SOLVE Px™

AI Predictive Pricing for Municipal Markets

Below are answers to frequently asked questions regarding SOLVE Px for Municipal Bonds, an Artificial Intelligence-generated dataset that predicts the next traded level for 900,000+ securities. SOLVE Px is tuned and trained using several hundred features to reduce the error between the predictive price and the next trade.

✓ What is SOLVE Px, and what does it represent?

SOLVE Px predicts the next trade price for over 900,000 municipal securities. It is not an evaluated price.

SOLVE Px uses sophisticated proprietary machine learning models built around security master, trade, and SOLVE's proprietary Quotes data. These three key "buckets" are the core from which almost 300 feature inputs are used to generate SOLVE Px. Other macro variables include benchmark curves.

Please see our SOLVE Px White Paper for more information regarding our training process.

✓ What differentiates SOLVE Px?

SOLVE Px is differentiated by the inclusion of SOLVE Quotes data. "Quotes" is pre-trade data SOLVE collects from clients, parsed from thousands of structured and unstructured messages. Quotes are parsed in near real-time and, in addition to being made available to SOLVE clients as Quotes Parsed and/or Market data, is a key dataset used to generate Px.

Through back testing, we have observed that Quotes can be as valuable as trade data when it comes to improving prediction accuracy. The inclusion of Quotes is unique to SOLVE Px.

✓ How does the SOLVE Px model intrinsically capture market movements without being driven by a new price in the underlying bond?

The SOLVE Px machine learning model determines relationships between bonds that form cohorts. When highly correlated bonds have market observations, they impact other bonds in the cohorts based on their individual correlations.

How does SOLVE Px compare to evaluated pricing services?

SOLVE Px is not an evaluated price. It is a predictive price. As such, any such comparison would not be relevant as the prices are, by their nature, different.

What trade size is SOLVE Px generated for? Is it for institutional or retail traders?

SOLVE recognizes that different market participants require different tools and that pricing for an institutional trade can differ from a retail trade. As such, Px is produced based on trade sizes of $1mm and $50,000. Px can also be provided through our data feed based on client-specific average trade size.

How is SOLVE Px displayed for client use?

SOLVE Px is produced with a bid/mid/offer price and with the corresponding yield and spread.

How often is SOLVE Px produced?

SOLVE Px is current as of the time a user generates Px in the Quotes interface and/or is delivered via a data feed.

How is the intraday Px generated? (Applying a predicted spread to a benchmark or a newly generated price.)

SOLVE Px intraday output is the result of a new predictive price being generated.

How is SOLVE Px delivered?

SOLVE Px is available through the SOLVE UI with or without SOLVE Quotes. Px is also available via data feeds.

✓ What is the universe of municipal bonds covered by SOLVE Px?

SOLVE Px delivers results for approximately 99% of fixed coupon municipal bonds and 93% of all outstanding municipal bonds — equating to over 900,000 bonds. Importantly, Px is available for bonds irrespective of whether there are recent quotes or trades. Solve Px excludes variable and zero-coupon rate bonds as well as those bonds lacking minimum needed reference data.

✓ Back-testing performance

SOLVE continues to perform back-testing analyses and has been doing so since May 2023. As of this writing, our Median Absolute Error ("MAE") — obtained by analyzing the difference between actual trades and the SOLV E Px immediately before each trade — is $.25/ bond. For this analysis, we use a duration of four years.

For the most updated information regarding the MAE, please speak with your SOLVE representative and see our White Paper.

✓ Is there bias in the results?

Bias is less than a penny.

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