Demand Elasticity in the Primary Market for Corporate Bonds*

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Abstract

We establish primary market investor demand elasticity as a key driver of corporate bond issuance costs and underwriter pricing decisions. Using novel bookbuilding data, we construct a model-free, bond-level measure of demand elasticity from two pairs of price and quantity observed along the offering day demand curve. Demand elasticity varies meaningfully across time, credit quality, maturity, and issue characteristics, and declines during periods of heightened market stress. More elastic demand reduces underpricing and offering spreads, lowering financing costs for issuers, and further enables underwriters to operate with smaller order books and less spread compression during the issuance process. Our elasticity estimates also provide a useful complement to those from structural demand-systems showing the link between investor demand and secondary market asset prices.

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1. Introduction

Many questions in financial economics require an understanding of how investors' demand elasticity determines asset prices. A growing literature uses structural asset demand systems (Koijen and Yogo (2019)) applied to secondary-market investor portfolio-holdings and returns to estimate elasticities.[1] Although corporate bonds represent a vital source of external financing for many U.S. firms, the critical role of demand elasticity in shaping primary market outcomes and therefore firms' cost of funding is not well understood.[2] In this paper, we use novel bookbuilding data for new issues of corporate bonds to construct a model-free, bond-level measure of demand elasticity, which we use to explain underwriter behavior and firms' financing costs in this market.

A simple example is useful to highlight the important link between demand elasticity and the determination of issue prices for corporate bonds. Underwriters design offering terms with the explicit goal of mitigating undersubscription risk, often by underpricing to induce excess investor demand (Chowdhry and Sherman (1996), DeMarzo and Frankel (2025)). Figure 1 demonstrates that to achieve a given oversubscription ratio (order book size relative to the offering amount), the required offering yield in excess of the market-clearing yield—i.e., underpricing—is smaller when the demand curve is flatter (i.e., more elastic). Thus, underpricing, typically viewed as a cost to issuers, decreases with demand elasticity.[3]

Our approach to estimating the slope of the demand curve at issuance utilizes two price–quantity pairs along an individual bond's offering-date demand curve, which we ob-

[1]See Koijen and Yogo (2021) for discussion of recent innovations in this literature that have been applied to stock and bond markets. Applications of asset demand systems to corporate bond secondary markets include Bretscher et al. (2025), Chaudhary et al. (2022), Darmouni et al. (2022), Choi et al. (2023)).

[2]According to SIFMA, total corporate bond issuance reached \$2.22 trillion in 2025, more than nine times the volume of equity issuance during the same period.

[3]Focusing on agency problems in the primary market, Siani (2025) proxies for short-term investors' orders using the product of secondary market turnover and the final oversubscription ratio, which she uses in a structural framework to infer the demand elasticity of short- and long-term investors as model parameters. Her model predicts that in periods of weak markets, issues are more underpriced than they otherwise would be in order to attract a higher share of short-term investors, whose demand is more elastic than their long-term counterparts'.

serve during the bookbuilding process. Before bookbuilding begins, underwriters quote an initial offering spread over the Treasury benchmark that is typically well above the final offering spread (Wang (2021)). They then take orders to build the book— known as the "peak" book— at the initial offering spread, before announcing the final offering yield and assembling the final order book.[4] We calculate $Demand\ elasticity^y$ as the percentage change from the peak book size to the final order book size, scaled by the change from the initial offering spread to the final offering spread. Similarly, we calculate $Demand\ elasticity^P$ as the percentage change from the peak book size to the final order book size scaled by the negative of the percentage change in price ($Demand\ elasticity^P = Demand\ elasticity^y \times \frac{1}{modified\ duration}$). Figure 2 shows the two price–quantity pairs along the otherwise unobservable demand curve from which we estimate this slope. We note that it is not possible to calculate elasticity using the final offering amount and the market clearing price as a third price-quantity pair because the market clearing price is not observable to researchers.[5] High demand elasticity means that a small increase in the offering spread can attract a large amount of investor demand; that is, investors are able to absorb a large supply shock at a small increment in yield.

Using a sample of 2,955 investment-grade (IG) dollar-denominated corporate bonds issued between October 2019 and December 2023, we find that the average (median) yield-based demand elasticity ($Demand\ elasticity^y$) is 78.96 (68.61), while the price-based elasticity ($Demand\ elasticity^P$) is 12.95 (9.67). Recent estimates from asset demand systems applied to the secondary corporate bond market vary considerably and are sensitive to model

[4] Studies utilizing the final order book size to measure investor demand for corporate bond offerings include Hotchkiss et al. (2025), Siani (2025), and Wang and Wu (2022).

[5] Most literature uses the immediate aftermarket trade price to proxy for the market clearing price to calculate underpricing. However, the immediate aftermarket trade price is different from the market clearing price that lies on the same demand curve as the two price and quantity demand pairs we utilize for at least the following reasons. First, the immediate aftermarket trade price reflects demand by both primary and secondary market investors rather than just primary market investors; not all secondary market investors interact with underwriters in the segmented corporate bond market (Goldstein et al. (2021)). Second, secondary market prices are affected by flipping activities and underwriters' price stabilization efforts (Bessembinder et al. (2022), Nikolova and Wang (2022)). Third, prices of newly issued bonds continue to trade upwards within the first month of the offering (Goldstein et al. (2021)). Thus, the market clearing price is unclear.

assumptions.[6] The average value of our model-free individual bond elasticity for the primary market is closest to Bretscher et al. (2025), who report an estimated price-based elasticity of 18 for IG bonds held by mutual funds between 2006 and 2020.

While prior studies typically report an average elasticity across bonds derived from panel regression coefficients, our bond-level estimates enable us to study both time-series and cross-sectional determinants, and to directly link this measure to primary market outcomes at the individual bond level. We find that demand elasticity is significantly lower during periods of heightened uncertainty—specifically at the peak of the COVID-19 crisis and in 2022 Q4—consistent with the notion that increased uncertainty and risk aversion reduce investor demand elasticity (Kyle (1989); Koijen and Yogo (2019)). All else equal, demand elasticity is lower for low-rated and for split-rated bonds, supporting the prediction of Davis et al. (2025) that demand elasticity increases with the pass-through rate and substitutability (see also Chaudhary et al. (2022)). Larger offerings exhibit lower demand elasticity, likely reflecting the slow-moving capital problem described by Duffie (2010). These patterns are broadly consistent with existing structural and flow-based estimates, indicating that issuance-day elasticity is informative about general corporate bond demand and provides a natural benchmark for future work.

Furthermore, we demonstrate an important methodological point for fixed-income settings: price-based elasticity—the standard metric in equity markets—conflates demand sensitivity with maturity effects.[7] Reliance on price-based elasticity can bias inferred demand

[6]Bretscher et al. (2025) estimate a demand-based corporate bond pricing model that accommodates heterogeneity in institutional investors' preferences and mandates, and simulate how shifts in investor composition affect equilibrium credit spreads. Chaudhary et al. (2022) study the corporate bond market's ability to absorb demand-driven price pressure (price multipliers, the inverse of demand elasticity), and show that ignoring heterogeneous substitutability across bonds leads to a large upward bias in estimates. Darmouni et al. (2022) develop a framework to capture contagion across assets and institutions. Choi et al. (2023) quantify the price effects of investors' tendency to extrapolate past credit market trends into the future, using a demand system with time-varying elasticities that depend on credit conditions.

[7]We show that *Demand elasticity*^{y} significantly increases with maturity, whereas *Demand elasticity*^{P} exhibits the opposite relationship. This divergence is not contradictory, but rather a function of bond pricing mechanics: a given change in price translates into a relatively large change in yield for shorter-maturity bonds, whereas a given change in yield translates into a relatively large change in price for longer-maturity bonds. Because *Demand elasticity*^{P} is scaled by the percentage change in price, which corresponds to the change in yield multiplied by the modified duration, it therefore tends to decline with maturity.

elasticity for investors in long-term bonds downward. For the remainder of our analysis, we focus on yield-based demand elasticity to ensure that our measures are not confounded by technical pricing effects associated with maturity.

Using our unique bond-level estimates, we then focus on their importance in understanding primary market behavior and outcomes. We estimate the impact of demand elasticity on underpricing: all else equal, a one standard deviation increase in demand elasticity explains a reduction in underpricing— measured as change in yield, $Underpricing^y$— of 1.27 bps, accounting for 39.5% of its standard deviation. For the average sample bond, this corresponds to approximately $920,000 in additional offering proceeds. Importantly, this effect is not subsumed by standard proxies for information production during bookbuilding: when we control for spread compression and the peak oversubscription ratio (Wang (2021), Hotchkiss et al. (2025)), demand elasticity retains its full economic and statistical significance, while spread compression becomes only marginally significant. This establishes that the slope of the demand curve is a distinct channel from the information-revelation mechanisms emphasized in prior work. Consistent with its effect on underpricing, we confirm that greater demand elasticity is associated with lower offering spreads (higher offering prices), thereby reducing issuers' financing costs.

We obtain our main results using regressions that control for a rich set of bond characteristics, market conditions, issuer fixed effects, and year-quarter fixed effects. Because primary market orders for corporate bonds are taken to build the book within just a few hours on the offering date, it is unlikely that changes in price and book size reflect changes in firm fundamentals within that short window. One plausible concern is that time-varying unobservable issuer- and bond-level characteristics may affect both demand elasticity and underpricing. Another plausible concern is that, although our sample IG issuers are mostly seasoned public issuers with outstanding bonds traded in the secondary market, some investors may update their valuations of the offering following the offering spread update, which might drive both our estimated demand elasticity and the offering's underpricing.[8] To address these concerns, we implement an instrumental-variables (IV) strategy that exploits variation in the common investor pool across issuance days. Specifically, we proxy for the common investor-pool elasticity on any given day by the average elasticity of all other issuers' bonds launched on that day; this presumes that same-day offerings face a shared investor pool and similar market conditions, so that day-to-day variation in this average reflects exogenous shifts in investor-pool elasticity rather than issuer- and bond-specific fundamentals. The IV estimates show that our main finding—that higher demand elasticity reduces underpricing—is unlikely to simply reflect omitted issuer- or bond-level factors.

In addition to costs to the issuer, investors' demand elasticity should also affect other aspects of underwriters' behavior during the bookbuilding process. Underwriters propose an initial offering spread that is higher than their expected offering spread to generate momentum (Lowry and Schwert (2004), Wang (2021), DeMarzo and Frankel (2025)) and ensure oversubscription. When demand elasticity is high, underwriters can propose a lower initial offering spread to achieve their desired order book size. Further, a smaller order book size may be sufficient to ensure the success of an offering when demand elasticity is high, knowing that a small change in yield can absorb a large-scale shock. We find evidence consistent with these predictions: higher demand elasticity is significantly related to a lower initial offering spread and to lower peak and final order book sizes.

Finally, we examine the relationship between investor composition and offerings' demand elasticity. Exploiting both ex-ante and ex-post proxies of insurers' and mutual funds' demand using eMAXX data, we find that insurance companies' demand is positively associated with *Demand elasticity*^{y}, whereas mutual funds' demand is not robustly significantly related. We do not claim a causal relationship, but the significant and robust positive relationship between insurance companies' end-of-offering quarter holdings and *Demand elasticity*^{y}

[8] To evaluate the potential impact of valuation revision on demand elasticity, we conduct a Frisch-Waugh partial regression anaylsis (Frisch and Waugh (1933), Lovell (1963)) by residualizing both *Demand elasticity*^{y} and spread compression from the full set of our controls. Our findings suggest that a valuation revision effect, if it even exists, is minimal.

provides a useful contrast to conflicting results in prior literature, and complements previous studies showing that insurers' investment in this market reduces financing costs through price-level and stability channels (Massa et al. (2013); Kubitza (2023); Coppola (2025)).[9]

In summary, our study highlights investor demand elasticity as a key mechanism in explaining underwriter behavior and pricing in the primary market for corporate bonds. Issuance costs, specifically underpricing, have been shown to be significant, even for IG bonds.[10] A growing literature studies underwriters' efforts to ensure successful bond offerings through bookbuilding, allocation decisions, and price support (Wang (2021), Bessembinder et al. (2022), Goldstein et al. (2021), Nagler and Ottonello (2022), and Nikolova and Wang (2022)). At the same time, some studies suggest the importance of agency problems in explaining underpricing (Nikolova et al. (2020), Flanagan et al. (2021), Siani (2025)). Beyond these previously studied effects, using our novel measure, we show that investors' demand elasticity explains more than a third of the variation in underpricing and informs the dynamics of the primary market pricing process.

Our study of bond-level demand elasticity can also provide new insights into some seemingly puzzling time-series patterns observed in the primary market. For example, despite that corporate bond offerings are significantly underpriced during the COVID-19 crisis, the oversubscription ratio at issuance is exceptionally high during this period (Figure 5). Beyond an agency cost explanation, it appears difficult to justify why underwriters maintain a larger than usual order book size at the expense of higher underpricing at a time issuers need funding the most. Our study suggests that this period features low demand elasticity (Figure 4) such that flipping in the immediate after-market (Nikolova and Wang (2022)) or an unexpectedly dropped order— which is more likely to happen in unfavorable market conditions— would exert large price pressure on the security to push the price underwater.

[9]Given the important relation between maturity and demand elasticity we demonstrate earlier, this analysis controls for maturity using dummy variables indicating maturity by year or using granular maturity bucket by letter rating by year-quarter fixed effects.

[10]For our sample, IG bond offerings leave on the table an average of about \$2 million (i.e., our sample average offering size of \$859 million $\times$ underpricing of 21.20 basis points).

Therefore, underwriters need to accumulate a larger buffer to ensure a successful offering in this period.

Lastly, our work contributes to the developing literature showing the importance of investors' demand elasticity in determining asset prices. Most of the recent studies of corporate bond demand elasticity employ the asset demand system developed by Koijen and Yogo (2019), which relies on changes in investor-level holdings and secondary market prices to infer elasticity from coefficients of panel-data regressions (Bretscher et al. (2025), Darmouni et al. (2022), Chaudhary et al. (2022), Choi et al. (2023)). Overall, these papers show that different model assumptions and different levels of data aggregation lead to substantial variation in the estimated demand elasticity (Chaudhary et al. (2022)). In our paper, we instead construct micro-level corporate bond elasticity directly from observed order book data during the bookbuilding process. The parallels in our analyses show that the model-free bond-level estimates we provide are useful as a natural benchmark for future work on corporate bond markets, whether to calibrate structural models or to interpret reduced-form estimates of price impact in secondary markets.

2. Corporate bond offerings and demand elasticity

U.S. corporate bond offerings are typically executed in a single day through a fast-moving bookbuilding process. In the morning, underwriters announce the initial price talk (IPT) that sets the initial offering spread or yield (initial offering spread hereafter because we focus on IG bonds). Institutional investors then submit orders, often within hours, giving underwriters real-time information about the size and sensitivity of demand. Based on this information, underwriters frequently compress the offering spread and build the final book.[11] Previous studies find that the spread compression and final order book size reflect the level of investor demand (Wang (2021), Hotchkiss et al. (2025), Wang and Wu (2022), Siani (2025)). The recent availability of peak book size data enables us to observe two price–quantity pairs:

[11] Underwriters also sometimes increase the offering amount, a practice known as upsizing (Hotchkiss et al. (2025)). Our results are robust to excluding upsized offerings from our sample.

the peak book size at the initial offering spread and the final book size at the offering spread. This data allows us to construct a bond-level measure of demand elasticity in the primary market. To the best of our knowledge, we are the first to utilize peak book size information and to study how demand elasticity affects primary market outcomes.

We illustrate the role of demand elasticity in the primary market with a simplified example. In Figure 3, D1 and D2 represent two possible investor demand curves. Demand elasticity is higher under D2 than under D1. Both curves pass through the market-clearing point (the diamond in the figure), with yield Y0 and normalized demand of 1, equal to the offering amount. The slopes of these demand curves are consistent with Albuquerque et al. (2024), who document that credit supply for government bonds declines rapidly as yields fall, and that demand eventually reaches an upper bound beyond which quantity is unresponsive to yield changes near the clearing point. Underwriters deliberately set the initial offering spread so that the deal is oversubscribed (DeMarzo and Frankel (2025)); an oversubscribed book also allows underwriters to allocate bonds selectively, ensuring both a successful offering and alignment with issuers' preferences, such as favoring long-term investors (Brennan and Franks (1997); see also The International Capital Market Association's 2015 Primary Market Handbook). Importantly, the initial offering spread required to reach a target peak book size depends on demand elasticity. When the demand curve is flatter (i.e., more elastic), a smaller discount can induce sufficient demand. As a result, the necessary IPT (triangles in Figure 3) is lower. Similarly, to achieve a desired final book size, the offering spread (circles) is also smaller with high elasticity. For issuers, the implication is critical: an offering spread closer to the market-clearing price reduces underpricing (illustrated by U1 and U2 in Figure 1) and thereby lowers issuance costs.

Furthermore, when demand elasticity is high (D2), large demand shocks translate into relatively small price changes. This alleviates underwriters' concern that the bond might trade below the offering price in the secondary market (Bessembinder et al. (2022)). As a result, there is less need for a large oversubscription buffer when demand is elastic, leading to a smaller desired peak and final oversubscription ratio. In turn, both the IPT and the offering spread (star in Figure 3) are lower, resulting in an even smaller underpricing.

Finally, we also see a similar relationship between demand elasticity and spread compression— the adjustment from IPT to the final offering spread (Figure3). That is, the change in the price from peak oversubscription to final oversubscription is smaller when the demand curve is flatter. In sum, we expect that higher demand elasticity enables issuers to achieve lower underpricing, a lower initial offering spread, a lower final offering spread, smaller spread compression, and lower peak and final oversubscription ratios.

3. Data and sample

3.1. Sample construction

Since we focus on changes in prices and the order book size in the primary bond market, we obtain these variables from a data provider between October 21st, 2019, the earliest available date of these variables, and December 31st, 2023. We keep IG bond offerings, identified using rating information from the data provider, with non-missing peak book size, final book size, IPT, and offering spread over the Treasury benchmark. We do not include high-yield bonds because the book size information of these bonds are typically not available to the public. To obtain bond characteristics, we then match these bonds with USD-denominated corporate debentures and medium-term notes (MTNs) from Mergent FISD (FISD) that are non-convertible, non-perpetual, non-preferred, non-exchange, with fixed coupon rate and having non-missing offering date, offering price, and maturity information. These criteria leave us 2,955 bonds.

To evaluate the representativeness of our sample, we compare sample bonds with bond offerings obtained from FISD. We restrict the FISD sample bonds to USD-denominated, non-convertible, non-perpetual, non-preferred, non-exchange, and fixed-rate corporate debentures and MTNs, with non-missing offering date, offering price, and maturity information. We further require the FISD sample to have IG rating, based on rating information within four weeks of the bond issuance obtained from FISD, or be matched to our sample. Table 1 shows the comparison in terms of the number of bonds and offering amount. Panel A shows that for corporate debentures, our sample coverage is higher between 2021 and 2023, covering an average of 70% bond offerings obtained from FISD in terms of the number of offerings; this coverage is lower for the partial year of 2019 and 2020, but still covering an average of around 50% FISD bonds. The offering amount of sample corporate debentures is slightly higher than that of non-sample corporate debentures ($869 million vs. $838 million). Panel B shows that for MTNs, our sample only covers about 11% of those obtained from FISD. However, sample MTNs are much larger than non-sample MTNs ($786 million vs. $105 million). This comparison echoes previous studies that exclude MTNs when studying bond offerings, in that most of MTNs are of much smaller size and are offered in a way different from corporate debentures. Our main analysis includes sample MTNs because they are offered in a similar manner as sample corporate debentures and are of similar size. In robustness tests, we exclude MTNs.

To measure the post-issuance performance, we obtain from TRACE secondary market transaction data for the bonds in our sample. We clean the dataset by removing cancellations, corrections, and reversals, as well as duplicate interdealer trades. We also exclude retail-sized trades (less than $100,000), transactions involving commissions, and those reported under special price conditions. Out of 2,955 sample bonds, 2,936 of them have at least one secondary market trade in TRACE within the first week after issuance for us to measure the secondary market performance.

3.2. Main variables

We use an offering's yield spread compression to quantify the price changes during the bookbuilding process. We calculate *Spread compression* as the final offering spread minus the initial offering spread. Since underwriters tighten the yield spread in response to positive investor demand, a more negative value of *Spread compression* implies stronger investor demand (Wang 2021). We also calculate the implied percentage price change,

$\%\Delta Price$, using the negative value of the spread compression multiply the bond's modified duration, scaled by 10,000. This measure implicitly assumes bond coupon is unchanged from IPT to launch.

We use the attrition rate to quantify the quantity changes in investor demand during the bookbuilding process in response to spread compression. We measure *Attrition* as the final book size minus the peak book size, scaled by the peak book size. Because underwriters typically compress the yields rather than increase the yields, *Attrition* is mostly negative.

Demand elasticity is typically defined as the percentage change in quantity divided by the percentage change in price. However, in the case of fixed income securities, maturity introduces a complication: percentage price changes are not directly comparable across bonds of different maturities. Moreover, underwriters quote bonds in terms of yield spreads rather than prices. For these reasons, our primary measure of demand elasticity is defined as the percentage change in quantity divided by the percentage change in spreads.

Formally, we calculate $Demand\ elasticity^y$ as *Attrition* scaled by the 10,000th of the *Spread compression*. For nearly all bonds in our sample, both *Attrition* and *Spread compression* are negative, which yields a positive value of $Demand\ elasticity^y$. A more positive value of $Demand\ elasticity^y$ corresponds to greater demand elasticity.

For comparison to measures commonly used in the literature, we provide descriptive statistics for an alternative elasticity metric based on prices, $Demand\ elasticity^P$. This measure is defined as the negative of *Attrition* scaled by the percentage change in price, i.e., $\%\Delta Price$. Equivalently, $Demand\ elasticity^P$ can be expressed as the product of $Demand\ elasticity^y$ and $\frac{1}{modified\ duration}$.

To measure the aftermarket performance of bond offerings, we follow Wang (2021) to calculate underpricing. Specifically, $Underpricing^y$ ($Underpricing^P$) is the yield (percentage price) change from the offering yield (price) to the first trade yield (price) in the secondary market, adjusted for the changes in yields (returns) of the rating- and maturity-matched ICE BofA indexes. The first-trade price is computed as the volume-weighted average price of trades on the first available trading day within one week of the offering date. The corresponding first-trade yield is then derived from this price.

3.3. Summary statistics

Table 2 presents statistics of primary market outcomes, bond characteristics, and market conditions for the sample with non-missing demand elasticity measures. We winsorize all continuous variables at the 1st and 99th percentile of the sample. The average initial offering spread of the sample is 159 bps, which reflects that all our sample bonds are of investment grade. The average peak book size is $3.4 billion, or 4.4 times the offering amount. The typical offering spread is 134 bps, which is 25 bps lower than the initial offering spread. This spread compression is larger than that documented in Wang (2021) and Hotchkiss et al. (2025), likely due to our different sample periods. The average final book size is $2.8 billion, which corresponds to an attrition rate of -18.6%. Post-offering, the average underpricing in terms of yield spreads is -2.5 bps, corresponding to an average of 21 bps change in the bond price.

BBB-rated bonds account for 47% of the sample, and 41.8% of the sample are rated differently by S&P and Moody's (i.e., split rating). Yankee bonds and MTNs account for 12.6% and 13% of the sample, respectively. The vast majority of sample bonds are senior (91%).

4. Demand elasticity

4.1. Time series variation

Since we are the first to study corporate bond elasticity calculated using observed pairs of changes in price and quantity, we begin our analysis by showing stylized facts.

Panel A of Figure 4 shows that the demand elasticity, reported as both $\textit{Demand elasticity}^y$ and $\textit{Demand elasticity}^P$, sharply decreased with the onset of the COVID-19 crisis in early 2020. This change could be due to the heightened uncertainty and risk aversion during that period (Kyle (1989); Koijen and Yogo (2019)). It recovers by the end of 2020.

Demand elasticity^y and *Demand elasticity*^{P} co-move closely most of the time but show larger differences in the latter half of our sample period. The difference is likely due to changes in bond characteristics.

We estimate the following multivariate regression which controls for bond characteristics and issuer fixed effects:

$$Demand\ elasticity_i = \alpha + \gamma Cal\ quarter_t + \theta BondChar_i + FE + \epsilon_i, \quad (1)$$

where i indexes a bond offering. *Demand elasticity* is *Demand elasticity*^{y} or *Demand elasticity*^{P}, as defined in Section *3.2.*. *Cal quarter* indicates the calendar quarter when the bond is offered, where the omitted group is 2019 Q4. *BondChar* includes an indicator of BBB rating, an indicator of split rating, the natural logarithm of the offering amount, the natural logarithm of maturity in years, an indicator of Rule 144A bonds, seniority indicators (senior unsecured and senior), an indicator of Yankee bonds, and an indicator of MTNs. FE includes issuer fixed effects. We estimate this equation using an ordinary least squares (OLS) regression and cluster the standard errors at the issuer level.

Panel B of Figure 4 plots coefficients for the calendar quarter dummies. This panel shows that *Demand elasticity*^{y} and *Demand elasticity*^{P} move closely together, even in the later half of our sample. Moreover, both measures show a significant dip in 2022 Q4, in which the Federal Reserve aggressively increased the Fed Fund rate twice to fight against the fierce inflation and when investors stoke fear of a recession. This result confirms that demand elasticity is lower when market conditions are more uncertain and investors are more risk averse. Panels A and B also demonstrate the influence of changing characteristics of bond issues (such as maturity) over time on demand elasticity measured from prices rather than yields.

4.2. Bond characteristics and demand elasticity: Univariate results

Bond rating and maturity are key determinants of the substitutability of bonds (Chaudhary et al. (2022)). Panel A of Table 3 shows the average *Demand elasticity*^{y} by letter rating and maturity buckets. *Demand elasticity*^{y} declines as credit rating worsens for short- and intermediate-maturity bonds, but does not have a significant trend for long-term bonds. For A- and BBB-rated bonds, which together account for 89% of our sample, demand elasticity increases as maturity increases. This suggests that investors react more aggressively to each basis point change in the yield of longer term bonds due to its larger impact on the cumulative return over the life of the bond.

Panel B of Table 3 repeats this description for *Demand elasticity*^{P}. Similar to Panel A, *Demand elasticity*^{P} declines as credit rating worsens for short- and intermediate-maturity bonds, but does not have a significant trend for long-term bonds. However, *Demand elasticity*^{P} significantly decreases as the bond maturity lengthens, indicating that the same amount of price change is associated with a greater change in quantity for shorter maturity bonds. These results are consistent with what we show in Panel A because the same magnitude price change produces a larger change in yield for shorter maturity bonds. These results imply that when measuring bond demand elasticity, we need to consider the unique feature of bonds – maturity.

4.3. Determinants of demand elasticity

Because our sample contains bond offerings with rich differences in bond characteristics and spanning both tranquil and crisis periods, we are able to investigate the determinants of corporate bond demand elasticity by estimating the following model:

$$Demand\ elasticity_i = \alpha + \theta Bond\,Char_i + \gamma Market\,condition_i + FE + \epsilon_i, \qquad (2)$$

where i indexes a bond offering. *Demand elasticity* is *Demand elasticity*^{y} or *Demand elasticity*^{P}, as defined in Section *3.2.*. *BondChar* is the same as in equation 1. $Market\,condition$ include 10-year Treasury rate, Treasury slope, and VIX. FE includes calendar-quarter and issuer fixed effects. We first estimate this equation using OLS regressions, and cluster standard errors at the issuer level.

Table 4 presents the estimation results. Columns (1)-(3) use *Demand elasticity*^{y} as the dependent variable. Column (1) does not control for calendar-quarter and issuer fixed effects. These results show that the demand elasticity of BBB-rated offerings is 7.484 lower than other bond offerings, which accounts for 13.5% of its standard deviation (55.40). This result is consistent with the theoretical prediction that substitutability and pass-through rates increase demand elasticity. The offering size strongly affects its demand elasticity, with a one standard deviation (0.506) increase in log(offering amt) decreasing the demand elasticity by 12.68, accounting for 22.9% of its standard deviation. Larger bond offerings likely require a greater number of investors to absorb (Helwege and Wang (2021)) and suffer more from the slow-moving capital problem (Duffie (2010)). Moreover, longer maturity offerings have higher demand elasticity, with a one-standard deviation increase in log(maturity) (0.794) increasing *Demand elasticity*^{y} by 6.07, accounting for 11% of its standard deviation (noting that a one basis point change in yields is associated with a greater percentage change in price for longer term bonds). Yankee bonds, which are issued by non-US firms, have lower demand elasticity; our results are robust to excluding Yankee bonds or MTNs (Table B1, Appendix B). MTNs, typically issued by better quality firms, have higher demand elasticity. Finally, column (1) shows that demand elasticity is higher when market conditions are more favorable, as indicated by higher Treasury rate, higher Treasury slope, and lower VIX.[12]

Column (2) adds calendar-quarter fixed effects. All results are similar to those in column (1) except that the market condition indicators become insignificant due to the

[12] While demand elasticity co-moves with credit risk and market conditions that also affect secondary-market liquidity, it is not simply a relabeled liquidity measure. In particular, we find that elasticity decreases with offering size, whereas the literature typically documents that larger issues are more liquid, with higher trading volume and frequency and lower trading costs (e.g., Dick-Nielsen et al. (2012), Helwege and Wang (2021), Hotchkiss and Jostova (2017)). This opposite relation with issue size underscores that our primary-market elasticity captures the slope of investors' demand at issuance, rather than secondary-market trading frictions.

inclusion of time fixed effects. Column (3) further adds issuer fixed effects. Within the same issuer, those with split-ratings have lower demand elasticity, again consistent with the argument that demand elasticity decreases with uncertainty.

Columns (4)-(6) repeat the exercises in columns (1)-(3) using *Demand elasticity*^{P} as the dependent variable. All other results are similar, except that *Demand elasticity*^{P} decreases with bond maturity. This result is expected given that $Demand\ elasticity^P = Demand\ elasticity^y \times \frac{1}{modified\ duration}$, and the significantly increased R^2 is consistent with the effect of maturity for this measure.

Taken together, our model-free, bond-level measure allows us to directly relate demand elasticity to key determinants including credit rating, maturity, issue size, and market conditions, without imposing a specific asset-demand system. The patterns we document—for example, lower elasticity for BBB and split-rated bonds, and during periods of heightened uncertainty—are broadly in line with those produced by structural demand-system models (Bretscher et al. (2025)) and flow-based panel regressions with heterogeneous substitutability (Chaudhary et al. (2022)). In addition, our average price-based elasticity for IG bonds is close in magnitude to the price-based elasticity Bretscher et al. (2025) report for IG bonds held by mutual funds, suggesting that primary-market and secondary-market estimates are broadly comparable. Overall, these parallels imply that the behaviors we uncover for issuance-day elasticity are likely to be informative about secondary-market demand, making our measure a useful benchmark for future research on corporate bond demand in both primary and secondary markets.

4.4. Discussion: Yield-based versus price-based demand elasticity

A defining feature of fixed-income securities is that price sensitivity is linked to maturity through duration. Because $Demand\ elasticity^P \approx Demand\ elasticity^y \times \frac{1}{\text{Modified Duration}}$, price-based measures conflate investor behavior with the bond's technical features.

The literature approaches this distinction based on the specific research context. For instance, Koijen and Yogo (2019) develop a demand system in price space for equities, where duration is not a primary factor. In the corporate bond market, Chaudhary et al. (2022) and Darmouni et al. (2022) analyze bond returns and fund flows, resulting in price-based measures. Meanwhile, Bretscher et al. (2025) and Choi et al. (2023) specify demand as a function of yield before converting to price-based elasticity for cross-asset comparability. Siani (2025), studying the primary market most closely related to our setting, estimates elasticities with respect to after-market yield changes.

Table 3 highlights how this measurement choice influences empirical results. We find that yield-based and price-based demand elasticities exhibit divergent trends with respect to maturity. Specifically, yield-based elasticity increases with maturity—suggesting investors are more sensitive to each basis point of yield for longer-dated bonds—whereas price-based elasticity decreases, reflecting the larger price impact of yield changes at longer durations. This relationship is confirmed in our multivariate analysis (Table 4), where the coefficient on log(maturity) is positive for *Demand elasticity*^{y} but negative for *Demand elasticity*^{P}.

These results suggest that while price-based measures are standard for equity-like returns, they capture different dynamics when applied to the bond market's cross-section. Specifically, relying on price-based elasticity may understate the demand sensitivity of long-duration portfolios, such as those held by insurance companies. Consequently, to isolate investor sensitivity from the mechanical effects of duration, we focus on yield-based elasticity for our primary analyses.

5. Demand elasticity and primary market outcomes

5.1. Demand elasticity and underpricing

5.1.1. Baseline regressions

In this section, we examine how demand elasticity shapes issuance costs for corporate bonds. We begin with underpricing, which Figure 1 suggests declines as demand becomes more elastic. As discussed in Section *4.4.*, we focus exclusively on *Demand elasticity*^{y} rather than *Demand elasticity*^{P} hereafter.

To quantify the relation between underpricing and demand elasticity while holding constant credit risk, issue characteristics, and market conditions, we use the following multivariate regression of underpricing on bond-level demand elasticity and a rich set of controls:

$$Underpricing_i^y = \alpha + \theta Demand\ elasticity_i^y + \gamma Controls_i + FE + \epsilon_i, \qquad (3)$$

where i indexes a bond offering. $Underpricing^y$ and $Demand\ elasticity^y$ are defined in Section *3.2.*. *Controls* include *BondChar* and *Market condition* as in equation 2. FE includes calendar-quarter and issuer fixed effects. We estimate this equation using OLS regression and cluster the standard errors at the issuer level.

Results in Table 5 strongly suggest that underpricing decreases with demand elasticity.[13] For example, column (1) indicates that a one standard deviation increase in $Demand\ elasticity^y$ (55.4) decreases the magnitude of $Underpricing^y$ by 1.27 bps, which accounts for 39.5% of its standard deviation (3.22 bps).[14] Applied to the $1.7 trillion in total U.S. IG bond issuance in 2025 (SIFMA), this effect implies annual savings of roughly $220 million for IG issuers. This economic effect is also about three times as large as the impact of moving from non-BBB to BBB rating, underscoring that demand elasticity is at least as important as credit quality—which is widely viewed as a central driver of corporate bond pricing—in explaining cross-sectional variation in underpricing among investment-grade offerings.

These results, together with the sharp decline in demand elasticity during the COVID-19 crisis (Figure 4), help explain an otherwise puzzling pattern in primary market data: despite significant underpricing, oversubscription ratios were exceptionally high during this period (Figure 5). Low demand elasticity means that potential order drops or immediate

[13] Note that a more positive $Underpricing^y$ corresponds to a smaller magnitude of underpricing. These results are robust to explicitly controlling for the offering spread and the final oversubscription of the offering (Table B2, Appendix B). They are also robust to excluding MTNs or Yankee bonds from our sample (Table B3, Appendix B).

[14] Albuquerque et al. (2024) find that marginal demand elasticity decreases the abnormal post-auction return of the re-opened security. Using demand elasticity as a proxy for the consensus of investors' valuation of equity offerings, which entail much greater valuation uncertainty than bond offerings, Cornelli and Goldreich (2003) find that demand elasticity at the issuance price. which measures the degree of investors' agreement on IPO price in their setting, increases underpricing.

aftermarket flipping (Nikolova and Wang, 2022) would exert large price pressure, requiring underwriters to build larger buffers to protect against the bond trading below the offering price. That is, when the demand curve is steep, even a modest reduction in demand—whether from flipping or unexpectedly dropped orders—translates into a large adverse price movement, making underwriters more cautious and leading them to accumulate a larger oversubscription buffer at the cost of higher underpricing.

5.1.2. Potential impact of valuation revision

Our estimates assume that the two observed price-quantity pairs trace the same demand curve. A concern is that investors may revise their valuation of the bond between the initial price talk and the final offering yield — for example, by interpreting spread compression as a signal of the value of the underlying bond. Such a revision would shift the demand curve rather than tracing a movement along it. If such valuation revision is correlated with spread compression, it could introduce nonlinear bias into our elasticity measure. Specifically, "hot" offerings with large spread compression may understate true elasticity (because favorable revision reduces investor attrition), while "cold" offerings with little compression may overstate it (because unfavorable revision amplifies attrition). This would create convexity or structural breaks in the relationship between measured elasticity and spread compression.

We note, however, that this concern is likely limited in our setting. Our sample consists of investment-grade bonds issued by seasoned firms, the vast majority of which are publicly listed with existing bonds trading in the secondary market. The scope for information asymmetry regarding value — and thus for meaningful valuation revision during the few hours of bookbuilding — is arguably small.

Nonetheless, we evaluate this concern in two ways before implementing an IV test in the following section. First, we examine whether there is a non-linear relation between demand elasticity and spread compression after controlling observables. Specifically, we construct a Frisch-Waugh partial regression plot (Frisch and Waugh (1933), Lovell (1963)) by residualizing both *Demand elasticity*^{y} and spread compression from the full set of controls and fixed effects in Table 4, column (3), and plotting the residuals against each other (Figure B2, Appendix B). If valuation revision introduces nonlinear distortion, we would expect significant higher-order terms in the partial relationship. As Figure B2 shows, the linear and cubic fitted lines are nearly indistinguishable across the entire range of spread compression. A joint F-test for the quadratic and cubic terms yields $F = 0.148$ ($p = 0.862$), and neither term is individually significant.[15] This confirms that, conditional on bond characteristics and fixed effects, the partial relationship between demand elasticity and spread compression is linear with little evidence of nonlinear contamination from valuation revision.

Second, we directly exclude the tails of the spread compression distribution where valuation revision is most likely to distort measured elasticity. Specifically, we restrict the sample to bonds whose spread compression falls between the 25th and 75th percentiles of the cross-sectional distribution within year $\times$ letter-rating groups and re-estimate equation 3. Column (3) of Table B3, Appendix B, reports the results. The coefficient on *Demand elasticity*^{y} is 0.019 ($t = 9.32$), virtually identical to the full-sample estimate of 0.019 in Table 5, column (3). The stability of this coefficient across the full sample and the middle subsample indicates that the relation between demand elasticity and underpricing is not driven by extreme spread compression observations where valuation revision would be most likely of concern.

5.1.3. Instrumental variable estimates

We obtain baseline results using OLS, controlling for a rich set of bond characteristics and issuer fixed effects. Thus, the relation between demand elasticity and underpricing reflects differences in the slope of investor demand curves rather than differences in observable credit risk, issue terms, or time-invariant issuer characteristics such as reputation or long-run governance quality.

[15] In the linear specification, the coefficient on residualized spread compression is 1.156 ($t = 4.533$). Adding quadratic and cubic terms yields coefficients of 0.007 ($t = 0.502$) and 0.001 ($t = 0.483$), respectively, with R^2 virtually unchanged at 0.027. Standard errors are clustered at the issuer level throughout.

A remaining concern is that unobservable time-varying issuer characteristics and bond characteristics may affect both demand elasticity and underwriter behavior. For example, if underwriters perceive a bond as especially exposed to downgrade risk or other forms of information asymmetry not fully captured by ratings, they may both face a less elastic order book and choose higher underpricing or wider offering spreads for reasons unrelated to the pure slope of the demand curve. In this case, OLS estimates would conflate the effect of demand elasticity with the impact of these unobserved issuer- or bond-specific factors.

To address this concern, we estimate two-stage least squares (2SLS) regressions in which bond-level *Demand elasticity*^{y} is treated as endogenous and instrumented with the average elasticity of *other issuers'* bonds issued on the same day. For bond i issued by issuer k on day d, we define the same-day, cross-issuer elasticity measure as

$$Z_{All\ other\ i,d} \equiv \frac{1}{N_{d,-k}} \sum_{\substack{j \in d \\ \text{issuer}(j) \neq k}} \text{Demand elasticity}^y_{j,d}, \tag{4}$$

where $N_{d,-k}$ denotes the number of bonds issued on day d by issuers other than k. To verify the availability of same-day offerings, we plot the number of unique daily issuers in Figure B1 of Appendix B. Of the 483 days with at least one offering, only 17% involve a single issuer. These single-issuer days are distributed throughout the sample without temporal clustering. On average, each offering date features 3.6 unique issuers (median of 3).

The instrument is relevant because offerings launched on a given day tap the same institutional investor pool and face the same day-specific funding and risk conditions. Thus, shocks to investors' willingness to expand orders in response to yield changes (for example, driven by changes in risk appetite) will be reflected in the elasticities of multiple deals on that day. The cross-issuer daily average $Z_{i,d}$ captures this common component.

The exclusion restriction requires that, conditional on observables, $Z_{All\ other}$ is uncorrelated with the structural error in the pricing equation, including the component driven by issuer- and bond-level unobservables. This is plausible in our setting because we include a rich set of bond characteristics and market conditions, as well as issuer and time fixed effects, and because $Z_{All\ other}$ is constructed from other issuers' bonds on the same day, so that the remaining variation in the instrument primarily reflects common, day-level shifts in investor demand rather than shocks specific to issuer k or bond i. Thus, this instrument variable also helps to further address the concern discussed in section *5.1.2.*.

We also construct two alternative instruments to account for investor clienteles based on maturity and credit quality. First, we calculate the average elasticity of other issuers' bonds launched on the same day with the same maturity bucket ((0,5),[5, 10), and [10,) ($Z_{Mat.}$). Second, we further refine this measure by requiring that the other-issuer bonds also share the same credit quality (BBB vs. non-BBB) as the focal offering ($Z_{Mat.Cred.}$).

We implement 2SLS as follows. In the first stage, we augment equation 2 predicting demand elasticity by adding one of the three IVs as a control variable. The second stage estimates equation 3 by replacing *Demand elasticity*^{y} with its fitted value obtained from the first stage. Results presented in Table 6 show that the IV is strongly related to bond-level elasticity in the first stage. For example, column (1) shows that all else equal, a one unit increase in $Z_{All\ other}$ is associated with a 0.205 unit increase in *Demand elasticity*^{y}. The Kleibergen–Paap rk Wald F-statistic is 14.79, exceeding the conventional threshold of 10, suggesting that weak-instrument concerns are unlikely.

The IV estimates are economically and statistically close to the baseline OLS results. For example, column (4) of Table 6 suggests that a one-standard-deviation increase in instrumented *Demand elasticity*^{y} (36.55) reduces underpricing by 1.37 basis points, which accounts for 43% of the standard deviation of Underpricing^y (3.18). Thus, the economic significance of elasticity for issuance costs is preserved when we isolate only the variation driven by same-day shifts in the common investor pool. The two alternative IVs, $Z_{Mat.}$ and $Z_{Mat.Cred.}$, yield similar results (columns (5) and (6)).

These results alleviate concerns that our results are mechanically driven by overlapping construction or by unobserved issuer- and bond-level heterogeneity, and they reinforce the view that investors' demand elasticity is a primitive determinant of underwriters' pricing decisions in the primary corporate bond market.

5.1.4. Underpricing and information production

Previous studies show that bookbuilding theories extend to corporate bond offerings: Underwriters use underpricing to induce investors to reveal private information. For example, Wang (2021) documents the partial adjustment phenomenon (Hanley (1993)) in corporate bonds— underpricing is positively associated with the price update during bookbuilding.

To isolate the distinct role of demand elasticity in explaining underpricing, we explicitly control for proxies of investors' information production. First, we use spread compression, where larger negative compression indicates stronger positive demand information (Wang (2021), Nikolova and Wang (2022)). Second, we use final oversubscription, a direct measure of investor demand (Hotchkiss et al. (2025), Wang and Wu (2022), Siani (2025)).

We re-estimate equation 3 by adding either spread compression or final oversubscription, and report the results in Table 7. Our main finding holds: the effect of demand elasticity remains similar across all specifications. Interestingly, although our results support the partial adjustment phenomenon—spread compression is positively correlated with $Underpricing^y$—when we do not control for demand elasticity (column (1)), spread compression becomes only marginally significant when demand elasticity is included, with p-value of 0.102 (column (2)). In contrast, the economic and statistical significance of demand elasticity remains similar to when not controlling for spread compression (column (3) of Table 5). Columns (3) and (4) confirm that peak oversubscription is a strong predictor of underpricing, consistent with bookbuilding theories. The economic magnitudes of peak oversubscription and demand elasticity are comparable. In particular, column (4) indicates that a one-standard-deviation increase in $Demand\ elasticity^y$ (55.4) increases $Underpricing^y$ by 0.292 standard deviations (3.22), while a one-standard-deviation increase in peak oversubscription (2.22) raises it by 0.306 standard deviations.

Taken together, these results suggest that demand elasticity is at least as important as bookbuilding mechanisms in explaining corporate bond underpricing. Rather than being subsumed by information-production effects, elasticity provides an independent and economically meaningful dimension of investor behavior in the primary market.[16]

5.2. Demand elasticity and issuance date behavior

Figure 3 demonstrates the expected relationship between investors' demand elasticity and other underwriter behavior on the offering date, specifically, how the IPT is set and the changes in price made in response to the peak book size observed during bookbuilding. To consider these outcomes, we re-estimate equation 3 but replace the left-hand-side variable with the initial and final offering spread, peak and final oversubscription ratio, and spread compression.

Table 8 shows that demand elasticity has a significant impact on behavior on the offering date. Columns (1) to (5) show that a one-standard-deviation increase in $Demand\ elasticity^y$ is associated with a 4.3 bps decrease in the initial offering spread, 0.27 decrease in the peak oversubscription ratio, 1.27 bps smaller spread compression, 3.1 bps decrease in the offering spread, and 0.72 decrease in the final oversubscription ratio, which accounts for 5.9%, 12.5%, 14.5%, 4.4%, and 40.2% of their standard deviations, respectively. When we use the dollar amount of the book size in lieu of the oversubscription ratio, our findings are robust (untabulated). These results together suggest that when demand elasticity is high, underwriters are more confident in successfully placing the offerings, thus they propose a lower initial offering spread; in turn, they receive smaller books, compress the initial offering spread less but still reach a lower offering spread, and reach a smaller final book size.

Comparing the coefficient of $Demand\ elasticity^y$ in column (3) of Table 5 (0.019), where the dependent variable is $Underpricing^y$, with that in column (4) of Table 8 (-0.056), where the dependent variable is the offering spread, we conclude that the impact of demand elasticity on reducing the offering spread goes beyond decreasing underpricing (i.e.,

[16] A plausible alternative is that demand elasticity captures a lower dispersion in investor valuations, which is a facet of information production. If this were the case, demand elasticity should be positively—rather than negatively—correlated with underpricing, following the logic of Cornelli and Goldreich (2003).

0.056>0.019). It also decreases the fair or the secondary-market yield of the new offering. The latter part is consistent with the argument of Bretscher et al. (2025) that higher investor demand elasticity should lead to lower credit spreads.

We also apply the IV method discussed in Section *5.1.3.* to these primary market outcomes. The second-stage estimation results reported in Table B4 of Appendix B similarly suggest that the impact of demand elasticity on primary market outcomes is not driven by unobserved issuer- and bond-level factors. Together, our findings in this section suggest that investor demand elasticity has a central role in shaping underwriters' behavior throughout the bookbuilding process and primary corporate bond market outcomes.

6. Investor composition and demand elasticity

In Section 4., we explore how bond characteristics and market conditions affect demand elasticity. The bond level demand elasticity we calculate is the aggregate demand elasticity of all primary market investors of an offering. If different types of investors exhibit heterogeneous demand elasticity beyond that explained by bond characteristics and market conditions, then investor composition should inform bond-level demand elasticity. Comparing demand elasticity at the investor-type level—mutual funds versus insurance companies—prior studies do not find consistent evidence as to which type of investors are more price sensitive.[17]

It is challenging to assess whether investor composition affects bond-level demand elasticity in our setting: it is challenging to distinguish whether specific investor types increase elasticity or are merely drawn to bonds with high elasticity. As this is not our primary research question, we restrict attention to documenting associations between investor composition and demand elasticity but leave causal inference to future work.

Because investor-level order book data are unavailable, we proxy for primary-market subscription with two measures. (1) Following Wang and Wu (2022), we use investors' hold-

[17] For example, Bretscher et al. (2025) estimate that the demand elasticity of mutual funds is higher than that of insurance companies, whereas Darmouni et al. (2022) find the opposite.

ings of similar bonds in the secondary market during the offering quarter, $\%Holdings_{similar}$, as a proxy for latent primary-market demand. The idea is that investors who hold more bonds similar to the new issue are more likely to request allocations. Its limitation is granularity: the measure depends on how 'similar' is defined (e.g., credit quality and maturity bands). (2) We use investors' end-of-quarter holdings of the new bond, $\%Holdings_{EoQ}$. This captures realized bond-level variation in holdings but only partially reflects primary-market subscription, since some investors request but receive no allocation, some sell shortly after issuance, and others buy in the immediate secondary market. In short, $\%Holdings_{similar}$ gauges propensity to subscribe (ex ante) but is coarse, whereas $\%Holdings_{EoQ}$ captures realized exposure (ex post) but mixes primary allocations with secondary trading.

We use eMAXX data on global quarterly holdings of corporate bonds from Refinitiv to construct the two proxies. To calculate $\%Holdings_{similar}$, for each bond offering we first find similar bonds as fixed-coupon USD-denominated corporate debenture or corporate MTN offered within three years prior to the new offering date recorded in Mergent FISD, which are of the same credit quality and whose time-to-maturity is within three years that of the new offering.[18] We then compute the percentage holdings of each similar bond, as total par value held scaled by the offering amount, by mutual funds and insurers, respectively. Finally, for each bond offering, we take the average percentage holdings of all similar bonds by mutual funds and insurers, and record them as $\%Holdings^{MF}_{similar}$ and $\%Holdings^{Insurer}_{similar}$, respectively.

To calculate $\%Holdings_{EoQ}$, for each offering at the end of the offering quarter we compute the percentage holdings of the offering, as total par value held scaled by the offering amount, by all mutual funds and all insurers, and record them as $\%Holdings^{MF}_{EoQ}$ and $\%Holdings^{Insurer}_{EoQ}$, respectively. Because investor disclosures can lag, if $\%Holdings^{MF}_{EoQ}$ or $\%Holdings^{Insurer}_{EoQ}$ is missing in the offering quarter, we substitute the percentage holdings

[18]Morningstar classifies bond funds within its style box based on interest-rate sensitivity and average credit quality (i.e., AAA- and AA-rating is high credit quality, A- and BBB-rating is medium credit quality, and BB-rating and below is low credit quality).

from the quarter immediately following the offering quarter. In robustness tests, we restrict the sample to offerings with non-missing $\%Holdings^{MF}_{EoQ}$ or $\%Holdings^{Insurer}_{EoQ}$ and require that the offering date falls within 30 days of the quarter-end.

The correlation matrix presented in Panel A of Table 9 suggest that our measures using similar bonds and quarter-end holdings are reasonably correlated. $\%Holdings^{Insurer}_{similar}$ and $\%Holdings^{Insurer}_{EoQ}$ are positively correlated ($\rho = 0.386$), so are $\%Holdings^{MF}_{similar}$ and $\%Holdings^{MF}_{EoQ}$ ($\rho = 0.327$). Also, $\%Holdings^{Insurer}_{similar}$ and $\%Holdings^{MF}_{similar}$, as well as $\%Holdings^{Insurer}_{EoQ}$ and $\%Holdings^{MF}_{EoQ}$, are negatively correlated. This is consistent with the view that the two large investor groups, mutual funds and insurance companies, are competing for primary market allocations.

In Panel B of Table 9, we present mean values of these proxies by rating and maturity buckets. Insurers' holdings, whether measured using similar bonds or quarter-end holdings, are larger for A- and BBB-rated bonds, which together account for 89% of our sample, than for AAA- and AA-rated bonds. Consistent with the notion that insurers are long-term investors, insurers' holdings increase with maturity. This Panel also indicates that mutual funds have sizable holdings across all rating and maturity buckets. The exception is short- and intermediate-maturity AAA/AA bonds, where mutual-fund holdings are lower than in other buckets yet remain above those of insurers. $\%Holdings^{MF}_{similar}$, calculated using existing bonds, does not show a clear pattern that mutual funds hold more short-term bonds. However, $\%Holdings^{MF}_{EoQ}$, capturing the immediate aftermarket, suggest that mutual funds tilt toward short-term bonds for A- and BBB-rated bonds.

Using these measures for insurer and mutual funds' proportion in the primary market, we study the association between investor composition and demand elasticity by re-estimating equation 2 but including $\%Holdings^{Insurer}_{similar}$ and $\%Holdings^{MF}_{similar}$, or $\%Holdings^{insurer}_{EoQ}$ and $\%Holdings^{MF}_{EoQ}$, as independent variables.

Results presented in Table 10 strongly suggest that demand elasticity is positively associated with the share of insurer investors. Specifically, column (1) shows that $\%Holdings^{Insurer}_{similar}$

is strongly positively associated with $Demand\ elasticity^y$. However, once we control for maturity more finely—adding maturity dummies in column (2)—the coefficient attenuates and becomes statistically insignificant. This attenuation is unsurprising: by construction, a large share of the cross-sectional variation in $\%Holdings^{Insurer}_{similar}$ is driven by maturity (see Table 9).

In contrast, the positive association between $\%Holdings^{insurer}_{EoQ}$ and $Demand\ elasticity^y$ remains strong after we control for maturity dummies (column (4)) and granular maturity bucket (i.e., (0,3), [3,5), [5,7), [7,10), [10,15), [15,30), [30,)) by lettering rating by year quarter fixed effects (column (5)). In terms of economic significance, column (5) suggests that a one standard deviation increase in $\%Holdings^{insurer}_{EoQ}$ (0.11) is associated with a 8.00 increase in $Demand\ elasticity^y$, which accounts for 14.4% of its standard deviation (55.40).

Given the limitations of using $\%Holdings_{EoQ}$ to proxy investors' subscriptions, we mitigate measurement errors by restricting the sample to offerings that have non-missing $\%Holdings^{insurer}_{EoQ}$ at the end of the offering quarter, are issued within 30 days prior to quarter-end, and have maturities under 30 years. These filters substantially reduce the sample size. Yet, results in column (6) show that the coefficient of $\%Holdings^{insurer}_{EoQ}$ remains large and statistically significant.

For mutual funds, the Pearson correlation between $\%Holdings^{MF}_{similar}$ ($\%Holdings^{MF}_{EoQ}$) and $Demand\ elasticity^y$ is -0.082 (-0.147), significant at 1% (1%). However, we do not find a significant relation between mutual funds' holdings and demand elasticity at the bond level in any of our model specifications, suggesting that the Pearson correlations are driven by bond- and issuer-characteristics, as well as market conditions. In robustness tests, we drop Yankee bonds and MTNs, and our results hold.

Absent causal identification, our estimates point to a strong positive association between insurer demand and demand elasticity at the bond level. Given that demand elasticity reduces underpricing (Table 5), our results suggest that insurer participation indirectly lowers issuance costs through its effect on the slope of the aggregate demand curve. This finding complements causal evidence from related settings. Massa et al. (2013) establish that a more stable bond investor base reduces supply uncertainty and allows firms to sustain higher leverage. Kubitza (2023) uses variation in insurance premium income to instrument for insurer bond purchases, finding that increased insurer demand raises secondary market bond prices and reduces primary market financing costs. Massa and Zhang (2021) exploit Hurricane Katrina as an exogenous liquidity shock to insurers, showing that forced liquidations by Katrina-exposed insurers depress bond prices and induce affected firms to shift toward more expensive bank financing. Coppola (2025) shows that bonds held predominantly by insurers suffer milder price declines during crises, enabling firms with more stable bondholder bases to maintain higher borrowing at lower cost. While these studies identify the causal effects of insurer participation on price levels and stability, our contribution is to document its association with the slope of the demand curve at issuance—a distinct dimension of investor behavior. Our finding that insurer participation is associated with higher demand elasticity suggests that these investors actively evaluate close substitutes during the bookbuilding process. We leave formal causal identification for the insurer composition–demand elasticity channel to future work.

7. Conclusions

This paper advances our understanding of corporate bond demand elasticity and its importance in determining primary market outcomes. Exploiting order book information, we construct a direct, model-free measure of demand elasticity at the bond level. Our analysis shows that demand elasticity varies meaningfully across time, credit quality, maturity, and issue characteristics, and declines during periods of heightened market stress.

We establish that demand elasticity is an important determinant of issuance outcomes. More elastic demand reduces underpricing and offering spreads, lowering financing costs for issuers. It further allows underwriters to operate with smaller order books and less spread compression during the bookbuilding process. Our results isolate the distinct impact of demand elasticity, given the theoretical foundations explored in other work for the existence of underpricing itself (for example, agency-cost explanations for underpricing) and underscore that even seasoned investment-grade issuers face pricing dynamics driven by investor demand conditions.

Finally, we show that insurer participation is positively related to bond-level demand elasticity, while mutual fund demand is not robustly associated. This link between investor composition and elasticity suggests fruitful directions for future research on heterogeneous investor behavior.

Taken together, our study introduces a new lens for analyzing primary markets and contributes to the broader literature on asset demand and security pricing. Our analysis of the determinants of bond-level demand elasticity—across ratings, maturities, issuance sizes, and market states—provides a useful reference point for future theoretical modeling and empirical work, offering a foundation for deeper inquiry into how investor demand interacts with corporate financing dynamics.

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Figure 1: Demand elasticity and underpricing

This figure illustrates how demand elasticity, the slope of investors' demand curve, shapes underpricing in the primary market. The y-axis is yield, and the x-axis is quantity. The dashed vertical line represents the offering amount, normalized to 1, whereas the dotted (dash-dotted) line represents the desired oversubscription ratio of an offering. D1 and D2 depict two scenarios of the investors' demand curve. Y0 is the market-clearing yield of the bond, whereas U1 and U2 are the corresponding magnitude of $Underpricing^y$.

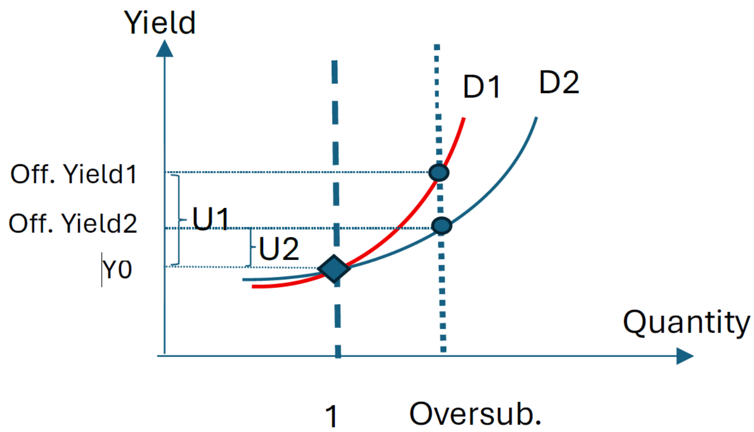


Figure 2: Estimating elasticity by observing two points on investors' demand curve

This figure illustrates our method for estimating demand elasticity in the primary market. The dashed vertical line represents the offering amount, normalized to 1; the dotted (dash-dotted) line represents the desired final (peak) oversubscription ratio of an offering. D depicts the investors' demand curve. IPT is the initial proposed offering yield, and Off. Yield is the final offering yield. The triangle and dot represent the two points observed along the demand curve.

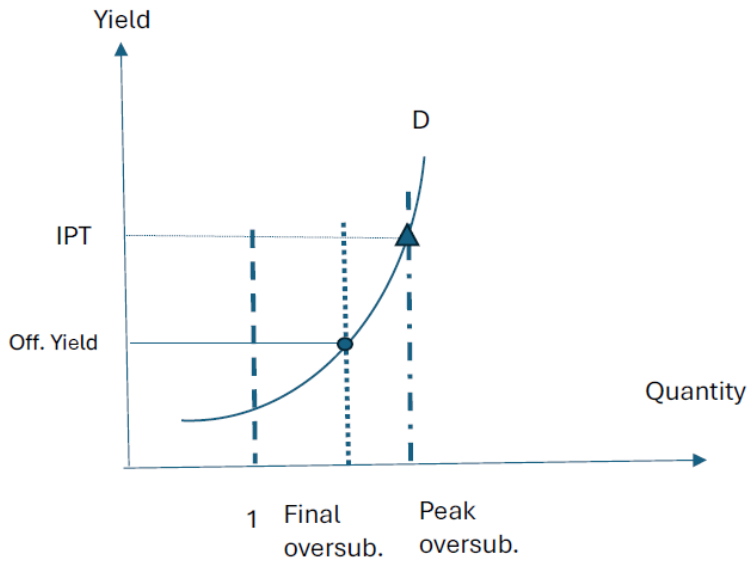


Figure 3: Demand curve and primary market outcomes

This figure illustrates how demand elasticity shapes primary market decisions. The y-axis is yield, and the x-axis is quantity. The dashed vertical line represent the offering amount, normalized to 1, whereas the dotted (dash-dotted) line represent the desired peak (final) oversubscription ratio of an offering. D1 and D2 depict two scenarios of the investors' demand curve. Y0 is the market-clearing yield of the bond. IPT1 and IPT2 are the initial offering yield that produces the desired peak oversubscription ratio when investors' demand curve is D1 and D2, respectively. Off. Yield1 and Off. Yield2 are the offering yield that produces the desired final oversubscription ratio when investors' demand curve is D1 and D2, respectively, whereas Compre.1 and Compre. 2 are the corresponding spread compression. The star marks a pair of offering yield and final oversubscription along D2 when underwriters desire a smaller final oversubscription ratio when facing a flatter demand curve.

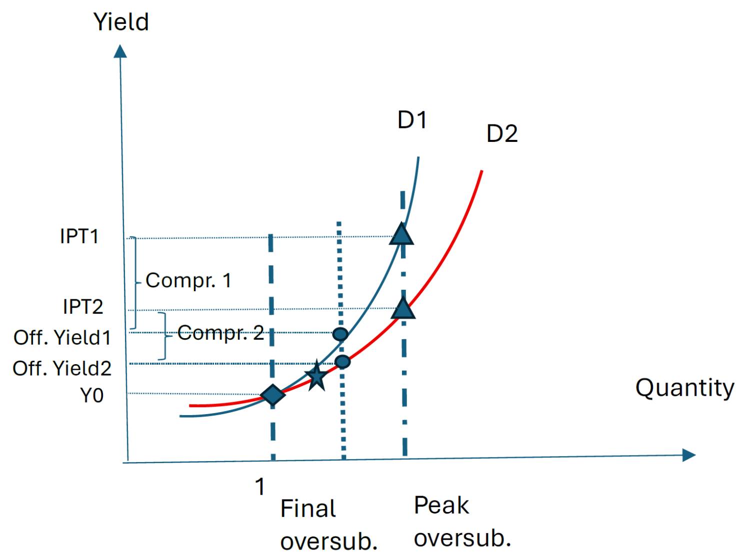
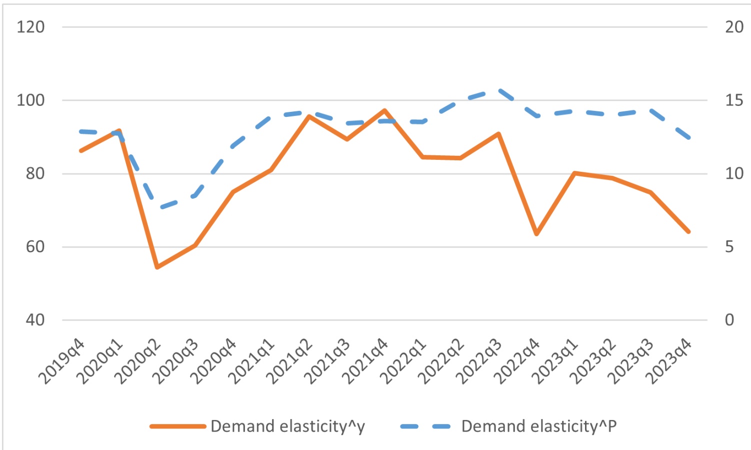


Figure 4: Demand elasticity in times series

This figure presents the quarterly movements in *Demand elasticity*^{y} and *Demand elasticity*^{P}. In Panel A, we plot quarter average *Demand elasticity*^{y} (left-axis) and *Demand elasticity*^{P} (right-axis). In Panel B, we remove differences in issuer and bond characteristics by regressing *Demand elasticity*^{y} and *Demand elasticity*^{P} on calendar quarter dummies and bond characteristics as in equation (1), controlling for issuer fixed effects. We then plot the coefficients for the calendar quarter dummies. Variable definitions are in Appendix A. The sample period is 10/2019–12/2023.

Panel A. Quarterly average demand elasticity



Panel B. Demand elasticity relative to 2019 Q4, controlling for bond characteristics and issuer fixed effects

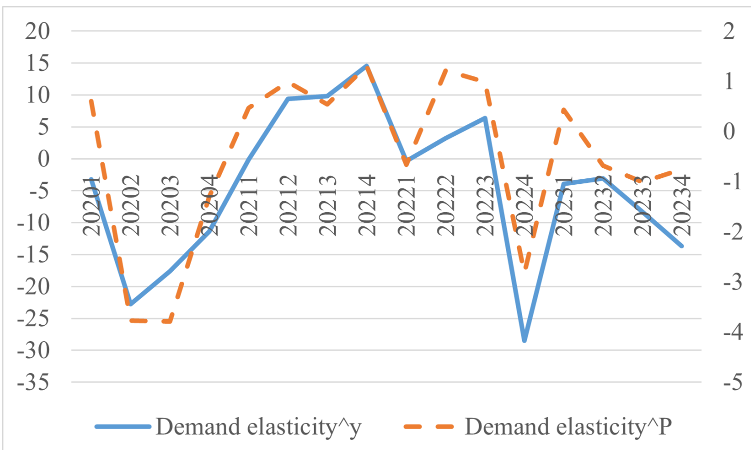
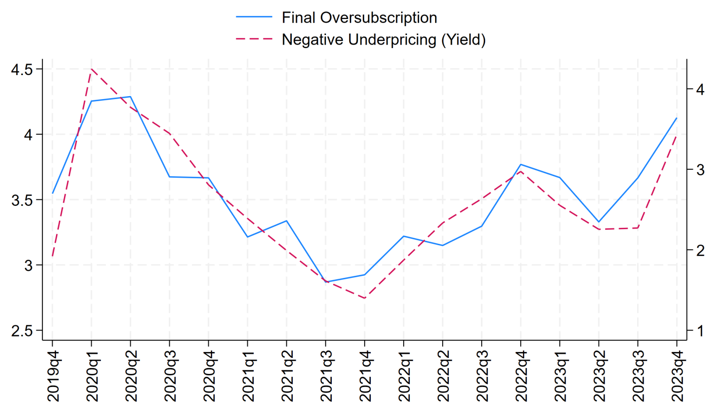


Figure 5: Oversubscription and underpricing

This figure shows the co-movements of the oversubscription ratio and underpricing at the quarterly frequency. Panel A (Panel B) presents the final *Oversubscription* on the left-axis and $-Underpricing^y$ ($Underpricing^P$) on the right-axis. Variable definitions are in Appendix A. The sample period is 10/2019–12/2023.

Panel A. Quarterly average oversubscription vs. $-Underpricing^y$



Panel B. Quarterly average oversubscription vs. $Underpricing^P$

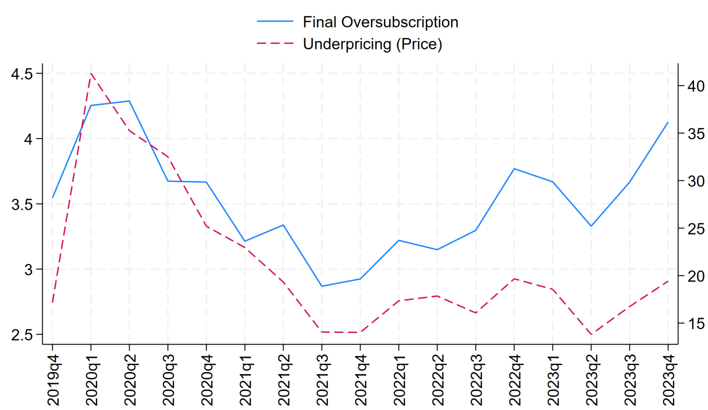


Table 1: Sample Coverage

This table compares sample bond offerings with bond offerings obtained from FISD. We restrict the FISD sample bonds to USD-denominated, non-convertible, non-perpetual, non-preferred, non-exchange, and fixed-rate corporate debentures and medium-term notes, with non-missing offering date, offering price, and maturity information. We further require the FISD sample to have IG rating, based on rating information within four weeks of the bond issuance obtained from FISD, or be matched to our sample. Sample bonds include bond offerings in our sample, and Non-sample bonds include offerings in the FISD sample but not our sample. N is the number of bonds, and Offering amount is the offering amount in $million. Panel A compares corporate debentures, whereas Panel B compares medium-term notes. The sample period is 10/2019–12/2023.

Panel A. Corporate debentures

Year	Sample bonds		Non-sample bonds		% bonds covered by sample
	N	Offering amount	N	Offering amount	
2019	67	1035	59	620	53%
2020	608	937	760	899	44%
2021	682	847	302	805	69%
2022	594	826	252	859	70%
2023	648	851	262	732	71%
Average		869		838	61%

Panel B. Corporate medium-term notes

Year	Sample bonds		Non-sample bonds		% bonds covered by sample
	N	Offering amount	N	Offering amount	
2019	5	480	65	119	7%
2020	72	803	362	271	17%
2021	90	793	456	148	16%
2022	106	818	1034	72	9%
2023	110	752	1341	69	8%
Average		786		105	11%

Table 2: Summary Statistics

This table shows summary statistics for sample bond offerings. Variable definitions are in Appendix A. The sample period is 10/2019–12/2023.

	N	Mean	Std Dev	25th	50th	75th
$Demand\ elasticity^y$	2955	78.958	55.402	37.594	68.611	108.225
$Demand\ elasticity^P$	2955	12.949	11.771	4.847	9.667	17.503
Initial offering spread	2955	159.349	73.657	110	145	195
Peak book size	2955	3418.663	2039.92	2000	2950	4300
Peak oversubscription	2955	4.367	2.222	2.75	3.8	5.4
Final book size	2955	2785.039	1767.102	1500	2300	3500
Final oversubscription	2955	3.495	1.793	2.2	3.067	4.2
Attrition	2955	-0.186	0.122	-0.251	-0.167	-0.095
Offering spread	2955	134.274	70.472	85	120	170
Spread compression	2955	-25.045	8.802	-30	-25	-20
$Underpricing^y$	2936	-2.544	3.215	-3.865	-1.962	-0.632
$Underpricing^P$	2936	21.206	32.974	3.775	11.875	28.98
BBB	2955	0.47	0.499	0	0	1
Split rating	2955	0.418	0.493	0	0	1
log(offering amt)	2955	13.518	0.506	13.122	13.528	13.816
log(maturity)	2955	2.171	0.794	1.609	2.303	2.351
Rule 144A	2955	0.24	0.427	0	0	0
Yankee	2955	0.126	0.332	0	0	0
MTN	2955	0.13	0.337	0	0	0
Senior	2955	0.91	0.286	1	1	1
Senior secured	2955	0.081	0.273	0	0	0
10-year Treasury rate	2955	2.236	1.252	1.28	1.74	3.53
Treasury slope	2955	0.279	0.994	-0.75	0.54	1.15
VIX	2955	22.819	7.556	17.78	21.37	26.37

Table 3: Univariate results

This table presents univariate results of corporate bond demand elasticity by rating and maturity. Panel A (Panel B) shows the mean values for *Demand elasticity*^{y} (*Demand elasticity*^{P}). Variable definitions are in Appendix A. The sample period is 10/2019–12/2023.

Panel A. *Demandelasticity*^{y}

	Maturity<5		5<=Maturity<10		10<=Maturity	
	N	Mean	N	Mean	N	Mean
AAA/AA	57	79.631	100	89.729	129	80.619
A	246	64.800	319	81.625	715	86.498
BBB	180	55.847	422	73.686	787	81.877

Panel B. *Demandelasticity*^{P}

	Maturity<5		5<=Maturity<10		10<=Maturity	
	N	Mean	N	Mean	N	Mean
AAA/AA	57	28.743	100	18.178	129	6.772
A	246	24.617	319	16.570	715	8.142
BBB	180	20.841	422	15.087	787	8.456

Table 4: Determinants of demand elasticity

This table presents estimation results for the determinants of corporate bond demand elasticity. The dependent variable is *Demand elasticity*^{y} in columns (1)-(3) and *Demand elasticity*^{P} in columns (4)-(6). Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Demand elasticity^y			*Demand elasticity*^{P}		
	(1)	(2)	(3)	(4)	(5)	(6)
BBB	-7.484**	-6.345*	-0.435	-1.889***	-1.741***	0.529
	(3.603)	(3.540)	(15.014)	(0.580)	(0.573)	(2.108)
log(offering amt)	-25.059***	-24.608***	-38.834***	-3.632***	-3.613***	-6.488***
	(2.589)	(2.672)	(3.517)	(0.436)	(0.444)	(0.674)
log(maturity)	7.648***	7.356***	8.314***	-7.336***	-7.360***	-7.225***
	(1.470)	(1.447)	(1.427)	(0.310)	(0.306)	(0.341)
Rule 144A	-5.128	-5.079	-14.837	-0.684	-0.671	-1.496
	(4.209)	(4.161)	(14.716)	(0.695)	(0.693)	(1.942)
Split rating	-5.269	-4.532	-14.684*	-1.012*	-0.931*	-2.192
	(3.272)	(3.256)	(8.846)	(0.545)	(0.546)	(1.563)
Yankee	-7.692*	-7.267	-56.785***	-1.493*	-1.437*	-28.853***
	(4.663)	(4.750)	(21.695)	(0.827)	(0.841)	(3.837)
MTN	8.527*	8.137*	-0.178	2.884***	2.896***	0.335
	(4.431)	(4.398)	(10.641)	(0.895)	(0.903)	(2.654)
Senior	2.840	1.932	-9.492	0.253	0.182	-3.130*
	(10.145)	(10.443)	(10.869)	(1.336)	(1.371)	(1.788)
Senior secured	2.624	1.977	-26.562*	-0.422	-0.512	-8.172***
	(11.414)	(11.616)	(15.039)	(1.591)	(1.613)	(2.962)
10-year Treasury rate	5.927***	-1.081	-13.025	1.451***	1.187	-0.570
	(1.746)	(8.180)	(9.512)	(0.292)	(1.397)	(1.655)
Treasury slope	10.523***	10.979	18.654*	1.713***	0.678	1.600
	(2.255)	(9.302)	(10.990)	(0.380)	(1.663)	(2.151)
VIX	-0.519**	-0.422	-0.557	-0.039	-0.019	-0.012
	(0.221)	(0.310)	(0.405)	(0.039)	(0.050)	(0.065)
Time FE	No	Yes	Yes	No	Yes	Yes
Issuer FE	No	No	Yes	No	No	Yes
Observations	2,955	2,955	2,706	2,955	2,955	2,706
R-squared	0.103	0.125	0.493	0.332	0.342	0.581

Table 5: Demand elasticity and underpricing

This table shows how demand elasticity affects aftermarket performance, measured by underpricing. The dependent variable is $Underpricing^y$. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	$Underpricing^y$		
	(1)	(2)	(3)
$Demandelasticity^y$	0.023***	0.024***	0.019***
	(0.001)	(0.001)	(0.001)
BBB	-0.361**	-0.385**	-0.448
	(0.168)	(0.163)	(0.688)
log(offering amt)	0.911***	0.913***	0.649***
	(0.164)	(0.161)	(0.213)
log(maturity)	0.013	0.023	0.020
	(0.075)	(0.074)	(0.079)
Rule 144A	-0.175	-0.220	-2.350**
	(0.208)	(0.205)	(1.037)
Split rating	0.329**	0.298*	0.127
	(0.157)	(0.153)	(0.246)
Yankee	-0.412*	-0.376	2.338*
	(0.246)	(0.249)	(1.313)
MTN	0.552***	0.609***	-0.097
	(0.181)	(0.187)	(0.691)
Senior	0.609	0.606	1.633*
	(0.660)	(0.678)	(0.963)
Senior secured	0.489	0.429	2.083*
	(0.751)	(0.767)	(1.188)
10-year Treasury rate	0.160	1.528***	1.600***
	(0.099)	(0.430)	(0.528)
Treasury slope	0.374***	-0.672	-0.803
	(0.114)	(0.508)	(0.566)
VIX	-0.074***	-0.053**	-0.084***
	(0.019)	(0.022)	(0.020)
Time FE	No	Yes	Yes
Issuer FE	No	No	Yes
Observations	2,936	2,936	2,686
R-squared	0.225	0.242	0.551

Table 6: IV regressions - demand elasticity and underpricing

This table reports 2SLS estimates of the effect of investor demand elasticity on corporate bond underpricing. In the first-stage regressions (Columns (1)–(3)), bond-level demand elasticity (*Demand elasticity*^{y}) is instrumented using the average demand elasticity of other bonds *by other issuers* launched on the same offering date. Specifically, the instrument is based on all bonds by other issuers in column (1) ($Z_{All\ other}$); bonds within the same maturity bucket ((0,5),[5, 10), and [10,)) by other issuers in column (2) ($Z_{Mat.}$); and bonds with the same maturity bucket and credit quality (BBB vs. non-BBB) by other issuers in column (3) ($Z_{Mat.Cred.}$). Columns (4)–(6) report the second-stage results, where underpricing ($Underpricing^y$) is regressed on the fitted values of demand elasticity from the corresponding first-stage specifications. All regressions control for BBB, Split rating, log(offering amt), log(maturity), Rule 144A, Yankee, MTN, Senior, Senior secured, 10-year Treasury rate, Treasury slope, and VIX, except that columns (3) and (6) exclude the Yankee dummy due to collinearity. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	$Demandelasticity^y$			$Underpricing^y$		
	(1)	(2)	(3)	(4)	(5)	(6)
$Z_{All\ other}$	0.205***					
	(0.0533)					
$Z_{Mat.}$		0.217***				
		(0.035)				
$Z_{Mat.Cred.}$			0.228***			
			(0.040)			
$Demand\ \widehat{elasticity}^y_{Allother}$				0.0374***		
				(0.0134)		
$Demand\ \widehat{elasticity}^y_{mat.}$					0.027***	
					(0.009)	
$Demand\ \widehat{elasticity}^y_{Mat.Cred.}$						0.028***
						(0.010)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2513	2,105	1,577	2,513	2,105	1,577
First-stage F stat.	14.79	39.38	31.82			

Table 7: Demand elasticity and information production

This table compares the impact of demand elasticity and information production on underpricing. The dependent variable is $Underpricing^y$. All regressions control for BBB, Split rating, log(offering amt), log(maturity), Rule 144A, Yankee, MTN, Senior, Senior secured, 10-year Treasury rate, Treasury slope, and VIX. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	$Underpricing^y$			
	(1)	(2)	(3)	(4)
$Demandelasticity^y$		0.019***		0.017***
		(0.002)		(0.001)
Spread compression	0.051**	0.030		
	(0.020)	(0.018)		
Peak oversubscription			-0.529***	-0.443***
			(0.059)	(0.055)
Other controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
Observations	2,686	2,686	2,686	2,686
R-squared	0.500	0.554	0.540	0.584

Table 8: Demand elasticity and primary market behavior

This table shows the estimation results of the impact of demand elasticity on *initial offering spread* in column (1), *peak oversubscription ratio* in column (2), *spread compression* in column (3), *offering spread* in column (4), and *final oversubscription* in column (5). Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Initial offering spread (1)	Peak oversubscription (2)	Spread compression (3)	Offering spread (4)	Final oversubscription (5)
$Demandelasticity^y$	-0.078***	-0.005***	0.023***	-0.056***	-0.013***
	(0.016)	(0.001)	(0.005)	(0.016)	(0.001)
BBB	25.620***	1.193***	-6.291**	19.009**	0.953***
	(6.778)	(0.365)	(2.877)	(7.800)	(0.264)
Split rating	2.559	-0.109	0.042	2.544	-0.056
	(4.500)	(0.180)	(0.879)	(4.464)	(0.140)
log(offering amt)	4.438*	-2.740***	1.168*	5.954**	-2.141***
	(2.619)	(0.158)	(0.703)	(2.697)	(0.124)
log(maturity)	37.141***	0.610***	-0.830***	36.231***	0.451***
	(0.818)	(0.053)	(0.185)	(0.809)	(0.040)
Rule 144A	-3.802	0.123	0.487	-3.665	0.087
	(5.881)	(0.402)	(2.005)	(5.565)	(0.343)
Yankee	27.254***	-1.669**	1.741	27.927***	-1.492***
	(9.915)	(0.666)	(2.804)	(10.090)	(0.573)
MTN	-0.281	-0.018	-1.703	-2.913	0.050
	(5.663)	(0.442)	(1.407)	(5.795)	(0.404)
Senior	-33.428***	-0.674***	2.374	-30.846**	-0.729***
	(11.520)	(0.248)	(1.672)	(11.938)	(0.216)
Senior secured	-14.047	-1.386***	3.338	-9.611	-1.364***
	(13.755)	(0.397)	(2.208)	(13.949)	(0.337)
10-year Treasury rate	7.772	-0.506*	2.416*	11.326**	-0.432*
	(5.237)	(0.294)	(1.258)	(4.998)	(0.222)
Treasury slope	13.367**	-0.673**	0.362	12.843*	-0.544**
	(6.796)	(0.301)	(1.584)	(6.700)	(0.229)
VIX	3.917***	0.020*	-0.065	3.880***	0.018**
	(0.268)	(0.011)	(0.071)	(0.243)	(0.008)
Constant	-72.646*	41.858***	-44.520***	-124.365***	33.803***
	(39.522)	(2.370)	(9.785)	(40.963)	(1.862)
Time FE	Yes	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes	Yes
Observations	2,706	2,706	2,706	2,706	2,706
R-squared	0.888	0.666	0.583	0.883	0.697

Table 9: Investor composition – correlations and univariate results

This table shows the correlation matrix of our investor holding measures and univariate results by rating and maturity. Panel A shows the correlation between $\%Holdings^{Insurer}_{similar}$,$\%Holdings^{MF}_{similar}$, $\%Holdings^{Insurer}_{EoQ}$, and $\%Holdings^{MF}_{EoQ}$. Panel B shows the univariate results by maturity buckets and ratings. Variable definitions are in Appendix A.The sample period is 10/2019–12/2023.

Panel A. Correlation matrix

	$\%Holdings^{Insurer}_{similar}$	$\%Holdings^{MF}_{similar}$	$\%Holdings^{Insurer}_{EoQ}$
$\%Holdings^{MF}_{similar}$	-0.094		
$\%Holdings^{Insurer}_{EoQ}$	0.386	-0.052	
$\%Holdings^{MF}_{EoQ}$	-0.137	0.327	-0.350

Panel B. Mean value by rating and maturity

		0<Maturity<5	5<=Maturity<10	Maturity>=10
$\%Holdings^{Insurer}_{similar}$	AAA/AA	0.075	0.127	0.215
	A	0.119	0.193	0.254
	BBB	0.120	0.195	0.252
$\%Holdings^{MF}_{similar}$	AAA/AA	0.105	0.125	0.168
	A	0.205	0.208	0.180
	BBB	0.206	0.208	0.188
$\%Holdings^{Insurer}_{EoQ}$	AAA/AA	0.058	0.110	0.149
	A	0.064	0.128	0.190
	BBB	0.082	0.130	0.182
$\%Holdings^{MF}_{EoQ}$	AAA/AA	0.167	0.150	0.193
	A	0.224	0.194	0.168
	BBB	0.301	0.265	0.216

Table 10: Investor composition and demand elasticity

This table shows the relation between investor composition and corporate bond demand elasticity. Investor compositions are measured by $\%Holdings_{similar}$ in columns (1) and (2) and $\%Holdings_{EoQ}$ in columns (3)-(6). All regressions control for BBB, Split rating, log(offering amt), log(maturity), Rule 144A, Yankee, MTN, Senior, Senior secured, 10-year Treasury rate, Treasury slope, and VIX. To construct the Maturity FE, we round the time-to-maturity of each offering to its nearest integer (in years). Mat. bucket-Rating-Time FE is the maturity bucket (i.e., (0,3), [3,5), [5,7), [7,10), [10,15), [15,30), [30,)) by lettering rating by year-quarter fixed effects. Restricted sample (column (6)) only includes offerings with maturity shorter than 30 years, non-missing $\%Holdings_{EoQ}$ at the end of the offering quarter, and the offering date within 30 days prior to quarter-end. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023.

	$Demandelasticity^y$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\%Holdings^{Insurer}_{similar}$	182.067***	27.382				
	(26.789)	(72.848)				
$\%Holdings^{MF}_{similar}$	28.158	-17.917				
	(36.679)	(43.429)				
$\%Holdings^{Insurer}_{EoQ}$			84.929***	57.844***	72.709***	113.955*
			(16.312)	(18.021)	(19.267)	(58.805)
$\%Holdings^{MF}_{EoQ}$			1.391	-0.461	0.947	-51.556
			(15.231)	(15.014)	(17.412)	(43.324)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Maturity FE	No	Yes	No	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	No	No
Issuer FE	Yes	Yes	Yes	Yes	Yes	Yes
Mat. bucket-Rating-Time FE	No	No	No	No	Yes	Yes
Restricted sample	No	No	No	No	No	Yes
Observations	2,706	2,706	2,314	2,314	2,251	361
R-squared	0.502	0.513	0.502	0.518	0.593	0.842

Appendix A. Variable definitions

IPT spread midpoint is the midpoint of the IPT yield spread range in bps.

Offering spread is the offering yield in excess of the Treasury benchmark rate at issuance in bps.

Spread compression is the spread change from the IPT spread midpoint to the offering spread in bps.

Oversubscription ratio is the final order book size scaled by the proposed offering amount.

Peak oversubscription ratio is the peak order book size scaled by the proposed offering amount.

Attrition is the percentage change from the peak book size to the final book size.

$Demand\ elasticity^{P}$ is $\frac{Attrition}{-(-Spread\ compression/10000 \times modified\ duration)}$,where modified duration measures the change in the value of a bond in response to a change in interest rates and is calculated using variables in FISD.

$Demand\ elasticity^{y}$ is $\frac{Attrition}{Spread\ compression/10000}$.

$Underpricing^{y}$ ($Underpricing^{P}$) is the yield (percentage price) change from the offering yield (price) to the first trade yield (price) in the secondary market, adjusted for the changes in yields (returns) of the rating- and maturity-matched ICE BofA indexes. The first trade price in the secondary market is the weighted average price of trades on the first available trading date within one week of the offering date in the secondary market, and the first trade yield is calculated using this price. Data source: FISD, TRACE, Refinitiv

$\%Holdings_{similar}$ For each bond offering we first find similar bonds as fixed-coupon USD-denominated corporate debenture or corporate MTN offered within three years prior to the new offering date recorded in Mergent FISD, which are of the same credit quality and whose time-to-maturity is within three years that of the new offering. We then compute the percentage holdings of each similar bond, as total par value held scaled by the offering amount, by mutual funds and insurers, respectively. Finally, for each bond offering, we take the average percentage holdings of all similar bonds by mutual funds and insurers, and record them as $\%Holdings^{MF}_{similar}$ and $\%Holdings^{Insurer}_{similar}$, respectively.

$\%Holdings_{EoQ}$ For each offering at the end of the offering quarter we compute the percentage holdings, as total par value held scaled by the offering amount, by all mutual funds and all insurers, and record them as $\%Holdings^{MF}_{EoQ}$ and $\%Holdings^{Insurer}_{EoQ}$, respectively. If $\%Holdings^{MF}_{EoQ}$ or $\%Holdings^{Insurer}_{EoQ}$ is missing in the offering quarter, we substitute the percentage holdings from the quarter immediately following the offering quarter.

BBB is a dummy variable indicating that a bond offering's best letter rating is BBB. Data source: FISD

Coupon, Maturity, Rule 144 A, Yankee, MTN, Secured, and Subordinated are bond characteristics from FISD.

log(offering amt) is the natural logarithm of the offering amount (in thousands). Data source: FISD.

Rating is the numerical value for letter ratings, where 1 indicates AAA, 2 indicates AA, and so on. When multiple rating agencies provide ratings, we take the better rating. Data source: FISD

VIX is the Cboe volatility index. Data source: Cboe

Appendix B. Additional figures and tests

Figure B1: Number of issuers per day

This figure illustrates the number of unique issuers per day. The y-axis is the number of issuers, and the x-axis is the date. The sample period is 10/2019–12/2023.

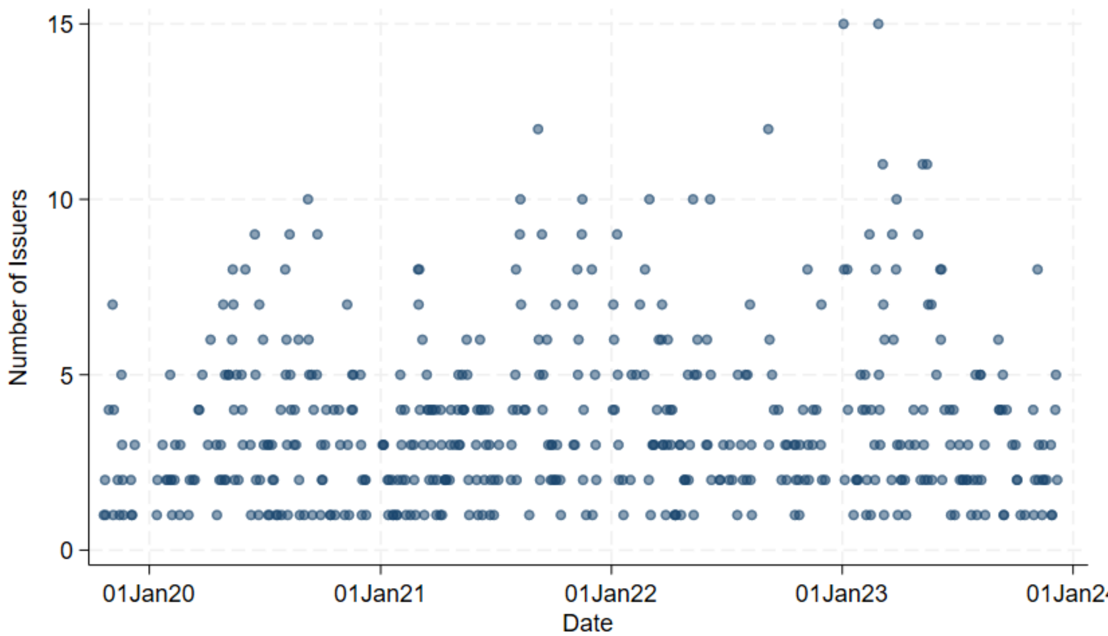


Figure B2: Partial Regression Plot — Demand Elasticity and Spread Compression

This figure displays a Frisch-Waugh partial regression plot of *Demand elasticity*^{y} against spread compression. Both variables are residualized from bond characteristics, market conditions, calendar-quarter fixed effects, and issuer fixed effects (Table 4, column (3) specification). Each point represents one bond offering. The solid line is the linear fit (slope = 1.156, t = 4.533); the dashed line is the cubic polynomial fit. Neither the quadratic nor the cubic term is statistically significant (t = 0.502 and 0.483, respectively), with standard errors clustered at the issuer level. Variable definitions are in Appendix A. The sample period is 10/2019–12/2023.

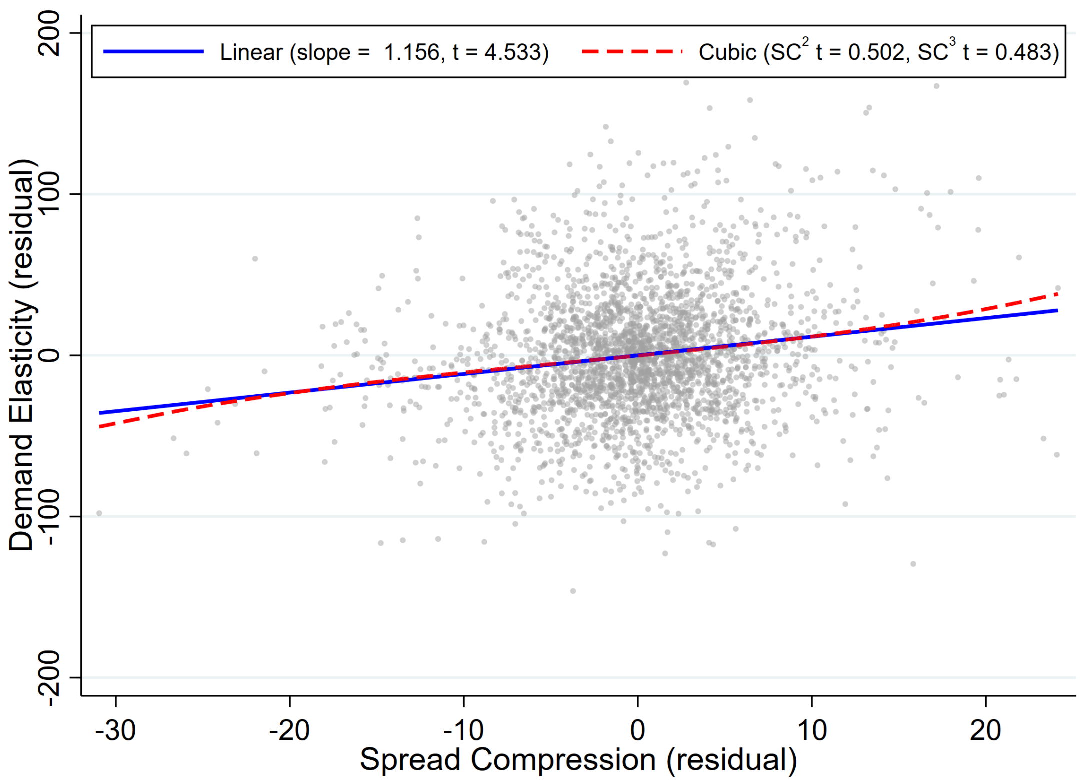


Table B1: Robustness: Determinants of demand elasticity

This table is similar to Table 4 but using subsamples. The dependent variable is *Demand elasticity*^{y} in columns (1) and (2) and *Demand elasticity*^{P} in columns (3) and (4). Odd columns exclude MTNs, whereas even columns exclude Yankee bonds. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	W/O MTN	W/O Yankee	W/O MTN	W/O Yankee
	Demand elasticity^y		*Demand elasticity*^{P}	
	(1)	(2)	(3)	(4)
BBB	-4.649	-0.996	0.156	0.001
	(16.167)	(17.652)	(2.184)	(2.489)
log(offering amt)	-37.621***	-38.974***	-6.316***	-6.597***
	(3.768)	(3.757)	(0.697)	(0.727)
log(maturity)	7.653***	8.337***	-6.922***	-7.313***
	(1.453)	(1.513)	(0.342)	(0.360)
Rule 144A	-18.170	-26.476**	-1.708	-2.728
	(15.251)	(12.360)	(2.069)	(1.817)
Split rating	-19.083*	-17.616*	-2.694*	-2.778
	(9.728)	(9.936)	(1.494)	(1.741)
Yankee				
MTN		-6.584		-0.600
		(13.661)		(3.501)
Senior	-10.359	-15.106	-1.967	2.484
	(15.710)	(18.334)	(2.657)	(5.903)
Senior secured	-10.813	-30.512	-4.350	-2.367
	(19.481)	(21.066)	(3.720)	(6.367)
10-year Treasury rate	-10.362	-10.878	-0.323	0.044
	(11.607)	(9.854)	(1.809)	(1.684)
Treasury slope	24.234*	17.416	2.966	1.406
	(14.064)	(11.792)	(2.568)	(2.292)
VIX	-0.686	-0.396	-0.035	0.009
	(0.498)	(0.415)	(0.075)	(0.066)
Time FE	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
Observations	2,337	2,379	2,337	2,379
R-squared	0.505	0.475	0.595	0.571

Table B2: The impact of demand elasticity on underpricing controlling for offering spread

This table is similar to Table 5, with additional controls of offering spread and oversubscription. The dependent variable is $Underpricing^y$. All regressions control for BBB, Split rating, log(offering amt), log(maturity), Rule 144A, Yankee, MTN, Senior, Senior secured, 10-year Treasury rate, Treasury slope, and VIX. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	$Underpricing^y$	
	(1)	(2)
$Demandelasticity^y$	0.018***	0.019***
	(0.002)	(0.001)
Offering spread	-0.012***	
	(0.003)	
Initial offering spread		-0.012***
		(0.003)
Other controls	Yes	Yes
Time FE	Yes	Yes
Issuer FE	Yes	Yes
Observations	2,686	2,686
R-squared	0.560	0.559

Table B3: Robustness: The impact of demand elasticity on underpricing

This table is similar to Table 5 but using subsamples. The dependent variable is $Underpricing^y$. Column (1) excludes MTNs, column (2) excludes Yankee bonds, and column (3) restricts the sample to bonds with spread compression (SC) between the 25th and 75th percentiles within year × letter-rating groups. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	$Underpricing^y$		
	W/O MTN	W/O Yankee	Middle SC
	(1)	(2)	(3)
Demand elasticity^y	0.021***	0.020***	0.019***
	(0.002)	(0.002)	(0.002)
BBB	-0.416	-0.312	-1.429*
	(0.743)	(0.775)	(0.826)
log(offering amt)	0.789***	0.565**	0.445**
	(0.238)	(0.229)	(0.221)
log(maturity)	0.012	0.077	-0.012
	(0.084)	(0.083)	(0.094)
Rule 144A	-2.203**	-2.275**	-2.122
	(0.965)	(1.155)	(1.946)
Split rating	0.272	0.138	0.302
	(0.307)	(0.267)	(0.320)
Yankee			2.955
			(2.265)
MTN		-0.620	0.870
		(0.590)	(0.823)
Senior	0.734	-1.701***	1.756
	(0.824)	(0.402)	(1.126)
Senior secured	1.269	-1.302*	1.671
	(1.230)	(0.751)	(1.515)
10-year Treasury rate	2.032***	1.822***	1.544**
	(0.661)	(0.536)	(0.764)
Treasury slope	-1.294*	-0.963	-0.349
	(0.717)	(0.595)	(0.767)
VIX	-0.078***	-0.079***	-0.061*
	(0.022)	(0.021)	(0.036)
Time FE	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes
Observations	2,325	2,372	1,586
R-squared	0.567	0.550	0.558

Table B4: IV regressions - Demand elasticity on primary market behavior

This table reports the second-stage results of 2SLS estimates of the effect of investor demand elasticity on other primary market outcomes. Bond-level demand elasticity (*Demand elasticity*^{y}) is instrumented using the average demand elasticity of other issuers' bonds launched on the same offering date. Dependent variables are in the table header. Variable definitions are in Appendix A. Robust standard errors clustered at the issuer level are in parentheses. The sample period is 10/2019–12/2023. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Initial offering spread	Peak oversubscription	Spread compression	Offering spread	Final oversubscription
	(1)	(2)	(3)	(4)	(5)
$\widehat{Demand\ elasticity}^y$	-0.269**	-0.034***	0.135***	-0.141	-0.038***
	(0.136)	(0.010)	(0.047)	(0.124)	(0.009)
BBB	29.345***	1.033	-6.681	22.273***	0.817
	(7.572)	(0.753)	(4.531)	(8.115)	(0.536)
Split rating	0.584	-0.324	0.810	1.321	-0.224
	(5.101)	(0.352)	(1.554)	(4.894)	(0.260)
log(offering amt)	-2.785	-3.830***	5.337***	2.638	-3.078***
	(6.209)	(0.444)	(2.038)	(5.649)	(0.370)
log(maturity)	38.745***	0.841***	-1.693***	37.127***	0.650***
	(1.584)	(0.121)	(0.507)	(1.452)	(0.101)
Rule 144A	-8.200	-0.120	1.417	-7.191	-0.153
	(8.112)	(0.543)	(3.321)	(6.788)	(0.399)
Yankee	15.664	-3.326***	9.519*	24.303*	-2.843***
	(13.761)	(1.037)	(5.168)	(13.092)	(0.825)
MTN	-2.421	0.186	-1.512	-4.109	0.226
	(6.051)	(0.434)	(1.664)	(6.341)	(0.420)
Senior	-31.480***	-1.080**	4.465*	-27.374**	-1.058***
	(11.276)	(0.492)	(2.470)	(11.374)	(0.400)
Senior secured	-12.601	-2.199***	7.296**	-4.829	-2.051***
	(14.231)	(0.688)	(3.287)	(13.841)	(0.580)
10-year Treasury rate	5.893	-0.702*	3.016*	9.873*	-0.606**
	(5.727)	(0.368)	(1.619)	(5.412)	(0.290)
Treasury slope	17.069**	-0.303	-0.717	15.485**	-0.233
	(7.511)	(0.451)	(2.080)	(7.212)	(0.357)
VIX	3.904***	0.009	-0.031	3.890***	0.009
	(0.287)	(0.017)	(0.082)	(0.255)	(0.012)
Time FE	Yes	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes	Yes
Observations	2,533	2,533	2,533	2,533	2,533