Corporate Bond Flipping*

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Abstract

In this paper, we provide the first empirical evidence on corporate bond flipping. Analyzing 2002-2018 insurer trades, we show that when flipping their allocation in an offering, insurers avoid selling to the underwriters despite underwriters providing better prices. Offerings with worse aftermarket performance are flipped less, but the flipping-to-performance sensitivity is similar when flipping to underwriters or non-underwriters, suggesting that underwriters discourage flipping in both overpriced and underpriced offerings. Insurers flipping to the underwriters receive less profitable allocations in these underwriters' subsequent offerings. Our findings suggest that underwriters can partially limit flipping by using their allocation discretion to penalize flippers.

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1. Introduction

Corporate bonds are commonly viewed as a buy-and-hold investment. Yet for a short period immediately after issuance, they are very actively traded.[1] The timing of this peak in trading activity raises the question of whether it is largely due to flippers – investors who receive a primary market allocation but promptly sell it in the secondary market. Understanding the extent and drivers of corporate bond flipping is important because flippers' participation in the bookbuilding process inflates demand and makes primary market pricing less efficient.[2]

Because the security issuance process is a repeated game, bond investors' decision to flip their allocation in an offering likely depends on how the underwriters perceive flipping. On the one hand, because demand curves for bonds are downward-sloping, flippers' selling in the aftermarket pushes the price down and makes underwriters' efforts to stabilize the price more difficult.[3] For this reason, underwriters may want to discourage flipping, especially for offerings with weak aftermarket performance. On the other hand, dealers tend to be the main market makers for the bonds they underwrite, which may enable underwriters to capture a larger share of secondary market trading profits from the offering.[4] For this reason, underwriters may want to encourage flipping, especially for offerings with strong aftermarket

[1]For example, Goldstein et al. (2021) show that trading activity in newly issued corporate bonds peaks on day 2 of trading but then declines by almost 90% by day 10.

[2]See Cornelli and Goldreich (2003) and Zhang (2012) for theory and evidence that when the information obtained from primary market investors during the bookbuilding process is less precise, less of it is incorporated in the offering price. For the practitioner view, see the International Capital Market Association's Primary Market Handbook, which describes the problem as follows: "Distinctly, issuers faced with 'inflated' orderbooks risk being misled into seeking pricing tighter than the market is able to absorb, which may lead to transactions performing poorly in the post launch market."

[3]See the theoretical model in Fishe (2002). Downward-sloping demand curves are an explicit assumption in Zhang (2004) and Hao (2007), who model the effect of overallocation and laddering, respectively, on IPO pricing. Downward-sloping demand curves for corporate bonds are empirically supported by the evidence in Ellul, Jotikasthira, and Lundblad (2011), Ellul, Jotikasthira, Lundblad, and Wang (2015), Dick-Nielsen and Rossi (2018), and Helwege and Wang (2021).

[4]See Boehmer and Fishe (2000) and Fishe (2002).

performance. While these dynamics between investors and underwriters in an offering's first days of trading have been extensively studied for equity offerings, they have received no attention for the larger and more frequent offerings of corporate bonds.[5]

Corporate bond offerings provide an ideal setting to investigate whether incentives set by the underwriters shape flipping. In particular, in the corporate bond market flippers may be able to hide their flipping from the underwriters by directing allocation sales to non-underwriter dealers. In contrast, regardless of who intermediates equity IPO flippers' sales, their actions are revealed to the underwriters through the daily reports of flipping activity provided by the Depository Trust Corporation's IPO tracking system (Aggarwal (2003) and Boehmer et al. (2006)). Thus, bond investors' decision to flip to non-underwriters should be relatively unencumbered by flipping penalties/rewards, and can serve as a useful benchmark that allows us to isolate the impact of underwriter incentives on flipping in a way that has not been possible in studies of equity offerings.

In this paper we shed light on the extent of flipping activity in the corporate bond market and whether underwriters discourage or encourage it by analyzing the trades of 998 insurance groups in 8,004 investment-grade (IG) corporate bonds issued during 2002–2018. We use insurer trades, because the detailed information about each trade insurers disclose in their regulatory filings makes it possible for us to identify their primary market allocations, subsequent sales of these allocations, and the counterparties to these sales. Prior studies, which have exclusively focused on initial public offerings (IPOs) of equity, have examined flipping differences between institutional and retail investors in the aggregate, or within a small sample of large institutional investors.[6] The advantage of our data is that we observe

[5]During our 2002–2018 sample period, corporate bond issuance averaged an annual $1.2 trillion compared to only $42 billion of initial public offerings and $153 billion of seasoned offerings of equity. See https://www.sifma.org/resources/archive/research/statistics/.

[6]Aggarwal (2003) and Boehmer et al. (2006) compare flipping between institutional and retail investors using proprietary data from 9 underwriters and/or data from the Depository Trust Corporation's (DTC's) IPO tracking system. Chemmanur et al. (2010) study flipping in a sample of 48 large asset managers, whose allocations and sales of these allocations are identified by combining 13F data and proprietary transaction-level trading data from Abel/Noser Corporation.

the identity of both parties to all trades involving an insurer, which makes it possible to study flipping activity in a broader and more heterogeneous cross section of investors than in previous work.[7]

Because we are the first to study corporate bond flipping, we begin by describing its frequency and magnitude. We find that in 62% of offerings at least one insurer flips its allocation within 2 days of issuance. The average proportion of allocated par value collectively flipped by insurers is 6% for all offerings and 9% for offerings with some flipping. Although the lack of detailed trading data for non-insurer investors makes it impossible to unambiguously identify these investors' flipping activity, the total par value of customer sell trades in TRACE suggests an upper bound of flipping (i.e., both the flipping of allocated bonds and further re-sales of the flipped bonds) by all investors of 9% of the offering amount. Consistent with the notion that corporate bonds are a buy-and-hold investment, these estimates are lower than estimates of flipping in equity IPOs where 15% of allocated shares are sold within 2 days of issuance on average (Boehmer and Fishe (2000) and Aggarwal (2003)). We also find that partial flipping is rare, with most insurers flipping either all or none of their allocation. Finally, flipping activity appears to be concentrated among more sophisticated investors - larger insurers that are active traders.

We proceed to examine whether flipping incentives set by the underwriters shape flipping and whether these incentives depend on an offering's aftermarket performance. First, we find evidence that insurers avoid flipping to underwriters in general. On average, only 35% of par value flipped is flipped to the underwriters, with a steady decline in this proportion over our sample period. Because flipping to the underwriters is effectively a purchase reversed with a sale to the same dealer within 2 days, we compare the 35% to the proportion of par value purchased and sold to the same dealer outside of the immediate aftermarket period. We find

[7] Hendershott et al. (2020) examine the corporate bond trading activity of more than 4,000 insurers and find that the top 100 account for 27.8% of trades and 45.3% of trading volume. Thus, while some insurers can be described as buy-and-hold investors, others are exceedingly active traders more similar to bond asset managers.

it to be significantly higher: 76% of par value sold within 2 days of purchase is sold to the dealer from whom it was purchased. We also show that underwriters purchase bonds from flippers at better prices than other dealers on average.[8] Taken together, our findings that insurers are reluctant to flip their allocation in an offering to the underwriters, even though this reluctance comes at a cost, suggest that underwriters may discourage flipping.[9]

Second, we find no evidence that underwriters discourage flipping more for offerings with worse aftermarket performance. Although we find a strong positive relation between flipping and underpricing, the sensitivity of flipping to underpricing is broadly similar whether flipping is to underwriters or non-underwriter dealers. This finding is not due to fewer non-underwriters trading overpriced offerings, nor to underwriters' higher likelihood of overallocating such offerings. If investors view underwriters as more tolerant of flipping underpriced offerings and scale back their flipping of such offerings less (or view them as particularly intolerant of flipping overpriced offerings and scale back their flipping of these more), then the positive flipping-to-underpricing sensitivity would be higher for flipping to underwriters than to other dealers. Thus, our finding of broadly similar underwriter and non-underwriter flipping-to-underpricing sensitivities indicates that insurers are reluctant to flip to the underwriters all offerings regardless of their aftermarket performance. It also suggests that the overall positive flipping-to-underpricing sensitivity we document, which parallels the evidence from equity IPOs, cannot be fully explained by potential penalties/rewards by underwriters.

Third, we show that underwriters penalize flipping regardless of the flipped offerings' aftermarket performance, consistent with the documented patterns in insurer flipping activity. Our analyses reveal a strong negative relation between an insurer's first-day profits in an

[8]While we focus on whether investors sell their allocation in the immediate aftermarket and to whom, Nagler and Ottonello (2021) study their selling decisions long term. They find that over horizons of 6 to 12 months, insurers who receive an allocation from an inventory-constrained underwriter are more likely to sell their allocation back to the underwriter the stronger the trading relationship between them.

[9]This reluctance also offer a possible explanation for why the majority of trading activity in a corporate bond's initial days of trading goes through non-underwriter dealers (Goldstein et al. (2021)), while the opposite is true for equity IPOs (Ellis et al. (2000)).

offering, and whether and how much that insurer flips prior-year offerings of the underwriters.[10] When we allow prior-year flipping to have a differential impact on first-day profits depending on the flipped offerings' aftermarket performance, we observe that past flipping is associated with smaller first-day profits regardless of performance, and that penalties are not significantly higher when the flipped offerings are overpriced.

Finally, having shown that penalties assessed by the underwriters cannot explain the positive relation between flipping activity in an offering and the offering's aftermarket performance, we examine several non-mutually exclusive alternative explanations for this relation: minimum position requirements, the disposition effect, and long-run performance. Prior studies argue that investors' minimum position requirements affect their decision of what to do with their allocation (e.g., Aggarwal (2003), Zhang (2004), and Ellis (2006)). Because offerings in high demand are rationed (Hanley (1993)), investors in such offerings are more likely to receive less than their required minimum but less likely to augment it because of rising prices. This should result in more flipping of more underpriced offerings and we find that it does. Another explanation for the positive relation between flipping and underpricing is the well-documented disposition effect whereby investors tend to ride losses but quickly realize gains (Shefrin and Statman (1985)). Our analyses yield support for this explanation as well. Finally, investors may flip their allocation in more underpriced offerings more in order to lock in their profits, if more underpriced offerings underperform in the long run as has been documented for equity IPOs (Ritter (1991)). While our analyses reveal that minimum position requirements and the disposition effect both partially explain the positive flipping-to-underpricing relation we document, we find no evidence that this relation is due to bond offerings' long-run performance.

Our study makes two important contributions. First, it adds to a new and growing

[10] Following Nikolova et al. (2020), we calculate an insurer's first-day profits in an offering as the product of its allocation and the offering's underpricing. Unlike the magnitude of an insurer's allocation alone, this measure reflects underwriters' ability to favor investors with small allocations of significantly underpriced offerings as well as large allocations of moderately underpriced offerings.

literature on the role of corporate bond underwriters in ensuring a successful offering. Wang (2021) shows that underwriters use bookbuilding to improve primary-market pricing. Nagler and Ottonello (2021) find that they employ their relationships with investors to overcome inventory capacity constraints and reduce issuers' borrowing costs. Bessembinder et al. (2020) and Goldstein et al. (2021) emphasize underwriters' importance for price stabilization and liquidity provision, respectively, in the immediate aftermarket. We add to this literature by documenting another way in which underwriters promote the success of an offering: relying on the repeated game nature of the issuance process, they try to limit flipping by using their allocation discretion to penalize flippers.

Our second contribution is to identify important differences between flipping activity in corporate bond offerings and flipping activity documented in equity IPOs. Equity IPO studies show that underwriters' flipping penalties are concentrated in offerings with weak aftermarket performance and these offerings are flipped less (Aggarwal (2003), Chemmanur et al. (2010), and Boehmer and Fishe (2000)). Using a large sample of heterogeneous corporate bond investors, we find that in corporate bond offerings underwriters penalize flipping across all offerings regardless of these offerings' aftermarket performance. As a result, investors avoid flipping to the underwriters both underpriced and overpriced offerings even though underwriters purchase bonds at better prices. While similarly to equity IPOs, underpriced offerings of corporate bonds are flipped more, we are able to show that the positive relation between flipping and underpricing is not due to underwriters' flipping penalties. Whether our different findings are due to institutional differences between equity and bond markets, as detailed in Section 2, or our more comprehensive flipping data is a question for future research.

2. Hypotheses

Because the issuance process for corporate bonds is a repeated game, investors' decision of whether to flip their allocation in an offering likely depends on whether underwriters discourage or encourage flipping. This in turn may depend on the offering's post-issuance performance as argued by equity IPO studies.

Flipping can be costly to the underwriters if an offering trades down in the aftermarket. Underwriters implicitly assume the responsibility to stabilize the secondary market price of the offerings they bring to market (Bessembinder et al., 2020). When an offering trades down immediately after issuance, flipping will put further downward pressure on the price and make any price stabilization efforts of the underwriters more difficult. Furthermore, the underwriters' price stabilization efforts may result in them accumulating inventory in bonds that are declining in price, which can be a significant regulatory burden (Bessembinder et al. (2018)). For these reasons, underwriters will want to discourage flipping in relatively overpriced offerings. They can accomplish this by assessing penalty bids to syndicate members who allow flipping or by threatening to withhold future allocations from investors who flip.

Underwriters may react differently to investors' flipping when an offering trades up in the aftermarket. In such a case, in addition to not having to stabilize the price, underwriters may also be less concerned about inventory risk. Holding inventory in bonds that are increasing in price is profitable and, to the extent that underpricing indicates strong customer demand, reducing inventory in such bonds should be easier. Most importantly, underwriters can directly benefit from intermediating secondary market trades, which should be most profitable for more underpriced offerings.[11] While this discussion suggests that underwriters may not want to discourage flipping in offerings that trade up in the aftermarket, whether they will

[11] Boehmer and Fishe (2000) propose a model in which underwriters balance underwriting profits against market making profits from the secondary market trading of newly issued securities. In their model, underpricing is necessary to attract low-valuation investors who flip the securities in the secondary market to high-valuation investors and underwriters capture the majority of the profits from intermediating this reallocation.

actively encourage it and how is unclear. Underwriters can conceivably reward flipping of underpriced offerings to themselves with larger future allocations, but they may also view investors' profits from flipping underpriced offerings as a sufficient reward.[12]

Equity IPO studies largely support the view that underwriters discourage flipping in overpriced offerings but tolerate it in underpriced offerings.[13] Aggarwal (2000) shows that equity IPO underwriters do assess penalty bids, albeit rarely and mainly for overpriced offerings. Chemmanur et al. (2010) find that equity IPO underwriters award smaller allocations to institutions that sell relatively overpriced offerings faster, but no significant effect on allocations when institutions sell relatively underpriced offerings faster. The perceived penalties for flipping overpriced offerings seem to have the desired disciplining effect on institutional investors: the percentage of shares offered that are flipped is relatively low and increases with the offering's underpricing (e.g., Aggarwal (2003), Boehmer et al. (2006), and Chemmanur et al. (2010)).

Whether the findings of equity IPO studies extend to corporate bonds is unclear in light of important differences between the markets in which these securities are issued and traded. First, while price stabilization in both equity IPOs and corporate bond offerings is typically facilitated through overallocation, overallocation is potentially costlier in bond offerings (Bessembinder et al. (2020)). In equity offerings, the underwriters can cover their short positions by exercising the overallotment option, which allows them to purchase up to 15% of additional shares from the issuer at the offering price. Overallotment options in bond offerings are rare. As a result, the underwriters must cover their short positions through secondary market purchases, which are costly when the offering trades up. If the underwriters can be certain that the level of flipping activity in an offering will be minimal, they can overallocate less and potentially limit their losses from the secondary market purchases of

[12]In contrast, investors' losses from flipping overpriced offerings may not be a sufficient penalty in and of itself, because the underwriters' price stabilization will reduce flippers' losses.

[13]See Ritter and Welch (2002), Hanley (2018), and Lowry et al. (2017) for a review of the literature on equity IPO flipping.

bonds that end up being underpriced. Thus, corporate bond underwriters may have a stronger incentive to curb flipping than equity IPO underwriters and this incentive may extend to underpriced as well as overpriced offerings.[14]

Second, the secondary market for equities significantly differs from that for corporate bonds. Stocks trade on exchanges characterized by relatively low trading costs, while bonds trade in over-the-counter markets where trading can be expensive and dealers' profits from market-making large.[15] Furthermore, most of the underpricing in equity IPOs is revealed at the market open (Barry and Jennings (1993)) while underpricing in corporate bonds is revealed slowly over the initial days of trading (Goldstein et al. (2021)). As a result, corporate bond dealers may be in a better position to benefit from intermediating secondary market trades immediately after issuance, and especially so for offerings they underwrite.[16] The potentially large market-making profits from underpriced offerings may create an incentive for corporate bond underwriters to encourage, rather than simply tolerate, the flipping of underpriced securities as long as the flippers direct sales to them.

Finally, while underwriters can easily identify flippers in equity IPOs to either penalize or reward, identifying corporate bond flippers is more challenging. For equity IPOs the Depository Trust Company's IPO tracking system provides daily flipping reports to an offering's

[14]Conditional on overallocation, underwriters may be reluctant to penalize flipping, since they need to purchase bonds in the open market to cover the short positions created through overallocation. Because such reluctance may in turn encourage flipping and increase the need to overallocate in the first place, underwriters may find it optimal to consistently penalize flippers regardless of whether an offering is overallocated. They may be able to do so yet still cover their short positions by purchasing bonds from other dealers rather than from investors. While our data does not allow us to analyze the impact of overallocation on underwriters' counterparty choice when purchasing bonds in the secondary market, in Section 5.4.2, we investigate the impact of overallocation on insurers' decision of whether to flip their allocation and whether to do so through an offering's underwriters.

[15]Edwards et al. (2007) report that effective spreads in equity markets for retail-sized trades average less than 40 basis points in contrast to the 124 basis points that they estimate for corporate bond trades of $20,000. For other estimates of trading costs in corporate bonds, see Schultz (2001), Bessembinder et al. (2006), Goldstein et al. (2007), and Goldstein and Hotchkiss (2020) among others.

[16]Ellis et al. (2000) find that while market-making is profitable, equity IPO underwriters' main source of profits are underwriting fees and not secondary market trading. Goldstein et al. (2021) estimate that corporate bond underwriters capture 31% (46%) of the rents from selling non-144A (144A) bonds to institutional investors in the 10 days immediately after issuance.

underwriters, but no similar system exists in the corporate bond market. As a result, a unique aspect of corporate bond flippers is that they may be able to hide their flipping from the underwriters, if they expect it to be penalized, by directing sales to non-underwriter dealers. If they succeed, underwriters may be unable to assess a penalty for flipping despite their desire to do so.

Investors' ability to direct flipping to dealers other than an offering's underwriters, however, may be limited by several distinctive features of the secondary market for corporate bonds. First, underwriters are typically a key market maker for the bonds they underwrite and their dominance in trading is highest in the period immediately after issuance. For instance, Goldstein et al. (2021) report that underwriters' share of volume is 38% on the day after the offering. Second, underwriters' dominance in trading is likely more pronounced when an offering trades down in the aftermarket. While they typically assume the responsibility to step in and stabilize the offering's price, few other dealers may be willing to make market in bonds that are declining in price and facing weak customer demand. Finally, the nature of bilateral bargaining in the fragmented OTC market in which corporate bonds trade implies that investors are limited in their ability to reach multiple dealers as search costs for trading alternatives can be significant (Duffie et al. (2005)). While some institutional investors have access to relatively large trading networks, many others choose to concentrate their trading with a single dealer (O'Hara et al. (2018) and Hendershott et al. (2020)). Taken together these arguments suggest that some investors, who would have preferred not to flip their allocation to the underwriters, may be constrained in their ability to do so.

In sum, whether and when corporate bond underwriters encourage or discourage flipping is an open empirical question. To answer it, we specify and test the following three hypotheses. First, if underwriters indeed discourage flipping by penalizing it, we expect that investors will attempt to hide their flipping by directing sales to non-underwriter dealers. Second, because the decision to flip to non-underwriters is relatively unencumbered by any penalties for flipping, we can use it as a benchmark of insurers' propensity to flip absent incentives set by underwriters. Thus, if investors view underwriters as more tolerant of flipping underpriced offerings and scale back their flipping of such offerings less, or view them as particularly intolerant of flipping overpriced offerings and scale back their flipping of these offerings more, then the positive flipping-to-performance sensitivity will be higher for flipping to underwriters than to other dealers. Alternatively, if insurers expect to be penalized for flipping both overpriced and underpriced offerings and proportionally scale back their flipping to underwriters across all offerings, then the positive flipping-to-underpricing sensitivity will be similar for flipping to underwriters verus to other dealers. Finally, if underwriters discourage flipping, they may do so by penalizing flippers through worse allocations in subsequent offerings. We expect that the more an investor flips, the larger the penalty.[17] In sum, our three hypotheses are specified as follow:

H1: Investors are less likely to flip their allocation in an offering to the offering's underwriters than to non-underwriters.

H2: If underwriters' tolerance of flipping increases with the offering's aftermarket performance, then the flipping-to-performance sensitivity should be higher when flipping to the underwriters than to non-underwriters.

H3: Investors that flip their allocation to the offering's underwriters will be penalized with smaller first-day profits in the underwriters' subsequent offerings. The more of their allocations they flip, the larger the penalty.

[17] It is important to note that an explicit penalty may not be necessary to deter flippers given the significant concentration of corporate bond underwriting in the hands of a few large banks. As Aggarwal (2003) points out, "Large banks have sufficient bargaining power that the implicit threat that investors will be left out of allocations in future offerings can deter investors from flipping."

3. Data

We use data from three main sources: Mergent's Fixed Income Securities Database (FISD), the enhanced version of FINRA's Trade Reporting and Compliance Engine (TRACE), and insurers' regulatory filings with the National Association of Insurance Commissioners (NAIC). Our sample covers the 7/1/2002–12/31/2018 period. At the lower end of this period we are limited by the availability of corporate bond price data from TRACE, which we use to assess an offering's aftermarket performance, while at the upper end we are constrained by the availability of insurer trade data from the NAIC, which we use to identify primary market allocations and flipping.

From FISD, we gather security characteristics and issuance information for all U.S. corporate bonds issued during our sample period, excluding convertible bonds, perpetual bonds, Yankee bonds, asset-backed and mortgage bonds, and bonds issued as part of an exchange offer.[18] We also remove medium-term notes, which are typically distributed on a best-efforts rather than firm-commitment basis, as well as bonds with a missing offering date, offering price/coupon, or underwriter since we need this information to identify primary market allocations and flipping. Following O'Hara et al. (2018), we exclude bonds with offering amounts of less than $1 million, which typically trade very infrequently. Finally, because of insurers' low level of participation in the primary market for non-IG bonds, following Nikolova et al. (2020) we limit our sample to IG offerings.[19] These filters yield an initial set of 9,550 bonds.

From TRACE, we collect secondary market trade information for this set of bonds. We first clean the TRACE data for cancellations, corrections and reversals, delete duplicate interdealer trade reports, and exclude retail-sized (<$100,000), commission or special-price-

[18] The last offering date for sample bonds is 12/17/2018 to allow for 10 trading days post-issuance.

[19] During our sample period of 2002–2018, insurers are allocated 6.62% of the par value in non-IG offerings, which is similar to the 6.44% reported by Nikolova et al. (2020) during 2002–2014 and constitutes about a third of their allocation in IG offerings. Our focus on IG offerings is also supported by the evidence in Ambrose et al. (2008), Becker and Ivashina (2015), and Murray and Nikolova (2021) that the majority of insurers' corporate bond holdings are rated IG.

condition trades. Because our analysis requires a measure of an offering's aftermarket performance, we retain only newly issued bonds with at least one secondary market trade in TRACE during the first week from issuance. We are left with 8,714 bonds.

From NAIC, we obtain information on life and property/casualty insurance companies' trades in these bonds. Insurance companies are required to report their purchases and sales at the individual security (nine-character CUSIP) level in Schedule D of their regulatory filings with the NAIC.[20] For each trade, they disclose the trade size, price paid/received, date traded, trade direction, and trade counterparty. We remove from the NAIC data observations with missing or negative trade size/price. Although Schedule D is filed by each individual insurance company, the predominant organizational structure in the insurance industry is the insurance group. While individual companies operate independently in some ways, many aspects of their operations, including investment decisions, are managed at the level of the group. We, therefore, conduct our analyses at the group level rather than at the individual company level by aggregating purchases and sales across all individual companies within a group. For ease of exposition, we refer to these groups as "insurers" throughout the remainder of the paper.

To construct our sample, we begin by linking the bonds traded by insurers in the NAIC data to the 8,714 bonds in our FISD/TRACE data set using nine-character bond CUSIPs. Following Nikolova et al. (2020), we identify the primary market allocation of a corporate bond offering to an insurer as a purchase made on the offering date at the offering price from any of the offering's underwriters.[21] We aggregate the par value allocated to an insurer by multiple underwriters of an offering to obtain a dataset at the insurer-offering level. Because only insurers allocated bonds can flip them, we retain only positive-allocation observations.

[20] Insurance companies report in Schedule D all acquisitions and disposals of securities, not only purchases and sales. We exclude any security acquisition or disposal due to maturity, repayment, call, payment-in-kind, or other non-trading activity.

[21] Since insurers enter the name of their trade counterparty in free form, as in Nikolova et al. (2020) we manually match these names to those of the underwriters of the bonds in the FISD/TRACE data set.

Our final sample includes 8,004 offerings issued by 1,292 unique firms. The average (median) offering has 2.6 (3) lead underwriters and is underpriced by 0.31% (0.18%).[22] Most offerings are of seasoned issuers as only 10% are the first debt offering of the issuer and 92% are of firms with publicly listed equity. Offerings issued under Rule 144A of the Securities Act of 1933 comprise 14% of the sample. On average, sample offerings are large (mean of $715M) and their maturities are near 12 years.[23]

4. Flipping activity

Following the equity IPO literature, we define flipping as the sale of securities in the immediate aftermarket by investors who receive an allocation in the primary market. Thus, for insurers receiving an allocation in an offering, we calculate the amount flipped as the par value sold in the secondary market in the bond's first 2 days of trading.[24] Our focus on a security's first 2 days of trading follows the standard practice in the equity literature and reflects our finding in Figure 1 that allocation sales are heavily concentrated in those days.

Table 1 presents descriptive statistics on allocations to insurers and subsequent flipping activity at both the bond and bond-insurer level, and makes several noteworthy points. First, the table shows that collectively insurers are important participants in the primary market for corporate bonds. On average (in median), they are allocated 18% (15%) of the par value issued with the average insurer receiving about 1%. When we examine the time

[22]In our analyses, we focus on an offering's lead underwriters because they are primarily responsible for pricing, allocation, and price stabilization decisions (Nikolova et al. (2020), Bessembinder et al. (2020), and Goldstein et al. (2021) among others). For ease of exposition, we refer to them simply as underwriters hereafter. In Section A1 and Tables A1-A3 of the Internet Appendix, we show that our main findings are robust to classifying as underwriters all members of the underwriting syndicate.

[23]The descriptive statistics discussed here as well as additional information about offerings in our sample are presented in Section A2 and Table A4 of the Internet Appendix.

[24]In some equity IPO studies, flipping does not include the sale of purchases in the aftermarket. In Section A3 and Table A5 of the Internet Appendix, we show that netting out any secondary market purchases that take place immediately after the offering has almost no effect on the incidence and magnitude of flipping in our sample.

series of aggregate insurer allocations in Figure 2, we find that it has declined from a high of 28% in 2002 to less than half of that in 2018. This steady decline may be the result of competition for allocations from bond mutual funds and ETFs. Second, insurers flip some of their allocation in the majority of offerings, but the proportion flipped is relatively small. In 62% of offerings in which insurers are allocated bonds, they sell at least some of these bonds in the first 2 days of trading. The proportion of allocated par value insurers collectively flip (*Aggr %Flipping*) is on average 6% for all offerings and 9% for offerings with some flipping activity.[25] In contrast to the steady downward time trend in aggregate insurer allocations, Figure 2 shows no clear time trend in flipping activity. Third, insurers' flipping activity is broadly comparable to that of other investors. Because the detailed trading data available for insurers is not available for other investors, it is impossible to unambiguously identify other investors' flipping. Nonetheless, the total par value of customer sell trades in TRACE suggests an upper bound of flipping by both insurer and non-insurer investors of 9% of the offering amount in the first 2 trading days on average. Finally, we find that when an insurer flips its allocation in an offering, it almost always flips all of it. The proportion of par value allocated to an insurer in an offering and subsequently flipped ($\%Flipping, \%Flipping > 0$) is 92%.

In Table 2 we investigate whether flipping is limited to a small number of insurers, and whether insurers that flip their allocation systematically differ from those that do not. For each of the 998 insurers in our sample, we calculate the ratio of the number of offerings allocated and flipped to the number of offerings allocated during the sample period. The cross-sectional statistics for this ratio, presented in Panel A of Table 2, indicate that the incidence of flipping across insurers is skewed. While the average flipper sells its allocation in 6% of allocated offerings, flippers at the 90th percentile of the distribution sell their

[25] Although estimates of flipping in equity IPOs vary across studies, the magnitude of these estimates is higher than the magnitude we observe in the corporate bond market. The proportion of allocated equity IPO shares flipped in the first 2 trading days is on average (in median) 15% (14%) in Boehmer and Fishe (2000) and 15% (7%) in Aggarwal (2003).

allocation in 13% of allocated offerings.

For each of the 998 sample insurers, we also construct variables that capture various insurer characteristics and then present the cross-sectional means and standard deviations of these variables as well as mean differences between flippers and non-flippers in Panel B of Table 2. These statistics show that along almost every dimension flippers are very different from non-flippers. We find that they receive an allocation in significantly more offerings (371 versus 39) and their allocations are on average larger (61 bps versus 19 bps). On average, flippers also have larger portfolios ($9.75 versus $0.91 billion) and are more active traders (average turnover of 0.36 versus 0.27). While trading volume with the underwriters accounts for a largely similar share of total trading volume for both flippers and non-flippers (0.12 and 0.13 on average), flippers have significantly bigger trading networks (21.6 versus 12.4 broker-dealers on average). These findings that flippers tend to be larger and more sophisticated investors are broadly consistent with the finding in the equity IPO literature that more flipping is done by institutional than retail investors (Aggarwal (2003)). Finally, we use the proxies of insurer-underwriter trading relationship and insurer information production in Nikolova et al. (2020) to compare flippers and non-flippers along these two dimensions. Flippers seem to have significantly stronger trading relationships with underwriters (as proxied by them accounting for a larger proportion of the underwriters' annual trading volume with insurers), which may explain why we find that they receive more and larger allocations. Non-flippers may be more likely to have better information about the offering (as proxied by them having larger holdings in the same industry as the current offering), which may explain why they tend to hold onto their allocations longer than flippers. Our findings in Table 2 of significant differences between flippers and non-flippers underscore the importance of controlling for the effect of observable and unobservable insurer characteristics on flipping in our subsequent multivariate analyses.

5. Do underwriters encourage or discourage flipping?

In this section, we analyze the empirical evidence on whether underwriters encourage or discourage flipping, and whether this depends on an offering's aftermarket performance. We do so by testing our three hypotheses detailed in Section 2.

5.1. Flipping to underwriters versus non-underwriters

Our first hypothesis *H1* predicts that if underwriters discourage flipping, insurers should try to avoid selling their allocation to them. To determine whether this is the case, we perform two types of tests. First, we investigate whether the flipping activity directed to underwriters is statistically less than that directed to other dealers and find that it is. In Panel A of Table 3, the proportion of offerings flipped to underwriters and non-underwriters is 29% and 46%, respectively, with the average difference of 17% being strongly significant. Similarly, insurers flip an average of 2.2% of their allocation in an offering to the offering's underwriters but more than twice that, 4.6%, to non-underwriters. Again, the difference is economically large and statistically significant. These findings support our hypothesis *H1.*

Second, recognizing that flipping to the underwriters is effectively selling bonds to the dealer from which they were purchased, we compare insurers' choice of a flipping counterparty to their choice of a counterparty more generally when reversing a purchase with a sale. We start by calculating the share of flipping activity in an offering that goes through the underwriters compared to other dealers. For each offering, we calculate the proportion of total par value flipped that is flipped to the underwriters, and in Panel B of Table 3 find it to be 35% on average. We then calculate the share of purchases quickly reversed with a sale where the same counterparty is used for both trades. Specifically, we consider insurer purchases of any securities in the FISD database that are issued during our sample period. We focus on purchases of these securities that take place more than 10 trading days after the offering date because we want to understand how insurers behave when their counterparty choice is unaffected by considerations specific to the immediate aftermarket period. For each purchase, we identify the closest in time subsequent sale within 2, 10, 20, or 60 trading days of the purchase date. If the purchase and sale counterparty name is the same, we classify the trade pair as being a same-counterparty trade pair. We then calculate the proportion of par value purchased and sold to the same counterparty and compare it to the share of flipping to the underwriters. The results of these comparisons, presented in Panel B of Table 3, indicate that the share of flipping to the underwriters is unusually low. For instance, the proportion of par value sold to the same counterparty from which it was purchased is 75% for purchases that are reversed within 2 trading days. This proportion is significantly higher than the proportion of flipping to the underwriters of 35%, which is also measured over 2 days, in support of our hypothesis *H1*. Extending the time between the purchase and subsequent sale reduces the proportion of par value in same-counterparty trade pairs, but this proportion always remains higher than the proportion of par value flipped to the underwriters in the immediate aftermarket.

Having established that insurers are less likely to flip their allocation in an offering to the offering's underwriters, we next investigate whether this is due to pricing differences between underwriters and non-underwriters. Because underwriters are typically a key market maker for the bonds they bring to market, their central position in trading may give them greater market power and enable them to trade with customers at worse prices than non-underwriters (O'Hara et al. (2018)). If dealers bid lower prices for the bonds they underwrite, this may explain why we observe that insurers are more likely to flip their allocation to non-underwriters.

To investigate whether pricing differences between underwriters and non-underwriters are the driver of insurers' choice of flipping counterparty, we specify the following model:

$$Price_{ij} = \alpha_0 + \alpha_{UW} UW_{ij} + \boldsymbol{\alpha_{BI} BI_{ij}} + \boldsymbol{\alpha_{\mathrm{I}} \mathrm{I}_{\mathrm{j}}} + \epsilon_{ij} \quad (1)$$

where i is a bond and j is an insurer. $Price$ is the weighted average price received by an insurer flipping its allocation in an offering, with the par value sold as the weight. UW is an indicator variable equal to one if an insurer flips its allocation to only the offering's underwriters, zero otherwise. **BI** is a vector of bond-insurer characteristics and **I** is a vector of insurer characteristics, both measured at the year-end before the offering. If underwriters offer flippers worse prices than other dealers, we expect that $\alpha_{UW} < 0$. We estimate equation (1) in the subsample of observations with flipping (*i.e.,* $\%Flipping > 0$), using OLS with insurer and bond fixed effects, and insurer-clustered standard errors.

The estimation results, reported in Table 4, indicate that underwriters tend to buy bonds from flipping insurers at better prices than other dealers. The coefficient of UW in column (1) implies that underwriters offer an average of 8.1 cents more than other dealers per \$100 of par value to insurers flipping their allocation. This finding is not driven by time-unvarying insurer or offering characteristics, since our specifications include fixed effects to control for both. When we add to the set of independent variables additional controls for time-varying insurer characteristics in column (2), the coefficient of UW remain positive, strongly significant, and of about the same magnitude as that in column (1).[26] Thus, pricing differences between underwriters and non-underwriters not only cannot explain why the majority of flipping activity goes through non-underwriters, but instead make our finding that it does even more striking: insurers seem willing to sell allocated bonds at lower prices if it means they can avoid selling to the underwriters.

[26] This finding complements that of Goldstein et al. (2021), who show that in the first 2 trading days customers receive better prices when selling bonds to these bonds' underwriters than to other dealers. While their data allows them to analyze both insurer and non-insurer trades, our data allows us to distinguish flippers from non-flippers and control for investor characteristics and investor-dealer connections.

5.2. Flipping to underwriters versus non-underwriters and aftermarket performance

We next turn our attention to hypothesis *H2*, which predicts that if underwriters discourage flipping in offerings with weak compared to strong aftermarket performance more, then the sensitivity of flipping-to-performance will be stronger when flipping to underwriters than to other dealers. We quantify an offering's aftermarket performance using its underpricing. Following Cai et al. (2007), we calculate underpricing, *UP*, as the difference between the first daily aftermarket price and the offering price as a percentage of the offering price. The daily aftermarket price is the trade-size-weighted average flat price from TRACE on institutional-size (≥$100,000) secondary-market trades during the day.[27] For bonds traded in the secondary market on the offering date, underpricing is simply the percentage change from the offering price to the offering-date daily aftermarket price. For bonds not traded in the secondary market on the offering date, underpricing is the percentage change from the offering price to the first available daily secondary-market price within a week of the offering date, adjusted for accrued interest and market movements.[28] We adjust for market movements by subtracting from the offering's raw underpricing the same period return of the Barclays corporate bond index with the same letter rating and maturity category as those of the offering. We obtain Barclays index returns from Thomson Reuters' Datastream. We then classify offerings into three groups based on whether they are in the bottom (LowUP), middle three (MidUP), or top (HighUP) quintile of *UP* by letter rating and year. The average underpricing in each of the three groups, presented in Table 5, indicates that LowUP offerings

[27] This approach of comparing secondary market to primary market prices has been used by Brugler et al. (2022), Nagler and Ottonello (2021), and Bessembinder et al. (2020) among others. As an alternative, Wang (2021) measures underpricing by comparing secondary market to primary market yields to maturity, since the industry convention is to use yields during the bookbuilding process. In this study, we use underpricing to quantify investors' potential profits/losses from flipping and underwriters' potential profits/losses from market making, which are better captured by changes in prices rather than changes in yields.

[28] 85.6% of sample offerings trade in the secondary market on the offering date, and an additional 11.1% trade on the following day.

are on average overpriced (mean $UP = -7$ bps), while HighUP offerings are significantly underpriced (mean $UP = 94$ bps). Offerings we classify as MidUP average only 20 bps of underpricing, which translates into offering yields that are merely 1.7 bps higher than secondary-market yields on average, and indicates that underwriters may still be concerned about flipping reversing this yield differential.

We first find that flipping activity increases with an offering's aftermarket performance for both flipping to underwriters and flipping to non-underwriters. Specifically, we compare the average proportion of offerings flipped or the average proportion of an insurer's allocation flipped between LowUP and HighUP offerings. The results of these comparisons, presented in Panels A and B of Table 5 respectively, show that insurers are less likely to flip overpriced than significantly underpriced offerings, whether to underwriters or non-underwriters. For instance, in Panel A we document that insurers flip to the underwriters only 19% of overpriced offerings, compared to 45% of significantly underpriced offerings. Similarly, in Panel B we show that insurers flip to the underwriters an average of 1.7% of the par value allocated to them in overpriced offerings but almost twice as much, 3.3%, in significantly underpriced offerings. This pattern of higher flipping activity in more underpriced offerings repeats when we examine flipping to non-underwriters.

More importantly and as a direct test of *H2*, the results in Table 5 also suggest that the sensitivity of flipping activity to underpricing is somewhat weaker, rather than stronger, when flipping is to the underwriters than to other dealers. In Panel A, we find that among overpriced offerings an average of 8% fewer are flipped to underwriters than non-underwriters, while among significantly underpriced offerings an average of 21% fewer are. Similarly in Panel B, the average insurer flips 0.9% less of its allocation in overpriced offerings to underwriters than to non-underwriters, while this difference is 4% for significantly underpriced offerings. These findings suggest that insurers scale back their flipping to underwriters across all offerings regardless of performance, rather than only being concerned about flipping to the underwriters overpriced offerings. Thus, we find no support for the argument in Boehmer and

Fishe (2000) that investors are encourages by underwriters to flip to them more underpriced offerings.

We next test our hypothesis *H2* in a multivariate setting by specifying the following model:

$$Flip\,Choices_{ijt} = \alpha_0 + \alpha_{UP}UP_i + \boldsymbol{\alpha_{BI}BI_{ij}} + \boldsymbol{\alpha_{\mathrm{I}}\mathrm{I}_{j,t-1}} + \boldsymbol{\alpha_B B_i} + \epsilon_{ijt} \quad (2)$$

where i is a bond, j is an insurer, and t is a year. $Flip\,Choices$ is a categorical variable based on an insurer's available choices of flipping its allocation in an offering with three possible outcomes that have no natural ordering: (1) it does not flip its allocation, which is our baseline outcome; (2) flips its allocation to only the offering's underwriters; and (3) flips its allocation to non-underwriters.[29] **BI** is a vector of bond-insurer characteristics, **I** is a vector of insurer characteristics, and **B** is a vector of bond characteristics, as discussed below. We estimate equation (2) using a multinomial logit model with bond letter rating, issuer industry, and issuance year fixed effects, and insurer-clustered standard errors.

The estimation results, presented in Table 6, indicate that an offering's strong aftermarket performance increases the probability of an insurer flipping it than not flipping it, whether to the underwriters or other dealers. In column (1), the coefficient on UP is positive and significant, which suggests that higher underpricing increases the likelihood of an insurer flipping its allocation to the offering's underwriters rather than holding onto it. In column (2), we reach the same conclusion when it comes to an insurer flipping its allocation to non-underwriters. In columns (3) and (4), we allow for an asymmetric effect of UP on the odds of flipping to underwriters or non-underwriters, respectively, than not flipping. In column (3), we find that compared to moderately underpriced offerings, insurers' odds of

[29] We opt for using a categorical variable with three rather than four outcomes (the fourth outcome being flipping to both underwriters and non-underwriters) because insurers almost always flip their allocation to either only underwriters or only other dealers. In only 0.5% of flipping observations, an insurer flips its allocation in a given bond to both an underwriter and a non-underwriter dealer. In equation (2), we classify these observations as flipping to non-underwriters (i.e., outcome (3)).

flipping overpriced offerings to the underwriters than not flipping them are lower, though the statistical significance of the $LowUP$ coefficient is weak (p-value$= 0.07$). In contrast, the odds of insurers flipping HighUP offerings to the underwriters than not flipping them are significantly higher than for MidUP offerings. Our findings are largely similar in column (4) with one exception: the large magnitude and strong statistical significance of the $LowUP$ coefficient (-0.447, p-value< 0.01) indicate that insurers are significantly more likely to flip offerings to non-underwriters than to hold onto them, when these offerings are moderately underpriced than overpriced.

To test *H2*, we compare the marginal effect of an offering's aftermarket performance on flipping activity between flipping to underwriters and flipping to non-underwriters. We find that the coefficient on UP in column (1) is lower, but not significantly so, than the coefficient in column (2) (p-value$= 0.11$). We also calculate the marginal effects of $LowUP$, $MidUP$, and $HighUP$ on the probability of flipping to underwriters and non-underwriters, using the mean values of other explanatory variables. These marginal effects, presented in Figure 4, suggest that underwriter flipping-to-underpricing sensitivity is similar or marginally lower than non-underwriter flipping-to-underpricing sensitivity. These findings suggest that insurers scale back their flipping to the underwriters across all offerings regardless of aftermarket performance and supports the notion that insurers' concerns over underwriters' reaction to their flipping extend to both overpriced and underpriced offerings, contrary to our hypothesis *H2*.

Finally, control variables in Table 6 generally carry the expected sign. In columns (1) and (3), the coefficient of $\%VolumeUW$ is positive and strongly significant, which implies that when an underwriter accounts for a larger share of an insurer's prior year trading, the insurer is more likely to flip its allocation to the underwriter. The coefficient of $ln(\#BD)$ is positive and strongly significant across all columns, but its magnitude in NonUW columns is twice that in UW columns, suggesting that the larger the number of dealers with which an insurer trades in the prior year, the more likely the insurer is to flip its allocation to non-underwriters than underwriters. Taken together, these results indicate that insurers are more likely to flip their allocation to underwriters when they have fewer trading alternatives. Insurers are more likely to flip relatively smaller allocations as indicated by the strongly significant negative coefficient on $\%Allocation$, providing initial support to the notion that investors have a minimum position requirement. Consistent with the results in Table 2, we find that insurers with higher turnover ($Turnover$) and larger portfolios ($ln(Hldg)$) are more likely to flip their allocations. We also find that larger insurers are more likely to flip to the underwriters than non-underwriters, as the larger coefficients on $ln(Hldg)$ in columns UW than NonUW imply, possibly because they have more bargaining power and are less concerned about being penalized for flipping. We also include in the set of independent variables proxies for an insurer's trading relationship with the offering's underwriters and information production in the offering, both constructed as in Nikolova et al. (2020). The coefficient on $TrdRel$ is never statistically different from zero, while that on $InfoProd$ is positive but only in NonUW columns; we interpret this as evidence that the drivers of profitable allocations are not important determinants of flipping to underwriters. We also find that insurers are more likely to flip to the underwriters Rule 144A bonds as the positive coefficient on $Rule144A$ in the UW columns and negative coefficient in the NonUW columns shows. This is consistent with the findings of Goldstein et al. (2021) that underwriters dominate these bonds' secondary market trading, which leaves insurers with fewer alternative dealers interested in trading the bonds.

5.3. First-day profits and past flipping to underwriters

Finally, we test our hypothesis *H3* and investigate whether underwriters use their allocation discretion to penalize flippers in subsequent offerings. Specifically, we examine whether insurers' first-day profits in an offering are negatively related to their past flipping in the prior-year offerings of the current offering's underwriters. To do so, we modify our sample in several ways to include both insurers that receive an allocation in an offering and those that do not but may have wanted to, and exclude insurers without prior-year allocations for which measures of past flipping cannot be calculated. We begin by constructing a balanced panel at the insurer-offering level that includes all insurer-offering pairs whereby the insurer could have received, but does not necessarily receive, an allocation in the offering. Essentially, we supplement the sample used in our earlier analyses by adding for each offering a set of insurers that we view as potential primary market investors in corporate bonds. At the beginning of each year, we identify this set as insurers that hold at least $1 million of corporate debt securities and at least 50 fixed-income securities at the beginning of the year, and purchase at least $1 million of corporate bonds during the year. We then merge the set of insurers identified as potential primary market investors at the beginning of a given year with each sample offering issued during that year. If any of the insurer-offering pairs are not in our earlier sample, we add them and set the par value allocated to them to zero. As in Nikolova et al. (2020), we limit the augmented sample to insurers who are regular participants in the primary market for corporate bonds. Specifically, for each insurer, we annually calculate the number of offerings in which it receives an allocation and retain in our sample only insurers in the top quartile of allocation participation in a given year. Since we have no information on insurers' bids in an offering, we are unable to unambiguously determine whether an insurer without an allocation did not request one or requested one but did not receive an allocation. Presumably, insurers who regularly receive allocations are more likely to have participated in the bookbuilding process and have submitted a bid. Because insurers are only able to flip their allocation if they receive one, we further exclude from the augmented sample any insurer-offering observations where the insurer receives no allocations in the year prior to the current offering.

We then use this sample to estimate a model that follows Nikolova et al. (2020) as closely as possible:

$$Profits_{ijt} = \alpha_0 + \alpha_{FlipUW} FlipUW_{ij,t-1} + \boldsymbol{\alpha_{BI}} \mathbf{BI_{ij,t-1}} + \boldsymbol{\alpha_B} \mathbf{B_i} + \boldsymbol{\alpha_I} \mathbf{I_{j,t-1}} + \epsilon_{ijt} \quad (3)$$

where i is a bond, j is an insurer, and t is a year. The dependent variable $Profits$ is an insurer's first-day profits from an offering, calculated as the product of the offering's par value allocated to an insurer and the offering's underpricing. Unlike the magnitude of an insurer's allocation alone, first-day profits reflect the underwriters' ability to favor investors with small allocations of significantly underpriced bonds as well as large allocations of modestly underpriced bonds.[30] Our main independent variable of interest, $FlipUW$, is one of several measures of an insurer's flipping in the prior-year offerings of the current offering's underwriters. To construct these measures, we consider all such offerings in which an insurer receives an allocation and for each offering check whether and how much of the par value allocated the insurer flips to the underwriters. *IndFlipUW* is an indicator variable equal to one if an insurer flips to the underwriters any of its allocations in the underwriters' prior-year offerings, zero otherwise. *%FlipUW* is the average of an insurer's ratio of par value flipped to the underwriters to par value allocated in an offering, across the underwriters' prior-year offerings. Under our hypothesis *H3*, we expect that $\alpha_{FlipUW} < 0$. Following Nikolova et al. (2020), we include bond-insurer (**BI**), bond (**B**), and insurer (**I**) characteristics and estimate equation (3) using OLS with fixed effects for the insurer, bond letter rating, issuer industry, and year as well as standard errors clustered by bond.

The estimation results, presented in Table 7, provide strong evidence that underwriters penalize insurers for prior flipping when allocating the first-day profits in an offering. In column (1), the negative coefficient of *IndFlipUW* indicates that insurers who flip some

[30] Hanley (1993) finds that equity IPO underwriters prefer to compensate investors for truthfully revealing information by allocating a smaller number of significantly underpriced shares rather than a larger number of modestly underpriced shares. Our focus on first-day profits rather than on allocation magnitude allows us to remain agnostic about whether corporate bond underwriters behave in a similar manner.

of their allocations in any of the underwriters' prior-year offerings receive smaller first-day profits from the underwriters' current offering. Furthermore, the negative and strongly significant coefficient on $\%FlipUW$ in column (2) shows that the more of its allocations an insurer flips, the smaller its first-day profits.

We also find no evidence that penalties for flipping are higher when the aftermarket performance of the flipped offerings is worse. To do so, we modify equation (3) to allow for a differential effect of past flipping depending on the underpricing of the flipped offerings. Specifically, we calculate an insurer's past flipping separately for offerings of low, medium, and high underpricing. $\%FlipUW\_LowUP$ ($\%FlipUW\_MidUP$) [$\%FlipUW\_HighUP$] is the average of the proportion of allocated par value in prior-year LowUP (MidUP) [HighUP] offerings of the current offering's underwriters that the insurer flips to these underwriters. To be able to distinguish cases of no past flipping from those of no past allocation, we also include the indicator variables $NoAlloc\_LowUP$, $NoAlloc\_MidUP$, and $NoAlloc\_HighUP$ that equal one if in the prior year an insurer received no allocation in a LowUP, MidUP, and HighUP offering, respectively; zero otherwise. In column (3), the coefficients on all three measures of past flipping ($\%FlipUW\_LowUP$, $\%FlipUW\_MidUP$, and $\%FlipUW\_HighUP$) are negative and strongly significant, which suggests that insurers are penalized for flipping their allocation in all offerings regardless of performance. Importantly, the coefficient on $\%FlipUW\_LowUP$ is not larger in magnitude than those on $\%FlipUW\_MidUP$ and $\%FlipUW\_HighUP$, which suggests that insurers are not penalized more for prior flipping in overpriced than in moderately or significantly underpriced offerings. This is consistent with our finding in Table 6 that insurers scale back their flipping to the underwriters regardless of an offering's aftermarket performance. This conclusion is in contrast to that in the equity IPO literature that investors are penalized through worse allocations for quick sales of overpriced but not underpriced offerings (Chemmanur et al. (2010)).

Our findings are similar when we account for systematic differences between flippers and non-flippers. As shown in Table 2, flippers differ from non-flippers along several observable dimensions (e.g., hold larger portfolios and have stronger trading relationships with underwriters) that should make them more likely to receive more profitable allocations (Nikolova et al. (2020)). It is plausible that there may be unobservable differences between flippers and non-flippers as well that contribute to our observation of larger allocations to flippers overall (Table 2). Thus, we may be underestimating the flipping penalties assessed by the underwriters to the extent that they take the form of less profitable future allocations. One approach to addressing this issue is to include insurer fixed effects to control for the impact on first-day profits of any unobservable insurer characteristics that are relatively stable through time, which we do in columns (1)–(3) of Table 7. However, given the length of our sample period and the steady decrease of flipping to underwriters over that period (Figure 3), insurer fixed effects may not fully control for the systematic differences between flippers and non-flippers. Thus, we also estimate equation (3) as a linear regression with endogenous treatment using a two-step procedure that allows us to control for insurers' probability of becoming flippers at an annual frequency. Specifically, in the first step we estimate a probit model of insurers' choice to flip to the current offering's underwriters any of their prior-year allocations by these underwriters ($IndFlipUW$), and in the second step we estimate equation (3) with the hazard from the probit estimation added.[31] The first-step estimation results are broadly similar to those presented in Table 6 and discussed in Section 5.2, so to conserve space we report them in Section A4 and Table A6 of the Internet Appendix. The second-step estimation results, presented in column (4) of Table 7, continue to support our conclusion that underwriters penalize past flipping with less profitable allocations: the coefficient on $IndFlipUW$ is negative and strongly significant. The coefficient on $Hazard$ also carries a statistically significant coefficient, which validates our decision to estimate equation (3) as a linear regression with endogenous treatment since the unobservable insurer

[31] We use the etregress procedure in STATA, which is built on the model in Heckman (1978) and implements the estimators derived in Maddala (1983). Cameron and Trivedi (2005) and Wooldridge (2010) provide a discussion of endogenous treatment-effects models and their application in recent work.

characteristics impacting first-day profits seem to be correlated with those that impact the incidence of flipping. As expected, accounting for this correlation increases the magnitude and statistical significance of the coefficient on $IndFlipUW$ compared to that reported in column (1), and implies that insurers' first-day profits are 17% lower when they have flipped to the underwriters prior year allocations compared to when they have not.[32]

Finally, we find no evidence that underwriters are able to detect and penalize flipping to non-underwriters. Specifically, we construct analogs to the several measures of an insurer's flipping in the prior-year offerings of the current offering's underwriters, except that now we measure their flipping activity to dealers other than the underwriters. For instance, the analog to the indicator variable $IndFlipUW$ is $IndFlipNonUW$, which is equal to one if an insurer flips to *non-underwriters* at least some of its allocations in any prior-year offerings of the current offering's underwriters, zero otherwise. We then re-estimate equation (3) after replacing in it the measures of past flipping to underwriters with the measures of past flipping to non-underwriters. The estimation results, reported in Section A4 and Table A7 of the Internet Appendix, indicate that past flipping to non-underwriters does not decrease first-day profits, which we interpret as evidence that insurers are successful at hiding their flipping from the underwriters by directing sales to non-underwriter dealers.

5.4. Alternative explanations

In this section, we investigate and rule out two alternative explanations for our findings. Specifically, we explore whether the availability of counterparty alternatives and the practice of overallocation are responsible for the similar sensitivity of flipping to underpricing, when flipping is to the underwriters than to non-underwriters.

[32]We calculate 17% as the coefficient of *IndFlipUW*, −0.427, divided by the mean of *Profits*, 2.477.

5.4.1. Availability of counterparty alternatives

We argue that because insurers are concerned about flipping penalties regardless of an offering's aftermarket performance, we observe a similar flipping-to-performance sensitivity for flipping to underwriters and non-underwriter dealers. Alternatively, it is plausible that the availability of counterparty alternatives may explain this finding. When an offering trades down in the aftermarket, few dealers other than the underwriters, who typically assume the responsibility to stabilize the price of offerings they bring to market, may be willing to provide liquidity. In contrast, when an offering trades up in the aftermarket, many dealers may be available to intermediate trades, because providing liquidity in underpriced offerings can generate profits with relatively less risk. Thus, even if insurers' incentive to avoid flipping to the underwriters increases with overpricing, their ability to do so may decrease. This may explain why insurers' probability of flipping to the underwriters is just as sensitive to aftermarket performance as their probability of flipping to non-underwriters.

To test the plausibility of this alternative explanation for our findings in Table 6, we first investigate whether there is indeed a positive relation between the number of non-underwriter dealers trading an offering and the offering's aftermarket performance. While we cannot do so using TRACE data, since the public version of this data does not identify a bond's underwriters, we look for evidence of such a relation in the NAIC data. We count for each bond the number of non-underwriter dealers trading with insurers in the bond's first 2 days of trading, $\#NonUW$. We focus on dealer sell trades rather than both buy and sell trades to alleviate the concern that this count measure and flipping to the underwriters are a tautology. In Table 8, we report the cross-sectional average of $\#NonUW$, separately for LowUP, MidUP, and HighUP offerings. We find that in the first 2 days of trading an average of 0.83 non-underwriters trade overpriced offerings with insurers, while an average of 1.10 non-underwriters trade significantly underpriced offerings. While the difference in the number of non-underwriters between the two extreme underpricing groups is small, it is nonetheless statistically significant. Because these statistics are based only on trades of insurers, we are reluctant to interpret them as strong evidence in support of our conjecture that investors have fewer counterparty alternatives when flipping overpriced bonds, but they are nonetheless consistent with it.

We next examine whether the availability of counterparty alternatives is responsible for our findings in Table 6. We re-estimate equation (2) after adding the natural logarithm of $\#NonUW$ to the set of independent variables. The estimation results, presented in Table 9, provide no evidence that the number of non-underwriter dealers trading in an offering impacts the flipping-to-underpricing sensitivity, whether to the offering's underwriters or other dealers. While we find that $\#NonUW$ is negatively related to the odds of flipping to the underwriters over not flipping in columns (1) and (3), controlling for $\#NonUW$ leaves the coefficients of our underpricing variables largely unchanged. As in Table 6, the flipping-to-underpricing sensitivity is not stronger when flipping is to the underwriters than to non-underwriters.

5.4.2. Overallocation

Another alternative explanation for our finding of a broadly similar sensitivity of flipping to aftermarket performance when flipping to underwriters and non-underwriters relates to underwriters' practice of overallocating offerings. Because overpriced offerings may be more likely to be overallocated, this may alter underwriters' reaction to flipping and in turn investors' willingness to flip. As discussed earlier in the paper, when an overpriced offering is not overallocated, flipping is costly to the underwriters because it results in them building inventory in a bond that is declining in price. In contrast, when an offering is overpriced and overallocated, underwriters may be less concerned over flipping and may not penalize it. First, because the offering is overallocated, any purchases by the underwriters up to the overallocation amount do not affect inventory, eliminating this potential cost. Second, because the offering is also overpriced, even though the underwriters' price stabilization responsibilities likely result in them purchasing bonds at prices higher than those offered by other dealers, they may still be able to profit from the positive difference between the offering price and the declining secondary market price. These arguments suggest that underwriters may not penalize investors as harshly when they flip overpriced offerings if these offerings are also overallocated. As a result, investors may not be as intent on avoiding flipping to the underwriters such offerings. However, since investors may not be able to ascertain that an offering is overallocated, they may still avoid flipping to the underwriters as a precaution.

To empirically investigate the impact of overallocation on flipping to underwriters and non-underwriters, we first determine whether an offering is overallocated by comparing the amount issued to aggregate investor allocations. Because our NAIC data allows us to identify only allocations to insurers, to calculate aggregate allocations to both insurer and non-insurer investors we use primary market transaction information from TRACE that FINRA began collecting in March 2010. To ensure that the magnitude of overallocation is meaningful and consistent with the approach in Bessembinder et al. (2020) and Goldstein et al. (2021), we classify an offering as overallocated ($Overallocated = 1$) if the aggregate par value of primary market sales to customers exceeds the offering amount by more than 2%. As in these papers, we exclude from our analyses any offerings with no primary market sales reported, or with aggregate allocations below 95% or above 115% of the offering amount. This leaves us with 4,307 offerings.

We next examine whether overpriced offerings are more likely to be overallocated and in Table 10 find that they are. On average, 26% of overpriced offerings are overallocated, while only 15% of significantly underpriced offerings are. The difference of 11% is strongly statistically significant. This confirms the finding of Bessembinder et al. (2020) that overallocated offerings are associated with less price appreciation in the secondary market.

Finally, we investigate whether overallocation affects the sensitivity of flipping to aftermarket performance documented in Table 6. We re-estimate equation (2) after adding

Overallocated to the set of independent variables. The estimation results indicate that overallocated offerings are less likely to be flipped to non-underwriters than not flipped. We also find that while the magnitude of the coefficients on our underpricing measures remain similar to those reported in Table 6, their statistical significance is smaller. While this may be due to us controlling for overallocation, it may also be due to the shorter sample period of 2010–2018 for which an estimate of overallocation is available and the dramatic decrease in flipping to the underwriters during that period, both of which lower the power of our tests. To determine the reason, we re-estimate equation (2) for the 4,307 offerings with overallocation data but without controlling for overallocation. In Section A5 and Table A8 of the Internet Appendix, we find that the magnitude and statistical significance of the coefficients on UP, $LowUP$, and $HighUP$ are almost identical to those reported in Table 11. Thus, overallocation does not appear to affect our finding of a positive relation between flipping and underpricing, nor our finding of the broadly similar sensitivity of flipping to underpricing when flipping to the underwriters versus non-underwriters.[33]

6. Why do investors flip offerings with strong aftermarket performance more?

Similar to equity IPO studies, our findings provide strong evidence that flipping activity is higher in offerings with better aftermarket performance, but indicate that this positive flipping-to-underpricing relation is likely not due to penalties by the underwriters. While explaining the positive relation is not the main focus of our paper, in this section we take ad-

[33]We also examine whether past flipping to the underwriters in overallocated offerings is still penalized with lower first day profits in the underwriters' current offering. Specifically, we re-estimate equation (3) for the 2010–2018 subperiod with prior-year flipping measures constructed using only overallocated offerings. Although we find no statistically significant relation between past flipping in overallocated offerings and first-day profits (e.g., $IndFlipUW$ coefficient$= -0.077$, p-value$= 0.124$), we are reluctant to interpret this finding as evidence of no penalties because of the shorter sample period (2010–2018) and the lower incidence of flipping to underwriters during this period.

vantage of the richness of our data to examine the empirical validity of three plausible drivers: minimum position requirements, the disposition effect, and expected long-run performance.

6.1. Minimum position requirement

The positive flipping-to-underpricing relation we document may be the result of investors having a minimum position requirement for any security they consider adding to their investment portfolio. Possibly as a result of fixed costs to investment research, investors may be reluctant to hold relatively small positions in a security, which will affect their decision of whether to sell their allocation in a new offering or hold on to it.[34] Furthermore, this decision will likely depend on the offering's aftermarket performance. In particular, because offerings in high demand are rationed (Hanley (1993)), investors are more likely to receive less than their required minimum in such offerings than others, pushing them to either flip or augment their allocation. Since demand and underpricing of an offering are likely positively correlated, augmenting the allocation may be more expensive in high-demand than low-demand offerings, so investors will be more likely to flip more underpriced offerings.

To test this reasoning, we estimate a probit model, in which the dependent variable is an indicator equal to one if an insurer flips some of its allocation in an offering, zero otherwise. The main independent variable of interest is an interaction term between the underpricing of the offering and the size of the insurer's allocation. As in equation (2), we control for bond, insurer, and bond-insurer characteristics. The results from estimating this probit model are presented in columns (1)–(4) of Table 12 and largely support our reasoning. For instance, the coefficients on both $\%Allocation$ and $\%Allocation \times UP$ are negative and statistically significant, which implies that insurers are more likely to flip smaller allocations and more so in more underpriced offerings. Similarly, both $\%Allocation$ and $\%Allocation \times HighUP$ carry significantly negative coefficients, which we interpret as evidence that smaller allocation are

[34] Aggarwal (2003), Zhang (2004), and Ellis (2006) among others make this argument in the context of equity IPOs.

even more likely to be flipped in significantly underpriced than in moderately underpriced offerings. These results suggest that minimum position requirements partially explain the positive relation between flipping and underpricing.

6.2. Disposition effect

Our finding that offerings with strong aftermarket performance are flipped more may also be the result of the well-documented disposition effect (Shefrin and Statman (1985)). This effect refers to investors' tendency to ride losses but realize gains quickly, and has been documented for both retail and institutional investors.[35] For instance, Cici (2012) shows that 34% of actively managed funds realize a larger share of available gains than losses and do so persistently.

We investigate whether similar investment behavior by insurers may explain the positive relation between flipping and aftermarket performance. Specifically, we calculate annually an insurer's realized portion of available gains (PGR) in its portfolio as the ratio of the number of gains realized to the number of total (i.e., realized and unrelaized) gains. Similarly, the realized portion of available losses (PLR) is the ratio of the number of losses realized to the number of total losses in the portfolio. Following Cici (2012), we construct *DispRatio* as the ratio of PGR to PLR, and identify insurers susceptible to the disposition effect as those with relatively high *DispRatio*. That is, $HighDispRatio$ is an indicator variable equal to one if *DispRatio* is above the median for the year, zero otherwise. We then estimate a probit model, in which the dependent variable is an indicator equal to one if an insurer flips some of its allocation in an offering, zero otherwise. The main independent variable of interest is an interaction term between the underpricing of the offering and the one-year lag of the indicator variable $HighDispRatio$. Again, we control for bond, insurer, and bond-insurer

[35] For retail investors see Odean (1998), Grinblatt and Keloharju (2001), and Shapira and Venezia (2001). For institutional investors see Grinblatt and Keloharju (2001), Wermers (2003), Frazzini (2006), Jin and Scherbina (2011), and Cici (2012).

characteristics.

The estimation results, presented in columns (5)–(8) of Table 12, indicate that the disposition effect is partly responsible for the positive flipping-to-underpricing relation we document. For instance, the coefficient on the interaction term $HighDispRatio \times UP$ in column (5) is significantly positive. This suggests that insurers, who display the disposition effect when trading in the rest of their portfolio, are more likely to flip more underpriced offerings relative to other insurers. We reach a similar conclusion in columns (6)–(8). As with minimum position requirements, the disposition effect alone does not fully explain why insurers are more likely to flip more underpriced offerings, because these flipping patterns are also present among insurers who do not appear susceptible to the disposition effect.

6.3. Long-run performance

Another plausible explanation for investors' tendency to flip offerings with strong aftermarket performance more is that investors may expect such offerings to underperform in the long run and rationally sell their allocation immediately to lock in their profits. Indeed, for equity IPOs, Ritter (1991) finds that more underpriced offerings tend to have the worst long-run performance. To determine whether the same return pattern exists in the corporate bond market, we examine the relation between long-run realized return and immediate aftermarket performance. To do so, we start by calculating for each offering its market-adjusted return over the one year period following its first 2 days of trading as follows. First, we construct a daily price as the trade-size-weighted average flat price from TRACE on institutional-size ($\geq$\$100,000) secondary-market trades during the day. Second, we calculate a raw return as the percentage daily price change from trading day 3 to a day exactly 1 year later, with accrued interest/coupon added. For offerings with no trade on trading day 3, we use the first available price over the following 5 trading days. For offerings with no trade exactly 1 year later, we use the last available price over the preceding 20 trading days. Because following the immediate aftermarket corporate bonds rarely trade, we are able to calculate one-year returns for only 71% of our sample. Finally, we market-adjust the raw return by subtracting from it the same period return of the Barclays corporate bond index with the same letter rating and maturity category as those of the offering.

Figure 5 presents the average market-adjusted one-year return of sample offerings by underpricing quintile. The figure suggests that more underpriced offerings have the best, not the worst, long-run performance. The average market-adjusted return of $HighUP$ offerings over the year following their first 2 days of trading is 1.60%, while that of $LowUP$ offerings is 0.84%. The difference of 0.76% is statistically significant (p-value$<$ 0.01) and economically large.

Overall, our findings in Section 6 suggest that both minimum position requirements and the disposition effect contribute to the positive flipping-to-underpricing relation we document, but we do not find support for the notion that this relation is due to investors' expectation that more underpriced offerings' will perform worse in the long run.

7. Conclusion

In this paper, we provide the first empirical evidence on flipping activity in the corporate bond market. Using data on insurers' trades in a sample of 8,004 investment-grade corporate bonds issued during 2002–2018, we document that some flipping takes place in most offerings but its magnitude is small. Insurers sell at least some of their allocation in 62% of sample offerings within 2 days of issuance, and the average proportion of the allocated par value sold in these offerings is 9%. Flipping activity in corporate bonds is highly skewed: only a third of insurers ever flip their allocation and these flippers tend to be the larger and more active investors.

The results of our analyses strongly suggest that in deciding whether to flip their allocation in an offering and to whom, insurers consider how underwriters would perceive flipping and behave accordingly. First, they appear to actively avoid flipping their allocation in an offering to the offering's underwriters. Only a third of insurers' flipping activity goes through an offering's underwriters and this proportion has been steadily declining over time. This is particularly striking in light of our finding that underwriters buy bonds from flippers at better prices than other dealers and suggests that insurers are willing to sell allocated bonds at a lower price if it means that they can avoid selling to the underwriters. Second, although insurers are less likely to flip offerings with worse aftermarket performance, the positive flipping-to-performance relation we observe is broadly similar when flipping is to the underwriters and when it is to non-underwriter dealers. This finding supports the interpretation that insurers are reluctant to flip to the underwriters not only overpriced but also underpriced offerings. Finally, we show that when insurers nonetheless flip their allocation in an offering to the underwriters, they are penalized with less profitable allocations in the underwriters' subsequent offerings. Flipping is penalized regardless of the flipped offering's aftermarket performance in contrast to findings in the equity IPO literature that penalties are concentrated in overpriced offerings.

Overall, the empirical evidence we present suggests that corporate bond underwriters rely on the repeated game nature of the issuance process to try and limit flipping in both overpriced and underpriced offerings by using their allocation discretion to penalize flippers. However, their power to limit flipping is constrained by investors' ability to flip their allocation undetected by directing sales to non-underwriter dealers.

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Figure 1: Flipping by trading day

This figure presents the cross-sectional mean of aggregate insurer flipping by trading day. *Aggr %Flipping* is the sum of *%Flipping* across all insurers flipping their allocation in an offering. *%Flipping* is the fraction of an offering's par value allocated to an insurer that the insurer flips on a given trading day. *Trading Day* is relative to the offering date, which is designated as day 1. The sample period is 7/1/2002–12/31/2018.

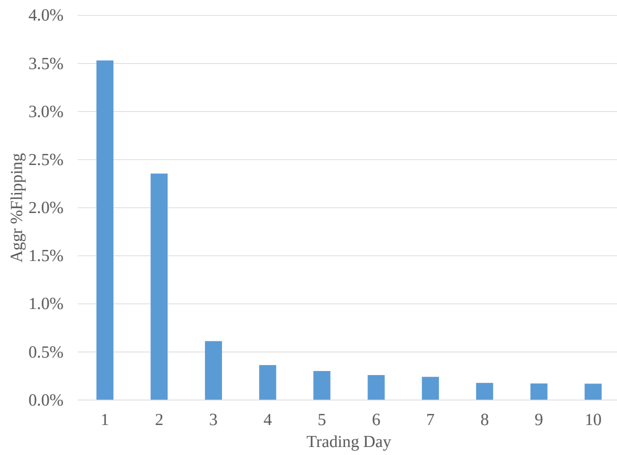

Figure 2: Allocation and flipping over time

This figure presents the time series of aggregate insurer allocations and flipping. *Aggr %Allocation* is the sum of *%Allocation* across all insurers participating in an offering. *%Allocation* is the fraction of an offering's par value issued that is allocated to an insurer. *Aggr %Flipping* is the sum of *%Flipping* across all insurers flipping their allocation in an offering. *%Flipping* is the fraction of an offering's par value allocated to an insurer that the insurer flips. The figure presents cross-sectional averages of these variables by year. The sample period is 7/1/2002–12/31/2018.

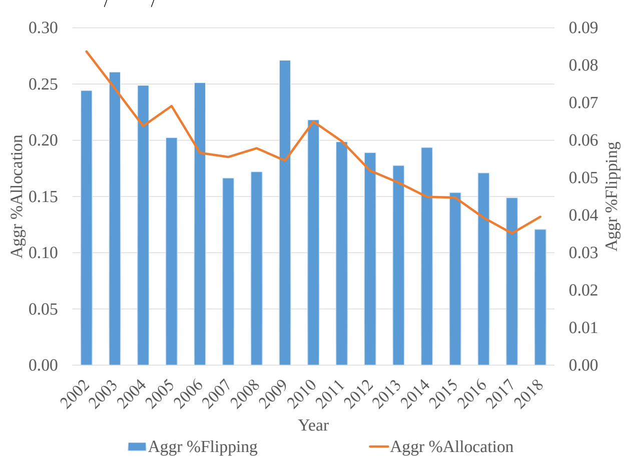

Figure 3: Flipping to underwriters over time

This figure presents the time series of the underwriter share of aggregate flipping. *Aggr %FlippingUW* is an offering's par value flipped by all insurers to the offering's underwriters as a fraction of the par value flipped by all insurers to any dealer. The figure presents the cross-sectional average of this variable by year. The sample period is 7/1/2002–12/31/2018.

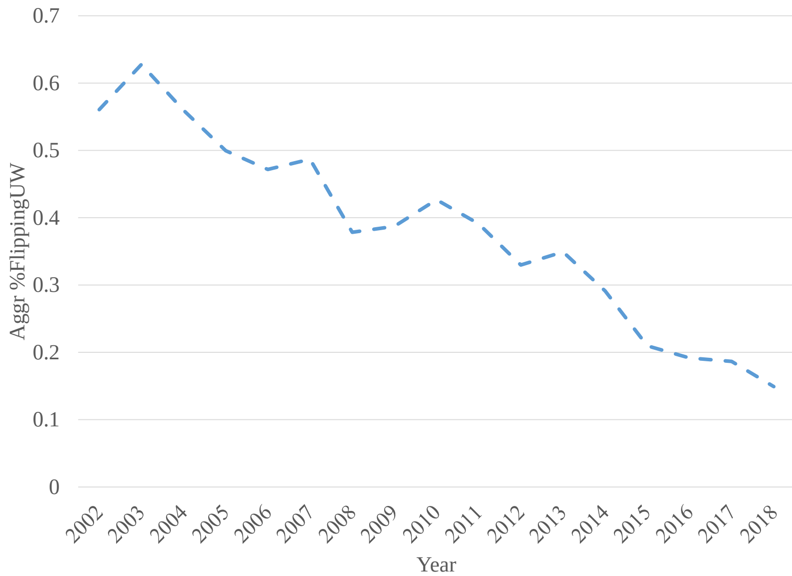

Figure 4: Marginal effect of aftermarket performance on flipping to underwriters versus non-underwriters

This figure presents the marginal effect of an offering's aftermarket performance on the probability of flipping to underwriters and the probability of flipping to non-underwriters, each relative to not flipping. Marginal effects for *HighUP*, *MidUP*, and *LowUP* are calculated from the multinomial logit estimation results, presented in columns (3) and (4) of Table 6, at the mean value of the other explanatory variables. In the multinomial logit analysis, the dependent variable is a categorical variable based on an insurer's available choices of flipping its allocation in an offering with three possible outcomes that have no natural ordering: (1) it does not flip its allocation, which is our baseline comparison outcome; (2) flips its allocation to only the offering's underwriters (UW); and (3) flips its allocation to non-underwriters (NonUW). *HighUP* (*MidUP*) [*LowUP*] is an indicator variable equal to one if an offering is in the top (middle three) [bottom] quintile of *UP* by letter rating and year, zero otherwise. *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). The sample period is 7/1/2002–12/31/2018.

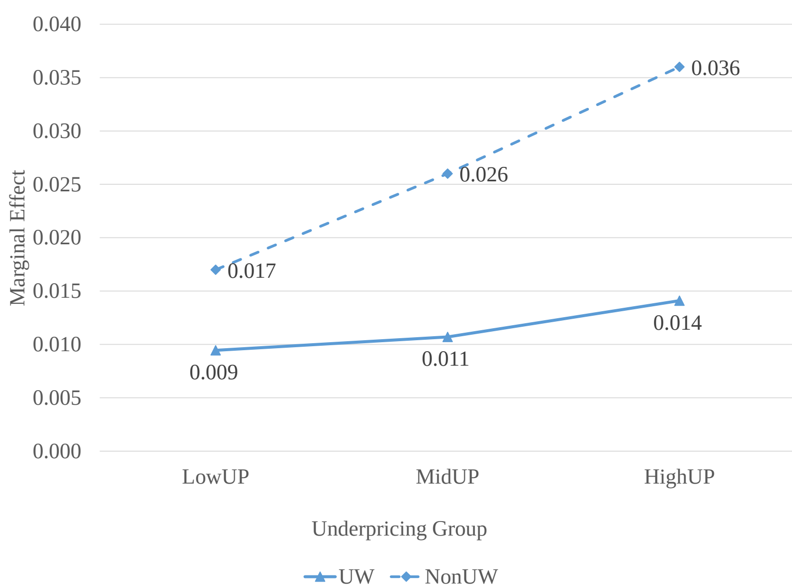

Figure 5: Long-run return and aftermarket performance

This figure presents average long-run return by offering aftermarket performance. Long-run return is calculated over the 1-year period following a bond's first 2 trading days, and is market adjusted using the 1-year return on a maturity and rating matched index. Market adjusted return is in percent per year. Underpricing is calculated as a bond's index-adjusted initial return following Cai et al. (2007). The sample period is 7/1/2002–12/31/2018.

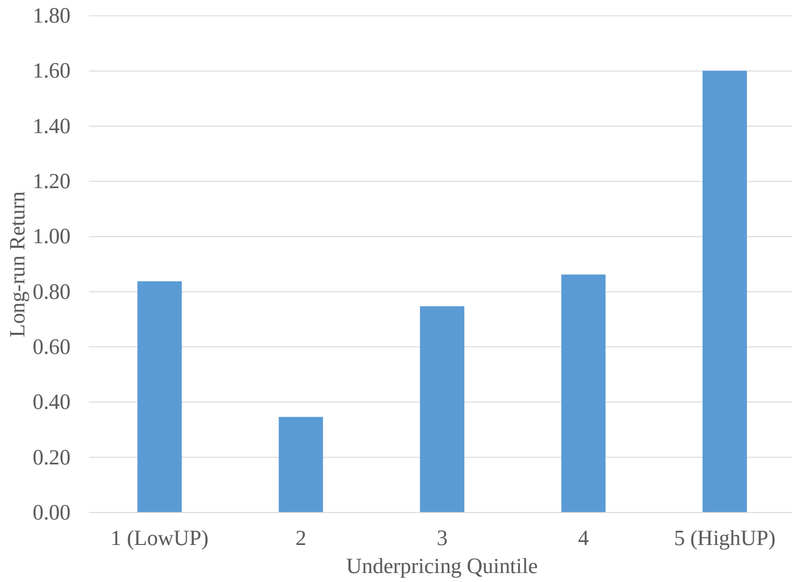

Table 1: Allocation and flipping activity

This table presents allocation and flipping statistics at the offering level and insurer-offering level. *Aggr %Allocation* is the sum of *%Allocation* across all insurers participating in an offering. *%Allocation* is the fraction of an offering's par value issued that is allocated to an insurer. *Aggr %Flipping* is the sum of *%Flipping* across all insurers flipping their allocation in an offering. *Aggr %Selling* is the total par value of trades in TRACE where a customer, either insurer or non-insurer, sells to a dealer. *%Flipping* is the fraction of an offering's par value allocated to an insurer that the insurer flips. The sample period is 7/1/2002–12/31/2018.

Variable	N	Mean	Median	SD
Aggr %Allocation	8,004	0.18	0.15	0.12
%Allocation	139,736	0.01	0.00	0.02
Aggr %Flipping	8,004	0.06	0.02	0.10
Aggr %Flipping, Aggr %Flipping> 0	4,983	0.09	0.06	0.11
Aggr %Selling	8,004	0.09	0.08	0.07
%Flipping	139,736	0.07	0.00	0.27
%Flipping, %Flipping> 0	11,264	0.92	1.00	0.34

Table 2: Flippers versus nonflippers

This table presents cross-sectional statistics for the 998 insurers in our sample. In Panel A, we report cross-sectional means (Mean), standard deviations (SD), and 50th, 75th, 90th, and 99th percentiles (P50, P75, P90, and P99) of the ratio *#Flipped*/*#Allocated* for all insurers. In Panel B, we report cross-sectional means (Mean) and standard deviations (SD) separately for flippers and nonflippers, as well as mean differences between flippers and nonflippers (Diff). Flippers (nonflippers) are insurers, which flip at least one (none) of their allocations during the sample period. *#Flipped* is the number of allocations during the sample period which an insurer flips. *#Allocated* is the number of offerings during the sample period in which an insurer receives an allocation. *%Allocation* is an insurer's allocation in a bond scaled by the bond's offering amount, averaged over the sample period. *Hldg* is the year-end par value ($B) of an insurer's corporate bond portfolio, averaged over the sample period. *Turnover* is the year-end turnover of an insurer's corporate bond portfolio, measured as the lower of par value bought and par value sold, scaled by par value held and averaged during the sample period. *%VolumeUW* is the year-end insurer's trading volume with allocated offerings' underwriters scaled by the insurer's total trading volume, averaged over the sample period. *#BD* s the number of broker-dealers with which an insurer trades during the sample period. *TrdRel* and *InfoProd* are the year-end proxies of an insurer's trading relationship with the underwriters and information production, respectively, as in Nikolova et al. (2020), averaged over the sample period. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 2002–2018.

Panel A: Frequency of flipping, *#Flipped/#Allocated*

Insurers	N	Mean	SD	P50	P75	P90	P99
All	998	0.02	0.07	0.00	0.01	0.05	0.31
Flippers	303	0.06	0.11	0.03	0.07	0.13	0.62

Panel B: Flipper and nonflipper characteristics

	Flippers			Nonflippers			
Variable	N	Mean	SD	N	Mean	SD	Diff
#Flipped	303	37.17	173.45	695	0.00	0.00	37.17***
#Allocated	303	370.85	517.36	695	39.38	85.29	331.47***
%Allocation	303	0.61	0.82	695	0.19	0.51	0.42***
Hldg ($B)	303	9.75	24.82	695	0.91	4.98	8.84***
Turnover	303	0.36	0.26	695	0.27	0.29	0.09***
%VolumeUW	303	0.12	0.05	695	0.13	0.09	-0.01**
#BD	303	21.63	8.78	695	12.42	6.29	9.21***
TrdRel	303	0.33	0.76	695	0.04	0.35	0.29***
InfoProd	303	3.37	2.35	695	4.01	6.93	-0.64**

Table 3: Flipping to underwriters versus non-underwriters

This table compares flipping to the underwriters to either flipping to non-underwriters (Panel A) or same counterparty paired trades (Panel B). In Panel A, *Flipped* is an indicator variable equal to one if a bond is flipped by any insurer, zero otherwise. *%Flipping* is the fraction of an offering's par value allocated to an insurer that an insurer flips. The columns labeled UW (NonUW) present statistics based on flipping to underwriters (non-underwriters). The columns labeled UW−NonUW present the mean difference between values in the UW and NonUW columns, along with the statistical significance of the difference based on a t-test that the mean difference equals zero. In Panel B, *Flipped to UW/Flipped to all* is the fraction of par value flipped that is flipped to an offering's underwriters. *Same CP paired trades/All paired trades* is the fraction of paired-trade par value that is bought from and sold to the same counterparty. Paired trades are a purchase of a bond by an insurer more than 10 trading days after the offering date followed by a sale within 2, 10, 20, or 60 trading days of the purchase date. To construct the pairs, we consider all bonds in the FISD database for which an offering date is available and all trades of these bonds in the NAIC database for which a counterparty is named. The column labeled Days presents the period in days between a buy and sell trade. The column labeled Diff presents the difference between *Same CP paired trades/All paired trades* at various periods and *Flipped to UW/Flipped to all*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

Panel A: Comparison of flipping to underwriters and non-underwriters

	N	UW	NonUW	UW−NonUW
Flipped	8,004	0.291	0.457	-0.166***
%Flipping	139,736	0.022	0.046	-0.024***

Panel B: Comparison of flipping to underwriters and same-counterparty paired trades

	Days	%Par Value	Diff
Flipped to UW/Flipped to all	2	0.35	
Same CP paired trades/All paired trades	2	0.75	0.40
	10	0.63	0.28
	20	0.55	0.20
	60	0.45	0.10

Table 4: Pricing by underwriters versus non-underwriters

This table presents results from an OLS analysis of prices received by insurers when flipping their allocation in an offering. The dependent variable is the weighted average price received by an insurer flipping its allocation in an offering to underwriters or non-underwriters, with the par value sold as the weight. *UW* is an indicator variable equal to one if the price received is from the offering's underwriters, zero otherwise. *%VolumeUW* is the year-end insurer's trading volume with an offering's underwriters scaled by the insurer's total trading volume. *#BD* s the number of broker-dealers with which an insurer trades during the year. *%Allocation* is an insurer's allocation in a bond scaled by the bond's offering amount. *Turnover* is the year-end turnover of an insurer's corporate bond portfolio, measured as the lower of par value bought and par value sold scaled by par value held. *Hldg* is the year-end par value ($B) of an insurer's corporate bond portfolio. *TrdRel* and *InfoProd* are the year-end proxies of an insurer's trading relationship with the underwriters and information production, respectively, as in Nikolova et al. (2020). All insurer characteristics are measured at the year-end prior to the offering. Standard errors clustered at the insurer level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes only observations with flipping (*%Flipping*> 0) during 7/1/2002–12/31/2018.

	(1)	(2)
UW	0.081***	0.063***
	(0.024)	(0.019)
%VolumeUW		0.196
		(0.154)
ln(#BD)		-0.086*
		(0.048)
%Allocation		0.002
		(0.007)
Turnover		-0.014
		(0.040)
ln(Hldg)		-0.026
		(0.034)
TrdRel		-0.964
		(0.623)
InfoProd		-0.001
		(0.003)
Insurer FE	YES	YES
Bond FE	YES	YES
N	9,576	9,576
R^2	0.915	0.928

Table 5: Flipping to underwriters versus non-underwriters by aftermarket performance

This table presents average offering level (Panel A) and insurer-offering level (Panel B) statistics for flipping to underwriters and non-underwriters. In Panel A, *Flipped* is an indicator variable equal to one if a bond is flipped by any insurer, zero otherwise. In Panel B, *%Flipping* is the fraction of an offering's par value allocated to an insurer that the insurer sells. The columns labeled UW (NonUW) present statistics based on flipping to underwriters (non-underwriters). The columns labeled UW−NonUW present the mean difference between values in the UW and NonUW columns, along with the statistical significance of the difference based on a t-test that the mean difference equals zero. The rows labeled LowUP (MidUP) [HighUP] present statistics for offerings in the bottom (middle three) [top] quintile of *UP* by letter rating and year. *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). The rows labeled HighUP−LowUP present the mean difference between values in the HighUP and LowUP rows, along with the statistical significance of the difference based on a t-test that the mean difference equals zero. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

Panel A: Bonds flipped, *Flipped*

	N	UP	UW	NonUW	UW−NonUW
LowUP	1,579	-0.07	0.19	0.28	-0.08***
MidUP	4,838	0.23	0.27	0.45	-0.18***
HighUP	1,587	0.94	0.45	0.65	-0.21***
HighUP−LowUP			0.25***	0.38***	

Panel B: Flipped fraction of an insurer's allocation, *%Flipping*

	N	UW	NonUW	UW−NonUW
LowUP	22,256	0.017	0.026	-0.009***
MidUP	86,342	0.020	0.042	-0.022***
HighUP	31,138	0.033	0.073	-0.040***
HighUP−LowUP		0.016***	0.047***	

Table 6: Probability of flipping to underwriters versus non-underwriters and aftermarket performance

This table presents results from a multinomial logit analysis of insurers' choice of whether and to whom to flip their allocation in an offering. The dependent variable is a categorical variable based on an insurer's available choices of flipping its allocation in an offering with three possible outcomes that have no natural ordering: (1) it does not flip its allocation, which is our baseline comparison outcome; (2) flips its allocation to only the offering's underwriters (UW); and (3) flips its allocation to non-underwriters (NonUW). *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). *HighUP* (*LowUP*) is an indicator variable equal to one if an offering is in the top (bottom) quintile of *UP* by letter rating and year, zero otherwise. *%VolumeUW* is the year-end insurer's trading volume with an offering's underwriters scaled by the insurer's total trading volume. *#BD* is the number of broker-dealers with which an insurer trades during the year. *%Allocation* is an insurer's allocation in a bond scaled by the bond's offering amount. *Turnover* is the year-end turnover of an insurer's corporate bond portfolio, measured as the lower of par value bought and par value sold scaled by par value held. *Hldg* is the year-end par value ($B) of an insurer's corporate bond portfolio. *TrdRel* and *InfoProd* are the year-end proxies of an insurer's trading relationship with the underwriters and information production, respectively, as in Nikolova et al. (2020). All insurer characteristics are measured at the year-end prior to the offering. *DIPO* is an indicator variable equal to one if an offering is the first public debt offering of the issuer, zero otherwise. *Public* is an indicator variable equal to one if an offering's issuer has publicly traded equity, zero otherwise. *Rule144A* is an indicator variable equal to one if an offering is issued under Rule 144A, zero otherwise. *Maturity* is an offering's time to maturity (in years). *Amount* is an offering's par value issued (in $ million). Standard errors clustered at the insurer level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

Table 6: Probability of flipping to underwriters versus non-underwriters and aftermarket performance - continued

	UW	NonUW	UW	NonUW
	(1)	(2)	(3)	(4)
UP	0.250**	0.427***		
	(0.107)	(0.058)		
HighUP			0.289**	0.327***
			(0.117)	(0.068)
LowUP			-0.136*	-0.447***
			(0.075)	(0.056)
%VolumeUW	3.462***	1.681	3.503***	1.741
	(1.180)	(1.397)	(1.180)	(1.384)
ln(#BD)	0.571**	1.039**	0.574**	1.041**
	(0.274)	(0.437)	(0.275)	(0.437)
%Allocation	-0.439**	-0.417***	-0.439**	-0.419***
	(0.179)	(0.112)	(0.179)	(0.112)
Turnover	1.950***	2.088***	1.952***	2.090***
	(0.505)	(0.441)	(0.506)	(0.442)
ln(Hldg)	0.424**	0.198**	0.423**	0.197**
	(0.200)	(0.100)	(0.201)	(0.100)
TrdRel	6.128	-7.145	6.178	-7.051
	(6.850)	(13.058)	(6.884)	(13.021)
InfoProd	-0.012	0.025*	-0.012	0.024*
	(0.016)	(0.013)	(0.016)	(0.013)
DIPO	0.147***	0.073	0.140***	0.077
	(0.051)	(0.054)	(0.051)	(0.055)
Public	0.009	0.009	0.018	0.020
	(0.075)	(0.074)	(0.077)	(0.070)
Rule144A	0.183*	-0.217***	0.180*	-0.210***
	(0.101)	(0.057)	(0.103)	(0.059)
ln(Maturity)	0.485***	0.542***	0.475***	0.557***
	(0.112)	(0.068)	(0.112)	(0.068)
ln(Amount)	-0.648***	-0.411***	-0.646***	-0.403***
	(0.102)	(0.086)	(0.103)	(0.086)
Rating FE	YES		YES	
Industry FE	YES		YES	
Year FE	YES		YES	
N	138,048		138,048	
Pseudo R^2	0.140		0.140	

Table 7: First-day profits and past flipping

This table presents results from a linear regression analysis of first-day profits without and with endogenous treatment. The dependent variable is $Profits$, defined as the product of an offering's par value allocated to an insurer and the offering's UP (in \$ thousand). UP is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). $IndFlipUW$ is an indicator variable equal to one if an insurer flips to the underwriters at least some of its allocations in any prior-year offerings of the current offering's underwriters, zero otherwise. $\%FlipUW$ is the average of an insurer's ratio of par value flipped to the underwriters to par value allocated, across all prior-year offerings of the current offering's underwriters. $\%FlipUW\_LowUP$ ($\%FlipUW\_MidUP$) [$\%FlipUW\_HighUP$] is the average of an insurer's ratio of par value flipped to the underwriters to par value allocated, across only LowUP (MidUP) [HighUP] prior-year offerings of the current offering's underwriters. $NoAlloc\_LowUP$ ($NoAlloc\_MidUP$) [$NoAlloc\_HighUP$] is an indicator variable that equals one if in the prior year an insurer received no allocation in a LowUP (MidUP) [HighUP] offering of the current underwriters, zero otherwise. LowUP (MidUP) [HighUP] offerings are those in the bottom (middle three) [top] quintile of UP by letter rating and year. $TrdRel$ and $InfoProd$ are the year-end proxies of an insurer's trading relationship with the underwriters and information production, respectively, as in Nikolova et al. (2020). $Affiliated$ is an indicator variable equal to one if the insurer is affiliated with the offering's underwriters, zero otherwise. $Hldg$ is the year-end par value (\$B) of an insurer's corporate bond portfolio. $PastProfits$ is the average of an insurer's first-day profits from allocations in all prior-year offerings of the current offering's underwriters. $DIPO$ is an indicator variable equal to one if an offering is the first public debt offering of the issuer, zero otherwise. $Public$ is an indicator variable equal to one if an offering's issuer has publicly traded equity, zero otherwise. $Rule144A$ is an indicator variable equal to one if an offering is issued under Rule 144A, zero otherwise. $Maturity$ is an offering's time to maturity (in years). $Amount$ is an offering's par value issued (in \$ million). $Hazard$ is the hazard from a probit estimation, the results from which are presented in Section A4 and Table A6 of the Internet Appendix. In the columns labeled OLS, we estimate an OLS regression with standard errors clustered by offering. In the column labeled Selection, we estimate a linear regression with endogenous treatment using the two-step procedure in Maddala (1983). N is the number of insurer-offering observations. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes all regular primary market investors with at least one allocation in the year prior to the offering. The sample period is 7/1/2003–12/31/2018.

Table 7: First-day profits and past flipping - continued

	OLS			Selection
	(1)	(2)	(3)	(4)
IndFlipUW	-0.083**			-0.427***
	(0.042)			(0.105)
%FlipUW		-2.978***		
		(0.328)		
%FlipUW_LowUP			-0.880***	
			(0.253)	
%FlipUW_MidUP			-1.731***	
			(0.283)	
%FlipUW_HighUP			-0.895***	
			(0.156)	
NoAlloc_LowUP			0.019	
			(0.058)	
NoAlloc_MidUP			0.413*	
			(0.219)	
NoAlloc_HighUP			0.085	
			(0.060)	
TrdRel	0.388***	0.380***	0.380***	0.395***
	(0.035)	(0.035)	(0.035)	(0.018)
InfoProd	0.290***	0.290***	0.290***	0.289***
	(0.020)	(0.020)	(0.020)	(0.022)
Affiliated	0.304	0.297	0.308	0.306
	(0.272)	(0.272)	(0.272)	(0.310)
ln(Hldg)	0.313***	0.309***	0.312***	0.321***
	(0.038)	(0.038)	(0.038)	(0.047)
PastProfits	1.320***	1.307***	1.307***	1.323***
	(0.072)	(0.072)	(0.072)	(0.022)
DIPO	0.454***	0.454***	0.455***	0.455***
	(0.135)	(0.135)	(0.135)	(0.049)
Public	-0.099	-0.100	-0.100	-0.097
	(0.150)	(0.150)	(0.150)	(0.060)
Rule144A	0.084	0.082	0.085	0.088*
	(0.126)	(0.126)	(0.126)	(0.047)
ln(Maturity)	1.215***	1.215***	1.215***	1.216***
	(0.046)	(0.046)	(0.046)	(0.020)
ln(Amount)	1.581***	1.580***	1.581***	1.582***
	(0.085)	(0.085)	(0.085)	(0.026)
Hazard				0.221***
				(0.063)
Insurer FE	YES	YES	YES	YES
Rating FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	762,261	762,261	762,261	762,261
R^2	0.083	0.083	0.083	

Table 8: Number of non-underwriter dealers by aftermarket performance
This table presents the average number of non-underwriters trading in a bond by aftermarket performance. For each bond, we count the number of unique dealers other than the bond's underwriters selling the bond to insurers in the first 2 trading days, and then report the cross-sectional average. The row labeled LowUP (MidUP) [HighUP] presents statistics for offerings in the bottom (middle three) [top] quintile of *UP* by letter rating and year. *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). The row labeled HighUP−LowUP presents the mean difference between values in the HighUP and LowUP rows, along with the statistical significance of the difference based on a t-test that the mean difference equals zero. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

	N	Mean	SD
LowUP	1,579	0.83	1.14
MidUP	4,838	1.02	1.29
HighUP	1,587	1.10	1.42
HighUP−LowUp		0.27***	

Table 9: Probability of flipping to underwriters versus non-underwriters, after-market performance, and number of non-underwriter dealers

This table presents results from a multinomial logit analysis of insurers' choice of whether and to whom to flip their allocation in an offering. The dependent variable is a categorical variable based on an insurer's available choices of flipping its allocation in an offering with three possible outcomes that have no natural ordering: (1) it does not flip its allocation, which is our baseline comparison outcome; (2) flips its allocation to only the offering's underwriters (UW); and (3) flips its allocation to non-underwriters (NonUW). *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). *HighUP* (*LowUP*) is an indicator variable equal to one if an offering is in the top (bottom) quintile of *UP* by letter rating and year, zero otherwise. *#NonUW* is the number of unique dealers other than the offering's underwriters selling the offering to insurers in the first 2 trading days. Control variables include bond-insurer, insurer, and bond characteristics, and are the same as those included in Table 6. Standard errors clustered at the insurer level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

	UW	NonUW	UW	NonUW
	(1)	(2)	(3)	(4)
UP	0.256**	0.423***		
	(0.104)	(0.058)		
HighUP			0.298***	0.323***
			(0.113)	(0.066)
LowUP			-0.140*	-0.444***
			(0.074)	(0.056)
#NonUW	-0.042**	0.021	-0.045**	0.018
	(0.021)	(0.017)	(0.021)	(0.016)
Controls	YES		YES	
Rating FE	YES		YES	
Industry FE	YES		YES	
Year FE	YES		YES	
N	138,048		138,048	
Pseudo R^2	0.140		0.140	

Table 10: Overallocation by aftermarket performance

This table presents statistics on the incidence of overallocation by aftermarket performance. An offering is considered overallocated if aggregate allocations, based on primary market (P1) sell trades to customers, are more than 102% of the offering amount. The row labeled LowUP (MidUP) [HighUP] presents statistics for offerings in the bottom (middle three) [top] quintile of *UP* by letter rating and year. *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). The row labeled HighUP−LowUP present the mean difference between values in the HighUP and LowUP rows, along with statistical significance based on a t-test that the mean difference equals zero. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 3/1/2010–12/31/2018, since primary market trades are reported to TRACE starting in March 2010.

	N	Mean	SD
LowUP	794	0.26	0.44
MidUP	2,625	0.19	0.39
HighUP	888	0.15	0.36
HighUP−LowUP		0.11***	

Table 11: Probability of flipping to underwriters versus non-underwriters, aftermarket performance, and overallocation

This table presents results from a multinomial logit analysis of insurers' choice of whether and to whom to flip their allocation in an offering. The dependent variable is a categorical variable based on an insurer's available choices of flipping its allocation in an offering with three possible outcomes that have no natural ordering: (1) it does not flip its allocation, which is our baseline comparison outcome; (2) flips its allocation to only the offering's underwriters (UW); and (3) flips its allocation to non-underwriters (NonUW). *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). *HighUP* (*LowUP*) is an indicator variable equal to one if an offering is in the top (bottom) quintile of *UP* by letter rating and year, zero otherwise. *Overallocated* is an indicator variable equal to one if aggregate allocations in an offering, based on primary market (P1) sell trades to customers, are more than 102% of the offering amount, zero otherwise. Control variables include bond-insurer, insurer, and bond characteristics, and are the same as those included in Table 6. Standard errors clustered at the insurer level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 3/1/2010–12/31/2018, since primary market trades are reported to TRACE starting in March 2010.

	UW	NonUW	UW	NonUW
	(1)	(2)	(3)	(4)
UP	0.299	0.494***		
	(0.222)	(0.092)		
HighUP			0.238	0.292***
			(0.166)	(0.077)
LowUP			-0.238*	-0.458***
			(0.137)	(0.074)
Overallocated	0.041	-0.121***	0.041	-0.128***
	(0.077)	(0.045)	(0.067)	(0.042)
Controls	YES		YES	
Rating FE	YES		YES	
Industry FE	YES		YES	
Year FE	YES		YES	
N	80,994		80,994	
Pseudo R^2	0.178		0.179	

Table 12: Explanations for the overall positive flipping-to-underpricing relation This table presents results from a probit analysis of insurers' probability of flipping their allocation in an offering. The dependent variable is an indicator equal to one if an insurer flips some of its allocation in an offering, zero otherwise. *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). *HighUP* (*LowUP*) is an indicator variable equal to one if an offering is in the top (bottom) quintile of *UP* by letter rating and year, zero otherwise. *%Allocation* is an insurer's allocation in a bond scaled by the bond's offering amount. *HighDispRatio* is an indicator variable equal to one if an insurer is classified as a disposition investor based on a comparison of its share of gains realized and share of losses realized, zero otherwise. Control variables include bond-insurer, insurer, and bond characteristics, and are the same as those included in Table 6. Standard errors clustered at the insurer level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

	Min position requirement		Disposition effect	
	(1)	(2)	(3)	(4)
UP	0.227***		0.144***	
	(0.028)		(0.036)	
HighUP		0.177***		0.098***
		(0.030)		(0.035)
LowUP		-0.182***		-0.149***
		(0.026)		(0.028)
%Allocation	-0.136**	-0.149***		
	(0.053)	(0.055)		
%Allocation×UP	-0.050***			
	(0.014)			
%Allocation×HighUP		-0.034**		
		(0.016)		
%Allocation×LowUP		0.023		
		(0.016)		
HighDispRatio			0.102	0.110
			(0.103)	(0.101)
HighDispRatio×UP			0.085**	
			(0.040)	
HighDispRatio×HighUP				0.109**
				(0.043)
HighDispRatio×LowUP				-0.016
				(0.034)
Controls	YES	YES	YES	YES
Rating FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	139,690	139,690	139,690	139,690
Pseudo R^2	0.136	0.136	0.138	0.138

Corporate Bond Flipping

Internet Appendix

This Version: April 2022

Abstract

This Internet Appendix examines the robustness of our main findings and presents estimation results that are referenced but not included in the main paper. In Section A1, we examine the robustness of our main findings to classifying as underwriters all members of the underwriting syndicate. In Section A2, we report summary statistics for the corporate bond offerings analyzed in the main paper. In Section A3, we explore whether accounting for secondary market purchases affects our estimates of the incidence and magnitude of flipping. In Section A4, we present the results from the first stage estimation of the linear regression with endogenous treatment of first-day profits on past flipping, and investigate whether past flipping to non-underwriters is penalized through lower first-day profits. In Section A5, we assess the robustness of our multinomial logit results in a subsample of offerings issued during the period when overallocation can be calculated.

A1. Lead and non-lead underwriters

In the analyses in the main paper, we focus on the distinction between lead underwriters and all other dealers. This is because the responsibility to set the offering price, determine allocations, stabilize the offering and provide liquidity in the secondary market rests primarily with an offering's lead underwriters as documented in Nikolova et al. (2020), Bessembinder et al. (2020), and Goldstein et al. (2021) among others. In this section, we assess the robustness of our main findings to classifying as underwriters all members of the underwriting syndicate (i.e., both lead and non-lead underwriters).

First, we investigate whether the share of flipping that goes through non-lead underwriters alters our conclusion that insurers avoid flipping to underwriters. In the main paper, we show that only 35% of flipping goes through underwriters and when we expand our definition of underwriter to include non-lead underwriters, this proportion increases to 41%. Nonetheless, the proportion remains significantly lower than 75%, the proportion of same-counterparty paired trades where the purchase and sale are 2 trading days apart. Thus, the magnitude of flipping to non-lead underwriters is not large enough to change our conclusion that insurers avoid flipping to underwriters.

Second, we examine whether expanding our definition of underwriter affects our finding that underwriters purchase bonds from flippers at better prices and find that it does not. We re-estimate equation (1) in the main paper after replacing all underwriter variables with their respective counterpart under our expanded underwriter definition. The results from these estimations, reported in Table A1 of this Internet Appendix, are very similar to those reported in Table 4 of the main paper.

Third, our conclusion that the flipping-to-underpricing sensitivity is not higher for flipping to underwriters than to other dealers is also robust to classifying as underwriters all members of the underwriting syndicate. We replicate the analyses, whose results are provided in Table 6 of the main paper, but with dependent and independent variables that reflect our expanded underwriter definition. The results from these replications are presented in Table A2 of this Internet Appendix and closely mirror those presented in Table 6 of the main paper.

Finally, under our expanded underwriter definition we still find that underwriters penalize flipping through worse allocations in subsequent offerings. To do so, we re-estimate equation (3) in the main paper, now classifying as underwriters all members of the underwriting syndicate. The estimation results, presented in Table A3 of this Internet Appendix, are not materially different from those presented in Table 7 of the main paper.

In sum, our decision to classify as underwriters only the lead underwriters of an offering is both consistent with industry practices and prior academic work, and has no meaningful impact on our main findings.

A2. Offering descriptive statistics

In this section, we describe the sample of corporate bond offerings analyzed in the main paper. The sample includes 8,004 investment-grade (IG) bonds issued by 1,292 unique firms. Descriptive statistics for these bonds, reported in Table A4 of this Internet Appendix, indicate that they are underwritten by 2.6 lead underwriters and underpriced by 31 bps on average. Most sample offerings are of known issuers: 92% are of firms with publicly traded equity and only 10% are the first bond of the issuer. Rule 144A offerings account for 14% of the sample. The average (median) maturity of sample offerings is 11.9 (10) years, and the average (median) offering amount is $714.5 million ($500 million). Finally, most sample offerings are rated BBB (57%).

A3. Net flipping

Flipping describes the immediate aftermarket sale of securities purchased in the primary market at the offering price (i.e., primary market allocation) and not of securities purchased in the secondary market. In the main paper, we regard all sales in the first 2 days of trading by insurers who receive a primary market allocation as flipping. Effectively, we assume that flippers, who both receive an allocation in the primary market and purchase additional securities in the secondary market, sell their allocation first. This is consistent with the approach taken by the Depository Trust Corporation, in the context of initial public offerings (IPOs) of equity, to classify as flipping all sell trades of investors who receive an allocation (Boehmer et al. (2006)). Nonetheless, in this section, we investigate whether accounting for secondary market purchases materially impacts our measure of flipping. We calculate net flipping for each flipper in an offering as the par value flipped minus the par value bought in the secondary market in the first 2 days of trading, scaled by the flipper's allocation. In Table A3 of this Internet Appendix, we show that netting out secondary market purchases leaves the incidence and magnitude of flipping almost identical to those reported in Table 1 of the main paper.

A4. First-day profits and past flipping – first-stage estimation results and past flipping to non-underwriters

A4.1. First-stage estimation results

In some of our analyses in the main paper, we estimate equation (3) as a linear regression with endogenous treatment using a two-step procedure. In the first step we estimate a probit model of insurers' choice to flip to the current offering's underwriters any of their prior-year allocations by these underwriters, and in the second step we estimate equation (3) with the hazard from the probit estimation added. To conserve space in the main paper, we present the first-stage estimation results in Table A6 of this Internet Appendix. The specification for the first-stage estimation includes all independent variables from equation (2) in the main paper. But because we are modeling the likelihood that an insurer flips in *any* of the underwriters' prior-year offerings, to control for offering characteristics we include the averages of these characteristics across all prior-year offerings in which the insurer receives an allocation.

The estimation results are presented in Table 6 and indicate that insurers, whose trading with the underwriters accounts for a larger share of their total trading, are more likely to flip their allocations. However, the larger coefficient on $\%VolumeUW$ in column (1) compared to column (2) suggests that they are more likely to flip to underwriters than to non-underwriter dealers. We also find that insurers with larger trading networks, as measured by the natural logarithm of the number of broker-dealers with whom they trade in a given year, $ln(\#BD)$, are more likely to become flippers, though the likelihood is higher that they flip to non-underwriters than underwriters. Finally, the signs and statistical significance of the average offering characteristics are broadly consistent with those presented in Table 6 and discussed in Section 5.2 of the main paper.

A4.2. Past flipping to non-underwriters

In the main paper, we provide strong evidence that underwriters penalize with worse allocations insurers' flipping in their prior-year offerings. In this section, we investigate whether by selling their allocations to non-underwriters, insurers are able to avoid this penalty.

To do so, we construct several measures of past flipping to non-underwriters that are analogous to the measures of past flipping to underwriters we analyze in Section 5.3 of the main paper. Specifically, $IndFlipNonUW$ is an indicator variable equal to one if an insurer flips to *non-underwriters* at least some of its allocations in any prior-year offerings of the current offering's underwriters, zero otherwise. $\%FlipNonUW$ is the average of an insurer's ratio of par value flipped to *non-underwriters* to par value allocated, across all prior-year offerings of the current offering's underwriters. $\%FlipNonUW\_LowUP$ ($\%FlipNonUW\_MidUP$) [$\%FlipNonUW\_HighUP$] is the average of an insurer's ratio of par value flipped to *non-underwriters* to par value allocated, across only LowUP (MidUP) [HighUP] prior-year offerings of the current offering's underwriters. We then replace underwriter past flipping measures ($FlipUW$) with these non-underwriter past flipping measures ($FlipNonUW$) in equation (3) and re-estimate it.

The estimation results, presented in Table A7, show that past flipping to non-underwriters does not decrease first-day profits. The coefficient on $IndFlipNonUW$ in columns (1) is not statistically different from zero, while the coefficient on $\%FlipNonUW$ in column (2) is positive. When we allow for flipping penalties to vary with the aftermarket performance of the flipped offering in column (3), the coefficients on the past flipping measures are similarly insignificant or positive but never negative. The several positive coefficients we observe are likely the result of flippers having the typical characteristics of investors more likely to receive better allocations (Nikolova et al. (2020)). This is confirmed by the estimation results from a linear regression with endogenous treatment in column (4) where the coefficient on $IndFlipNonUW$ becomes negative but is still not statistically significant. Taken together, our findings in Table A7 suggest that insurers are successful at hiding their flipping from the underwriters by directing sales to non-underwriter dealers.

A5. Probability of flipping to underwriters versus non-underwriters and aftermarket performance – 2010–2018 subsample

In the main paper, we investigate whether overallocation impacts our findings by including in the specification an indicator variable for whether an offering is overallocated or not. Doing so leaves the coefficients on our underpricing measures similar to those reported in Table 6, but their statistical significance is smaller. We recognize that this may be due to us controlling for overallocation, or alternatively to the shorter sample period of 2010–2018 for which a measure of overallocation can be constructed and the dramatic decrease in flipping to the underwriters during that period, both of which lower the power of our tests. To determine the reason, we re-estimate equation (2) in the main paper for the 4,307 offerings with overallocation data but without controlling for overallocation. The estimation results are presented in Table A8 of this Internet Appendix and show that the coefficients on UP, $LowUP$, and $HighUP$ are almost identical to those reported in Table 11 of the main paper, both in terms of magnitude and statistical significance. Thus, we conclude that controlling for overallocation does not appear to be the reason for the lower statistical significance in Table 6 of the main paper.

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Table A1: Pricing by underwriters versus non-underwriters – lead and non-lead underwriters

This table presents results from an OLS analysis of prices received by insurers when flipping their allocation in an offering. The sample and methodology are the same as those used to generate Table 4 in the main paper but the definition of underwriter-related variables differs. In the main paper, these variables are based only on lead underwriter information while here they are based on both lead and non-lead underwriter information.

	(1)	(2)
UW	0.096***	0.081***
	(0.025)	(0.021)
%VolumeUW		0.040
		(0.126)
ln(#BD)		-0.054
		(0.038)
%Allocation		0.004
		(0.007)
Turnover		-0.084***
		(0.028)
ln(Hldg)		0.003
		(0.011)
TrdRel		0.388
		(0.583)
InfoProd		-0.003
		(0.003)
Insurer FE	YES	YES
Bond FE	YES	YES
N	9,576	9,554
R^2	0.915	0.918

Table A2: Probability of flipping to underwriters versus non-underwriters and aftermarket performance – lead and non-lead underwriters

This table presents results from a multinomial logit analysis of insurers' choice of whether and to whom to flip their allocation in an offering. The sample and methodology are the same as those used to generate Table 6 in the main paper but the definition of underwriter-related variables differs. In the main paper, these variables are based only on lead underwriter information while here they are based on both lead and non-lead underwriter information.

	UW	NonUW	UW	NonUW
	(1)	(2)	(3)	(4)
UP	0.245**	0.430***		
	(0.106)	(0.061)		
HighUP			0.278**	0.311***
			(0.117)	(0.072)
LowUP			-0.148**	-0.456***
			(0.073)	(0.060)
%VolumeUW	2.518***	2.079*	2.524***	2.091*
	(0.949)	(1.170)	(0.948)	(1.164)
ln(#BD)	0.691***	1.163***	0.693***	1.164***
	(0.263)	(0.446)	(0.263)	(0.446)
%Allocation	-0.426**	-0.441***	-0.426**	-0.443***
	(0.181)	(0.114)	(0.181)	(0.114)
Turnover	1.897***	2.102***	1.897***	2.103***
	(0.456)	(0.420)	(0.457)	(0.421)
ln(Hldg)	0.410**	0.174*	0.409**	0.173*
	(0.186)	(0.096)	(0.187)	(0.096)
TrdRel	2.867	-5.382	2.913	-5.293
	(4.812)	(11.488)	(4.824)	(11.435)
InfoProd	-0.010	0.026**	-0.011	0.026*
	(0.015)	(0.013)	(0.015)	(0.013)
DIPO	0.147***	0.024	0.140***	0.029
	(0.052)	(0.058)	(0.052)	(0.060)
Public	0.015	0.018	0.024	0.030
	(0.066)	(0.082)	(0.068)	(0.077)
Rule144A	0.172**	-0.008	0.171**	0.003
	(0.070)	(0.055)	(0.072)	(0.054)
ln(Maturity)	0.480***	0.526***	0.472***	0.546***
	(0.098)	(0.067)	(0.099)	(0.068)
ln(Amount)	-0.612***	-0.428***	-0.609***	-0.419***
	(0.103)	(0.087)	(0.104)	(0.088)
Rating FE	YES		YES	
Industry FE	YES		YES	
Year FE	YES		YES	
N	138,883		138,883	
Pseudo R^2	0.138		0.138	

Table A3: First-day profits and past flipping – lead and non-lead underwriters This table presents results from a linear regression analysis of first-day profits without and with endogenous treatment. The sample and methodology are the same as those used to generate Table 7 in the main paper but the definition of underwriter-related variables differs. In the main paper, these variables are based only on lead underwriter information while here they are based on both lead and non-lead underwriter information.

	OLS			Selection
	(1)	(2)	(3)	(4)
IndFlipUW	-0.084*			-0.481***
	(0.044)			(0.138)
%FlipUW		-4.084***		
		(0.465)		
%FlipUW_LowUP			-0.747***	
			(0.265)	
%FlipUW_MidUP			-2.725***	
			(0.437)	
%FlipUW_HighUP			-0.950***	
			(0.192)	
NoAlloc_LowUP			0.137	
			(0.096)	
NoAlloc_MidUP			0.242	
			(0.294)	
NoAlloc_HighUP			0.283***	
			(0.098)	
TrdRel	0.551***	0.541***	0.541***	0.558***
	(0.068)	(0.068)	(0.068)	(0.035)
InfoProd	0.265***	0.266***	0.266***	0.264***
	(0.021)	(0.021)	(0.021)	(0.024)
Affiliated	0.311	0.312	0.315	0.317
	(0.273)	(0.272)	(0.272)	(0.356)
ln(Hldg)	0.297***	0.293***	0.299***	0.316***
	(0.047)	(0.047)	(0.047)	(0.059)
PastProfits	1.866***	1.850***	1.849***	1.872***
	(0.092)	(0.092)	(0.092)	(0.025)
DIPO	0.610***	0.612***	0.611***	0.613***
	(0.170)	(0.170)	(0.170)	(0.061)
Public	-0.140	-0.141	-0.142	-0.139*
	(0.190)	(0.190)	(0.190)	(0.073)
Rule144A	-0.114	-0.109	-0.113	-0.115**
	(0.157)	(0.157)	(0.157)	(0.058)
ln(Maturity)	1.392***	1.392***	1.392***	1.392***
	(0.061)	(0.061)	(0.061)	(0.024)
ln(Amount)	1.951***	1.949***	1.951***	1.950***
	(0.114)	(0.114)	(0.114)	(0.031)
Hazard				0.253***
				(0.083)
Insurer FE	YES	YES	YES	YES
Rating FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	805,628	805,628	805,628	805,628
R^2	0.072	0.073	0.073	

Table A4: Offering characteristics

This table presents cross-sectional mean, median, and standard deviation for the 8,004 offerings in our sample. *#UW* is a bond's number of underwriters. *UP* is a bond's underpricing (in %) calculated as its index-adjusted initial return following Cai et al. (2007). *Public* is an indicator variable equal to one if an offering's issuer has publicly traded equity, zero otherwise. *DIPO* is an indicator variable equal to one if an offering is the first public debt offering of the issuer, zero otherwise. *Rule144A* is an indicator variable equal to one if an offering is issued under Rule 144A, zero otherwise. *Maturity* is an offering's time to maturity (in years). *Amount* is an offering's par value issued (in $ million). *AAA* (*AA*) {*A*} [*BBB*] is an indicator variable equal to one if an offering's is rated AAA (AA) {A} [BBB], zero otherwise. The sample period is 7/1/2002–12/31/2018.

	Mean	Median	SD
#UW	2.6	3.0	1.3
UP	0.31	0.18	0.47
Public	0.92	1.00	0.27
DIPO	0.10	0.00	0.31
Rule144A	0.14	0.00	0.35
Maturity	11.9	10.0	9.9
Amount	714.5	500.0	651.7
AAA	0.02	0.00	0.13
AA	0.07	0.00	0.25
A	0.35	0.00	0.48
BBB	0.57	1.00	0.50

Table A5: Flipping activity – net flipping

This table presents net flipping statistics at the offering level and offering-insurer level. The sample and methodology are the same as those used to generate Table 1 in the main paper but flipping is net of any secondary market purchases within the first 2 trading days.

Variable	N	Mean	Median	SD
Aggr %Net flipping	8,004	0.06	0.02	0.10
Aggr %Net flipping, Aggr %Net flipping> 0	4,855	0.09	0.06	0.11
%Net flipping	139,736	0.07	0.00	0.26
%Net flipping, %Net flipping> 0	11,089	0.91	1.00	0.24

Table A6: First-day profits and past flipping – first-stage estimation results
This table presents the first-stage estimation results from the OLS analysis of first-day profits with endogenous selection presented in Table 7 in the main paper and Table A7 in this Internet Appendix. The results are from a probit regression of insurers' probability of flipping at least one of their prior-year allocations by the current offering's underwriters. In column (1), the dependent variable is *IndFlipUW*, an indicator variable equal to one if an insurer flips to the underwriters at least some of its allocations in any prior-year offerings of the current offering's underwriters, zero otherwise. In column (2), the dependent variable is *IndFlipNonUW*, an indicator variable equal to one if an insurer flips to non-underwriters at least some of its allocations in any prior-year offerings of the current offering's underwriters, zero otherwise. *%VolumeUW* is the year-end insurer's trading volume with an offering's underwriters scaled by the insurer's total trading volume. *#BD* is the number of broker-dealers with which an insurer trades during the year. *Turnover* is the year-end turnover of an insurer's corporate bond portfolio, measured as the lower of par value bought and par value sold scaled by par value held. *Hldg* is the year-end par value ($B) of an insurer's corporate bond portfolio. *Volume* is the year-end insurer's trading volume ($B). All insurer characteristics are measured at the year-end prior to the offering. *Past%Allocation, PastUP, PastDIPO, PastPublic, PastRule144A, PastMaturity,* and *PastAmount* are the average of *%Allocation, UP, DIPO, Public, Rule144A, Maturity,* and *Amount,* respectively, across all prior-year offerings of the current offering's underwriters that are allocated to an insurer. *%Allocation* is an insurer's allocation in a bond scaled by the bond's offering amount. *UP* is a bond's underpricing calculated as its index-adjusted initial return following Cai et al. (2007). *DIPO* is an indicator variable equal to one if an offering is the first public debt offering of the issuer, zero otherwise. *Public* is an indicator variable equal to one if an offering's issuer has publicly traded equity, zero otherwise. *Rule144A* is an indicator variable equal to one if an offering is issued under Rule 144A, zero otherwise. *Maturity* is an offering's time to maturity (in years). *Amount* is an offering's par value issued (in $ million). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample period is 7/1/2002–12/31/2018.

Table A6: First-day profits and past flipping – first-stage estimation results - continued

	IndFlipUW	IndFlipNonUW
	(1)	(2)
%VolumeUW	2.026***	1.545***
	(0.020)	(0.019)
ln(#BD)	0.762***	1.019***
	(0.007)	(0.007)
Past%Allocation	-0.176***	-0.070***
	(0.003)	(0.003)
Turnover	-0.005	0.059***
	(0.005)	(0.005)
ln(Hldg)	-0.248***	-0.296***
	(0.003)	(0.003)
ln(Trades)	0.488***	0.440***
	(0.003)	(0.003)
PastUP	0.905***	0.855***
	(0.008)	(0.008)
PastDIPO	-0.065***	0.119***
	(0.018)	(0.017)
PastPublic	-0.070***	0.029
	(0.020)	(0.019)
PastRule144A	0.768***	0.644***
	(0.013)	(0.013)
ln(PastMaturity)	0.491***	0.810***
	(0.007)	(0.006)
ln(PastAmount)	-0.431***	-0.117***
	(0.008)	(0.008)
Year FE	YES	YES
N	762,261	762,261

Table A7: First-day profits and past flipping – flipping to non-underwriters
This table presents results from a linear regression analysis of first-day profits without and with endogenous treatment. The methodology, sample, and dependent variable are the same as those used to generate Table 7 in the main paper, but the set of independent variables differs. Specifically, measures of past flipping to underwriters are replaced with analogous measures of past flipping to non-underwriters as follows. $IndFlipNonUW$ is an indicator variable equal to one if an insurer flips to non-underwriters at least some of its allocations in any prior-year offerings of the current offering's underwriters, zero otherwise. $\%FlipNonUW$ is the average of an insurer's ratio of par value flipped to non-underwriters to par value allocated, across all prior-year offerings of the current offering's underwriters. $\%FlipNonUW\_LowUP$ ($\%FlipNonUW\_MidUP$) [$\%FlipNonUW\_HighUP$] is the average of an insurer's ratio of par value flipped to non-underwriters to par value allocated, across only LowUP (MidUP) [HighUP] prior-year offerings of the current offering's underwriters.

Table A7: First-day profits and past flipping – flipping to non-underwriters - continued

	OLS			Selection
	(1)	(2)	(3)	(4)
IndFlipNonUW	0.062			-0.081
	(0.038)			(0.105)
%FlipNonUW		0.723***		
		(0.188)		
%FlipNonUW_LowUP			0.979***	
			(0.169)	
%FlipNonUW_MidUP			-0.123	
			(0.196)	
%FlipNonUW_HighUP			0.248*	
			(0.127)	
NoAlloc_LowUP			0.054	
			(0.058)	
NoAlloc_MidUP			0.461**	
			(0.220)	
NoAlloc_HighUP			0.147**	
			(0.060)	
TrdRel	0.386***	0.385***	0.385***	0.389***
	(0.035)	(0.035)	(0.035)	(0.018)
InfoProd	0.290***	0.290***	0.291***	0.290***
	(0.020)	(0.020)	(0.020)	(0.022)
Affiliated	0.295	0.298	0.300	0.297
	(0.271)	(0.272)	(0.271)	(0.310)
ln(Hldg)	0.315***	0.315***	0.314***	0.318***
	(0.038)	(0.038)	(0.038)	(0.047)
PastProfits	1.314***	1.316***	1.316***	1.315***
	(0.072)	(0.072)	(0.072)	(0.022)
DIPO	0.453***	0.453***	0.454***	0.454***
	(0.135)	(0.135)	(0.135)	(0.049)
Public	-0.099	-0.099	-0.099	-0.099*
	(0.150)	(0.150)	(0.150)	(0.060)
Rule144A	0.081	0.082	0.086	0.082*
	(0.126)	(0.126)	(0.126)	(0.047)
ln(Maturity)	1.215***	1.215***	1.215***	1.215***
	(0.046)	(0.046)	(0.046)	(0.020)
ln(Amount)	1.580***	1.580***	1.582***	1.580***
	(0.085)	(0.085)	(0.085)	(0.026)
Hazard				0.093
				(0.064)
Insurer FE	YES	YES	YES	YES
Rating FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	762,261	762,261	762,261	762,261
R^2	0.083	0.083	0.083	

Table A8: Probability of flipping to underwriters versus non-underwriters and aftermarket performance – 2010–2018 subsample

This table presents results from a multinomial logit analysis of insurers' choice of whether and to whom to flip their allocation in an offering. The methodology, dependent variable, and independent variables are the same as those used to generate Table 6 in the main paper but the sample period is 3/1/2010–12/31/2018 as in Table 11 of the main paper.

	UW	NonUW	UW	NonUW
	(1)	(2)	(3)	(4)
UP	0.292	0.514***		
	(0.212)	(0.090)		
HighUP			0.233	0.306***
			(0.161)	(0.078)
LowUP			-0.234*	-0.471***
			(0.134)	(0.074)
Controls	YES		YES	
Rating FE	YES		YES	
Industry FE	YES		YES	
Year FE	YES		YES	
N	80,994		80,994	
Pseudo R^2	0.178		0.179	