NASDAQM Market Velocity and Forces is a market sentiment indicator measuring the pre-trade order activity in the NASDAQ Stock Market trading system. It indicates the intensity and direction of trading interest before that activity results in trades and price movement. The products are akin to the visible activity and audible noise that experienced floor traders use on a physical trading floor to detect changes in market direction, momentum, or liquidity.

Market Velocity measures the intensity of the desire to trade using order messages entering NASDAQ trading systems, many of which do not show up in a traditional quote feed because they are immediately cancelled or routed and therefore never reside in the book. Market Forces categorizes those order messages by whether they are buy or sell orders to provide an indication of direction.

Both products are more effective than physical activity or audible noise on a trading floor because they can be precisely measured and benchmarked and because of filters that remove irrelevant messages (such as orders priced far from the inside market).

We set order type and price screens to include only appropriate, aggressively-priced orders in Market Velocity and Market Forces. We use 21-days of historical data to calculate an expected value for Market Velocity for each stock at each time of day.

**Table of Contents**

- Velocity and Forces Components .................................................................................................................... 2
- NASDAQ OMX Velocity and Forces Views .................................................................................................. 3
- NASDAQ Velocity and Forces Frequently Asked Questions (FAQs) ....................................................... 5
- NASDAQ Market Velocity and Forces Example ............................................................................................ 7
- Support ......................................................................................................................................................... 8
I. Velocity and Forces Components

1. Get Chart – Use this field to enter any individual symbol from NASDAQ-, NYSE- and AMEX-listed securities.

2. Data Display Views– Use these links to change between the different views of the Velocity and Forces data: 3 Minute View, Intraday View, and VF Gauges view. Please see NASDAQ OMX Market Velocity and Forces Views section for additional detail.

3. Market Forces Ratio– This ratio displays the buy (blue) to sell (red) volume ratio for a given security. The buy-side portion of the ratio = (Buy Volume/(Buy Volume + Sell Volume))*10. The sell-side portion of the ratio = (Sell Volume /(Buy Volume + Sell Volume))*10. This number is updated every second. Because this represents a percentage, either side will never be above 10 or below 0.

4. Market Forces Graph – Indicates whether the pressure is on the buy side or the sell side. The red bars (also represented on the negative side of the graph) indicate the pressure is on the sell side while the blue bars (also represented on the positive side of the graph) indicate the pressure is on the buy side. The bars show the difference in shares between the buy side and sell side. In the screen print above, you will notice the Forces is 461 on the positive portion of the graph. This indicates that the difference between the buy and sell order volume is 461. This indicates more buying than selling interest at that time.

5. Market Velocity – These numbers display the total order volume (buy + sell) and the expected volume (based on a 21-day average of historical data at each time of day).

6. Market Velocity Graph – Indicates the volume coming in to the NASDAQ Execution system and thus displays the surges in trading interest. The red line plots the total volume at the time it came in to the NASDAQ System. The blue line is the expected volume. Compare the total volume with the expected volume to determine whether the stock is trading above or below the normal expected level.

7. Buy:Sell Ratio – Click this button to view another Market Forces graph (data content is same as the default
II. NASDAQ OMX Market Velocity and Forces Views

**3 Minute View:** Displays Velocity and Forces data for a given security over the last three minutes.

**Intraday View:** Displays Velocity and Forces data for a given security since Market Open.
Velocity Gauges
Displays Forces data using a

- The 100% arrow in the Velocity gauge equates to the expected volume (the blue line) in the Velocity graph in the 3 Minute and Intraday views. The percentage in the Velocity graph is based on the total volume as compared to the expected. For example, if MSFT has total volume of 1,740 coming in and the expected volume is 3000, the percentage in the Velocity gauge would be 58%. Please note, there is no upper bound on the Velocity chart, i.e. the Velocity chart could read 2000% which means that the order volume coming in greatly exceeds the expected volume.

- The Forces Gauge displays the buy:sell ratio and is equivalent to the ratio in the 3 Minute and Intraday views and indicates whether there is more pressure on the buy or sell side.
III. Velocity and Forces Frequently Asked Questions (FAQs)

What is Velocity and Forces?
NASDAQ Market Velocity and Forces is a market sentiment indicator measuring the pre-trade order activity in the NASDAQ Stock Market trading system. It indicates the intensity and direction of trading interest before that activity results in trades and price movement. The products are akin to the visible activity and audible noise that experienced floor traders use on a physical trading floor to detect changes in market direction, momentum, or liquidity.

What does the Velocity indicate?
Market Velocity measures the intensity of the desire to trade using order messages entering NASDAQ trading systems, many of which do not show up in a traditional quote feed because they are immediately cancelled or routed and therefore never reside in the book.

What do the Forces indicate?
Market Forces categorizes those order messages by whether they are buy or sell orders to provide an indication of direction.

What orders are included Velocity and Forces?
We set order type and price screens to include only appropriate, aggressively-priced orders in Market Velocity and Market Forces. Velocity and Forces includes displayable orders, orders that are routed and immediate-or-cancel orders whether these orders are displayable or not.

How do you determine whether an order is aggressively priced or not?
We determine whether an order for a security is aggressively priced based on the formula below, using the prior day’s data:

1. Every minute we record the bid snapshot (the difference between the NASDAQ inside bid (buy) price and the fifth price level below it) as well as the ask snapshot (the difference between the NASDAQ inside ask (sell) and the fifth price level above it).
2. These differences (i.e. ranges) are gathered at the end of the day. Then median buy, median sell, mean buy and mean sell values are calculated from the buy ranges and sell ranges.
3. Of these mean and median values, we choose the value that falls within 10% of the closing price. This number will be used as the “outer bound” for the symbol for the next day. The same “outer bound” value for a symbol is used the entire day.
4. The next day, as EACH order comes through to the NASDAQ system, orders whose price are outside of the outer bound value (depending on the price and the calculated inside), will be filtered out.
What is the Expected Velocity?
We use the previous 21- business days of historical data to calculate an expected value for Market Velocity for each stock at each time of day.

How is the Expected Velocity calculated?
The expected value is the average of the total volume at a given time for security over the last 21 days.

How can I use Velocity and Forces?
Velocity and Forces is designed to provide real-time, intraday pre-trade data from the NASDAQ market center:
- Traders can execute their trading strategy by comparing the expected order activity in a security with the current activity to detect surges in trading interest before trades occur.
- These types of surging trading interest may be indicative of “hot” stocks which traders can then watch.
- Velocity and Forces offers the perfect pairing of market intensity and trend awareness to arm traders with the insight necessary to predict the most effective trading times.
- Traders can determine the direction of the market by viewing whether pre-trade interest is surging in buy or sell orders.
- Velocity and Forces may help give an indication of directional price movement.

Are canceled orders included in Velocity and Forces?
Velocity and Forces ignores cancel messages. Replace messages are included as a new order comes to Velocity and Forces. If a customer entered an order for 1000, then replaced it within the same time period, it would show up as 2000 as Velocity and Forces treats it as two different orders.

How are halts handled in Velocity and Forces?
Velocity and Forces does not take halts in to account when calculating the "expected value". Expected values continue to disseminate during issue halts even though the real-time values are not updating.

Does Velocity and Forces update in real-time?
Orders are “calculated” in real time, and the values being “calculated” in real time are disseminated each second. The “calculation” is done at the moment the order is accepted. The "total" is disseminated to clients each second. You can view data in different ways: across the last three minutes (using the 3 Minute view), since the Market Open (using the Intraday View), or up to the second (using the VF Gauges view).

What time does Velocity and Forces start and end dissemination of data?
Velocity and Forces starts displaying data at 07:00:00 and completes at 20:00:00.

Are all Market Participants included in the data?
Not necessarily. If Market Participant orders are not aggressively priced (as defined above), then their orders will NOT be included in the Velocity and Forces data.
Is Market Participant attribution included in Velocity and Forces?
No. Velocity and Forces does not display ANY Market Participant information.

Where can I find out information about the NASDAQ Velocity and Forces Data Feed? Please see the NASDAQ OMX Data Feed page.
IV. NASDAQ Velocity and Forces Example

The above example indicates the following:

- Apple is trading at 38% as compared to its normal expected volume (100%) as stated in the Velocity gauge. This indicates that Apple is trading below expected values.
- The Forces gauge indicates that the interest is on the buy-side.
- Interpretation: While there is interest on the buy-side for Apple, this interest is limited as it has less than expected willing trading partners.
The above example indicates the following:

- John is looking for a profit opportunity in Microsoft Corporation (MSFT) using NASDAQ Velocity and Forces. At 3:11:23 p.m., ET, John sees that Market Velocity in MSFT is rising well above the expected volume. Market Forces also indicates that the activity is shifting from selling pressure to buying pressure. John quickly responds by buying 5,000 shares of MSFT at $30.27/share. The NASDAQ Velocity and Forces product provided John with information on interest that others not taking this product may not be able to see. It also provided John the potential for price changes using information that isn’t available to those who aren’t subscribing to the product. At 3:11:58 p.m., ET, Market Forces indicates that the direction of the pressure is changing from buying to selling. John sells his shares of MSFT at a price of $30.51 before the price drops, netting $1200.

V. Support

For technical support for the NASDAQ Velocity and Forces on NASDAQ OMX Data Store, please contact datastore@nasdaqomx.com.

For information for the NASDAQ Velocity and Forces data feed, please see the NASDAQ Velocity and Forces Product Page or contact NASDAQ OMX Global Data Products dataproducts@nasdaqomx.com.