_j + v_t + \varepsilon_{ijt} \quad (1)$$

where Y_{ijt} is an outcome variable of $\{\Delta \ln \text{NumClients}, \Delta \ln \text{TotalFees}, \Delta \ln \text{FeesperClient}\}$, measured at the audit firm (i), city (j), and year (t) level. u_j is a city fixed effect, and v_t is a

year fixed effect. We cluster standard errors at the city level, but our standard error estimates are quantitatively similar when clustering by both city and year or by city and incumbent audit firm.

We first study the effect of entry on marketwide fees of incumbent audit firms. In Table 2, we present evidence that, on average, the first entrant is associated with a relative decrease in total fee growth, suggesting that entrants provide competitive pressure either through client acquisition or fee reduction. As shown in equation (1), each column in the table includes city and year fixed effects, which force identifying variation to come from within-city changes in client retention and entry, controlling for aggregate shifts in entry and audit demand. However, columns (2), (3), and (4) incrementally add fixed effects to restrict the tests to use different sources of identifying variation. Column (2) adds incumbent audit firm fixed effects, which forces the effect of entry to come from a comparison across offices for the same audit firm. Column (3) adds audit firm by city fixed effects, which eliminates trends in market-level profitability for the particular audit firm. This test eliminates alternative explanations for our findings based on static market selection. Finally, column (4) adds audit firm by year fixed effects, which forces identifying variation to come from differences in entry and client retention across audit offices of the same incumbent audit firm at the same time. This test further eliminates alternative explanations for our findings based on incumbent audit firm trends in productivity.

The results in Table 2 suggest that the first entrant is associated with a relative reduction in total fees by 3.0% to 4.7% for the average incumbent audit office. As the average

incumbent office generates \$3.5 million of total fees annually, the economic effects of entry range between \$105,000 and \$165,000. Our preferred specification, which is also the most restrictive, produces the largest estimated effects. Entry may affect local audit markets not only through the redistribution of clients, but also by exerting competitive pressure on fees. To decompose the effect on total fees into the client acquisition and fee pressure channels, we move on to separately estimate entry effects on incumbents' client retention and fees per client.

In Table 3, we study the effect of entry on client retention by incumbent audit offices. We present evidence that, on average, one additional entrant is associated with a relative decrease in client retention by incumbents, consistent with entrants acquiring incumbents' clients. The structure of the table corresponds exactly to that of Table 2; we incrementally include more restrictive fixed effects to control for unobservable, time-varying factors that vary at the incumbent audit firm level. The results are consistent with those presented in Table 2. We find robust evidence that, on average, the first entrant is associated with a relative reduction in incumbents' clients by between 1.1% and 1.5%. Also as in Table 2, the most economically significant estimate is our preferred one from the most restrictive specification, though in almost every specification our estimates are statistically significant at the 1% level. These estimates are, however, relatively small in magnitude when compared to the relative reduction in total fees, suggesting that the effect on total fees cannot be explained entirely by client acquisition. In other words, we expect to find that entry increases competitive pressure on fees.

To complete our decomposition of entry's effects on total fees, we next investigate the effects of entry on fees per client, which captures incremental price pressure from a change in the competitive environment. Table 4 presents estimates of the competitive effects of entry on incumbents' fees per client. Again, the structure of the table mimics that of Tables 2 and 3, and results are consistent with them as well. We find statistically significant evidence that, on average, the first entrant is associated with a relative reduction in fees per client by between 1.7% and 2.8%. Our preferred specification delivers the most economically significant estimate, and the coefficient estimates are statistically significant at the 1% level in all specifications. Together, our evidence suggests that not only do entrants attract incumbents' clients, but their presence impacts the competitive environment such that it decreases prices.

Table 5 presents evidence that the main effects shown in the previous tables are robust to alternative forms and definitions of local market entry. In particular, we investigate net entry and decompositions of our baseline entry measure into entry by audit firms that acquire the client of an incumbent or not, that enter by merging with an incumbent or not, and that were newly founded or not. As Table 5 shows, estimates based on the most restrictive specifications of the previous three tables (i.e., those with the most fixed effects) using these measures are economically similar to our baseline estimates for each outcome variable of interest. This evidence of robustness to alternative measurement choices with respect to our main independent variable suggests that our baseline findings are not spurious or driven by measurement error.

4. Dynamics and identification

The previous results show that local market entry is associated with a decline in both the number of clients and total fees for incumbents. However, these results are subject to the concern that entry decisions are made strategically. In this section, we introduce methods to investigate the endogenous entry decision and the potential estimation bias that it introduces for our baseline tests presented in the previous section.

4.1. Dynamics

The industrial organization literature has developed a variety of models to explain entry decisions (Berry and Reiss 2007). Expected future profitability, typically operationalized as recent profitability, is the most common and studied determinant of entry decisions. In our setting, we can investigate both the endogenous entry decision and entry impact dynamics using lead-lag relationships between entry and market outcomes. Specifically, we employ a dynamic test of entry effects that incorporates leads and lags of entry. Including lags of our entry shocks allows us to estimate pre-entry trends for local audit markets with and without entry as in a standard difference-in-differences estimator. Similarly, including leads of our entry shocks allows us to quantify the dynamic effects of entry on fees and client retention in the years subsequent to the entry shock. We present our findings in Table 6. Each coefficient estimate corresponds to a lead or lag of the entry variable to incorporate two years before the entry year and two years after the entry year. All specifications include city and year fixed effects and robust standard errors are clustered at the city level.

Figure 7 presents a visualization of the coefficient estimates and corresponding 95% confidence intervals as shown in Table 6. These results suggest that the effects of entry on relative growth in total fees, client base, and fees per client last at least two years and do not subsequently reverse. The multi-year effect on fee and client growth suggests that entry has an incremental effect on the fee generation and client retention in the first post-entry year, and the lack of a reversal suggests that the effects of entry on the level of fees and number of clients is persistent. For example, the first entrant is associated with a relative reduction in total fees of 2.5% in the entry year, an additional relative reduction in total fees of 2.5% in the first post-entry year, and a statistically insignificant relative increase in total fees in the second post-entry year of 0.3%. On a cumulative basis, these results suggest that the first entrant is associated with a relative reduction in total fees by 4.7% over three years.

If audit firms made local market entry decisions based on recent profitability, then we should expect our specifications to reveal relative increases in total fees and clients in the pre-entry years. Instead, the dynamic specifications in Table 6 are consistent with the assumption of parallel trends. That is, we find no evidence of economically or statistically significant pre-entry trends in total fee or client growth for entry and non-entry markets. Even in the absence of other evidence, these dynamic tests support a causal interpretation of our baseline estimates from Tables 2 to 4. However, based on the industrial organization literature that studies entry decisions, we have strong priors based on theory and empirical evidence from other industries that entry decisions should be based on expected *future* profitability. Therefore, it may be the case that potential entrants into local audit markets do not consider recent total fees, client

counts, or fees per client when forecasting future profitability. They may instead base their expectations of future profitability on unobservable factors. Then even though we fail to reject parallel pre-entry trends on these observable measures of profitability, it may be that entry and non-entry markets differ on unobservable factors that determine audit firm entry decisions.

From an identification perspective, this selection on unobservables should attenuate any of our baseline findings on the effects on incumbent client retention and fee generation because entrants should select local markets based on expected future profitability, which would predict that incumbent fee and client growth should be counterfactually better in entry markets than in non-entry markets. Because this selection effect would predict a positive association between entry and profitability, it makes our baseline findings that entry leads to fewer clients and less fees for incumbents even more striking.

4.2 Shift-share instrumental variables

One may be concerned that the past profitability of incumbents is not a strong indicator of expected future profitability of entrants or that local audit markets selected by the same incumbent audit firms that are not facing entry are not a valid counterfactual for the profitability trends of incumbents facing entrants. However, the revealed expectation of the entrant is that selected local markets have high expected future profitability. Therefore, we should generally expect entry to be associated with increased profitability for incumbents. That is, any competitive pressure from an entrant will be offset by the expected and prevailing

positive profitability trend for incumbents. This source of estimation bias should be attenuating, pushing our estimates of the competitive effects of entry toward zero.

Based on the evidence presented in previous sections, the existence of an estimation bias that would inflate our estimates of the competitive effects of entry would require that entrants select local audit markets based on a competitive advantage that is time-varying and specific to the entrant-market pair. Although this would be consistent with a general interpretation of entry as change in competition, it may prevent our baseline estimates from being generalizable to situations in which audit firms do not strategically select which markets to enter. For example, consider an entrant that has developed a new audit technology that is specific to a local audit market. This technology may decouple their expected profitability from other audit firms' offices in the same local market. In this situation, interpreting entry as a reflection of location-specific technology shocks is potentially interesting, but it may not reflect a generalizable effect of randomly allocating entrants across local audit markets since this technological innovation may not be relevant to other audit firms operating in other local audit markets.

To address this type of selection concern, we introduce an instrumental variable strategy that forces identifying variation in local market entry to come from secular trends in the audit industry. Specifically, we introduce two versions of a shift-share instrument in the style of Bartik (1991). Each of these instruments captures two elements of changes in the audit industry that are relevant to entry in local markets, but are also exogenous with respect to the individual

audit firm's selection to enter any specific local market. Our first shift-share instrument for entry into a focal market is defined as the aggregate contemporaneous shift in entry for all *other* markets (i.e., excluding the focal market) multiplied by the focal market's lagged share of the aggregate audit market (based on client counts). In this sense, our first shift-share instrument is a measure of expected entry in the focal market based on the focal market's exposure to aggregate entry trends. Our second shift-share instrument is based on national audit firm-level trends. We define it based on the aggregate contemporaneous shift in entry for all audit firms that are not incumbents in the focal market multiplied by the focal market's lagged share of the aggregate audit market based on client counts. Whereas our first instrument treated audit firm-market pairs as independently determined, our second instrument allows for some dependence between incumbent audit firms and local markets. Since aggregate entry is not a function of audit firm or local market phenomena, these aggregate entry shifts can be presumed exogenous with respect to dynamic audit firm-market pair selection concerns outlined above. This means that the variation in entry used in our instrumental variables tests excludes both the attenuating bias from anticipated profitability trends and the potential inflationary bias from dynamic firm-market selection. If, for example, the economic significance of the instrumental variables result is larger than the main results presented in previous sections, then it is likely that the attenuation bias from expected future profitability dominates and suggests that our baseline estimates understate the competitive effects of entry.

To implement the shift-share instrumental variables tests, our preferred specification is as follows:

$$\text{First stage:} \quad \ln \text{Number of Entrants}_{jt} = \delta + \tau \ln \text{Shift-Share}_{jt} + u_j + v_t + \varepsilon_{ijt}$$

$$\text{Second stage:} \quad Y_{ijt} = \alpha + \beta \ln \widehat{\text{Number of Entrants}}_{jt} + u_j + v_t + \varepsilon_{ijt} \quad (2)$$

where *Shift-Share* is either based on aggregate entry trends (*Market Shift-Share*) or national audit- firm trends (*Firm Shift-Share*). *Market Shift-Share* is defined as follows:

$$\text{Market Shift-Share}_{jt} = \text{Number of Entrants}_{jt} \times \left(\text{Number of Clients}_{jt} / \sum_i \text{Number of Clients}_{it} \right),$$

and *Firm Shift-Share* simply adjusts *Number of Entrants*_{jt} by subtracting all entry by audit firms operating in MSA *j*. The rest of the specification follows previous equations. Y_{ijt} is an outcome variable of $\{\Delta \ln \text{NumClients}, \Delta \ln \text{TotalFees}, \Delta \ln \text{FeesperClient}\}$, measured at the audit firm (*i*), city (*j*), and year (*t*) level. u_j is a city fixed effect, and v_t is a year fixed effect. We cluster standard errors at the city level.

Panel A of Table 7 presents the estimates of the first stage model as in equation (2). Columns (1) and (2) present evidence of relevance for the *Market Shift-Share* instrument, and columns (3) and (4) present evidence of relevance for the *Firm Shift-Share* instrument. Relative to columns (1) and (3), which reflect the specification in equation (2), columns (2) and (4) include city by audit firm and audit firm by year fixed effects to isolate the same identifying variation used in our preferred and most restrictive baseline specifications in previous sections. Additionally, these fixed effects structures span the least and most restrictive specifications from our baseline tests. Both shift-share instruments are statistically relevant in all specifications with *t*-statistics in the range of 30 and corresponding *F*-statistics that significantly exceed the rule-of-thumb relevance threshold of 10.

Panel B of Table 7 presents second stage estimates using the *Market Shift-Share* instrument. Economically, our instrumented coefficient estimates are as large or larger than their reduced form counterparts from Tables 2, 3, and 4, suggesting that the attenuation bias from profit anticipation is, indeed, present. It also suggests that the inflationary bias from selection on audit firm-market pair characteristics is unlikely to pose a significant problem in the baseline tests. In our most restrictive specifications, our IV results indicate that the first entrant is associated with a relative reduction in total fees of 10.3%, or about \$365,000. The composition of the total fees effect is similar to our baseline results as well; entry affects both client retention and increases competitive pricing pressure.

Panel C of Table 7 presents second stage estimates using the *Firm Shift-Share* instrument, which uses similar identifying variation as the *Market Shift-Share* instrument, but excludes national audit firm-level entry trends for auditors already present in the focal market. This test effectively allows for national audit firm-level productivity shocks, but eliminates variation in entry decisions based on strategic geographic selection. The results in Panel C are statistically significant at the 1% level and similar, though consistently slightly smaller in magnitude, to those of Panel B. In our most restrictive specification, these IV results indicate that the first entrant is associated with a relative reduction in total fees of 8.4%, or about \$298,000. Overall, our instrumental variables results support a causal interpretation of our baseline results on the effects of entry in local markets, and they further suggest that these effects are likely to extrapolate to settings in which audit firms are precluded from strategically timing specific geographic markets.

5. Segmentation, competition, and product mix

We now investigate the effects of market and entrant characteristics on the effects of entry. The audit industry exhibits several characteristics that augment competitive interactions at the local level. The segmentation of the markets between Big 4 and non-Big 4 audit firms leads to significant stratification (Willenborg 1999; Ettredge, Kwon, and Lim 2009; Lennox, Francis, and Wang 2012; Guedhami, Pittman, and Saffar 2014), and we investigate whether this market feature affects client retention and downward pressure on fees at the local level. Local markets vary significantly in concentration and audit firm profitability, and auditors and their clients often have long-lived relationships; we also investigate whether or not these market factors lead to greater effects of entry. Because entry provides additional outside options to client firms in a local market, we examine whether entry leads to declines in the number of clients for audit firms with significant market share, profits, or lengthy relationships. Finally, we examine the effects of downward price pressure due to entry on product offerings.

5.1. Segmentation by Big 4 status

Whether Big 4 firms perform higher quality audits (Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis and Krishnan 1999; Francis, Maydew, and Sparks 1999; Francis 2004; Eshleman and Guo 2014; DeFond and Zhang 2014), or not (Boone, Khurana, and Raman 2010; and Lawrence, Minutti-Meza, and Zhang 2011), the largest auditors are indeed special, in that they retain their clients at a higher rate (Hogan and Martin 2009), earn a fee premium (Ireland and Lennox 2002), and are in high demand for clients with financing needs (Myers

1984; Long and Malitz 1985; Blackwell, Noland, and Winters 1998; Minnis 2011). We investigate whether potential stratification of the audit industry characterizes the effects of entry at the local market level. Both Big 4 and non-Big 4 auditors can enter a new market (for that auditor), and they can poach clients away from both types of auditor. We are interested in the effects of Big 4 entry, and also in the effects of entry on Big 4 incumbents. In principle, not all audit offices are the same, and if a larger auditor is supporting a local office, these greater resources will have an impact on the ability of that office to fulfill its duties. We investigate this using a similar regression framework, now distinguishing between Big 4 and non-Big 4 entrants. We are interacting these Big 4-specific terms in our regressions to examine the marginal effects of market segmentation. Our preferred specification is as follows:

$$Y_{ijt} = \alpha + \beta_1 \ln \text{Number of non-Big4 Entrants}_{jt} + \beta_2 1[\text{Big4 Incumbent}]_{it} + \beta_3 1[\text{Big4 Incumbent}]_{it} \times \ln \text{Number of non-Big4 Entrants}_{jt} + u_j + v_t + \varepsilon_{ijt} \quad (3)$$

where the set-up follows equation (1) as before, but we now interact $\ln \text{Number of non-Big4 Entrants}$ with $1[\text{Big4 Incumbent}]$, an indicator that equals one if the incumbent audit office is from a Big 4 audit firm and zero otherwise.

Similarly, we study the differential effects of Big 4 entry shocks using the same specification, but replace $\ln \text{Number of non-Big4 Entrants}$ with $\ln \text{Number of Big4 Entrants}$, simply the subset of entrants that belong to Big 4 audit firms, as follows:

$$Y_{ijt} = \alpha + \beta_1 \ln \text{Number of Big4 Entrants}_{jt} + \beta_2 1[\text{Big4 Incumbent}]_{it} + \beta_3 1[\text{Big4 Incumbent}]_{it} \times \ln \text{Number of Big4 Entrants}_{jt} + u_j + v_t + \varepsilon_{ijt} \quad (4)$$

We examine these specifications for both all three outcome variables in Table 8. In column (1), we estimate the effect of Big 4 entrants on non-Big 4 and Big 4 incumbents. Our estimates suggest that the first Big 4 entrant is associated with a relative reduction in total fees of 19.3% for non-Big 4 incumbents, but, statistically, no change in total fees for Big 4 incumbents. Economically, this 19.3% reduction is approximately four times as large as our average effect estimate of entry from Table 2. Together, these findings are consistent with Big 4 entrants having greater resources, both when entering a new market, and when an incumbent. In column (2), we estimate the effects of entry by non-Big 4 audit firms on Big 4 and non-Big 4 incumbents. We find that the first non-Big 4 entrant is associated with a relative reduction in total fees by 2.6% for non-Big 4 incumbents, but also that this relative reduction is 4.1% for Big 4 incumbents. This result suggests that local market entry by even non-Big 4 audit firms creates competitive pressure for Big 4 audit firms.

Columns (3) and (4) and columns (5) and (6) estimate similar segmentation models that decompose the effect on total fees into client growth and fee per client growth. These findings are generally consistent with our decomposition of entry effects in Tables 3 and 4. One important difference in the pattern of results for client retention and fees per client is that non-Big 4 entrants appear to have no incremental ability to attract Big 4 incumbents' clients relative to other incumbents' clients. This indicates that even though non-Big 4 entrants do not acquire Big 4 incumbents' clients, they are able to exert incremental downward pressure on the prices charged by Big 4 incumbents. These results suggest that non-Big 4 audit firms provide significant competitive threats to Big 4 audit firms through entry in local audit markets.

Furthermore, our findings based on local audit markets suggest that the audit industry may be less segmented than previously thought.

5.2. Market characteristics

Industrial organization research has long concerned itself with the effects of market entry on competition and the competitive environment. Research has shown that entry has the greatest effect when market concentration is high (Bresnahan and Reiss 1991), in keeping with classical models of monopolistic and oligopolistic competition. However, because the audit market has several distinct features and a unique organization, it is unclear whether local market entry should see these same effects. We now examine whether local market concentration, profitability, and market orientation (longer auditing relationships or not) affect competitive outcomes related to entry. We do so by interacting the number of entrants with indicator variables for market concentration, profitability, relationship length, and turnover. Our preferred specification is as follows:

$$Y_{ijt} = \alpha + \beta_1 \ln \text{Number of Entrants}_{jt} + \beta_2 X_{jt-1} + \beta_3 X_{jt-1} \times \ln \text{Number of Entrants}_{jt} + n_i + u_j + v_t + \varepsilon_{ijt} \quad (5)$$

where Y_{ijt} is an outcome variable of $\{\Delta \ln \text{NumClients}, \Delta \ln \text{TotalFees}, \Delta \ln \text{FeesperClient}\}$, measured at the audit firm (i), city (j), and year (t) level. u_j is a city fixed effect, n_i is an audit firm fixed effect, and v_t is a year fixed effect. X_{jt-1} represents one of four indicator variables $\{1[\text{Few Incumbents}], 1[\text{Profitable}], 1[\text{Relationship-oriented}], 1[\text{Concentrated}]\}$ that measure the characteristic of city j in year $t-1$ of entry. We cluster standard errors at the city level.

In Table 9, we estimate equation (5) using these four different indicators to describe the competitive environment of a local market in the year of entry. In column (1) we investigate the interactive effect of entry with whether or not the city in question has below mean number of incumbent audit firms, meaning the audit market is relatively more concentrated than other cities. We find that more concentrated local markets are associated with greater competitive disruption as the result of entry. In other words, and in keeping with previous work in industrial organization, the less competitive the market was in the first place, the greater the impact of entry. In column (2), we find that entry is associated with greater client loss for incumbents in cities in which total fees per client are above average. These findings indicate that if a small number of auditors dominate a local market, and are as a result able to charge higher fees, then entry leads to lower client retention by incumbents.

In column (3), we find that markets within which incumbent auditors have above average relationship length with their clients also see greater client loss due to entry. This result is consistent with entry busting market-level coordination among incumbent audit firms or entrants low-balling engagements to attract clients with long-standing auditor relationships. Additionally, within cities that have above mean levels of audit market concentration (i.e., above mean Hirschman-Herfindahl Index (HHI) based on client share), we find that entry has a larger effect on incumbent fees. Across a variety of measures, these findings indicate that it is precisely those markets that face limited competition that see the greatest changes due to entry.

5.3. Incumbent characteristics

Larger audit offices have been shown to perform higher quality audits (Francis and Yu 2009) and office-level industry expertise is associated with an audit fee premium (Ferguson, Francis, and Stokes 2003). We investigate whether incumbent characteristics relating to expertise and market power are related to effects of competitive pressure. We measure whether auditors are one of the top in the city, whether they have above average fees per client, whether they have longer than average incumbency in the market, and the degree to which they see high turnover with their clients. Taking these measures as indicator variable interactions in our model as before, our preferred specification is as follows:

$$Y_{ijt} = \alpha + \beta_1 \ln \text{Number of Entrants}_{jt} + \beta_2 X_{jt-1} + \beta_3 X_{jt-1} \times \ln \text{Number of Entrants}_{jt} + n_i + u_j + v_t + \varepsilon_{ijt} \quad (6)$$

where Y_{ijt} is an outcome variable of $\{\Delta \ln \text{NumClients}, \Delta \ln \text{TotalFees}, \Delta \ln \text{FeesperClient}\}$, measured at the audit firm (i), city (j), and year (t) level. u_j is a city fixed effect, and v_t is a year fixed effect. X_{it-1} represents one of four indicator variables $\{1[\text{Leader}], 1[\text{Profitable}], 1[\text{Entrenched}], 1[\text{Opportunistic}]\}$ that measure the quality of incumbent i in year $t-1$ of entry. As in our other tests, we cluster standard errors at the city level.

In Table 10, we estimate equation (6) to determine the heterogeneous effects of entry across incumbents. In column (1) we first interact number of entrants with whether or not the incumbent in question is in the top 3 in the market by total fees. We find that market leader incumbents lose statistically significantly more fees due to auditor entry, consistent with top ranked audit firms competing less vigorously or relying on local reputation to retain clients. In column (2) we find that incumbents with above average fees per client within the local market

lose less fees as a result of entry. In other words, incumbents that offer differentiated products are better able to withstand entry.

In column (3) we investigate the effects on total fees for incumbent auditors with longer than average incumbency in the market. We find that auditors that have operated in the local market for a longer period of time are more likely to lose fees as a result of entry, consistent with long-standing incumbents being entrenched with local clients. In column (4), we find evidence that incumbents that experience a high degree of client turnover in the market are less affected by entry. This is likely because auditors that experience a frequent client turnover are likely competing vigorously prior to entry, making entry a smaller marginal change in their competitive environment. Overall, our evidence suggests that competitive incumbents that offer differentiated products (i.e., higher quality) are better able to ward off new competitors, but that entrenched incumbents with more clients are more susceptible to competition from new competitors.

5.4. Product mix

Incumbent auditors lose clients to auditor entry and also experience downward pressure on audit fees. Due to these fee pressures, one may expect that entry changes the products that incumbent auditors are able to sell to their clients. The academic literature has long questioned the merits of non-audit services (Gigler and Penno 1995; Antle, Gordon, Narayanamoorthy, and Zhou 2006; Whisenant, Sankaraguruswamy, and Raghunandan 2003), yet clients often spend hundreds of thousands of dollars on additional advisory and compliance services (Harris 2014).

In Table 11, we investigate the effect of entry on both the likelihood of offering non-audit services (Panel A) as well as the percentage of total fees allocated for the core audit (Panel B). Both panels present evidence using the same specifications as Tables

Panel A of Table 11 presents results on changes in the propensity that incumbents offer non-audit services, including tax, IT, and benefits consulting, and Panel B presents results on the fraction of the incumbent's total fees that come from core audit services. In both panels, the specification in column (1) includes city and year fixed effects, and we incrementally add restrictive fixed effects until the specification in column (4), which includes city by auditor and auditor by year fixed effects. These specifications and format correspond exactly to those presented in Tables 2, 3, and 4.

In Table 11, we find that not only do firms reduce their product offerings following entry, but that the audit fee rises as a proportion of total fees. One could interpret this as renewed focus on the core audit, driven by the discipline of increased competition. However, given the literature finds evidence of positive spillovers to the audit (DeFond, Raghunandan, & Subramanyam 2002; Kinney, Palmrose, & Scholz 2004; Ashbaugh, LaFond, and Mayhew 2003; Knechel and Sharma 2012; Knechel, Sharma, and Sharma 2012; Lim & Tan 2008), the welfare effects of decreased product offerings by incumbent auditors is less clear.

6. Conclusion

The nature and extent of competition in the audit market is an important issue of interest to academics, regulators, and practitioners. In this paper, we study one of the fundamental driving

forces behind competition between auditors – entry by audit firms into new local markets. We find that entry is frequent, and is associated with economically important effects on incumbent auditors, both directly, through a loss of clients, and indirectly, through downward fee pressure. As one would expect, these effects are both concentrated in markets with less competition, and are dependent on the business models and competitiveness of the individual incumbent offices in each market. We also separately investigate whether the effects of entry vary according to whether the entrant (or the incumbent) is a Big 4 firm and find evidence that Big 4 incumbents are affected even by entry of non-Big 4 auditors. Taken together, our findings suggest that local audit markets are characterized by vigorous and effective competition.

References

- Antle, R., Gordon, E., Narayanamoorthy, G., & Zhou, L. (2006). The joint determination of audit fees, non-audit fees, and abnormal accruals. *Review of Quantitative Finance and Accounting*, 27(3), 235-266.
- Aobdia, D., Enache, L., & Srivastava, A. (2016). Will the Auditing Industry Become a Tighter or Looser Oligopoly?
- Ashbaugh, H., LaFond, R., & Mayhew, B. W. (2003). Do nonaudit services compromise auditor independence? Further evidence. *The accounting review*, 78(3), 611-639.
- Ball, R. (2001). Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. *Brookings-Wharton papers on financial services*, 2001(1), 127-169.
- Balsam, S., Krishnan, J., & Yang, J. S. (2003). Auditor industry specialization and earnings quality. *Auditing: A journal of practice & Theory*, 22(2), 71-97.
- Bandyopadhyay, S. P., & Kao, J. L. (2004). Market structure and audit fees: a local analysis. *Contemporary Accounting Research*, 21(3), 529-562.
- Barton, J. (2005). Who cares about auditor reputation? *Contemporary Accounting Research*, 22(3), 549-586.
- Baylis, R. M., Burnap, P., Clatworthy, M. A., Gad, M. A., & Pong, C. K. (2017). Private lenders' demand for audit. *Journal of Accounting and Economics*, 64(1), 78-97.
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. (1998). The effect of audit quality on earnings management. *Contemporary accounting research*, 15(1), 1-24.
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15(1), 1-24.
- Berger, A. N., & Udell, G. F. (1995). Relationship lending and lines of credit in small firm finance. *Journal of Business*, 68(3), 351-381.
- Berry, S., & Reiss, P. (2007). Empirical models of entry and market structure. *Handbook of industrial organization*, 3, 1845-1886.
- Bharath, S. T., Sunder, J., & Sunder, S. V. (2008). Accounting quality and debt contracting. *The Accounting Review*, 83(1), 1-28.

- Biddle, G. C., & Hilary, G. (2006). Accounting quality and firm-level capital investment. *The Accounting Review*, 81(5), 963-982.
- Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics*, 48(2), 112-131.
- Billett, M. T., Flannery, M. J., & Garfinkel, J. A. (1995). The effect of lender identity on a borrowing firm's equity return. *Journal of Finance*, 50(2), 699-718.
- Black, B. (2001). The legal and institutional preconditions for strong stock markets: the nontriviality of securities law. *A comparative perspective, corporate governance in Asia*, 55-82.
- Black, B. S. (2000). The legal and institutional preconditions for strong securities markets. *UCLA L. Rev.*, 48, 781.
- Blackwell, D. W., Noland, T. R., & Winters, D. B. (1998). The value of auditor assurance: Evidence from loan pricing. *Journal of accounting research*, 36(1), 57-70.
- Boone, J. P., Khurana, I. K., & Raman, K. (2010). Do the Big 4 and the second-tier firms provide audits of similar quality? *Journal of Accounting and Public Policy*, 29(4), 330-352.
- Boone, J. P., Khurana, I. K., & Raman, K. (2016). Spatial Competition in Local Audit Markets and the Fallout on Deloitte from the 2007 PCAOB Censure. *Auditing: A Journal of Practice & Theory*, 36(2), 1-19.
- Bresnahan, T. F., & Reiss, P. C. (1991). Entry and competition in concentrated markets. *Journal of political economy*, 99(5), 977-1009.
- Brown, S. V., & Knechel, W. R. (2016). Auditor-client compatibility and audit firm selection. *Journal of Accounting Research*, 54(3), 725-775.
- Carrizosa, R., & Ryan, S. G. (2017). Borrower private information covenants and loan contract monitoring. *Journal of Accounting and Economics*, 64(2-3), 313-339.
- Carson, E. (2009). Industry specialization by global audit firm networks. *The Accounting Review*, 84(2), 355-382.
- Casterella, J. R., Francis, J. R., Lewis, B. L., & Walker, P. L. (2004). Auditor industry specialization, client bargaining power, and audit pricing. *Auditing: A Journal of Practice & Theory*, 23(1), 123-140.
- Chaney, P. K., & Philipich, K. L. (2002). Shredded reputation: The cost of audit failure. *Journal of Accounting Research*, 40(4), 1221-1245.

- Chen, F., Hope, O.-K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, 86(4), 1255-1288.
- Choi, J.-H., Kim, C., Kim, J.-B., & Zang, Y. (2010). Audit office size, audit quality, and audit pricing. *{Auditing: A Journal of Practice & Theory}*, 29(1), 73-97.
- Choi, J.-H., Kim, J.-B., Liu, X., & Simunic, D. A. (2008). Audit pricing, legal liability regimes, and Big 4 premiums: Theory and cross-country evidence. *Contemporary Accounting Research*, 25(1), 55-99.
- Christensen, H. B., Nikolaev, V. V., & Wittenberg-Moerman, R. (2016). Accounting information in financial contracting: The incomplete contract theory perspective. *Journal of Accounting Research*, 54(2), 397-435.
- Costello, A. M., & Wittenberg-Moerman, R. (2011). The impact of financial reporting quality on debt contracting: Evidence from internal control weakness reports. *Journal of Accounting Research*, 49(1), 97-136.
- Craswell, A. T., Francis, J. R., & Taylor, S. L. (1995). Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics*, 20(3), 297-322.
- Craswell, A. T., Francis, J. R., & Taylor, S. L. (1995). Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics*, 20(3), 297-322.
- DeAngelo, L. E. (1981). Auditor size and audit quality. *Journal of Accounting and Economics*, 3(3), 183-199.
- Dechow, P. M., Ge, W., Larson, C. R., & Sloan, R. G. (2011). Predicting material accounting misstatements. *Contemporary Accounting*, 28(1), 17-82.
- DeFond, M. L., & Subramanyam, K. (1998). Auditor changes and discretionary accruals. *Journal of Accounting and Economics*, 25(1), 35-67.
- DeFond, M. L., Francis, J. R., & Wong, T. J. (2000). {Auditor industry specialization and market segmentation: Evidence from Hong Kong}. *{Auditing: A Journal of Practice & Theory}*, 19(1), 49-66.
- DeFond, M. L., Raghunandan, K., & Subramanyam, K. (2002). Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of accounting research*, 40(4), 1247-1274.
- DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics*, 58(2-3), 275-326.

- Dekeyser, S., Gaeremynck, A., Knechel, R., & Willekens, M. (2017). Competitive rivalry in audit markets. *Working paper*.
- Doyle, J. T., Ge, W., & McVay, S. (2007). Accruals quality and internal control over financial reporting. *The Accounting Review*, *82*(5), 1141-1170.
- Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Journal*, *23*(4), 660-679.
- Eshleman, J. D., & Guo, P. (2014). Do Big 4 auditors provide higher audit quality after controlling for the endogenous choice of auditor? *Auditing: A Journal of Practice & Theory*, *33*(4), 197-219.
- Fan, J. P., & Wong, T. J. (2005). Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia. *Journal of Accounting Research*, *43*(1), 35-72.
- Ferguson, A., Francis, J. R., & Stokes, D. J. (2003). The effects of firm-wide and office-level industry expertise on audit pricing. *The Accounting Review*, *78*(2), 429-448.
- Francis, J. R. (2004). What do we know about audit quality? *The British Accounting Review*, *36*(4), 345-368.
- Francis, J. R., & Krishnan, J. (1999). Accounting accruals and auditor reporting conservatism. *Contemporary accounting research*, *16*(1), 135-165.
- Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research*, *25*(1), 157-191.
- Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *The Accounting Review*, *84*(5), 1521-1552.
- Francis, J. R., Golshan, N., & Hallman, N. (2017). Out of Sight, Out of Mind: Does Audit Partner Proximity to Clients Matter?
- Francis, J. R., Maydew, E. L., & Sparks, H. C. (1999). The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice & Theory*, *18*(2), 17-34.
- Francis, J. R., Maydew, E. L., & Sparks, H. C. (1999). The role of Big 6 auditors in the credible reporting of accruals. *Auditing: a Journal of Practice & theory*, *18*(2), 17-34.
- Francis, J. R., Reichelt, K., & Wang, D. (2005). The pricing of national and city-specific reputations for industry expertise in the US audit market. *The Accounting Review*, *80*(1), 113-136.

- Gerakos, J., & Syverson, C. (2015). Competition in the audit market: Policy implications. *Journal of Accounting Research*, 53(4), 725-775.
- Ghosh, A., & Moon, D. (2005). Auditor tenure and perceptions of audit quality. *The Accounting Review*, 80(2), 585-612.
- Gigler, F., & Penno, M. (1995). Imperfect competition in audit markets and its effect on the demand for audit-related services. *Accounting Review*, 317-336.
- Graham, J. R., Li, S., & Qiu, J. (2008). Corporate misreporting and bank loan contracting. *Journal of Financial Economics*, 89(1), 44-61.
- Gulati, R. (1995). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, 38(1), 85-112.
- Hanson, J. (2014). An overview of PCAOB priorities. *Speech at the CBI 10th Annual Pharma/Biotech Accounting*, 7.
- Harris, S. B. (2014). The rise of advisory services in audit firms. *Speech presented at the Practising Law Institute 12th Annual Directors' Institute on Corporate Governance*, New York, November, 24.
- Herfindahl, O. C. (1950). *Concentration in the steel industry*. Ph.D. dissertation, Columbia University New York.
- Hirschman, A. O. (1964). The paternity of an index. *The American Economic Review*, 54(5), 761-762.
- Hogan, C. E., & Jeter, D. C. (1999). Industry specialization by auditors. *Auditing: A Journal of Practice & Theory*, 18(1), 1-17.
- Hogan, C. E., & Martin, R. D. (2009). Risk shifts in the market for audits: An examination of changes in risk for "second tier" audit firms. *Auditing: A Journal of Practice & Theory*, 28(2), 93-118.
- Holod, D., & Peek, J. (2007). Asymmetric information and liquidity constraints: A new test. *Journal of Banking & Finance*, 31(8), 2425-2451.
- Hope, O.-K., & Thomas, W. B. (2008). Managerial empire building and firm disclosure. *Journal of Accounting Research*, 46(3), 591-626.
- Houston, J. F., Jiang, L., Lin, C., & Ma, Y. (2014). Political connections and the cost of bank loans. *Journal of Accounting Research*, 52(1), 193-243.

- Huang, H.-W., Raghunandan, K., & Rama, D. (2009). Audit fees for initial audit engagements before and after SOX. *Auditing: A Journal of Practice & Theory*, 28(1), 171-190.
- Ireland, J. C., & Lennox, C. S. (2002). The large audit firm fee premium: A case of selectivity bias? *Journal of Accounting, Auditing & Finance*, 17(1), 73-91.
- Johnson, V. E., Khurana, I. K., & Reynolds, J. K. (2002). Audit-firm tenure and the quality of financial reports. *Contemporary Accounting Research*, 19(4), 637-660.
- Johnstone, K. M., & Bedard, J. C. (2003). Risk management in client acceptance decisions. *The Accounting Review*, 78(4), 1003-1025.
- Keefe, T. B., King, R. D., & Gaver, K. M. (1994). Audit fees, industry specialization, and compliance with GAAS reporting standards. *Auditing*, 13(2), 41.
- Kim, J.-B., Simunic, D. A., Stein, M. T., & Yi, C. H. (2011). Voluntary audits and the cost of debt capital for privately held firms: Korean evidence. *Contemporary Accounting Research*, 28(2), 585-615.
- Kim, J.-B., Song, B. Y., & Zhang, L. (2011). Internal control weakness and bank loan contracting: Evidence from SOX Section 404 disclosures. *The Accounting Review*, 86(4), 1157-1188.
- Kinney Jr, W. R., Palmrose, Z.-V., & Scholz, S. (2004). Auditor independence, non-audit services, and restatements: Was the US government right? *Journal of Accounting Research*, 42(3), 561-588.
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375-400.
- Knechel, W. R., & Sharma, D. S. (2012). Auditor-provided nonaudit services and audit effectiveness and efficiency: Evidence from pre-and post-SOX audit report lags. *Auditing: A Journal of Practice & Theory*, 31(4), 85-114.
- Knechel, W. R., Naiker, V., & Pacheco, G. (2007). {Does auditor industry specialization matter? Evidence from market reaction to auditor switches}. *{Auditing: A Journal of Practice & Theory}*, 26(1), 19-45.
- Knechel, W. R., Sharma, D. S., & Sharma, V. D. (2012). Non-audit services and knowledge spillovers: Evidence from New Zealand. *Journal of Business Finance & Accounting*, 39(1-2), 60-81.
- Krishnan, G. V. (2003). Does Big 6 auditor industry expertise constrain earnings management? *Accounting Horizons*, 17, 1-16.

- Krishnan, J., & Krishnan, J. (1997). Litigation risk and auditor resignations. *Accounting Review*, 539-560.
- Lambert, R., Leuz, C., & Verrecchia, R. E. (2007). Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research*, 45(2), 385-420.
- Lawrence, A., Minutti-Meza, M., & Zhang, P. (2011). Can Big 4 versus non-Big 4 differences in audit-quality proxies be attributed to client characteristics? *The accounting review*, 86(1), 259-286.
- Lim, C.-Y., & Tan, H.-T. (2008). Non-audit service fees and audit quality: The impact of auditor specialization. *Journal of accounting research*, 46(1), 199-246.
- Long, M. S., & Malitz, I. B. (1985). Investment patterns and financial leverage. In *Corporate capital structures in the United States* (pp. 325-352). University of Chicago Press.
- Malloy, C. J. (2005). The geography of equity analysis. *The Journal of Finance*, 60(2), 719-755.
- Mansi, S. A., Maxwell, W. F., & Miller, D. P. (2004). Does auditor quality and tenure matter to investors? Evidence from the bond market. *Journal of Accounting Research*, 42(4), 755-793.
- Menon, K., & Williams, D. D. (2016). Audit report restrictions in debt covenants. *Contemporary Accounting Research*, 33(2), 682-717.
- Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, 49(2), 457-506.
- Myers, S. C. (1984). The capital structure puzzle. *The journal of finance*, 39(3), 574-592.
- Numan, W., & Willekens, M. (2012). An empirical test of spatial competition in the audit market. *Journal of Accounting and Economics*, 53(1-2), 450-465.
- O'Brien, P. C., & Tan, H. (2015). Geographic proximity and analyst coverage decisions: Evidence from IPOs. *Journal of Accounting and Economics*, 59(1), 41-59.
- Shu, S. Z. (2000). Auditor resignations: Clientele effects and legal liability. *Journal of Accounting and Economics*, 29(2), 173-205.
- Simunic, D. A., & Stein, M. T. (1996). Impact of litigation risk on audit pricing: A review of the economics and the evidence. *Auditing*, 15, 119.
- Sirois, L.-P., & Simunic, D. A. (2011). Auditor size and audit quality revisited: The importance of audit technology.

- Skinner, D. J., & Srinivasan, S. (2012). Audit quality and auditor reputation: Evidence from Japan. *The Accounting Review*, 87(5), 1737-1765.
- Slovin, M. B., Sushka, M. E., & Hudson, C. D. (1990). External monitoring and its effect on seasoned common stock issues. *Journal of Accounting and Economics*, 12(4), 397-417.
- Stigler, G. J. (1971). The theory of economic regulation. *{The Bell Journal of Economics and Management Science}*, 3-21.
- Sufi, A. (2007). Information asymmetry and financing arrangements: Evidence from syndicated loans. *Journal of Finance*, 62(2), 629-668.
- Teoh, S. H., & Wong, T. (1993). Perceived auditor quality and the earnings response coefficient. *Accounting Review*, 346-366.
- Watts, R. L., & Zimmerman, J. L. (1983). Agency problems, auditing, and the theory of the firm: Some evidence. *Journal of Law and Economics*, 26(3), 613-633.
- Whisenant, S., Sankaraguruswamy, S., & Raghunandan, K. (2003). Evidence on the joint determination of audit and non-audit fees. *Journal of accounting research*, 41(4), 721-744.

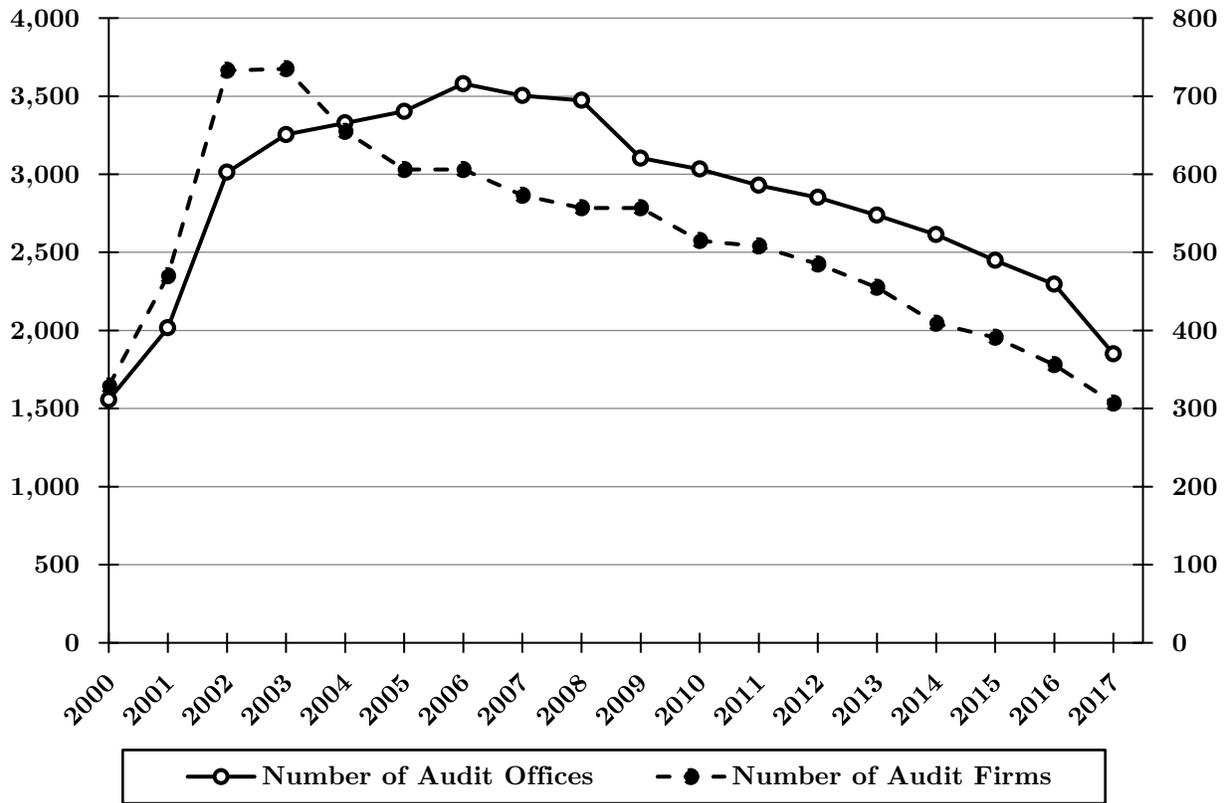


Figure 1. Count of Audit Offices and Firms from 2000 to 2018

The left axis of this figure plots a time series of the total number of local audit offices in each year between 2000 and 2017 (solid), and the right axis of this figure plots a time series of the total number of audit firms in each year between 2000 and 2017 (dashed).

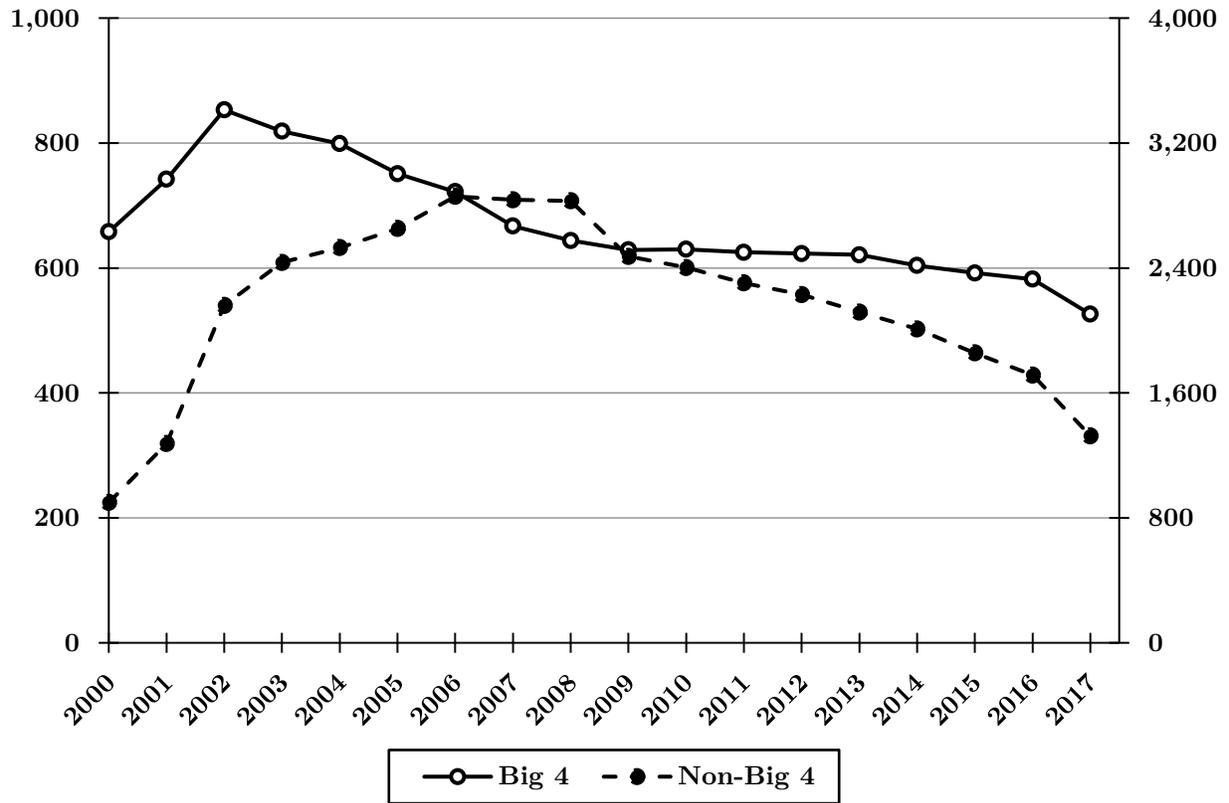
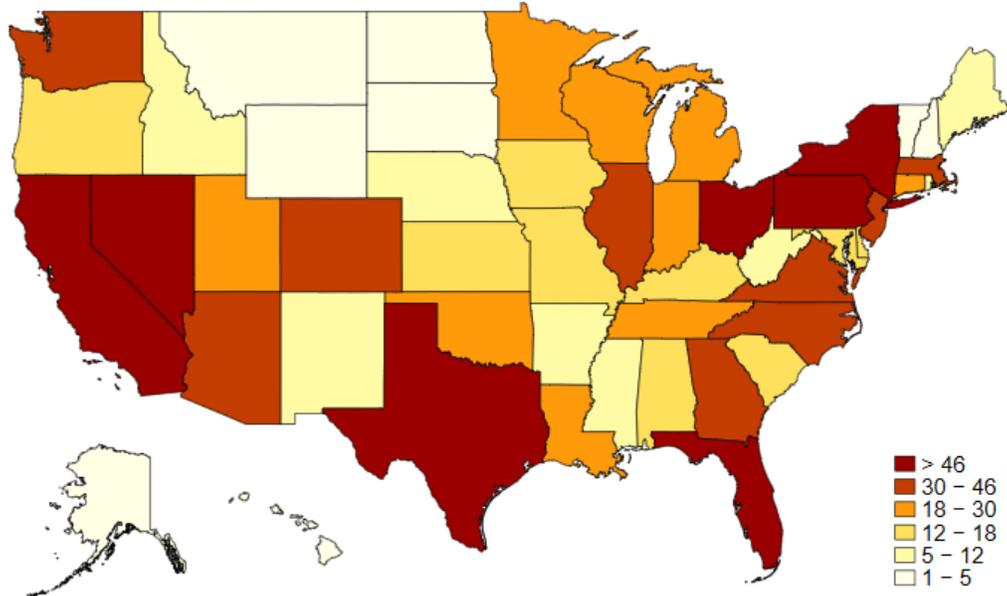
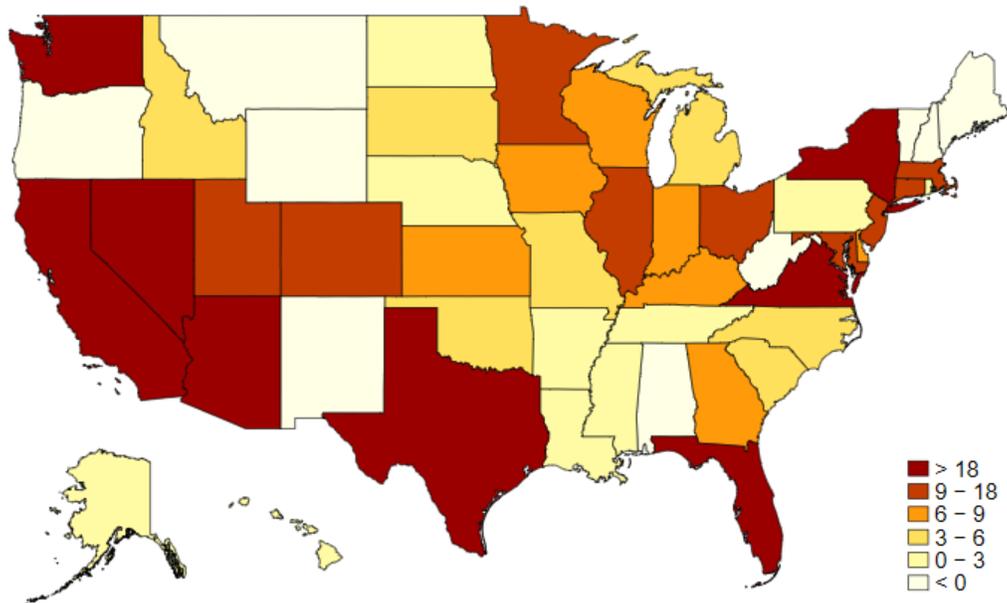


Figure 2. Count of Big 4 and non-Big 4 Audit Offices from 2000 to 2018

This figure plots a time series of the total number of Big 4 (solid) and non-Big 4 (dashed) audit offices in each year between 2000 and 2017.



Panel A. Audit Offices per State



Panel B. Net Entry of Audit Offices by State

Figure 3. The Number and Growth of Audit Offices by State, 2000 – 2017

Panel A of this figure plots the average number of audit offices per state between 2000 and 2017, and Panel B plots the change in the number of audit offices in each state between 2000 and 2017.

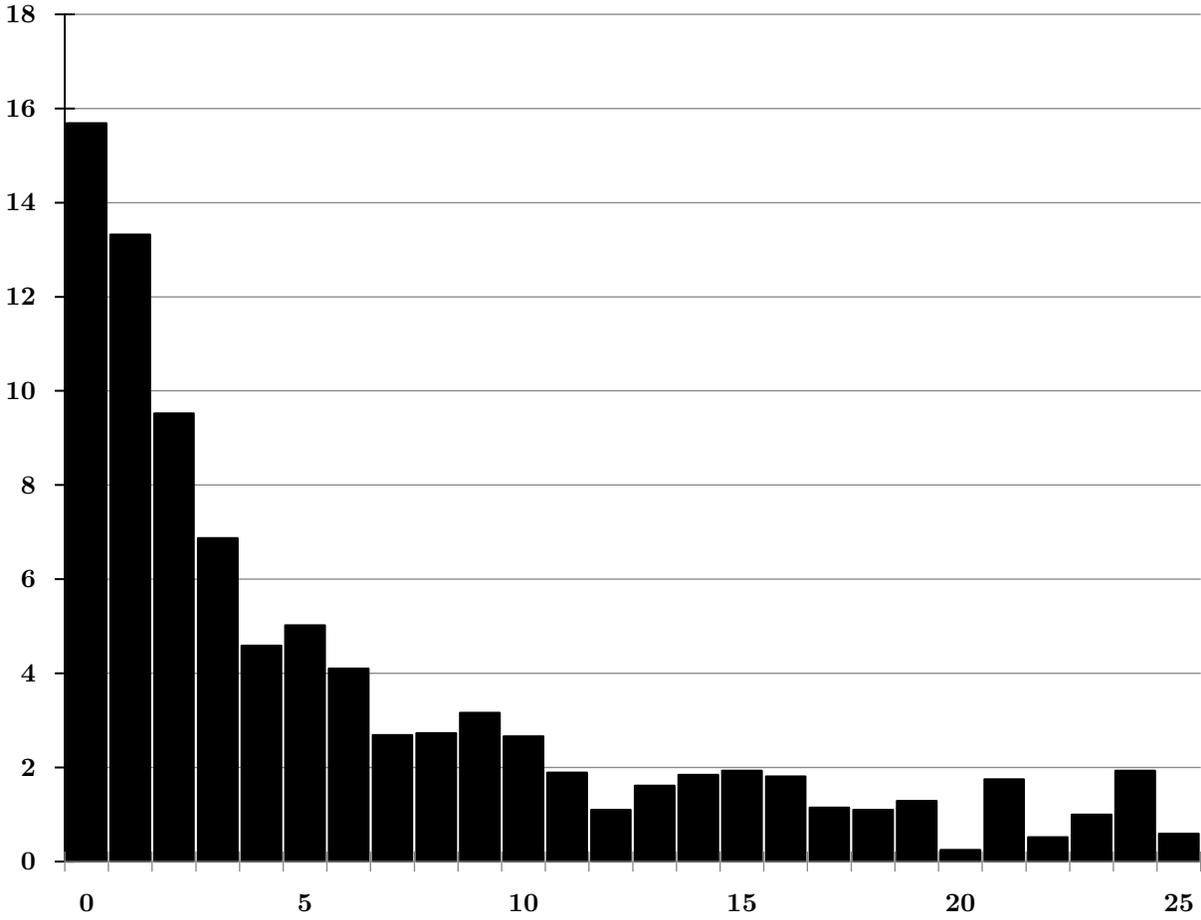
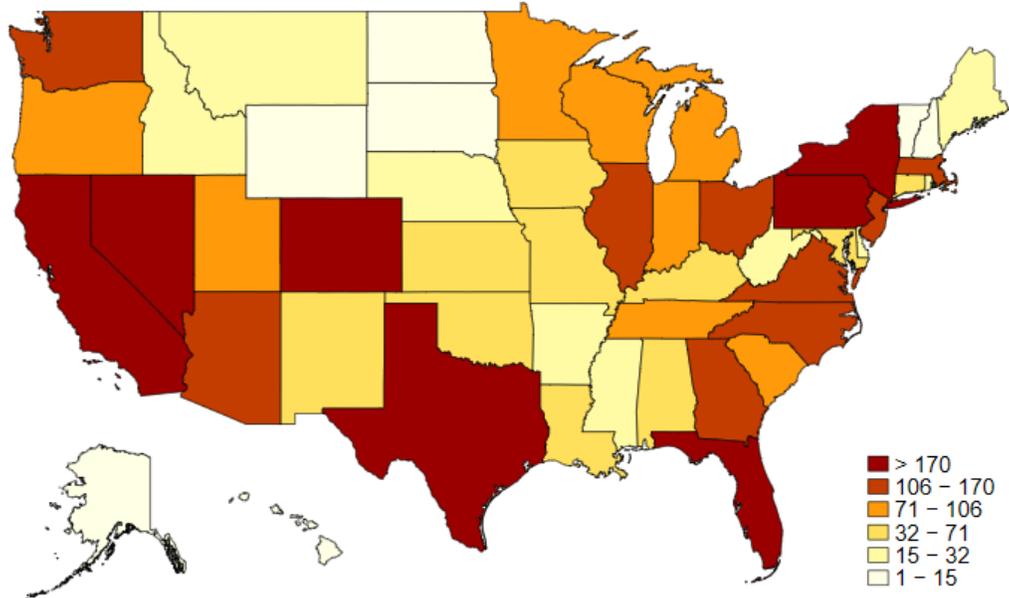
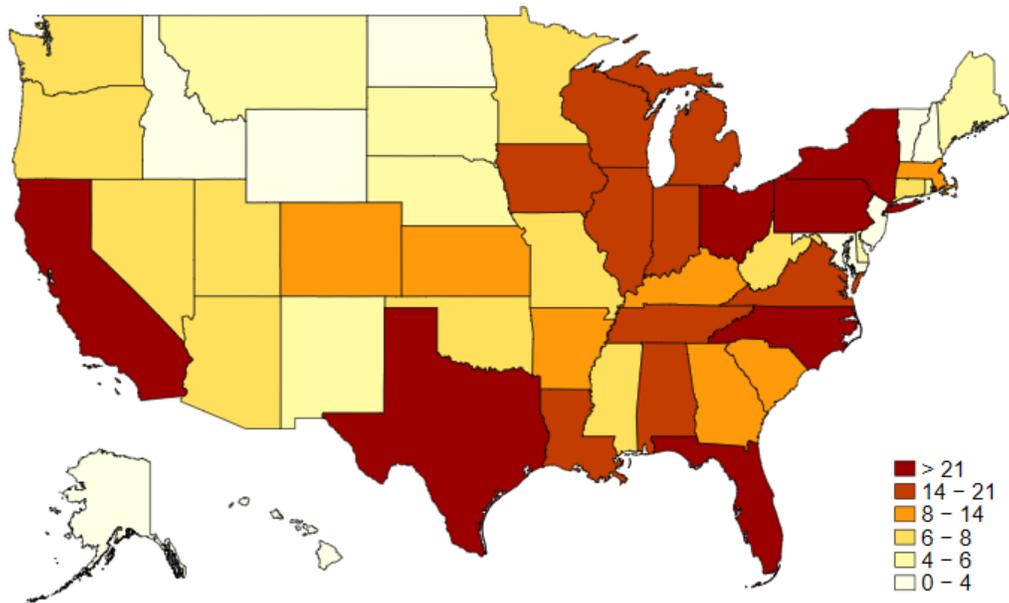


Figure 4. Entry Distribution

This figure presents a histogram of the number of entrants for all audit office-year level observations between 2000 and 2017. The x axis represents number of entering auditors and the y axis represents percent of audit office-year observations.



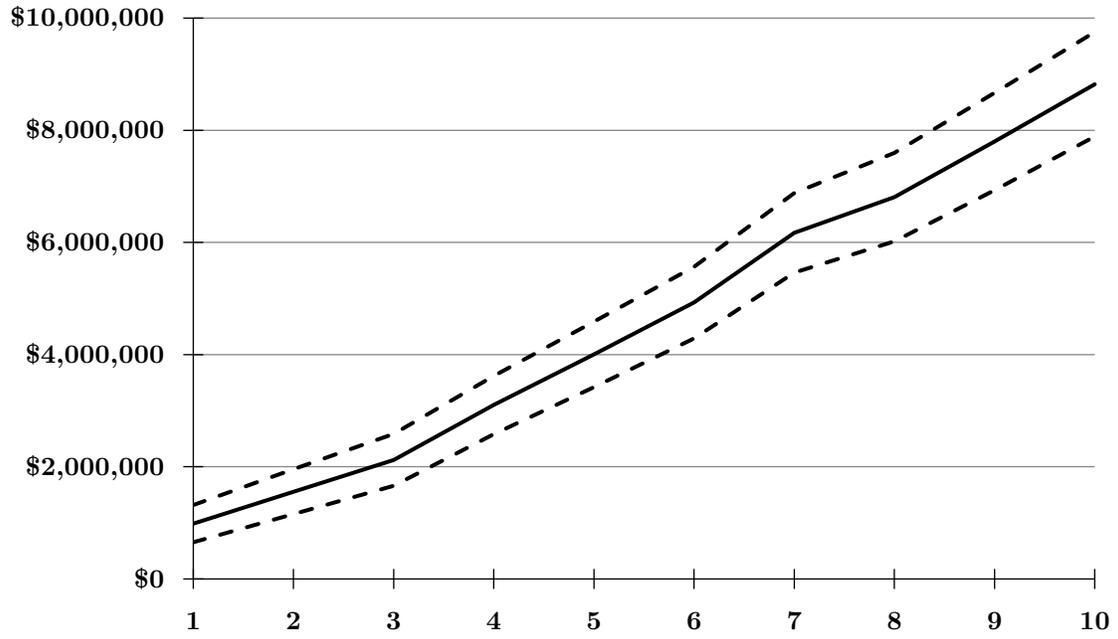
Panel A. Entrants by State



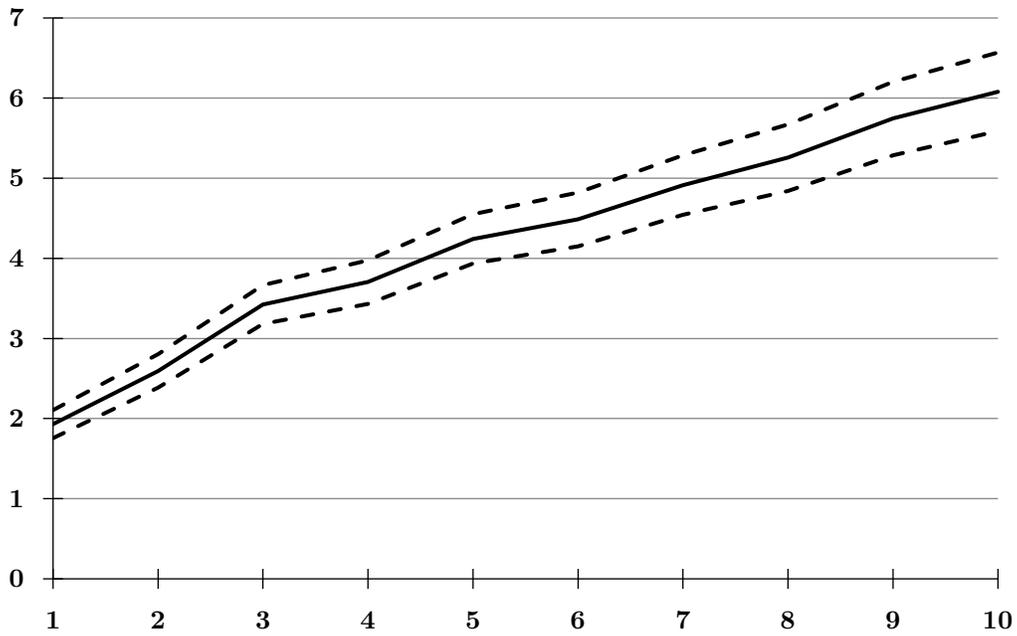
Panel B. Big 4 Entrants by State

Figure 5. Total and Big 4 Entrants by State, 2000 – 2017

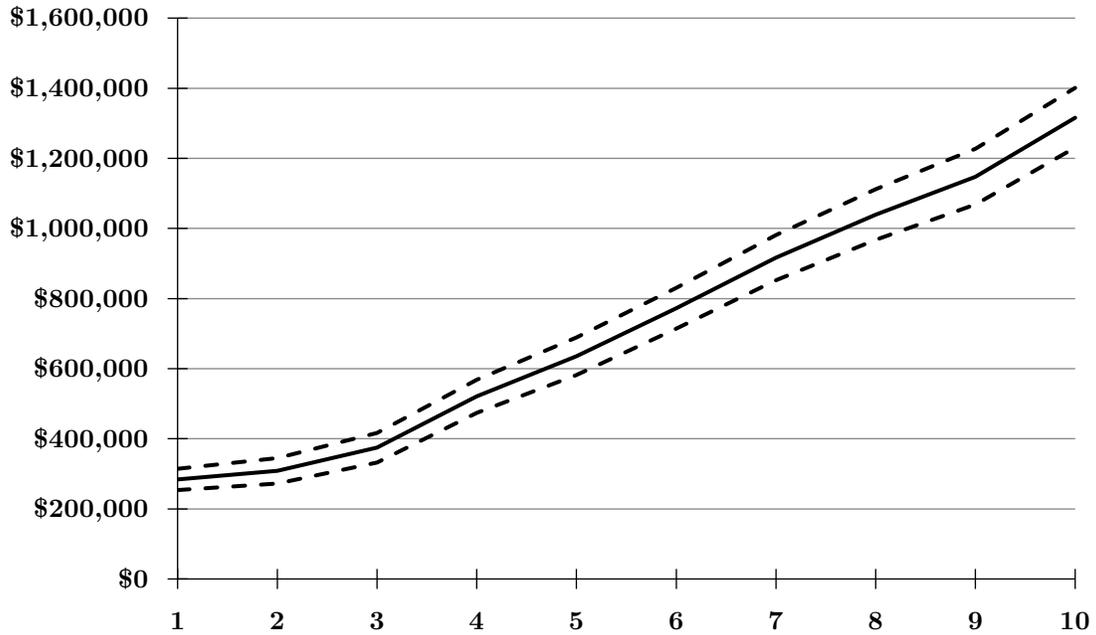
Panel A of this figure plots the number of entrants per state between 2000 and 2017, and Panel B plots the number of Big 4 entrants per state between 2000 and 2017.



Panel A. Total Fees



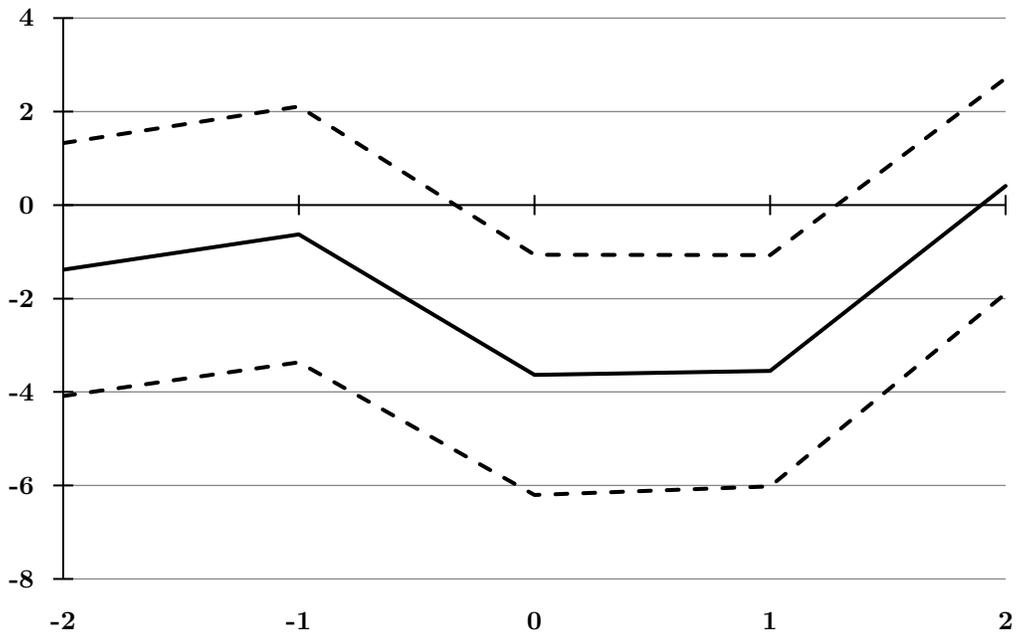
Panel B. Number of Clients



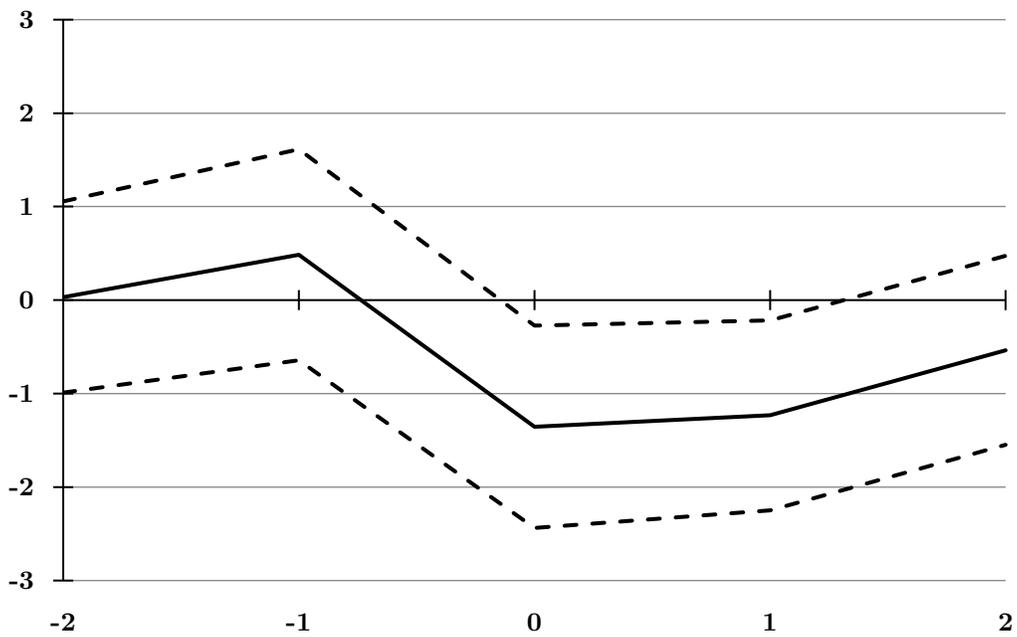
Panel C. Fees per Client

Figure 6. Post-Entry Market Dynamics for Entrants

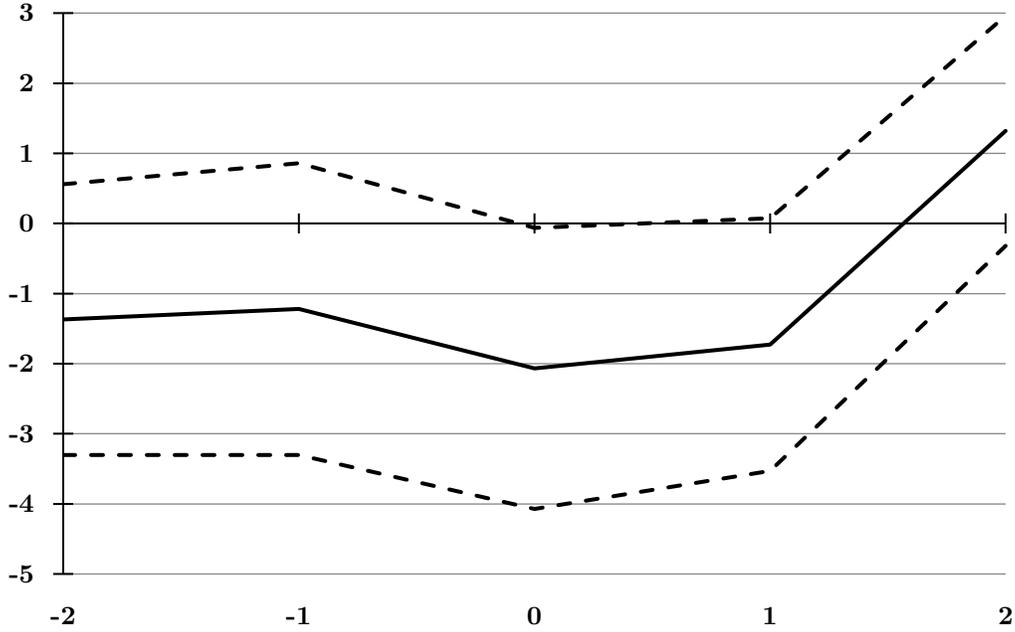
Panels A, B, and C of this figure presents the local market dynamics of total fees, client counts, and fees per client for audit firms that enter in $t = 0$. The y-axis represents the level of total fees, client counts, or fees per client in post-entry years for audit firms that enter in $t = 0$. The solid black line reflects the conditional average outcome and the dashed lines represent the corresponding 95% confidence interval.



Panel A. Total Fee Growth (%)



Panel B. Client Base Growth (%)



Panel C. Fees per Client Growth (%)

Figure 7. Dynamic Effects of Entry

Panels A, B, and C of this figure presents the dynamic effects of local audit market entry on average percentage growth in incumbents' total fees, client retention, and fees per client. The y-axis represents the effect of entry in $t = 0$ on the percentage growth rate of incumbent outcomes from two years before ($t = -2$) to two years after ($t = 2$) the entry shock. The solid black line reflects point estimates of the dynamic specification presented in Table 4 and the dashed lines represent the 95% confidence interval for these point estimates.

Table 1. Summary statistics

This table presents summary statistics for the main variables of interest.

	Mean	SD	P25	Median	P75
<i>Number of Entrants</i>	9.696	13.594	1	5	14
<i>Number of Big4 Entrants</i>	0.12	0.55	0	0	0
<i>Number of Clients</i>	3.29	11.26	1	1	2
<i>Total Fees</i>	\$3,525,785	\$24,600,000	\$33,505	\$124,207	\$666,606
<i>Fees per Client</i>	\$594,459	\$2,062,456	\$27,250	\$93,087	\$355,400
<i>AuditFee%</i>	83.95%	18.90%	76.14%	89.24%	100%
<i>NonAuditServices</i>	0.96	1.51	0	2	3
<i>Relationship length</i>	2.61	3.11	0	1.5	4
<i>NewRelationship%</i>	26.01%	41.40%	0%	0%	50%
<i>1[Big4 Incumbent]</i>	35.04%				
<i>Market HHI</i>	0.40	0.22	0.25	0.33	0.49

Table 2. Total Fees and Auditor Entry

This table presents fixed effects regression estimates of *TotalFees*, the dollar sum of total fees of an incumbent audit office, on *Number of Entrants*, the lagged number of entering audit firms in local market. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We successively include city and year, auditor, state by year, and auditor by year fixed effects to focus identifying variation on changes in the number of clients among incumbent audit offices relative to contemporaneous trends in client retention in the same state and for the same audit firm in other markets. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: $\Delta \ln TotalFees$	(1)	(2)	(3)	(4)
<i>lnNumber of Entrants</i>	-4.314*** (1.061)	-4.581*** (1.137)	-5.079*** (1.295)	-6.661*** (1.539)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Year</i>	X	X	X	X
<i>Auditor</i>		X	X	X
<i>City</i> \times <i>Auditor</i>			X	X
<i>Auditor</i> \times <i>Year</i>				X
R ²	0.0284	0.0674	0.1257	0.2099
Obs.	26,906	26,742	25,127	22,433

Table 3. Client Retention and Auditor Entry

This table presents fixed effects regression estimates of $NumClients$, the number of clients of an incumbent audit firm's office, on $Number\ of\ Entrants$, the lagged number of entering audit firms in local market. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We successively include city and year, auditor, state by year, and auditor by year fixed effects to focus identifying variation on changes in the number of clients among incumbent audit offices relative to contemporaneous trends in client retention in the same state and for the same audit firm in other markets. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: $\Delta \ln NumClients$	(1)	(2)	(3)	(4)
$\ln Number\ of\ Entrants$	-1.506*** (0.471)	-1.490*** (0.561)	-1.306** (0.674)	-2.144*** (0.603)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Year</i>	X	X	X	X
<i>Auditor</i>		X	X	X
<i>City</i> \times <i>Auditor</i>			X	X
<i>Auditor</i> \times <i>Year</i>				X
R ²	0.0613	0.1034	0.1460	0.2597
Obs.	26,906	26,742	25,127	22,433

Table 4. Fee Pressure and Auditor Entry

This table presents fixed effects regression estimates of *NumClients*, the number of clients of an incumbent audit firm's office, on *Number of Entrants*, the lagged number of entering audit firms in local market. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We successively include city and year, auditor, state by year, and auditor by year fixed effects to focus identifying variation on changes in the number of clients among incumbent audit offices relative to contemporaneous trends in client retention in the same state and for the same audit firm in other markets. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: $\Delta \ln FeesperClient$	(1)	(2)	(3)	(4)
<i>lnNumber of Entrants</i>	-2.375*** (0.833)	-2.736*** (0.960)	-3.562*** (1.103)	-4.001*** (1.345)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Year</i>	X	X	X	X
<i>Auditor</i>		X	X	X
<i>City</i> \times <i>Auditor</i>			X	X
<i>Auditor</i> \times <i>Year</i>				X
R ²	0.0323	0.0609	0.1339	0.2046
Obs.	26,906	26,742	25,127	22,433

Table 5. Alternative Entry Measures

This table presents fixed effects regression estimates of *NumClients*, the number of clients of an incumbent audit firm's office, and *TotalFees*, the dollar sum of total fees of an incumbent audit office, on different classifications of the lagged number of entering audit firms in local market. *Net Entry* is defined as change in the log of one plus the number of local audit firms if the change is positive and zero otherwise. *Client stealing* entry is defined as entry in which the new audit firm enters the market by acquiring a client from an incumbent audit firm in the local market. *New audit firm* entry is restricted to entering audit firms that did not exist in any local market in the previous year. *Merger-driven* entry is restricted to entry in which the new audit firm fully replaces the audit offices of an incumbent. Each coefficient is estimated from a separate regression that corresponds to the most restrictive specification (i.e., column 4) from Tables 2, 3, and 4. The table presents regression coefficients for two year windows around the entry year. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We include *Auditor* \times *City* and *Auditor* \times *Year* fixed effects in all specifications. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	$\Delta \ln TotalFees$	$\Delta \ln NumClients$	$\Delta \ln FeesperClient$
	(1)	(2)	(3)
Main Specification	-6.661*** (1.539)	-6.661*** (1.539)	-6.661*** (1.539)
Alternative measure:			
<i>Existing audit firms</i>	-6.314*** (1.457)	-2.144*** (0.545)	-3.720*** (1.265)
<i>Not merger-driven</i>	-5.965*** (1.457)	-1.698*** (0.551)	-3.861*** (1.262)
<i>Existing client firm</i>	-4.830*** (1.330)	-1.393*** (0.444)	-3.149*** (1.186)
<i>No client stealing</i>	-6.198*** (1.583)	-1.075* (0.620)	-4.699*** (1.317)
<i>Net entry</i>	-4.694*** (1.769)	-1.415** (0.556)	-2.856* (1.548)

Table 6. Auditor Entry Dynamics

This table presents fixed effects regression estimates of *NumClients*, the number of clients of an incumbent audit firm's office, and *TotalFees*, the dollar sum of total fees of an incumbent audit office, on *Number of Entrants*, the lagged number of entering audit firms in local market. The table presents regression coefficients for two year windows around the entry year. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We include city and year fixed effects in all specifications. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	$\Delta \ln TotalFees$	$\Delta \ln NumClients$	$\Delta \ln FeesperClient$
	(2)	(1)	(2)
<i>lnNumber of Entrants</i> _{t+2}	-1.381 (1.640)	0.032 (0.620)	-1.371 (1.170)
<i>lnNumber of Entrants</i> _{t+1}	-0.628 (1.658)	0.485 (0.684)	-1.222 (1.260)
<i>lnNumber of Entrants</i> _t	-3.634** (1.557)	-1.355** (0.656)	-2.068* (1.215)
<i>lnNumber of Entrants</i> _{t-1}	-3.546** (1.500)	-1.233** (0.616)	-1.728 (1.092)
<i>lnNumber of Entrants</i> _{t-2}	0.408 (1.396)	-0.537 (0.612)	1.320 (0.994)
Fixed effects:			
<i>City</i>	X	X	X
<i>Year</i>	X	X	X
R ²	0.0252	0.0144	0.0348
Obs.	15,398	15,398	15,398

Table 7. Shift-Share Instruments

This table presents instrumental variables regression estimates of *NumClients*, the number of clients of an incumbent audit firm's office, and *TotalFees*, the dollar sum of total fees of an incumbent audit office, on *Number of Entrants*, the lagged number of entering audit firms in local market, which is instrumented by one of two shift-share instruments in the style of Bartik (1991). Panel A of this table presents first stage estimates for each of the two instruments. Panel B presents estimates with the *Market Shift-Share* instrumental variable, which is based on the local market exposure to national trends in audit office entry. Panel C presents estimates with the *Firm Shift-Share* instrumental variable, which is based on the local market exposure to audit firm level trends in audit office entry. In Panels B and C, columns (1) and (2) present first stage regression estimates corresponding to the least and most restrictive specifications shown in Tables 1 and 2. Both specifications include city and year fixed effects, but the column (2) specification includes state by year and auditor by year fixed effects to control for state economic trends and audit firm trends. Audit offices are defined based on audit firm and the headquarters city of public firm clients. Columns (3) and (5) present second stage estimates that correspond to the first stage presented in column (1), and columns (4) and (6) present second stage estimates that correspond to the first stage presented in column (2). Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. First stage estimates				
Dependent variable: \lnNumber of Entrants				
	(1)	(2)	(3)	(4)
<i>Market Shift-Share</i>	1.264*** (0.041)	1.383*** (0.033)		
<i>Firm Shift-Share</i>			0.965*** (0.030)	1.002*** (0.021)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Year</i>	X	X	X	X
<i>Auditor</i>		X		X
<i>City</i> \times <i>Auditor</i>		X		X
<i>Auditor</i> \times <i>Year</i>		X		X
R ²	0.9233	0.9345	0.9234	0.9358
Obs.	26,906	22,433	26,906	22,433

Panel B. Second stage estimates – *Market Shift-Share* Instrument

Dependent variable:	$\Delta \ln TotalFees$		$\Delta \ln NumClients$		$\Delta \ln FeesperClient$	
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln \widehat{Number\ of\ Entrants}$	-10.269*** (1.799)	-14.680*** (2.679)	-4.112*** (0.764)	-5.583*** (0.946)	-4.525*** (1.314)	-7.437*** (2.335)
Fixed effects:						
<i>City</i>	X	X	X	X	X	X
<i>Year</i>	X	X	X	X	X	X
<i>Auditor</i>		X		X		X
<i>City</i> × <i>Auditor</i>		X		X		X
<i>Auditor</i> × <i>Year</i>		X		X		X
Obs.	26,906	22,433	26,906	22,433	26,906	22,433

Panel C. Second stage estimates – *Firm Shift-Share* Instrument

Dependent variable:	$\Delta \ln TotalFees$		$\Delta \ln NumClients$		$\Delta \ln FeesperClient$	
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln \widehat{Number\ of\ Entrants}$	-9.325*** (1.670)	-12.052*** (2.628)	-4.003*** (0.665)	-5.078*** (0.874)	-3.734*** (1.277)	-5.600*** (2.293)
Fixed effects:						
<i>City</i>	X	X	X	X	X	X
<i>Year</i>	X	X	X	X	X	X
<i>Auditor</i>		X		X		X
<i>City</i> × <i>Auditor</i>		X		X		X
<i>Auditor</i> × <i>Year</i>		X		X		X
Obs.	26,906	22,433	26,906	22,433	26,906	22,433

Table 8. Auditor Type Heterogeneity and Auditor Entry

This table presents fixed effects regression estimates of *NumClients*, the number of clients of an incumbent audit firm's office, and *TotalFees*, the dollar sum of total fees of an incumbent audit office, on *Number of non-Big4 Entrants*, the lagged number of entering non-Big 4 audit firms in local market, or *Number of Big4 Entrants*, the lagged number of entering Big 4 audit firms in local market, $1[Big4]$, an indicator that equals one for Big 4 incumbent audit offices and zero otherwise, and the interaction between $1[Big4]$ and the entry variable. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We include city and year fixed effects in all specifications. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	$\Delta \ln TotalFees$		$\Delta \ln NumClients$		$\Delta \ln FeesperClient$	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>lnNumber of Big4 Entrants</i>	-27.594** (11.931)		-6.276*** (2.212)		-0.450 (0.967)	
$1[Big\ 4]$	-1.014 (1.059)	2.593 (1.735)	-0.615* (0.336)	0.004 (0.518)	-19.578* (10.777)	2.587* (1.514)
$1[Big\ 4] \times \ln Number\ of\ Big4\ Entrants$	29.813* (15.364)		7.602** (3.095)		20.487 (13.458)	
<i>lnNumber of non-Big4 Entrants</i>		-3.416*** (1.099)		-1.360*** (0.464)		-1.622* (0.834)
$1[Big\ 4] \times \ln Number\ of\ non-Big4\ Entrants$		-2.577** (1.238)		-0.472 (0.440)		-2.135** (1.087)
Fixed effects:						
<i>City</i>	X	X	X	X	X	X
<i>Year</i>	X	X	X	X	X	X
R ²	0.0284	0.0285	0.0611	0.0614	0.0325	0.0324
Obs.	26,906					

Table 9. Local Market Heterogeneity

This table presents fixed effects regression estimates of $NumClients$, the number of clients of an incumbent audit firm's office, on $Number\ of\ Entrants$, the lagged number of entering audit firms in local market, in which the entry variable is interacted with a lagged characteristic of the local audit market. In column (1), $Number\ of\ Entrants$ is interacted with $1[Few\ Incumbents]$, an indicator that equals one for markets with below mean number of auditor firms. The column (2) interaction variable is $1[Profitable]$, an indicator that equals one if the audit market has an above average ratio of total fees per client firm and zero otherwise. The column (3) interaction variable is $1[Relationship-oriented]$, an indicator that equals one if the market has above average relationship length among audit office-client pairs and zero otherwise. In column (4), $Number\ of\ Entrants$ is interacted with $1[Concentrated]$, an indicator that equals one for markets with above mean HHI , which is calculated using total fee shares. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We include city and year fixed effects in all specifications. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: $\Delta \ln TotalFees$	(1)	(2)	(3)	(4)
$\ln Number\ of\ Entrants \times 1[Few\ Incumbents]$	-9.651*** (3.112)			
$\ln Number\ of\ Entrants \times 1[Profitable]$		-4.390** (2.140)		
$\ln Number\ of\ Entrants \times 1[Relationship-oriented]$			-4.488*** (1.136)	
$\ln Number\ of\ Entrants \times 1[Concentrated]$				-6.032*** (2.138)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Auditor</i>	X	X	X	X
<i>Year</i>	X	X	X	X
R ²	0.0679	0.0870	0.0703	0.0814
Obs.	26,742			

Table 10. Incumbent Heterogeneity

This table presents fixed effects regression estimates of *NumClients*, the number of clients of an incumbent audit firm's office, on *Number of Entrants*, the lagged number of entering audit firms in local market, in which the entry variable is interacted with a lagged characteristic of an incumbent audit office. In column (1), *Number of Entrants* is interacted with $1[Leader]$, an indicator that equals one for incumbents ranked in the top 3 in the market by total fees and zero otherwise. The column (2) interaction variable is $1[Profitable]$, an indicator that equals one if the incumbent has fee per client ratio that exceeds the average in the market and zero otherwise. The column (3) interaction variable is $1[Entrenched]$, an indicator that equals one if the incumbent has operated in the local market longer than the market average and zero otherwise. The column (4) interaction variable is $1[Opportunistic]$, an indicator that equals one if the incumbent has a higher than market average turnover among client firms and zero otherwise. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We include city and year fixed effects in all specifications. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: $\Delta \ln TotalFees$	(1)	(2)	(3)	(4)
$\ln Number\ of\ Entrants \times 1[Leader]$	-7.723*** (1.849)			
$\ln Number\ of\ Entrants \times 1[Profitable]$		5.898*** (1.680)		
$\ln Number\ of\ Entrants \times 1[Entrenched]$			-3.765*** (0.756)	
$\ln Number\ of\ Entrants \times 1[Opportunistic]$				4.972* (2.893)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Auditor</i>	X	X	X	X
<i>Year</i>	X	X	X	X
R ²	0.0786	0.0692	0.0678	0.0930
Obs.	26,742			

Table 11. Non-Audit Services and Auditor Entry

This table presents fixed effects regression estimates of *NonAuditServices*, the number of non-audit services (i.e., tax, benefits, or IT) offered by an incumbent audit office, or *AuditFee%*, the fraction of audit services fees paid to an incumbent audit office, on *Number of Entrants*, the lagged number of entering audit firms in local market. Audit offices are defined based on audit firm and the headquarters city of public firm clients. We successively include city and year, auditor, state by year, and auditor by year fixed effects to focus identifying variation on changes in the number of clients among incumbent audit offices relative to contemporaneous trends in client retention in the same state and for the same audit firm in other markets. Robust standard errors are clustered at the city level and presented in parentheses. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Entry and Product offerings

Dependent variable: $\Delta NonAuditServices$	(1)	(2)	(3)	(4)
<i>lnNumber of Entrants</i>	-3.132*** (1.115)	-3.855** (1.131)	-4.413*** (1.249)	-4.952*** (1.444)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Year</i>	X	X	X	X
<i>Auditor</i>		X	X	X
<i>City</i> \times <i>Auditor</i>			X	X
<i>Auditor</i> \times <i>Year</i>				X
R ²	0.0144	0.0411	0.1090	0.2321
Obs.	26,906	26,742	25,127	22,433

Panel B. Entry and Core Business Share

Dependent variable: <i>AuditFee%</i>	(1)	(2)	(3)	(4)
<i>lnNumber of Entrants</i>	2.216*** (0.274)	0.973*** (0.240)	0.750*** (0.226)	0.729*** (0.247)
Fixed effects:				
<i>City</i>	X	X	X	X
<i>Year</i>	X	X	X	X
<i>Auditor</i>		X	X	X
<i>City</i> \times <i>Auditor</i>			X	X
<i>Auditor</i> \times <i>Year</i>				X
R ²	0.1801	0.3393	0.5644	0.6159
Obs.	26,887	26,742	25,109	22,423