

Do Caps on Affiliated Fund Sales Foster Competition or Strategic Adaptation? Evidence from Korea

Yu Sung Ha, Byoung Uk Kang, and Jonathan Reuter*

June 23, 2026

Abstract

We evaluate Korean regulation intended to reduce sales of affiliated mutual funds by distributors. Beginning in 2013, sales of affiliated funds were capped at 50% of total sales. Between 2018 and 2022, this cap tightened from 45% to 25%. We find that distributors comply with both phases without increasing investor access to unaffiliated asset managers; flows to independent mutual funds do not increase. During the initial phase, funds of treated asset managers increase style-adjusted net returns, consistent with an initial increase in competition. During the tightening phase, however, we find evidence of reciprocal sales between distributors and no changes in fund performance. Treated asset managers also introduce online share classes and ETFs, both exempt from the sales cap.

Keywords: Mutual funds; distributors; fund affiliation

JEL Codes: G11, G18, G20, G23

*Ha, yu-sung.ha@polyu.edu.hk; Kang, byoung.kang@polyu.edu.hk, School of Accounting and Finance, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong; Reuter, reuterj@bc.edu, Carroll School of Management, Boston College, 140 Commonwealth Avenue, Chestnut Hill, MA 02467. We thank Vikas Agarwal, Richard Evans, and seminar and conference participants at the University of Macau, Hong Kong Polytechnic University, University of Sydney, UTS, and the 2026 Joint Conference with the Allied Korea Finance Associations for useful comments. Any errors are our own.

Do Caps on Affiliated Fund Sales Foster Competition or Strategic Adaptation? Evidence from Korea

Abstract

We evaluate Korean regulation intended to reduce sales of affiliated mutual funds by distributors. Beginning in 2013, sales of affiliated funds were capped at 50% of total sales. Between 2018 and 2022, this cap tightened from 45% to 25%. We find that distributors comply with both phases without increasing investor access to unaffiliated asset managers; flows to independent mutual funds do not increase. During the initial phase, funds of treated asset managers increase style-adjusted net returns, consistent with an initial increase in competition. During the tightening phase, however, we find evidence of reciprocal sales between distributors and no changes in fund performance. Treated asset managers also introduce online share classes and ETFs, both exempt from the sales cap.

Keywords: Mutual funds; distributors; fund affiliation

JEL Codes: G11, G18, G20, G23

1 Introduction

Although many early studies of mutual fund flows and performance implicitly assumed that mutual funds compete for investor attention in a unified market, it is now well understood that the market is segmented and that this segmentation is driven by the demand for financial advice. For example, Bergstresser, Chalmers, and Tufano (2009) document that U.S. mutual funds sold through brokers underperform U.S. mutual funds sold directly to investors even after adjusting for differences in the level of distribution fees. Del Guercio and Reuter (2014) argue that the underperformance of broker-sold funds arises from the fact that flows into broker-sold funds chase raw returns while flows into direct-sold funds chase risk-adjusted returns. Consequently, mutual fund families catering to do-it-yourself investors take actions with the goal of generating alpha, while mutual fund families catering to broker clients compete for brokers' attention through higher commissions (Christoffersen, Evans, and Musto, 2013; Chalmers and Reuter, 2020) to secure distribution shelf-space for their higher-beta offerings. The implication is that competition for broker attention through commissions can segment markets, driving up fees, and driving down managerial effort or skill. Of course, many financial advisors provide access to a limited number of investment options, some or all of which are managed by affiliated asset management firms. Recommending affiliated mutual funds when they are not a client's best option will also dampen competition, resulting in higher fees and lower performance.

In South Korea, many of the largest mutual fund distributors are affiliated with asset management firms. Investors seeking investment advice from a given distributor are limited to the mutual funds available on its investment menu, which represent a relatively small fraction of the mutual funds available across all distributors. For example, at the end of 2009, KB Kookmin Bank was the largest distributor of mutual funds in Korea, and 28% of the 148 mutual funds on their distribution menu were managed by affiliated asset managers. By 2011, regulators had become concerned that distributors were favoring affiliated asset managers to the detriment of retail investors. In response, they introduced regulation capping the

share of total mutual fund sales that could be sourced from affiliated asset managers. The initial version capped affiliated shares at 50% of total annual sales; it went into effect for 2013. Between 2018 and 2022, the maximum allowed fraction of affiliated sales was gradually reduced from 50% to 25%.

Our primary research question is whether regulation restricting the sales of affiliated mutual fund assets had the intended consequence of decreasing investor fees and increasing investor returns. In Figure 1, we plot the total net assets (TNA) of mutual funds distributed through affiliated versus unaffiliated distributors. The percentage of affiliated sales to total sales decreases from approximately 50% in 2009 to approximately 25% in 2022. Although the aggregate statistics are broadly consistent with the goals of the regulation, it is important to recognize that the typical mutual fund is available through both affiliated and unaffiliated distributors and the statistics on affiliated TNA only include affiliated sales through affiliated distributors. The market shares of mutual funds affiliated with distributors theoretically could remain unchanged if sales on unaffiliated distributor menus take the place of sales on affiliated distributor menus. To the extent that asset management firms seek to increase the number of unaffiliated distributors that sell their funds, however, it will expose these funds to more direct competition for advisor and investor attention.

Figure 1 about here

We begin our assessment of the regulation by testing whether distributors comply with it. Our treatment measure for distributor-level analyzes is the share of a distributor's platform TNA attributable to affiliated mutual funds, measured in 2011 for the cap introduction and in 2016 for the cap tightening phase. We find that stronger treatment intensities are associated with greater reductions in affiliated sales during both phases. This is true when we examine the affiliated fund ratio (by TNA or by count) or the Herfindahl-Hirschman Index (HHI) calculated using each fund family's share of the distribution menu. Interestingly, when we recalculate the HHI excluding affiliated families, we find no evidence that sales become more

dispersed across unaffiliated families. Instead, sales of unaffiliated family funds appear to increase in direct proportion to their earlier market shares.

Second, we ask whether independent asset managers, defined as those without affiliated distributors, benefit from the regulation through increased flows or market share. The answer is no. Figure 2 reveals that the market share of independent mutual fund families has remained consistently low from 2009 to 2024, and regressions of fund size and flows on an independent family indicator variable do not detect changes around either the introduction of the cap or the tightening of the cap.

Figure 2 about here

Third, we test whether affiliated fund families respond to competitive pressure by examining mutual fund fees and returns. For this purpose, we consider three measures of treatment intensity for each fund family. The first is the share of family assets sold through affiliated distributors, measured during the pre-period (i.e., 2011 or 2016), which captures the extent to which the fund family has relied on affiliated distributors. The second is the treatment intensity of the family's affiliated distributors, motivated by the fact that the regulatory cap applies at the distributor level rather than the family level. The third is the interaction between these two measures, which is greatest for fund families that relied heavily on affiliated distributors that were themselves most affected by the regulatory cap. Interestingly, we find strong evidence that all three measures predict higher style-adjusted net returns during the cap introduction phase, but little evidence that any of the measures predict higher performance during the cap tightening phase. We do not find that style-adjusted expense ratios decrease by a statistically significant amount during either phase.

Fourth, to shed light on why the competitive effects of the sales cap were stronger during the introduction of the cap than during the tightening of the cap, we test whether distributors engage in reciprocal dealing. Specifically, we test whether your sales of my funds predict my sales of your funds when we are both impacted by the sales cap. We find strong evidence that the answer is yes, but only during the cap tightening phase, suggesting that affiliated

families found a way to mute the competitive effects of the regulation by partnering with other distributors.

Fifth, we conclude by exploring the margins along which affiliated mutual fund families can circumvent the regulatory sales cap. During our sample period, we observe modest increases in online sales (through share classes exempt from the regulation because they are sold without financial advice) and direct sales (made directly by the asset management firm to investors), as shown in Figure 3. We also observe a sharp increase in the market share of ETFs, as shown in Figure 4. We find that the distributor-level treatment intensity measure predicts an increase in online fund sales, and that all three treatment intensity measures predict an increase in ETF introductions. In other words, affiliated asset managers respond to the sales cap by launching products that are exempt from the regulation.

Figures 3 and 4 about here

We conclude that while caps on affiliated fund sales initially fostered competition between Korean mutual fund families, these competitive effects weakened over time as regulated entities learned to adapt.

2 Related Literature

Conflicts of interest can arise because distributors are incentivized to sell funds with higher commissions or to sell affiliated products. The existing literature has largely focused on evaluating regulations seeking to improve investment recommendations by banning commissions or increasing advisor certification requirements. Not all of this regulation has proven to be equally effective.

Cookson, Jenkinson, Jones, and Vicente Martinez (2021) and Sokolinski (2023) study markets where reductions in commission payments benefit investors through lower fees. Cookson et al. (2021) study mutual fund recommendations and do-it-yourself investor behavior on online investment platforms in the UK. They exploit a 2014 UK ban on commission

sharing between funds and platforms. Before the ban, recommendations favor both affiliated products and high-commissions products. Investors discount affiliated recommendations but not those biased by commission payments. After the ban, recommendations continue to favor affiliated products but otherwise improve. They conclude that the ban caused the fees paid by do-it-yourself investors to decrease by at least 26 basis points. Sokolinski (2023) studies the effect of differentially lowering the sales commissions paid to Israeli banks by equity mutual funds. Notably, in his setting, every mutual fund is available through every bank, and banks are not allowed to compensate employees based on the sales commissions that they generate. He finds that lower commissions translate one-for-one into lower expense ratios for equity funds, resulting in higher flows and more equity funds being launched.

Other regulation has proven less successful, either because it failed to meet its stated objective or because it resulted in unintended consequences for some investors. Anagol, Marisetty, Sane, and Venugopal (2017) find that an Indian prohibition on front-end sales commissions had no effect on flows, and conjecture that this was because mutual fund companies found other ways to compensate advisors. Schaub and Straumann (2022) find that Swiss banks respond to a court-ordered ban on commission payments from third-party product providers by instead recommending affiliated funds and structured products, resulting in lower after-fee returns for bank clients, especially for the least financially sophisticated. Their paper highlights the need for regulators to jointly consider distortions arising from commission payments and affiliated products.

The UK Retail Distribution Review banned commissions and increased certification requirements in 2011. Burke and Hung (2015) estimate that the number of advisors decreased from 40,000 to 31,000. We are unaware of any UK studies on changes in the quality of investment recommendations among individuals who continue to rely upon advisors or changes in the quality of financial decision-making among individuals who lose access to advice. Linainmaa, Melzer, Previtero, and Foerster (2022) study a 2001 regulatory change in advisor certification requirements in Canada that impacted five of its ten provinces. Consistent with

an aggregate reduction in the supply of advice, the reform is associated with modest reductions in the likelihood of working with a financial advisor and the likelihood of holding any mutual funds. They conclude that the reduced supply of advisors lead some individuals to reallocate their savings away from mutual funds and towards cash, arguably reducing their welfare. Edelen, Fong, and Han (2025) study reforms in Australia that eliminated sales commissions, required advisors to provide annual fee disclosures to their clients, and required clients to opt into continued advice every two years. They find that more-sophisticated clients respond to fee disclosures by discontinuing advice, which may be welfare enhancing for those clients. At the same time, the many less-sophisticated clients who lose access to advice because they fail to opt back into the relationship may have been harmed by the regulation.

None of the regulation described above sought to directly limit the sales of affiliated funds. Scheld, Stolper, Fernandes, and Heyden (2026) test whether actively managed equity funds affiliated with German banks face less competition for investors than unaffiliated funds. In their setting, bank-affiliated funds represent 6% of the funds available in Germany, but account for 58% of the assets held by German households.¹ The authors find that affiliated mutual funds are more likely to be closet indexers, that they underperform conditional on being closet indexers due to higher fees, and that investors are harmed because they fail to withdraw dollars from underperforming funds. Although these findings are broadly consistent with reduced competition lowering fund quality, the authors are unable to exploit time-series or cross-sectional variation in the level of competition.

Ba, Liu, Ma, Shen, and Zhan (2025) argue that distributors have the ability to improve fund quality by screening funds before adding them to a distribution menu and by removing funds that underperform. They study mutual funds sold through affiliated and non-affiliated banks. When they estimate fixed effects panel regressions during 2019-2022, they find that

¹Since independent funds represent 94% of available funds, banks are likely to offer a combination of affiliated and independent funds. It is unclear from the paper, however, how often one bank distributes funds affiliated with a different bank.

higher non-affiliated distribution is associated with higher fund performance. When they exploit 2021 regulation increasing the extent to which some mutual funds were distributed by non-affiliated banks, they find that increased distribution by non-affiliated banks is associated with increased performance and that performance increases are larger when distributors have more market power, suggesting that the threat to terminate distribution following poor performance is more credible and costly. These findings are similar in spirit to our finding of increased performance during the initial phase of the Korean regulation.

3 Caps on Affiliated Fund Sales

On December 8, 2011, the Financial Services Commission (FSC) unveiled a plan to foster competition across distribution channels and to address the problematic fee structure.² The FSC was concerned by the fact that major fund distributors, typically commercial banks and securities firms, belonged to financial conglomerates that also operated asset management firms, thereby generating a strong incentive to sell affiliated or higher-fee funds rather than the products best suited to investors. In its press release, the FSC pointed out that affiliated funds accounted for an average of 48.6% of total fund sales at the ten largest distributors, and noted that the prevailing fee schedule was tilted toward distribution.³ Against this backdrop, the FSC warned that this favoring of affiliated products could hinder market competition and harm retail investors.

Initially, the FSC *encouraged* distributors to set their own sales limits for affiliated funds and, when selling their own products, to both disclose the affiliation and provide information on comparable unaffiliated funds. Because the fund industry showed little change through

²See FSC press release (in Korean): <https://www.fsc.go.kr/no010101/70160?srchCtgr=&curPage=698&srchKey=&srchText=3D&srchBeginDt=&srchEndDt=>.

³The distribution fee in Korea (as in several other jurisdictions) is a distinct, ongoing charge paid to intermediaries for selling fund shares, whereas the U.S. 12b-1 fee bundles this compensation with other marketing and shareholder-servicing costs. According to the FSC press release, the average distribution fee was 0.63%, which was 40% higher than the management fee of 0.45%, meaning investors paid more to buy the fund than to have it managed.

the first half of 2012, however, the FSC introduced its first binding rule prohibiting sales promotion activities for affiliated funds, on July 4, 2012. Under the new rule, distributors could no longer use bonuses or sales quotas to favor the sales of affiliated fund products.⁴ Later that year, on November 5, 2012, the FSC proposed an amendment to the Regulations on Financial Investment Business (RFIB) that would cap affiliated funds at 50% of total fund sales per quarter. On April 17, 2013, the FSC finalized this “50% Rule,” with the cap based on annual sales instead of quarterly sales.⁵ In practice, this meant that the annual sales volume of affiliated funds could no longer exceed that of unaffiliated funds. The FSC temporarily implemented this regulation for two years, effective from its enactment in April 2013.

Although the proportion of affiliated fund sales decreased from 47.8% in 2012 to 44.9% in 2014, the FSC concluded that affiliated sales were still too high.⁶ It extended the regulation for an additional two years in March 2015 and then again in April 2017. In December 2017, the FSC announced a plan to tighten the cap from 50% in 2017 to 45% in 2018 and then, tightening the cap by 5 percentage points per year, down to 25% in 2022. These changes were finalized on June 27, 2018. Since 2022, the 25% cap has been consistently enforced. During our sample period, which ends in 2024, no mutual fund distributor violated the regulation.⁷

Alongside these rules, the regulation provided for several exemptions. Private funds targeting institutional investors were excluded, as their investors are less vulnerable to the conflicted advice the regulation addresses. Money market funds (MMFs) were also excluded due to their minimal product differentiation and the frequent inflow and outflow of large-

⁴Such practices were prevalent internationally. For example, in 2003, Morgan Stanley was fined \$2 million by the National Association of Securities Dealers (NASD) for holding internal sales contests to encourage the sales of its proprietary mutual funds. See <https://www.finra.org/sites/default/files/DisciplinaryAction/p007441.pdf>.

⁵Article 4-20(10)(e) of the RFIB. Available at: <https://www.fnhubkorea.kr/fhkeng/bbs/B0000222/view.do?nttId=42502&menuNo=600044&cl1Cd=&sdate=&edate=&searchCnd=1&searchWrd=REGULATION+ON+FINANCIAL+INVESTMENT+BUSINESS+&pageIndex=1>.

⁶See FSC press release (in Korean): <https://www.fsc.go.kr/no010101/72685?srchCtgry=&curPage=&srchKey=all&srchText=%EA%B3%84%EC%97%B4%EC%82%AC+%ED%8E%80%EB%93%9C&srchBeginDt=&srchEndDt=>.

⁷In 2025, Jeju Bank increased the proportion of funds sold by affiliated asset managers to 36%, becoming the first institution to violate the regulation.

scale institutional capital. In the 2018 amendment, new exemptions were added to reflect the changing market landscape. Specifically, direct online funds by asset management firms and online-only share classes were exempted because they do not involve face-to-face advice. Additionally, top-rated funds and recommended funds were exempted up to a limit, under the theory that these high-quality posed minimal investor protection concerns, allowing distributors to sell additional affiliated funds equal to 10% of their non-affiliated fund sales.⁸

The FSC had two main goals for enacting this policy. First, by easing captive distribution, the FSC intended to move the market toward an open architecture and broaden the range of funds available to retail investors. As part of this, the FSC sought to expand the distribution channels to independent fund families that lack their own sales networks and must rely on unaffiliated platforms to reach investors. Second, by fostering competition among fund families on price and quality, the FSC intended to lower fees and improve performance. Collectively, these reforms were designed to direct investor capital toward funds that offer better value.

On the other hand, the specific design of the cap, applying only to individual distributors and mutual funds sold through intermediaries, raised concerns that financial groups might find ways around it without violating the rule. One concern was reciprocal dealing among financial groups.⁹ Instead of each group selling its own funds through its own distributors, two groups could sell each other's affiliate funds—a “you sell mine, I sell yours” arrangement that allowed them to protect their market shares while remaining compliant on paper. The second concern was that affiliated fund families could shift sales to online share classes, ETFs, or direct sales channels, which were not subject to the sales cap. Both scenarios lead to unintended consequences. Reciprocal dealing shields funds from competition, thereby

⁸Top-rated funds are those that received the highest ratings from fund rating agencies such as Korea Fund Ratings, Morningstar, and Zeorin based on 1-, 3-, and 5-year performance. Recommended funds are those that distributors choose to highlight to investors; since the regulation was introduced, distributors have been required to report the justification for their recommendations to KOFIA.

⁹See *The Seoul Shinmun*, April 25, 2013 (<https://www.seoul.co.kr/news/economy/2013/04/25/20130425020010>); and *The Korea Economic Daily*, August 13, 2013 (<https://www.hankyung.com/article/2013081378071>) (all in Korean)

muting managers' incentives to improve performance. Furthermore, while non-intermediated channels were exempted under the premise that investors make purchases without broker intervention; brokers in practice can still steer the investors who come to them toward their affiliated online funds and ETFs.¹⁰ Thus, while bypassing the regulation in this manner may reduce fees, it preserves the affiliated fund bias and does little to enhance fund quality. We examine both in Section 8.

4 Data and Descriptive Statistics

4.1 KFR data

We obtain data from Korea Fund Ratings (KFR) that covers all open-end mutual funds sold by at least one distributor in Korea between October 2009 and December 2024. KFR provides share-class-level data on TNA, net-of-fee return, expense ratio, and investment style, as well as data on the shares outstanding at each distributor at the end of each month.¹¹ We aggregate share-class-level data to the fund level and we aggregate share-class-distributor-level data to the fund-distributor level. The unique distributor-by-distributor data on shares outstanding allows us to decompose fund-level TNA into fund-distributor-level TNA as follows:

$$\text{TNA}_{i,t} = \text{SharesOut}_{i,t} \times \text{NAV}_{i,t} = \sum_d \text{SharesOut}_{i,d,t} \times \text{NAV}_{i,t} = \sum_d \text{TNA}_{i,d,t}, \quad (1)$$

where $\text{SharesOut}_{i,d,t}$ is the cumulative number of fund i 's shares sold through distributor d since inception, net of redemptions, as of the end of month t , $\text{NAV}_{i,t}$ is the net asset value per share, and their product $\text{TNA}_{i,d,t}$ represents fund i 's TNA attributable to distributor d .

¹⁰In fact, amid the rapid expansion of the ETF market, the Financial Supervisory Service investigated whether financial groups had grown their assets by selling ETFs through their affiliated distributors. See *The Korea Times*, August 16, 2024, <https://www.koreatimes.co.kr/economy/20240816/fss-investigates-claims-of-brokers-banks-favoring-affiliate-etfs-in-sales>.

¹¹Because share-class-distributor-level data become available in October 2009, we choose this date as the beginning of our sample period.

Net dollar flows into fund i through distributor d then follow directly:

$$\text{DollarFlow}_{i,d,t} = \text{TNA}_{i,d,t} - \text{TNA}_{i,d,t-1}(1 + R_{i,t}), \quad (2)$$

where $R_{i,t}$ is fund i 's net-of-fee return during month t .

Our sample construction closely follows Ha and Kang (2026): We filter out funds of funds, funds with unknown styles, duplicate funds or share classes that are not for sale, and funds that are coded inconsistently across share classes or over time in terms of fund structure. We also exclude micro-funds (locally referred to as *jaturi* funds) that never reached KRW 5 billion (approximately USD 4.3 million at the average exchange rate) in cumulative net sales.¹² To ensure consistency between the fund-distributor-level data and the fund-level data, we compare the cumulative net sales aggregated across distributors with the amounts reported at the fund level. If the difference exceeds 5%, we do not use the corresponding fund-distributor-level data. Our filtered sample includes 2,546 mutual funds and 171 distributors. Lastly, we obtain data on all ETFs listed in Korea from KFR, including their TNA. Because ETFs trade on exchanges rather than through distributors, the filters above do not apply to them.

4.2 Affiliated and independent entities

To identify affiliations between fund families and distributors, we manually review corporate disclosure filings in the Data Analysis, Retrieval, and Transfer System (DART) for all distributors and asset managers in our sample. We identify 30 financial groups comprising 114 affiliated distributors and 37 affiliated fund families; we classify all remaining entities as independent.

Tables 1 and 2 reveal a market dominated by these financial conglomerates, whose affiliated entities are substantially larger than their independent counterparts. On the distri-

¹²FSC advises asset management firms to liquidate funds that fail to attract KRW 5 billion in cumulative net sales even after a year of operation.

bution side, Table 1 shows that the average affiliated distributor has a menu roughly three times larger than that of the average independent distributor, reflecting the fact that Korea’s major distributors are commercial banks and securities firms belonging to large financial groups. On the asset management side, Table 2 shows that the average affiliated fund family manages approximately seven times the TNA of the average independent family. This gap reflects more than the general advantages of scale: affiliated asset managers may benefit from preferential access to affiliated distributors’ shelf space, allowing them to accumulate assets without necessarily competing on fees or performance. Independent fund families, by contrast, rely entirely on unaffiliated distributors—and it is this uneven playing field that the affiliated sales cap was designed to address.

Tables 1 and 2 about here

5 Empirical Design

Our identification strategy is based on two regulatory events in Korea, each of which imposed a binding limit on how much affiliated funds a distributor could sell. Figure 5 illustrates the timeline of both events, as well as the pre- and post-periods used in our analysis.

Figure 5 about here

The first event is the 50% cap on affiliated fund sales, which took effect in 2013 (hereafter the cap introduction). We use 2010–2011 as the pre-period and 2013–2014 as the post-period. We drop 2012, the year the cap was proposed and publicly discussed, to avoid anticipatory compliance. The second event is the progressive tightening of the cap from 45% to 25% over 2018–2022 (hereafter the cap tightening). The pre-period is 2015–2016, when the ceiling was stable and no further changes had been signaled, and the post-period is 2018–2024. We drop 2017 to maintain a parallel design.

In 2012, affiliated funds accounted for roughly 48.6% of major distributors’ total fund sales. The initial 50% cap, therefore, left many distributors close to compliance, with little immediate pressure to develop workarounds. The fact that the cap tightening phase began five years later, and was implemented gradually over a five-year period, gave affiliated groups ample time to devise more coordinated responses. The industry response to the second phase, therefore, is particularly informative about how regulated firms adjust their strategies once they have had sufficient time to do so.

5.1 Distributor-level analyses

We consider a continuous difference-in-differences (DiD) design in which treatment intensity varies across distributors according to their focus on affiliated fund sales. Distributors that historically focused more heavily on affiliated fund sales face a tighter constraint under the cap and are therefore assigned higher treatment intensity. We measure treatment intensity as the share of a distributor’s platform TNA attributable to affiliated mutual funds, measured in 2011 for the cap introduction and in 2016 for the cap tightening. Specifically, we first decompose the platform TNA into two components:

$$\sum_{i \in \mathcal{I}_d} \text{TNA}_{i,d,t} = \sum_{i \in \mathcal{A}_d} \text{TNA}_{i,d,t} + \sum_{i \notin \mathcal{A}_d} \text{TNA}_{i,d,t}, \quad (3)$$

where $\mathcal{I}_d$ and $\mathcal{A}_d$ denote, respectively, the set of all funds (excluding MMFs) sold through distributor d and the subset affiliated with distributor d . Both sets may vary over time; we suppress time subscripts for brevity. We then compute treatment intensity for distributor d as follows:

$$\text{TreatIntensity}_d \equiv \frac{\sum_{i \in \mathcal{A}_d} \text{TNA}_{i,d,t_0}}{\sum_{i \in \mathcal{I}_d} \text{TNA}_{i,d,t_0}}, \quad (4)$$

where t_0 is either the end of 2011 or the end of 2016. Independent distributors have no affiliated asset management firm, so $\mathcal{A}_d = \emptyset$ and $\text{TreatIntensity}_d = 0$ by construction; they

constitute the natural comparison group throughout our distributor-level analysis.

Ideally, we would measure treatment intensity based on the annual gross sales ratio averaged over the pre-period years (i.e., 2010–2011 or 2015–2016), since the regulation directly restricts that ratio. However, gross sales data are not available at the fund-distributor level. The analogous ratio based on annual net sales (net of redemptions) is problematic because the numerator or the denominator can be negative. Our TNA-based measure, while not directly comparable to the specific percentage set by the regulation (e.g., 50%), is stable and captures the extent to which a distributor has historically focused on affiliated fund sales—and, therefore, the degree to which it is likely to be constrained by the cap.

Table 3 reports the distribution of TreatIntensity_d across all distributors. Because independent distributors are included in the sample, the lower percentiles are zero throughout. Among all distributors, the median is 0.13 for the cap introduction and 0.11 for the cap tightening, with 75th percentiles of 0.46 and 0.36, respectively. Summary statistics for affiliated distributors only are reported in Internet Appendix Table IA.1, while the list of top ten distributors and their corresponding treatment intensities is reported in Internet Appendix Table IA.2.

Table 3 about here

5.2 Fund family-level analyses

The extent to which a fund family is affected by each cap depends on two factors: how heavily the fund family has relied on affiliated distributors, and how tightly those distributors are themselves constrained by the cap. To capture both dimensions—and their interaction—we construct three family-level treatment intensity measures:

$$\text{TreatIntensity1}_f = \frac{\sum_{d \in \mathcal{D}_f} \text{TNA}_{f,d,t_0}}{\text{TNA}_{f,t_0}}, \quad (5)$$

$$\text{TreatIntensity2}_f = \text{TreatIntensity}_{d^*}, \quad (6)$$

$$\text{TreatIntensity3}_f = \text{TreatIntensity1}_f \times \text{TreatIntensity2}_f, \quad (7)$$

where $\mathcal{D}_f$ is the set of distributors affiliated with fund family f , TNA_{f,d,t_0} is fund family f 's TNA attributable to distributor d , and TNA_{f,t_0} is fund family f 's total TNA. All TNA measures exclude MMFs, which do not count toward the cap, and are measured in 2011 for the cap introduction and in 2016 for the cap tightening. TreatIntensity1_f measures the fraction of family f 's assets attributable to its affiliated distributors. TreatIntensity2_f is the distributor-level treatment intensity of the family's affiliated distributors (denoted d^*).¹³ TreatIntensity3_f , the product of the first two measures, identifies families that relied heavily on affiliated distributors that were themselves most constrained. Independent fund families receive zero for all three measures by construction. We report summary statistics for all three measures in Table 3. Summary statistics for affiliated fund families are reported in Internet Appendix Table IA.1, and the top ten fund families along with their treatment intensities are listed in Internet Appendix Table IA.3.

6 Do Distributors Comply?

To test whether distributors comply with the regulation, we track the ratio of affiliated mutual funds on a distributor's platform by TNA—that is, the first term on the right-hand side of Equation (3) divided by the term on the left-hand side. This ratio captures the share of a distributor's platform TNA attributable to affiliated funds, which should decrease if

¹³When family f has multiple affiliated distributors, TreatIntensity2_f is computed as the TNA_{f,d,t_0} -weighted average of their TreatIntensity_d values.

distributors reduce their affiliated fund sales. Because no distributor violated the cap during the sample period (Section 3), this test serves as a sanity check on our empirical design. We also track the same ratio by number of funds, which captures whether the shift extends to menu composition. For each outcome, we estimate:

$$Y_{d,t} = \beta \text{TreatIntensity}_d \times \text{Post}_t + \varepsilon_{d,t}, \quad (8)$$

where d indexes distributors and t indexes months. The coefficient β captures the differential post-cap change in the outcome for distributors with higher treatment intensity relative to those with lower treatment intensity. A negative estimate implies that distributors with greater pre-period focus on affiliated fund sales exhibit larger declines in their affiliated fund ratios. All specifications include distributor fixed effects and month fixed effects, with standard errors clustered at the distributor level (Bertrand, Duflo, and Mullainathan, 2004).

Table 4 reports the results. For the cap introduction, the coefficient on $\text{TreatIntensity}_d \times \text{Post}_t$ is -0.28 ($t = -3.34$) for the TNA-based ratio, confirming that distributors with greater pre-period focus on affiliated fund sales reduced their affiliated fund sales by more. A one-standard-deviation increase in treatment intensity (0.30) corresponds to an 8.40 percentage-point reduction in the affiliated TNA ratio. That is, two distributors whose pre-cap focus on affiliated fund sales differs by 30 percentage points exhibit a differential decline of 8.40 percentage points in their affiliated TNA ratios following the cap introduction. This pattern persists during the cap tightening: the coefficient is -0.31 ($t = -2.78$), implying a differential decline of 7.13 percentage points for a one-standard-deviation difference in treatment intensity (0.23). These reductions are economically meaningful and confirm that distributors complied with the regulation in both periods. Results for the count-based ratio are broadly consistent, though smaller in magnitude, reflecting the fact that the regulation directly caps sales amounts, not the number of funds on the menu. For the cap introduction, a one-standard-deviation increase in treatment intensity implies a 3.00 percentage-point dif-

ferential decline ($\hat{\beta} = -0.10$, $t = -3.59$); for the cap tightening, the corresponding decline is 1.15 percentage points ($\hat{\beta} = -0.05$, $t = -1.78$).¹⁴

Table 4 about here

To examine the dynamic effects of the regulation and assess the parallel-trends assumption, we replace the Post_t indicator in Equation (8) with a full set of event-year dummies interacted with TreatIntensity_d . Figure IA1 plots the estimated coefficients and their 95% confidence intervals, based on standard errors clustered at the distributor level. The results show no evidence of pre-existing trends, while the impact of each event materializes quickly. As shown, the coefficients are insignificantly different from zero in the years preceding each event (2010–2011 for the introduction and 2015–2016 for the tightening), indicating that there is no differential trend between high- and low-intensity distributors. Following this, the affiliated TNA ratio declines immediately once the rule takes effect, a pattern consistent across both the introduction and the tightening of the cap.

If a distributor reduces affiliated fund sales, its customers’ capital becomes more diversified across fund families almost by construction—affiliated families mechanically occupy a smaller platform share, and unaffiliated families gain weight. But this does not guarantee broad diversification across unaffiliated fund families because the freed-up shelf space could be concentrated in the same few rather than spread across many. This motivates us to examine two Herfindahl-Hirschman indices. HHI1 measures concentration across all fund families on the distributor’s platform: each family’s share is its TNA sold through the distributor relative to total platform TNA, and HHI1 is the sum of squared shares across all families. A decline in HHI1 indicates that platform assets became less concentrated overall. HHI2 applies the same construction but is restricted to unaffiliated families, computing each unaffiliated family’s share within the unaffiliated portion of the platform. A decline

¹⁴Because the regulation caps annual gross sales, one might imagine a distributor satisfying the cap by churning unaffiliated funds—that is, by simultaneously selling and redeeming them to inflate the denominator without reducing its affiliated assets. The decline in the TNA-based ratio suggests that such behavior is not prevalent.

in HHI2 would indicate genuine diversification across unaffiliated families, rather than the replacement of one concentrated allocation with another.

Table 5 reports the results. HHI1 declines significantly for both the cap introduction ($\hat{\beta} = -0.17$, $t = -2.15$) and the cap tightening ($\hat{\beta} = -0.19$, $t = -1.69$), as expected: when distributors reduce their affiliated fund sales, affiliated families occupy smaller platform shares and concentration falls mechanically. The bottom panels of Figure IA1 show the corresponding dynamics for HHI1. Importantly, HHI2, which isolates concentration across unaffiliated fund families, shows no such pattern. Both point estimates are positive and statistically insignificant, suggesting that platform assets did not become more diversified across unaffiliated families. If anything, they became more concentrated. Taken together, these results indicate that distributors complied with the affiliated sales cap but stopped short of opening their platforms to genuine competition. The freed-up platform space was not spread broadly across unaffiliated families but instead appears to have been directed toward a narrow set of counterparties—a pattern we explore further in Section 8.1.

Table 5 about here

7 Who Benefits from the Regulation?

7.1 Do independent fund families benefit?

To the extent that distributors’ tendency to favor their own products stifles the growth of independent fund families, we would expect the cap on affiliated fund sales to increase the market share and investor flows of independent families. To test this, we estimate the following DiD specification with an indicator for independent fund families:

$$Y_{f,t} = \beta \text{Independent}_f \times \text{Post}_t + \mathbf{F}'\mathbf{Controls}_{f,t-1} + \varepsilon_{f,t}, \quad (9)$$

where $Y_{f,t}$ is either the logarithm of fund family f 's TNA in month t or the family's net dollar flows in month t scaled by its lagged TNA. Independent_f equals one for fund families with no affiliated distributor, measured as of 2011 for the cap introduction and as of 2016 for the cap tightening. **Controls** $_{f,t-1}$ includes family size (the logarithm of family TNA), family age (the logarithm of the number of months since the family's first fund was launched), and the equal-weighted average of the expense ratios across the family's funds, all measured in month $t - 1$, as well as the equal-weighted net-of-fee return over the trailing 12 months. Expense ratios and net-of-fee returns are style-adjusted before taking the average. The coefficient β captures the differential post-cap change in outcomes for independent fund families relative to affiliated ones; a positive estimate would indicate that independent families gained market share or attracted additional flows. All specifications include fund-family and month fixed effects, with standard errors clustered at the fund-family level.

Table 6 shows no evidence that independent fund families experienced the anticipated growth following the cap. Coefficients on $\text{Independent}_f \times \text{Post}_t$ for log TNA are negative but statistically insignificant across both periods and all specifications. For fund flows, the coefficients are negative in the cap introduction and positive but close to zero in the cap tightening, with no significant effect in either period. The lack of positive effects for independent funds are striking given the clear compliance documented above. Distributors reduced affiliated fund ratios both by TNA and count, yet this did not translate into gains for independent families because the platform space vacated by affiliated funds was not redirected toward independent funds.

Table 6 about here

7.2 Do affiliated fund families respond to competitive pressure?

When distributors are constrained in their ability to sell affiliated funds, affiliated fund families can no longer rely on captive shelf space to draw investor capital. They must instead compete on price and quality. To test whether they do so, we examine fees and

performance—specifically, the equal-weighted average of the style-adjusted expense ratio and the style-adjusted net-of-fee return across each family’s funds—and track how these outcomes vary with the intensity of the family’s exposure to the cap.¹⁵ Specifically, we estimate the fund family-level analogue of Equation (8):

$$Y_{f,t} = \beta \text{TreatIntensity}_f \times \text{Post}_t + \mathbf{\Gamma}' \mathbf{Controls}_{f,t-1} + \varepsilon_{f,t}, \quad (10)$$

where TreatIntensity_f denotes TreatIntensity1_f , TreatIntensity2_f , or TreatIntensity3_f , as defined in Equations (5), (6), and (7). The coefficient β captures the differential post-cap change in fees or performance for fund families with higher treatment intensity relative to those with lower treatment intensity. A negative estimate for expense ratios would indicate that more-exposed families responded to competitive pressures by lowering fund expenses; a positive estimate for net-of-fee returns would indicate that more-exposed families made systematic changes to portfolio management. Controls and other estimation details are the same as in Equation (9).

Table 7 reports the results. In Panel A, which focuses on the cap introduction, we find no evidence of fee reductions: expense ratio coefficients are statistically insignificant regardless of the treatment intensity measure used. The net-of-fee performance of treated funds improved, however. The coefficient on $\text{TreatIntensity1}_f \times \text{Post}_t$ for net-of-fee returns is 0.46 ($t = 2.64$), implying that two families whose pre-cap reliance on affiliated distributors differs by one standard deviation exhibit a 15.18 basis point per month (1.84% per annum) difference in style-adjusted returns. Similarly, a one-standard-deviation difference in the treatment intensity of the family’s affiliated distributor is associated with a 13.17 basis point per month (1.59% per annum) performance gap ($\hat{\beta} = 0.46$, $t = 1.85$), and a one-standard-deviation difference in the joint intensity corresponds to a 14.75 basis point per month (1.78%

¹⁵The performance analysis is restricted to actively managed funds, as index funds are designed to track their benchmarks and offer little scope for managers to respond to competitive pressure through improved performance.

per annum) gap ($\hat{\beta} = 0.87$, $t = 2.38$). Taken together, the cap introduction appears to have spurred a meaningful improvement in the performance of affiliated fund families, which is consistent with increased competitive pressure following the cap (and similar to the findings in Ba et al. (2025)). This improvement, however, was absent during the cap tightening phase. Panel B shows that all coefficients are statistically insignificant and close to zero. This lack of intended effects—-independent fund families did not benefit and competitive pressure on affiliated families dissipated—motivates the analysis in the next section, where we ask whether and how financial groups adapted to the regulation over time.

Table 7 about here

8 How Have Financial Groups Adapted?

We test for two potential adaptation mechanisms. The first is reciprocal dealing: a “you sell mine, I sell yours” arrangement through which financial groups could preserve the collective benefits of captive distribution while each individually complying with the cap. This first mechanism would help to explain the lack of performance effects during the cap tightening phase. The second mechanism is bypassing the cap entirely via non-intermediated distribution: asset management firms could expand their direct sales and launch cap-exempt products—such as online share classes and ETFs.

8.1 Do distributors engage in reciprocal dealing?

To test for reciprocal dealing, we estimate a group-level regression in which the dependent variable is $\text{Sales}_{i \rightarrow j, t}$ —group i ’s distributor selling group j ’s funds—and the key independent variable is $\text{Sales}_{j \rightarrow i, t-1}$ —group j ’s distributor selling group i ’s funds, where $i \neq j$.¹⁶ We are interested in whether this dollar-for-dollar sensitivity of i ’s sales to j ’s past sales increases

¹⁶We lag $\text{Sales}_{j \rightarrow i, t-1}$ to avoid simultaneity bias.

after the cap, particularly between groups that are both highly constrained in their affiliated fund sales. Specifically, we estimate the following continuous DiD regression:

$$\begin{aligned}
\text{Sales}_{i \rightarrow j, t} = & \beta_1 \text{Sales}_{j \rightarrow i, t-1} + \beta_2 \text{Sales}_{j \rightarrow i, t-1} \times \text{Post}_t \\
& + \beta_3 \text{Sales}_{j \rightarrow i, t-1} \times \text{Post}_t \times \text{JointIntensity}_{ij} \\
& + \beta_4 \text{Sales}_{j \rightarrow i, t-1} \times \text{JointIntensity}_{ij} + \beta_5 \text{Post}_t \times \text{JointIntensity}_{ij} \\
& + \beta_6 \text{JointIntensity}_{ij} + \varepsilon_{ij, t},
\end{aligned} \tag{11}$$

where both sales variables are computed as net dollar flows through the respective distributor (Equation (2)) aggregated across the respective group’s funds excluding MMFs. $\text{JointIntensity}_{ij} \equiv \text{TreatIntensity}_{d(i)} \times \text{TreatIntensity}_{d(j)}$, where each term is the treatment intensity of the distributor affiliated with the respective group, as defined in Equation (4).¹⁷ The coefficient β_1 captures baseline reciprocity. β_2 captures whether this sensitivity increases after the cap for pairs with no joint exposure. The coefficient of interest, β_3 , measures the additional increase for pairs with higher joint exposure. The remaining terms are lower-order components of the triple interaction. The sample includes all financial groups with at least one distributor and at least one affiliated fund family, ensuring that both sides of each pair can engage in reciprocal dealing.

We estimate three specifications. The first includes selling group (i), target group (j), and month fixed effects. The second replaces group fixed effects with undirected pair fixed effects, which absorb all time-invariant heterogeneity specific to the bilateral relationship between i and j .¹⁸ The third—our most stringent specification—adds selling group $\times$ month and target group $\times$ month fixed effects to the pair fixed effects, nonparametrically absorbing all time-varying group characteristics. Standard errors are two-way clustered at the selling group and target group levels.

¹⁷When a group has more than one affiliated distributor, $\text{TreatIntensity}_{d(i)}$ is the TNA-weighted average of their individual treatment intensities.

¹⁸Pair fixed effects treat (i, j) and (j, i) as the same pair, reflecting the fact that both directions represent the same bilateral relationship. Results are similar when using directed pair fixed effects.

Table 8 reports the results. In Panel A, the coefficient of interest on $\text{Sales}_{j \rightarrow i, t-1} \times \text{Post}_t \times \text{JointIntensity}_{ij}$ is statistically insignificant across all specifications. The lack of evidence of reciprocal dealing at the cap introduction is consistent with the cap being less binding and with such arrangements taking time to organize. Reciprocal dealing emerges only during the cap tightening. In Panel B, the coefficient of interest for dollar sales is 0.88 ($t = 3.13$) in Column (1), implying that a one-standard-deviation increase in joint intensity (0.04; Table IA.4) leads a group to sell 3.3 cents more of its partner’s funds for each additional dollar of its funds that the partner sells. Adding pair fixed effects in Column (2) leaves β_3 at 0.75, ruling out time-invariant bilateral relationships as the driver. The effect holds even under the most demanding specification in Column (3). There, β_3 is 0.57, and the group sells 2.1 cents more of the partner’s funds for each additional dollar the partner sells. The same holds when sales are scaled by distributor size, where β_3 remains significant throughout.

Table 8 about here

8.2 Do fund families shift to non-intermediated channels?

The second way that asset managements can adapt to the regulation is by changing their product mix. If fund families can no longer rely on affiliated distribution channels as much, they could—in addition to or in lieu of turning to unaffiliated distributors—pursue direct-to-customer sales or launch products that fall outside the scope of the regulation, such as online share classes and ETFs. The 2018 regulatory amendment explicitly excluded online share classes from the affiliated sales cap on the grounds that investors who purchase funds online without face-to-face advice are less susceptible to biased product recommendations. Similarly, ETFs, which are traded on stock exchanges, fall entirely outside the scope of the regulation.

To test whether affiliated fund families adjusted their product lineup, we estimate Equation (10) for three count-based outcome variables: the direct fund ratio, defined as the

number of funds offering a direct-to-customer share class divided by the family’s total number of funds; the online fund ratio, defined analogously for online share classes; and the ETF ratio, defined as the number of ETFs divided by the total number of products (mutual funds plus ETFs).

Table 9 reports the results. In Panel A, which covers the cap introduction phase, we fail to detect a significant effect on any of the three outcomes. This lack of product line changes is consistent with the fact that the cap was introduced as a temporary measure to be in effect for only two years, which was presumably too short a horizon to justify costly product lineup changes. In Panel B, which covers the cap tightening phase, we find a markedly different picture. The online fund ratio increases under TreatIntensity2_f , the treatment intensity of the family’s affiliated distributor: the coefficient is 0.20 ($t = 1.96$), implying that two families whose distributors differ by one standard deviation in treatment intensity (0.22) exhibit a differential increase in their online fund ratio of 4.4 percentage points post-tightening. The ETF ratio increases significantly across all three treatment intensity measures. The coefficients on $\text{TreatIntensity1}_f \times \text{Post}_t$, $\text{TreatIntensity2}_f \times \text{Post}_t$, and $\text{TreatIntensity3}_f \times \text{Post}_t$ are 0.07 ($t = 1.85$), 0.07 ($t = 2.76$), and 0.24 ($t = 3.03$), implying differential increases in the ETF ratio of 1.6, 1.5, and 2.2 percentage points for a one-standard-deviation difference in each treatment intensity measure, respectively. These magnitudes should be interpreted with the understanding that launching a first ETF is a discrete strategic shift that the ratio likely underestimates. Moreover, the ETF effect climbs steadily as the cap tightens. We do not observe a similar dynamic pattern for online share classes or direct-to-customer sales (Internet Appendix Figures IA2, IA3, and IA4), suggesting that ETFs—fueled by growing investor popularity—were the most scalable channel of adaptation.

These results, together with the reciprocal dealing evidence in Panel B of Table 8, point to a coherent pattern. Neither adaptation mechanism was operating during the cap introduction, when the cap was perceived as being temporary. Both emerge during the cap tightening phase, as the cap became permanent and progressively tighter. This pattern helps explain

why the competitive pressure documented during the cap introduction dissipated: as the constraint grew more binding, fund families found ways around it, and the need to compete on performance faded.

Table 9 about here

9 Conclusion

We assess regulation capping the percentage of fund sales from affiliated mutual funds in Korea. The cap was introduced in 2013, and was tightened between 2018 and 2022. We find strong evidence that sales of affiliated mutual funds by their own distributors declined during both phases, but little evidence that independent asset management firms were able to increase their market share as a result. The platform space freed up by affiliated funds was not reallocated to entrants; it was instead reallocated to pre-existing options.

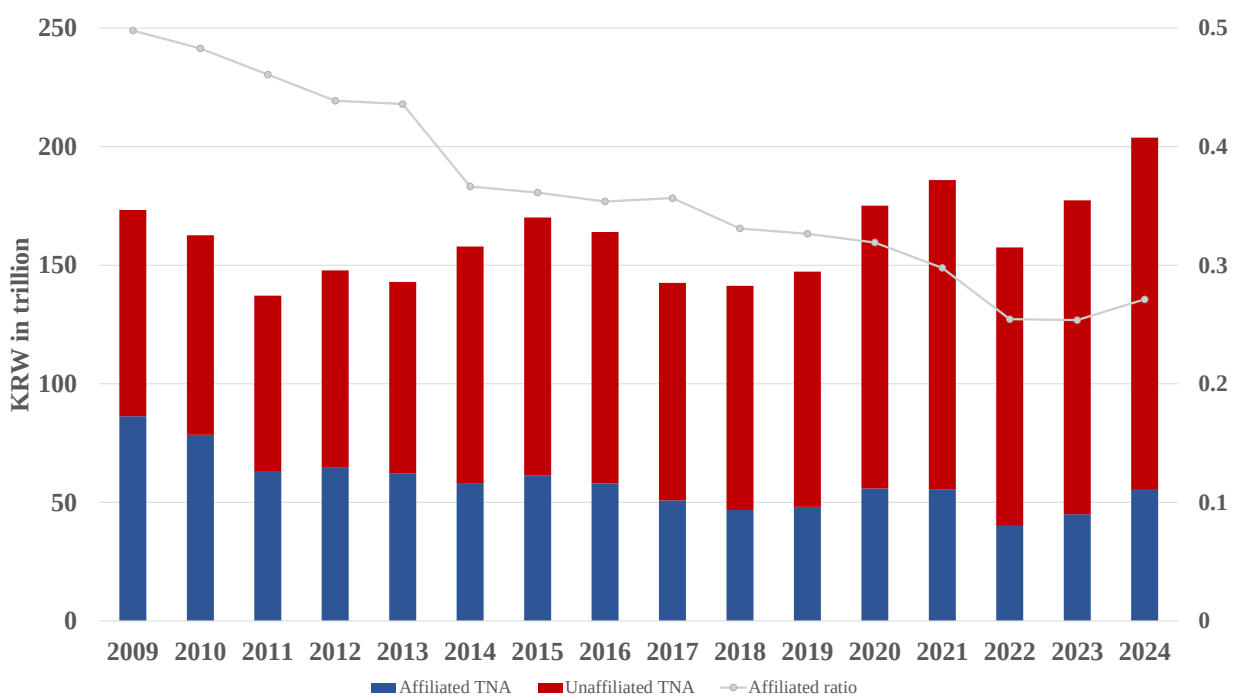
The effects on fund performance differed sharply across the two phases. During cap introduction, affiliated fund families with higher treatment intensity earned significantly higher style-adjusted net returns. This pattern did not persist. During cap tightening, performance improvements disappear, and we instead find evidence of two adaptation mechanisms. Affiliated financial groups increase cross-group sales with each other in proportion to their joint regulatory exposure, consistent with reciprocal dealing arrangements. Treated fund families also introduce online share classes and launch ETFs, because both products are exempt from the sales cap. Neither mechanism is present during the cap introduction, consistent with the view that coordinated adaptation takes time to develop. We conclude that while conduct-based regulation of affiliated fund sales can initially increase competition between mutual fund families, these competitive effects can weaken over time as regulated entities learn to adapt.

References

- Anagol, Santosh, Vijaya Marisetty, Renuka Sane, and Buvaneshwaran Venugopal, 2017, On the impact of regulating commissions: Evidence from the Indian mutual funds market, *World Bank Economic Review* 31, 241–270.
- Ba, Shusong, Baixiao Liu, Linlin Ma, Yan Shen, and Xingyi Zhan, 2025, Non-affiliated distribution and fund performance: Evidence from bank wealth management funds in China, Working Paper, Peking University HSBC Business School.
- Bergstresser, Daniel, John M. R. Chalmers, and Peter Tufano, 2009, Assessing the costs and benefits of brokers in the mutual fund industry, *Review of Financial Studies* 22, 4129–4156.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, 2004, How much should we trust differences-in-differences estimates?, *Quarterly Journal of Economics* 119, 249–275.
- Burke, Jeremy, and Angela A. Hung, 2015, *Financial Advice Markets: A Cross-Country Comparison* (RAND Corporation, Santa Monica, CA).
- Chalmers, John, and Jonathan Reuter, 2020, Is conflicted investment advice better than no advice?, *Journal of Financial Economics* 138, 366–387.
- Christoffersen, Susan E. K., Richard Evans, and David K. Musto, 2013, What do consumers’ fund flows maximize? Evidence from their brokers’ incentives, *Journal of Finance* 68, 201–235.
- Cookson, Gordon, Tim Jenkinson, Howard Jones, and Jose Vicente Martinez, 2021, Best buys and own brands: Investment platforms’ recommendations of mutual funds, *Review of Financial Studies* 34, 227–263.
- Del Guercio, Diane, and Jonathan Reuter, 2014, Mutual fund performance and the incentive to generate alpha, *Journal of Finance* 69, 1673–1704.

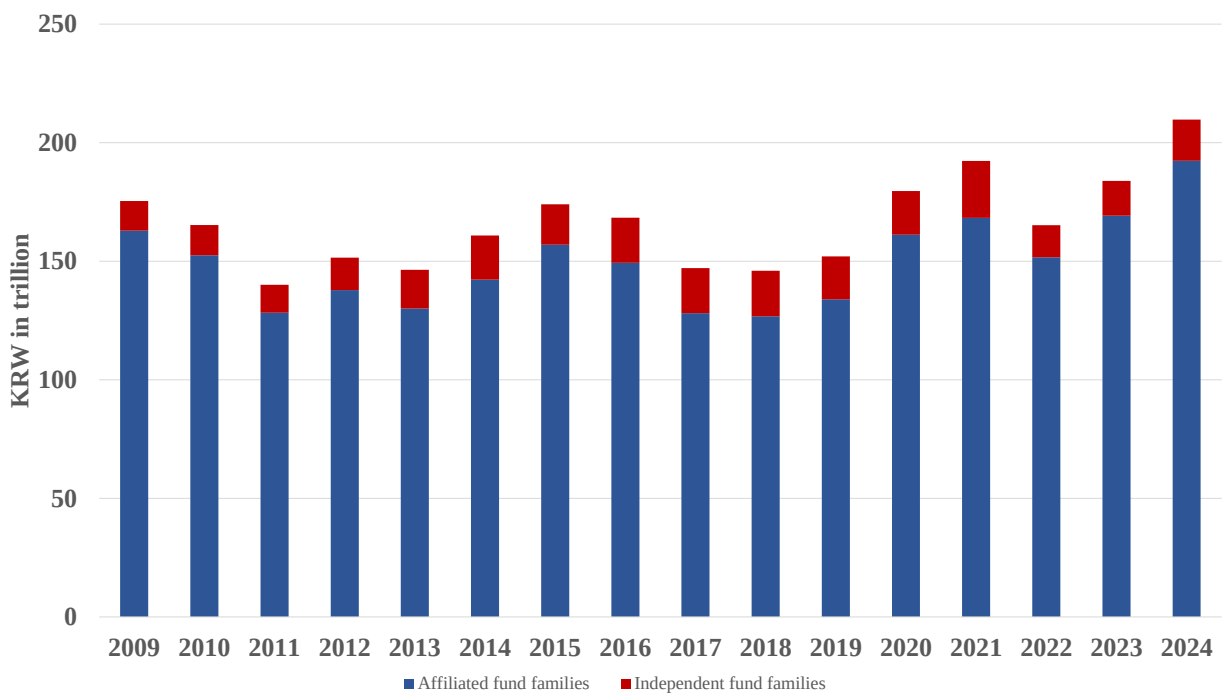
- Edelen, Roger, Kingsley Y.L. Fong, and Jingyi Han, 2025, Regulating inattention in fee-based financial advice, *Journal of Financial Economics* 164.
- Ha, Yu Sung, and Byoung Uk Kang, 2026, On the menu: Mutual fund tournaments in intermediated distribution, Working Paper.
- Linnainmaa, Juhani, Brian Melzer, Alessandro Previtero, and Stephen Foerster, 2022, Investor protections and stock market participation: An evaluation of financial advisor oversight, Working Paper, Tuck School of Business.
- Schaub, Nic, and Simon Straumann, 2022, How does a ban on kickbacks affect individual investors?, Working Paper, WHU.
- Scheld, Dominik, Oscar Stolper, Mario Fernandes, and Kim Heyden, 2026, Affiliated mutual funds: Beyond the reach of the invisible hand?, *Financial Management* (forthcoming).
- Sokolinski, Stanislav, 2023, Regulating commission-based financial advice: Evidence from a natural experiment, *Journal of Financial and Quantitative Analysis* 58, 1359–1389.

FIGURE 1: Mutual fund distribution in South Korea



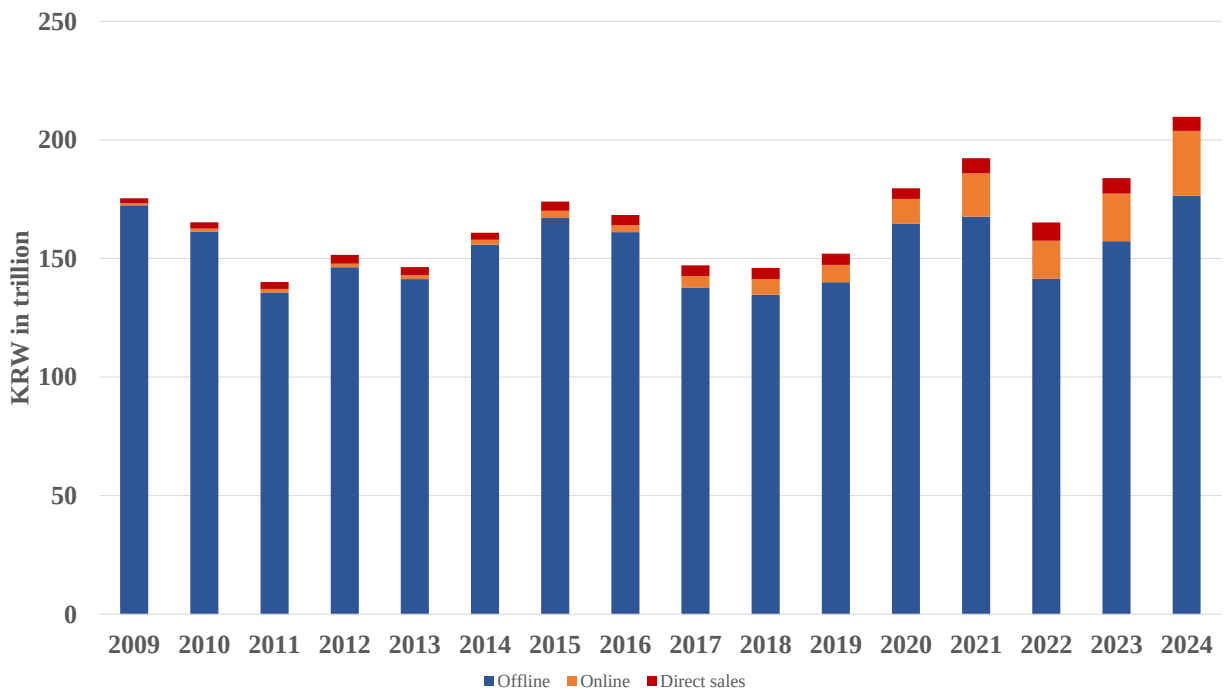
This figure illustrates the total net assets (in KRW) of Korean mutual funds sold through affiliated and unaffiliated distributors from 2009 to 2024. The line shows the ratio of affiliated to total net assets on the right axis.

FIGURE 2: Affiliated versus independent fund families



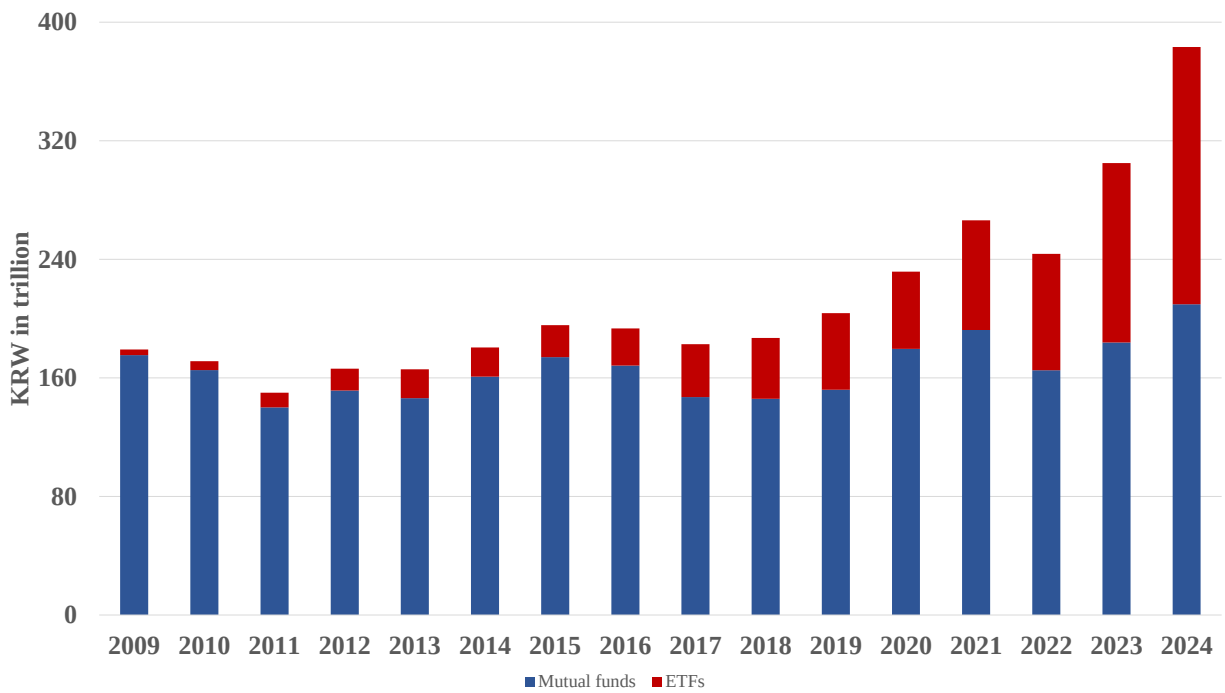
This figure illustrates the total net assets (in KRW) of Korean mutual funds from 2009 to 2024 in each type of fund family: affiliated and independent. A fund family is classified as affiliated if it belongs to a financial group that also operates a fund distributor, and as independent otherwise.

FIGURE 3: TNA by distribution channel



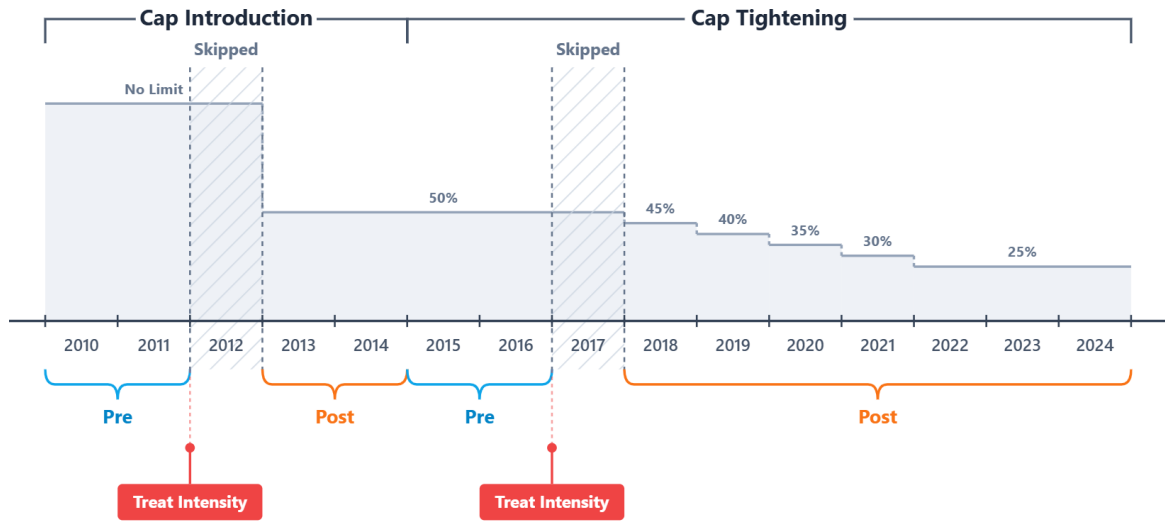
This figure illustrates the total net assets (in KRW) of Korean mutual funds in each type of distribution channel: offline, online, and direct sales from 2009 to 2024.

FIGURE 4: The rise of ETFs in Korea



This figure presents the growth of ETFs relative to mutual funds in total net assets (in KRW) from 2009 to 2024.

FIGURE 5: Timeline and empirical design



This figure illustrates the regulatory timeline of the Korean affiliated-sales cap and the empirical design used in the analysis. The shaded line shows the cap on the affiliated share of a distributor's annual sales: no limit before 2013 and a 50% cap from 2013, referred to as the cap introduction. The cap is then tightened in 5-percentage-point steps from 45% in 2018 to 25% in 2022 and held through 2024, referred to as the cap tightening. The cap introduction uses 2010–2011 as the pre-period and 2013–2014 as the post-period, excluding 2012 to avoid anticipatory compliance. The cap tightening uses 2015–2016 as the pre-period and 2018–2024 as the post-period, excluding 2017. The excluded years are shaded and labeled as skipped. Treatment intensity is measured at the end of 2011 and the end of 2016, just before the excluded years and the regulatory changes that follow.

TABLE 1: **Summary statistics: Distributor level**

<i>Panel A: Affiliated distributors</i>						
Year	# of distributors	# of affiliated distributors	Distributor size (in KRW 100 mil.)			
			Mean	P25	P50	P75
2009	73.00	44.00	31,680.29	4,374.42	13,496.57	50,279.99
2011	74.00	46.00	25,599.98	5,066.90	11,699.20	34,984.90
2016	65.00	41.00	32,881.61	9,845.42	15,877.92	51,072.91
2024	121.00	100.00	17,846.70	0.96	3.50	17,691.34
Avg.	81.81	56.94	26,245.64	4,173.23	10,096.42	38,750.79
<i>Panel B: Independent distributors</i>						
Year	# of independent distributors		Distributor size (in KRW 100 mil.)			
			Mean	P25	P50	P75
2009	29.00		6,841.74	571.50	2,570.79	10,058.98
2011	28.00		6,168.26	1,216.76	3,961.46	8,397.21
2016	24.00		11,463.63	1,718.15	7,532.66	10,042.20
2024	21.00		10,742.72	2,369.01	5,909.90	10,349.22
Avg.	24.88		8,859.25	1,702.31	5,389.60	10,557.60

This table presents summary statistics on mutual fund distributors in South Korea at the beginning (2009), before each regulatory change (2011 and 2016), and the end (2024) of the sample period. A distributor is classified as affiliated if it belongs to a financial group that also engages in asset management, and as independent otherwise. Distributor size is the sum across all funds of the net assets attributable to the distributor, in KRW 100 million. Panel A reports the total number of distributors, the number that are affiliated, and the distribution of size among affiliated distributors. Panel B reports the number of independent distributors and the distribution of size among them. The last row of each panel reports time-series averages of the corresponding monthly statistics across all sample months.

TABLE 2: Summary statistics: Fund family level

<i>Panel A: Affiliated fund families</i>						
Year	# of fund families	# of affiliated fund families	Fund family size (in KRW 100 mil.)			
			Mean	P25	P50	P75
2009	51.00	28.00	49,106.49	11,241.94	31,004.41	69,154.47
2011	52.00	30.00	41,575.76	9,336.62	24,013.74	56,454.61
2016	50.00	27.00	55,325.99	19,217.50	40,597.88	84,842.20
2024	50.00	26.00	71,303.34	19,234.67	44,391.21	111,004.91
Avg.	50.56	27.56	53,242.75	14,982.20	38,520.65	79,837.13
<i>Panel B: Independent fund families</i>						
Year	# of independent fund families		Fund family size (in KRW 100 mil.)			
			Mean	P25	P50	P75
2009	23.00		5,421.47	801.47	4,243.27	6,192.19
2011	22.00		5,361.11	1,385.49	2,690.88	7,883.15
2016	23.00		8,240.90	1,034.08	4,888.94	10,981.86
2024	24.00		7,223.13	408.65	1,743.10	12,746.31
Avg.	23.00		7,208.46	917.05	4,134.73	10,513.89

This table presents summary statistics on mutual fund families in South Korea at the beginning (2009), before each regulatory change (2011 and 2016), and the end (2024) of the sample period. A fund family is classified as affiliated if it belongs to a financial group that also operates a fund distributor, and as independent otherwise. Family size is the total net assets of all funds managed by the family, in KRW 100 million. Panel A reports the total number of fund families, the number that are affiliated, and the distribution of size among affiliated fund families. Panel B reports the number of independent fund families and the distribution of size among them. The last row of each panel reports time-series averages of the corresponding monthly statistics across all sample months.

TABLE 3: **Treatment intensity**

<i>Panel A: Cap Introduction</i>								
	<i>N</i>	Mean	SD	P10	P25	P50	P75	P90
TreatIntensity _d	73.00	0.25	0.30	0.00	0.00	0.13	0.46	0.73
TreatIntensity1 _f	52.00	0.28	0.33	0.00	0.00	0.09	0.54	0.80
TreatIntensity2 _f	52.00	0.24	0.29	0.00	0.00	0.10	0.47	0.71
TreatIntensity3 _f	52.00	0.12	0.17	0.00	0.00	0.01	0.19	0.43
<i>Panel B: Cap Tightening</i>								
	<i>N</i>	Mean	SD	P10	P25	P50	P75	P90
TreatIntensity _d	65.00	0.19	0.23	0.00	0.00	0.11	0.36	0.54
TreatIntensity1 _f	50.00	0.15	0.23	0.00	0.00	0.01	0.27	0.59
TreatIntensity2 _f	50.00	0.18	0.22	0.00	0.00	0.01	0.34	0.54
TreatIntensity3 _f	50.00	0.06	0.09	0.00	0.00	0.00	0.08	0.22

This table reports summary statistics for the four treatment intensity measures, each computed in the pre-period before the regulation. Panel A reports the measures for the cap introduction as of 2011. Panel B reports the measures for the cap tightening as of 2016. TreatIntensity_d is a distributor-level measure: the share of a distributor’s platform TNA attributable to affiliated funds. The remaining three are fund-family-level measures. TreatIntensity1_f is the fraction of family *f*’s assets attributable to its affiliated distributors. TreatIntensity2_f is the distributor-level treatment intensity of the family’s affiliated distributors, computed as the TNA-weighted average of TreatIntensity_d when a family has more than one. TreatIntensity3_f is the product of the first two measures. Money market funds are excluded from all four measures, as they are not subject to the cap. The measures equal zero for independent entities by construction.

TABLE 4: **Distributor compliance: Affiliated fund ratios**

Dependent Variable =	Cap Introduction		Cap Tightening	
	Affiliated Ratio (by TNA)	Affiliated Ratio (by count)	Affiliated Ratio (by TNA)	Affiliated Ratio (by count)
	(1)	(2)	(3)	(4)
$\text{TreatIntensity}_d \times \text{Post}_t$	-0.28*** (-3.34)	-0.10*** (-3.59)	-0.31*** (-2.78)	-0.05* (-1.78)
Distributor FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Adjusted R^2 (%)	88.59	92.84	78.85	92.86
Observations	3,392	3,392	6,526	6,526

This table reports difference-in-differences estimates of distributor compliance with the affiliated sales cap. Specifically, we estimate

$$Y_{d,t} = \beta \text{TreatIntensity}_d \times \text{Post}_t + \varepsilon_{d,t},$$

where d indexes distributors and t indexes months. The dependent variable is the affiliated TNA ratio in Columns (1) and (3) and the affiliated count ratio in Columns (2) and (4). The affiliated TNA ratio is the fraction of distributor d 's total net assets attributable to affiliated funds; the affiliated count ratio is the fraction of funds on the distributor's menu that are affiliated. Money market funds are excluded from both ratios, as they are not subject to the cap. TreatIntensity_d is the distributor-level treatment intensity defined in Table 3, and Post_t is an indicator variable equal to one in the post-regulation period and zero otherwise. Columns (1) and (2) cover the cap introduction and Columns (3) and (4) the cap tightening, using the pre- and post-periods illustrated in Figure 5. All specifications include distributor and month fixed effects. Standard errors are clustered at the distributor level, with t -statistics in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

TABLE 5: **Distributor compliance: Distributor-level HHI**

Dependent Variable =	Cap Introduction		Cap Tightening	
	HHI1 (All families)	HHI2 (Unaff. only)	HHI1 (All families)	HHI2 (Unaff. only)
	(1)	(2)	(3)	(4)
$\text{TreatIntensity}_d \times \text{Post}_t$	-0.17** (-2.15)	0.04 (0.48)	-0.19* (-1.69)	0.03 (0.38)
Distributor FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Adjusted R^2 (%)	75.58	70.80	65.73	67.79
Observations	3,391	3,381	6,526	6,526

This table repeats the Table 4 analysis for the concentration of fund family assets within each distributor, measured by two Herfindahl-Hirschman indices. HHI1 covers all fund families: each family's share is the fraction of the distributor's total net assets that it accounts for, and HHI1 is the sum of squared shares. HHI2 restricts this to unaffiliated families, with each family's share measured within the distributor's unaffiliated assets. Money market funds are excluded from both indices, as they are not counted toward the cap. Columns (1) and (2) cover the cap introduction and Columns (3) and (4) the cap tightening, using the pre- and post-periods illustrated in Figure 5. All specifications include distributor and month fixed effects. Standard errors are clustered at the distributor level, with t -statistics in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

TABLE 6: Independent fund families: TNA and flows

<i>Panel A: Cap Introduction</i>				
Dependent Variable =	Log(TNA)		Flow (%)	
	(1)	(2)	(3)	(4)
Independent _f × Post _t	-0.13 (-0.67)	-0.37 (-1.59)	-1.27 (-1.34)	-1.04 (-0.88)
Family size				-0.14 (-0.43)
Performance (%)		-0.00 (-1.04)		-0.00 (-0.21)
Family age		1.43*** (2.95)		-1.71 (-0.75)
Exp. ratio (%)		-0.87 (-1.56)		-2.67 (-1.36)
Family FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Adjusted R ² (%)	94.02	94.74	17.29	18.21
Observations	2,403	2,380	2,400	2,380
<i>Panel B: Cap Tightening</i>				
Dependent Variable =	Log(TNA)		Flow (%)	
	(1)	(2)	(3)	(4)
Independent _f × Post _t	-0.24 (-0.80)	-0.16 (-0.60)	0.03 (0.04)	0.21 (0.31)
Family size				0.03 (0.09)
Performance (%)		-0.00 (-0.51)		0.14*** (3.54)
Family age		0.50 (1.15)		-1.65 (-1.00)
Exp. ratio (%)		-0.47 (-0.63)		-2.45 (-0.82)
Family FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Adjusted R ² (%)	92.02	93.09	4.836	7.287
Observations	5,139	5,076	5,134	5,075

This table reports difference-in-differences estimates of the effect of the affiliated sales cap on the size and flows of independent fund families. Specifically, we estimate

$$Y_{f,t} = \beta \text{Independent}_f \times \text{Post}_t + \mathbf{\Gamma}' \mathbf{Controls}_{f,t-1} + \varepsilon_{f,t},$$

where f indexes fund families and t indexes months. The dependent variable is either the logarithm of family TNA or net flow. Family TNA is the aggregate net assets of all funds within the family, and net flow is the aggregate of their net dollar flows, scaled by lagged family TNA. Independent_f equals one for fund families with no affiliated distributor, measured in the pre-period, and Post_t is an indicator variable equal to one in the post-regulation period and zero otherwise. Controls include lagged family size, family age, the style-adjusted expense ratio, and the style-adjusted net-of-fee return over the trailing 12 months; some specifications omit them. Panel A covers the cap introduction and Panel B the cap tightening, using the pre- and post-periods illustrated in Figure 5. All specifications include fund-family and month fixed effects. Standard errors are clustered at the fund-family level, with t -statistics in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

TABLE 7: Mutual fund fees and performance

<i>Panel A: Cap Introduction</i>						
Dependent Variable =	Expense ratio, style adj. (%)			Net-of-fee return, style adj. (% per month)		
	(1)	(2)	(3)	(4)	(5)	(6)
TreatIntensity $1_f \times \text{Post}_t$	-0.02 (-0.25)			0.46** (2.64)		
TreatIntensity $2_f \times \text{Post}_t$		-0.09 (-1.04)			0.46* (1.85)	
TreatIntensity $3_f \times \text{Post}_t$			-0.12 (-0.63)			0.87** (2.38)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2 (%)	82.60	82.83	82.75	30.43	30.38	30.40
Observations	2,380	2,380	2,380	2,380	2,380	2,380
<i>Panel B: Cap Tightening</i>						
Dependent Variable =	Expense ratio, style adj. (%)			Net-of-fee return, style adj. (% per month)		
	(1)	(2)	(3)	(4)	(5)	(6)
TreatIntensity $1_f \times \text{Post}_t$	-0.05 (-0.99)			0.03 (0.22)		
TreatIntensity $2_f \times \text{Post}_t$		-0.02 (-0.29)			0.12 (0.76)	
TreatIntensity $3_f \times \text{Post}_t$			-0.09 (-0.60)			0.22 (0.70)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2 (%)	73.24	73.13	73.17	3.55	3.56	3.55
Observations	5,075	5,075	5,075	5,075	5,075	5,075

This table examines the fee and performance response of fund families to the affiliated sales cap. Specifically, we estimate

$$Y_{f,t} = \beta \text{TreatIntensity}_f \times \text{Post}_t + \mathbf{\Gamma}' \mathbf{Controls}_{f,t-1} + \varepsilon_{f,t},$$

where f indexes fund families and t indexes months. The dependent variable is either the style-adjusted expense ratio or the style-adjusted net-of-fee return, each an equal-weighted average across the family's funds after each is style-adjusted. TreatIntensity_f is one of the three family-level measures defined in Table 3, and Post_t equals one in the post-regulation period. Controls are the same as in Table 6, and all specifications include fund-family and month fixed effects. The performance analysis is restricted to actively managed funds, as index funds are designed to track their benchmarks and offer little scope for managers to respond to competitive pressure through improved performance. Panel A covers the cap introduction and Panel B the cap tightening. Standard errors are clustered at the fund-family level, with t -statistics in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

TABLE 8: **Reciprocal dealing**

<i>Panel A: Cap Introduction</i>						
Dependent Variable =	Dollar sales			Scaled by distributor size		
	(1)	(2)	(3)	(4)	(5)	(6)
Sales _{$j \rightarrow i, t-1$}	-0.02 (-1.40)	-0.03* (-1.77)	-0.02 (-1.19)	-0.03** (-2.18)	-0.03* (-1.98)	-0.01 (-0.68)
Sales _{$j \rightarrow i, t-1$} $\times$ Post _{t}	0.03* (1.78)	0.03 (1.30)	0.03 (1.36)	0.03* (1.85)	0.02 (1.12)	0.01 (0.91)
Sales _{$j \rightarrow i, t-1$} $\times$ Post _{t} $\times$ JointIntensity _{ij}	0.07 (0.44)	0.03 (0.28)	-0.05 (-0.47)	0.02 (0.17)	0.04 (0.30)	-0.01 (-0.15)
Sales _{$j \rightarrow i, t-1$} $\times$ JointIntensity _{ij}	-0.11 (-1.17)	0.04 (0.77)	0.05 (0.72)	0.02 (0.44)	0.06 (1.63)	0.06 (0.99)
Post _{t} $\times$ JointIntensity _{ij}	45.02** (2.21)	42.30* (2.05)	33.64 (1.50)	0.06* (2.00)	0.06* (1.89)	0.03 (0.48)
JointIntensity _{ij}	-12.69 (-0.55)			-0.00 (-0.15)		
Selling group FE	Yes			Yes		
Target group FE	Yes			Yes		
Pair FE		Yes	Yes		Yes	Yes
Month FE	Yes	Yes		Yes	Yes	
Selling group $\times$ Month FE			Yes			Yes
Target group $\times$ Month FE			Yes			Yes
Adjusted R^2 (%)	10.13	20.94	34.29	9.03	14.86	26.87
Observations	31,110	31,110	31,110	31,110	31,110	31,110

(continued)

TABLE 8 (Continued): **Reciprocal dealing**

<i>Panel B: Cap Tightening</i>						
Dependent Variable =	Dollar sales			Scaled by distributor size		
	(1)	(2)	(3)	(4)	(5)	(6)
Sales _{$j \rightarrow i, t-1$}	0.00 (0.01)	-0.00 (-0.38)	0.01 (0.83)	-0.01 (-0.76)	-0.01 (-1.08)	0.00 (0.44)
Sales _{$j \rightarrow i, t-1$} $\times$ Post _{t}	-0.00 (-0.27)	0.00 (0.05)	-0.02 (-1.26)	-0.00 (-0.21)	-0.00 (-0.01)	-0.02* (-1.82)
Sales _{$j \rightarrow i, t-1$} $\times$ Post _{t} $\times$ JointIntensity _{ij}	0.88*** (3.13)	0.75*** (3.11)	0.57*** (3.51)	0.82*** (3.03)	0.68** (2.45)	0.61*** (3.86)
Sales _{$j \rightarrow i, t-1$} $\times$ JointIntensity _{ij}	-0.12 (-0.67)	0.02 (0.10)	0.05 (0.05)	-0.01 (-0.07)	0.13 (0.77)	0.15 (0.86)
Post _{t} $\times$ JointIntensity _{ij}	3.28 (0.07)	35.28 (0.53)	52.08 (0.84)	-0.01 (-0.14)	-0.01 (-0.10)	0.01 (0.16)
JointIntensity _{ij}	-44.79 (-0.81)			-0.01 (-0.09)		
Selling group FE	Yes			Yes		
Target group FE	Yes			Yes		
Pair FE		Yes	Yes		Yes	Yes
Month FE	Yes	Yes		Yes	Yes	
Selling group $\times$ Month FE			Yes			Yes
Target group $\times$ Month FE			Yes			Yes
Adjusted R^2 (%)	1.75	2.35	10.59	1.51	1.70	8.86
Observations	52,344	52,344	52,344	52,344	52,344	52,344

This table reports pair-level difference-in-differences estimates testing for reciprocal dealing between affiliated financial groups. The sample consists of all ordered pairs (i, j) of affiliated financial groups i and j ($i \neq j$), observed at monthly frequency. The dependent variable Sales _{$i \rightarrow j, t$} measures total sales of fund families belonging to group j through distributors belonging to group i in month t , in units of KRW 100 million or scaled by group j 's total distributor TNA. Sales _{$j \rightarrow i, t-1$} is the corresponding lagged sales of group i 's funds through group j 's distributors, Post _{t} equals one in the post-regulation period, and JointIntensity _{ij} is the product of the pre-period treatment intensities of the distributors affiliated with groups i and j . Columns (1) and (4) include selling-group, target-group, and month fixed effects; Columns (2) and (5) replace the group fixed effects with pair fixed effects; and Columns (3) and (6) add selling-group $\times$ month and target-group $\times$ month fixed effects to the pair fixed effects. Standard errors are two-way clustered at the selling-group and target-group levels; t -statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

TABLE 9: **Non-intermediated channels**

<i>Panel A: Cap Introduction</i>									
Dependent Variable =	Direct fund ratio			Online fund ratio			ETF ratio		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TreatIntensity $1_f \times \text{Post}_t$	-0.01 (-0.32)			-0.07 (-1.12)			-0.00 (-0.18)		
TreatIntensity $2_f \times \text{Post}_t$		0.04 (1.53)			-0.09 (-1.34)			0.02 (0.75)	
TreatIntensity $3_f \times \text{Post}_t$			0.06 (1.44)			-0.11 (-0.77)			0.02 (0.77)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2 (%)	79.65	79.80	79.80	76.04	76.15	75.93	78.80	79.16	78.99
Observations	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380
<i>Panel B: Cap Tightening</i>									
Dependent Variable =	Direct fund ratio			Online fund ratio			ETF ratio		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TreatIntensity $1_f \times \text{Post}_t$	-0.00 (-0.20)			0.09 (0.99)			0.07* (1.85)		
TreatIntensity $2_f \times \text{Post}_t$		0.05 (1.60)			0.20* (1.96)			0.07*** (2.76)	
TreatIntensity $3_f \times \text{Post}_t$			0.03 (0.39)			0.29 (1.48)			0.24*** (3.03)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2 (%)	91.92	92.13	91.93	81.39	81.96	81.49	87.44	87.39	87.93
Observations	5,076	5,076	5,076	5,076	5,076	5,076	5,076	5,076	5,076

This table examines fund families' expansion into non-intermediated channels following the regulation, using the Table 7 specification. The direct fund ratio is the number of funds with a direct-to-customer share class divided by the family's total number of funds; the online fund ratio is defined analogously for online share classes; and the ETF ratio is the number of ETFs divided by the total number of mutual funds and ETFs. All other variables are defined as in Table 7. Panel A covers the cap introduction and Panel B the cap tightening. Standard errors are clustered at the fund-family level, with t -statistics in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Do Caps on Affiliated Fund Sales Foster Competition or Strategic Adaptation? Evidence from Korea

Internet Appendix

- Table IA.1: **Treatment Intensity: Affiliated entities**
- Table IA.2: **Top 10 distributors by platform size**
- Table IA.3: **Top 10 fund families by TNA**
- Table IA.4: **Joint intensity**
- Figure IA.1: **Distributor compliance: Dynamic effects**
- Figure IA.2: **Non-intermediated channels: Dynamic effects** (TreatIntensity1_f)
- Figure IA.3: **Non-intermediated channels: Dynamic effects** (TreatIntensity2_f)
- Figure IA.4: **Non-intermediated channels: Dynamic effects** (TreatIntensity3_f)

TABLE IA.1: **Treatment intensity: Affiliated entities**

<i>Panel A: Cap Introduction</i>								
	<i>N</i>	Mean	SD	P10	P25	P50	P75	P90
TreatIntensity _d	46.00	0.40	0.29	0.09	0.16	0.31	0.66	0.86
TreatIntensity1 _f	30.00	0.48	0.30	0.03	0.27	0.50	0.75	0.89
TreatIntensity2 _f	30.00	0.41	0.28	0.06	0.18	0.36	0.68	0.79
TreatIntensity3 _f	30.00	0.21	0.18	0.01	0.06	0.16	0.34	0.45
<i>Panel B: Cap Tightening</i>								
	<i>N</i>	Mean	SD	P10	P25	P50	P75	P90
TreatIntensity _d	41.00	0.31	0.22	0.05	0.12	0.30	0.47	0.62
TreatIntensity1 _f	27.00	0.28	0.25	0.02	0.04	0.25	0.38	0.72
TreatIntensity2 _f	27.00	0.33	0.21	0.02	0.14	0.31	0.50	0.63
TreatIntensity3 _f	27.00	0.11	0.10	0.00	0.00	0.08	0.20	0.24

This table reports summary statistics for the four treatment intensity measures among affiliated entities, each computed in the pre-period before the regulation. Panel A reports the measures for the cap introduction as of 2011. Panel B reports the measures for the cap tightening as of 2016. TreatIntensity_d is a distributor-level measure: the share of a distributor's platform TNA attributable to affiliated funds. The remaining three are fund-family-level measures. TreatIntensity1_f is the fraction of family *f*'s assets attributable to its affiliated distributors. TreatIntensity2_f is the distributor-level treatment intensity of the family's affiliated distributors, computed as the TNA-weighted average of TreatIntensity_d when a family has more than one. TreatIntensity3_f is the product of the first two measures. Money market funds are excluded from all four measures, as they are not subject to the cap. Independent entities, which have zero treatment intensity by construction, are excluded.

TABLE IA.2: Top 10 distributors by platform size

<i>Panel A: Cap Introduction</i>			
Rank	Name	Size (in KRW 100 mil.)	TreatIntensity _d
1	KB Kookmin Bank	160,167.04	0.47
2	Shinhan Bank	122,207.25	0.59
3	Mirae Asset Securities	87,860.31	0.88
4	Samsung Securities	71,988.60	0.66
5	Hana Daetoo Securities	70,907.15	0.54
6	Korea Investment & Securities	67,955.52	0.73
7	Woori Bank	59,369.99	0.20
8	Hana Bank	55,128.51	0.46
9	National Agricultural Cooperative Federation	44,003.90	0.34
10	Industrial Bank of Korea	43,952.66	0.22
<i>Panel B: Cap Tightening</i>			
Rank	Name	Size (in KRW 100 mil.)	TreatIntensity _d
1	KB Kookmin Bank	155,576.51	0.49
2	Shinhan Bank	118,009.96	0.36
3	Woori Bank	111,239.31	0.00
4	KEB Hana Bank	101,462.30	0.17
5	Samsung Securities	82,673.39	0.47
6	Industrial Bank of Korea	79,411.29	0.30
7	Korea Investment & Securities	73,026.15	0.63
8	NH Investment & Securities	71,439.49	0.26
9	Hana Financial Investment	67,983.51	0.33
10	Mirae Asset Securities	65,473.98	0.70

This table presents the ten largest distributors in South Korea ranked by size at two points in time: the cap-introduction pre-period (2011) and the cap-tightening pre-period (2016). Size is the sum across all funds of the net assets attributable to the distributor. The last column reports each distributor's treatment intensity, the share of its size attributable to affiliated funds, with higher values indicating greater reliance on in-house sales. Money market funds are excluded from this measure, as they are not subject to the cap.

TABLE IA.3: Top 10 fund families by TNA

<i>Panel A: Cap Introduction</i>					
Rank	Name	Size (in KRW 100 mil.)	TreatIntensity1 _f	TreatIntensity2 _f	TreatIntensity3 _f
1	Mirae Asset Global Investments	234,159.24	0.35	0.89	0.31
2	KB Asset Management	113,837.44	0.94	0.47	0.44
3	Korea Investment Management	112,342.08	0.25	0.73	0.18
4	Shinhan BNP Paribas Asset Management	111,379.30	0.79	0.58	0.45
5	Samsung Asset Management	103,314.37	0.49	0.68	0.34
6	UBS Hana Asset Management	82,187.94	0.87	0.51	0.44
7	Woori Asset Management	71,260.90	0.80	0.18	0.14
8	NH-CA Asset Management	56,454.61	0.60	0.36	0.22
9	Kyobo AXA Investment Managers	52,424.35	0.27	0.69	0.19
10	Eastspring Asset Management	35,886.89	0.50	0.86	0.43
<i>Panel B: Cap Tightening</i>					
Rank	Name	Size (in KRW 100 mil.)	TreatIntensity1 _f	TreatIntensity2 _f	TreatIntensity3 _f
1	Mirae Asset Global Investments	168,625.25	0.34	0.66	0.23
2	KB Asset Management	143,254.54	0.66	0.48	0.32
3	Samsung Asset Management	130,427.33	0.36	0.46	0.17
4	Shinhan BNP Paribas Asset Management	111,095.77	0.72	0.34	0.24
5	UBS Hana Asset Management	108,596.34	0.76	0.26	0.20
6	Kiwoom Asset Management	94,288.39	0.02	0.14	0.00
7	Korea Investment Management	84,842.20	0.27	0.63	0.17
8	NH-Amundi Asset Management	71,440.34	0.55	0.22	0.12
9	IBK Asset Management	67,604.61	0.73	0.30	0.22
10	Shinyoung Asset Management	67,274.62	0.13	0.54	0.07

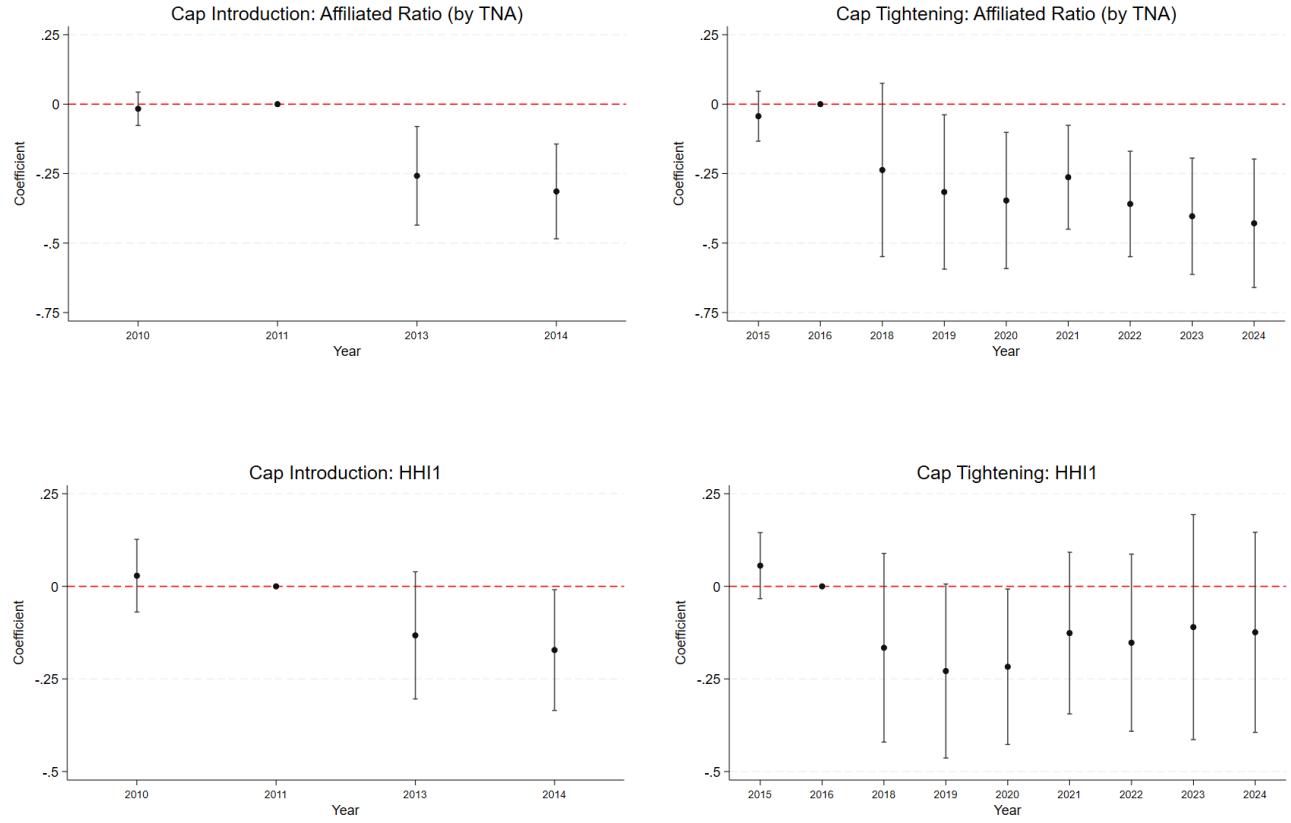
This table presents the ten largest fund families in South Korea ranked by size at two points in time: the cap-introduction pre-period (2011) and the cap-tightening pre-period (2016). Size is the total net assets of all funds within the family. The last three columns report the family's treatment intensity measures: TreatIntensity1_f, the fraction of its assets attributable to its affiliated distributors; TreatIntensity2_f, the TNA-weighted average treatment intensity of those affiliated distributors; and TreatIntensity3_f, the product of the two. Money market funds are excluded from these measures, as they are not subject to the cap.

TABLE IA.4: **Joint intensity**

<i>Panel A: Cap Introduction</i>								
	N	Mean	SD	P10	P25	P50	P75	P90
JointIntensity $_{ij}$	702	0.06	0.10	0.00	0.00	0.02	0.08	0.21
<i>Panel B: Cap Tightening</i>								
	N	Mean	SD	P10	P25	P50	P75	P90
JointIntensity $_{ij}$	552	0.02	0.04	0.00	0.00	0.00	0.02	0.06

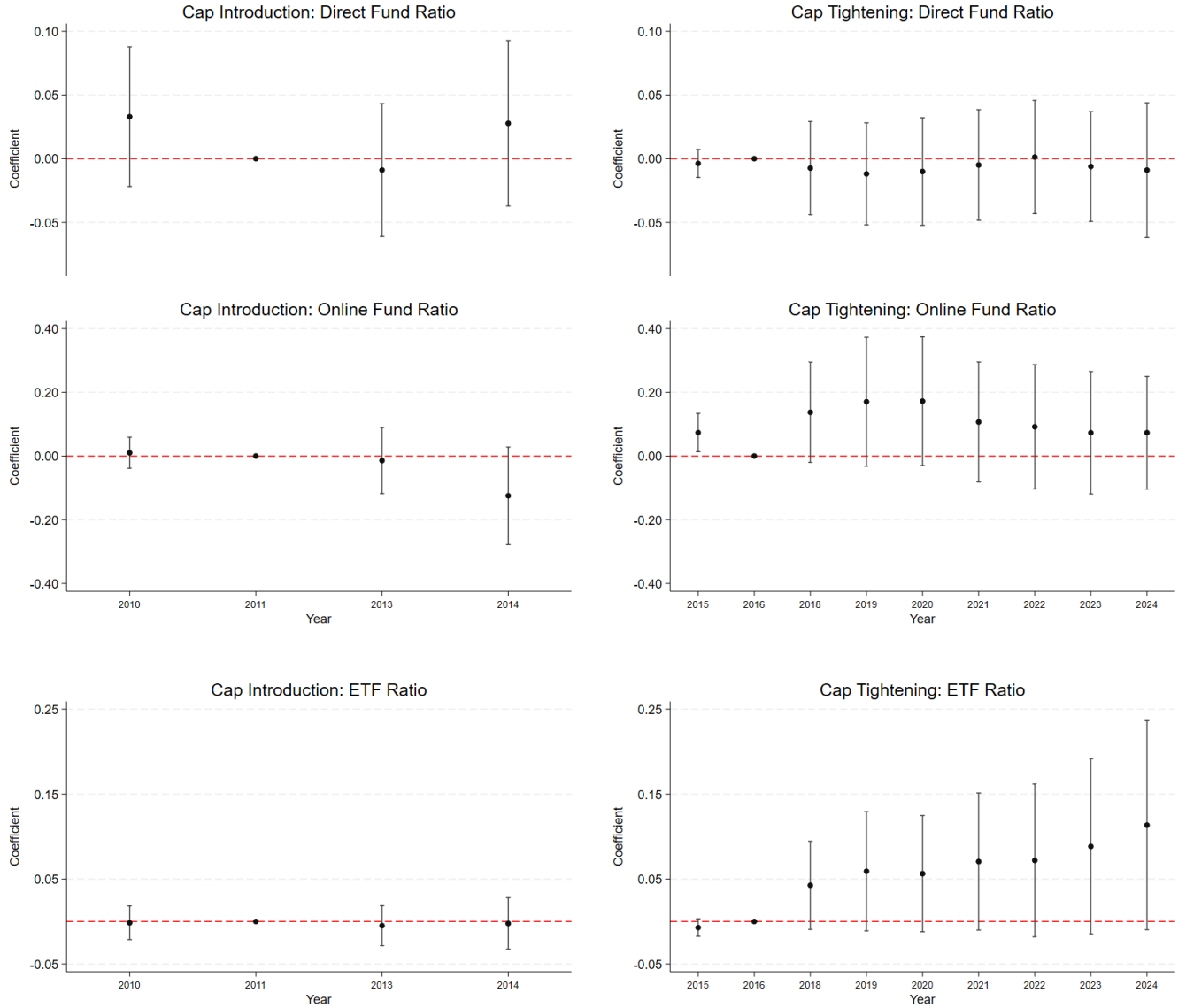
This table reports summary statistics for the joint treatment intensity of a pair of affiliated financial groups. The sample consists of all ordered pairs (i, j) of affiliated financial groups ($i \neq j$). For each pair, JointIntensity $_{ij}$ is the product of the pre-period treatment intensities of the distributors affiliated with groups i and j , where a distributor's treatment intensity is the share of its net assets attributable to affiliated funds. Panel A reports the measure for the cap introduction, with treatment intensities measured as of 2011; Panel B reports it for the cap tightening, measured as of 2016.

FIGURE IA1: Distributor compliance: Dynamic effects



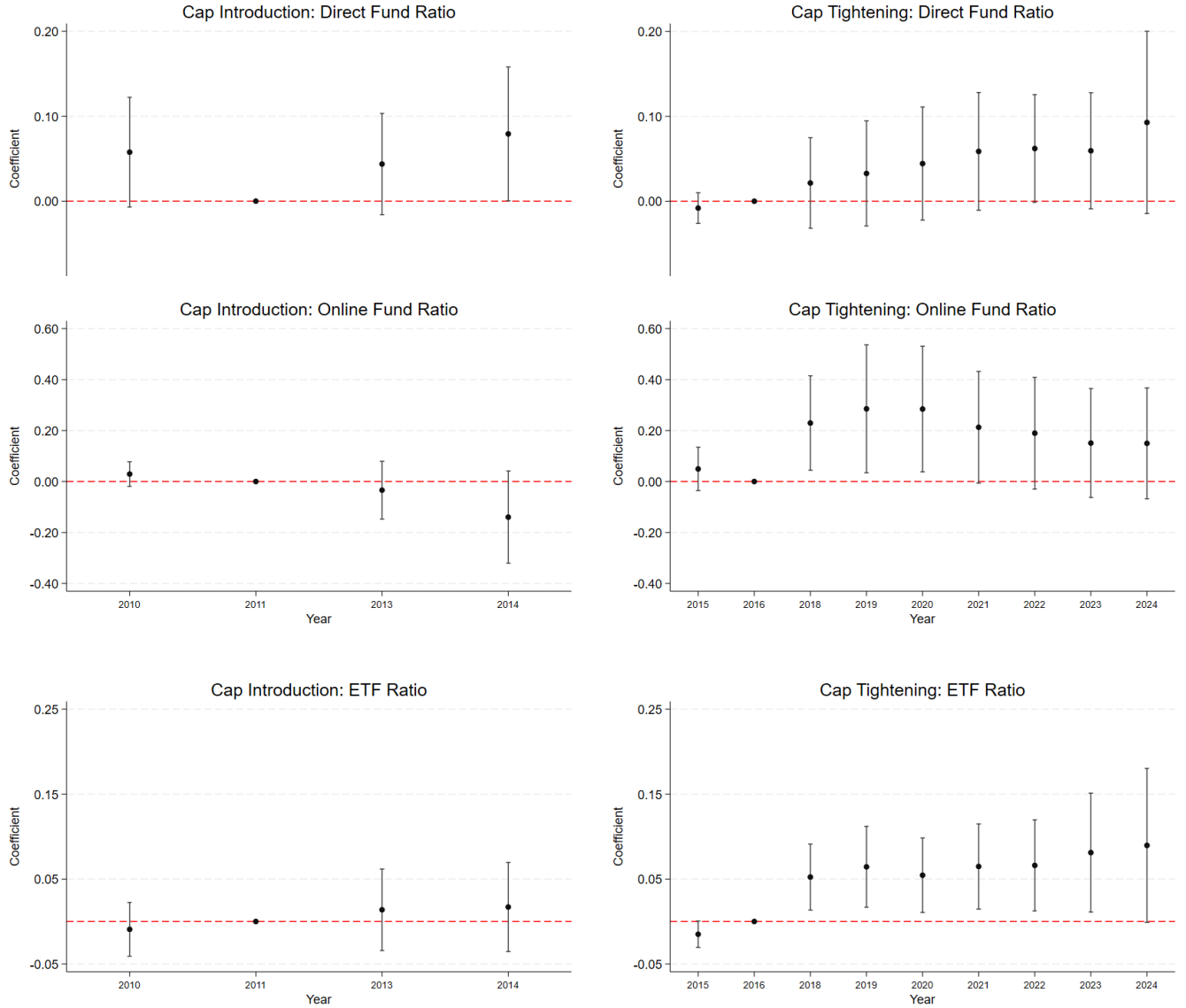
The top panels show year-by-year difference-in-differences coefficient estimates for the affiliated TNA ratio. The bottom panels show estimates for HHI1. In each, the left panel corresponds to the cap introduction and the right panel to the cap tightening. The vertical bars display 95% confidence intervals using standard errors clustered at the distributor level.

FIGURE IA2: **Non-intermediated channels: Dynamic effects** (TreatIntensity1_f)



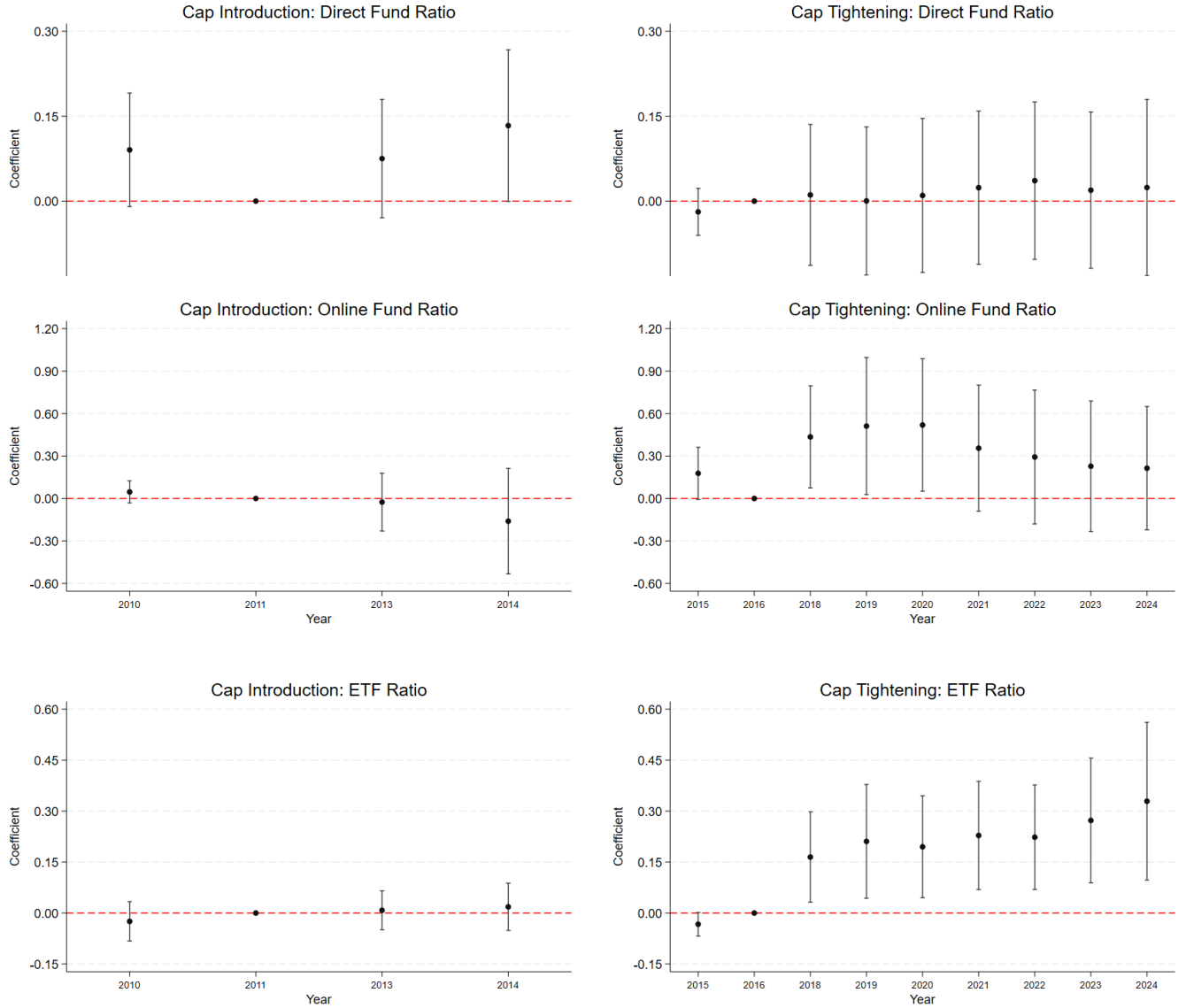
This figure plots year-by-year difference-in-differences coefficients for the non-intermediated channels regressions, using TreatIntensity1_f as the treatment intensity measure. The top panels show estimates for the direct fund ratio, the middle panels for the online fund ratio, and the bottom panels for the ETF ratio. In each, the left panel corresponds to the cap introduction and the right panel to the cap tightening. The base year is omitted. The vertical bars display 95% confidence intervals using standard errors clustered at the fund-family level.

FIGURE IA3: **Non-intermediated channels: Dynamic effects** (TreatIntensity2_f)



This figure plots year-by-year difference-in-differences coefficients for the non-intermediated channels regressions, using TreatIntensity2_f as the treatment intensity measure. The top panels show estimates for the direct fund ratio, the middle panels for the online fund ratio, and the bottom panels for the ETF ratio. In each, the left panel corresponds to the cap introduction and the right panel to the cap tightening. The vertical bars display 95% confidence intervals using standard errors clustered at the fund-family level.

FIGURE IA4: **Non-intermediated channels: Dynamic effects** (TreatIntensity3_f)



This figure plots year-by-year difference-in-differences coefficients for the non-intermediated channels regressions, using TreatIntensity3_f as the treatment intensity measure. The top panels show estimates for the direct fund ratio, the middle panels for the online fund ratio, and the bottom panels for the ETF ratio. In each, the left panel corresponds to the cap introduction and the right panel to the cap tightening. The vertical bars display 95% confidence intervals using standard errors clustered at the fund-family level.