



# MSCI Liquidity Data Methodology

MSCI Methodology for the Liquidity Data



## Contents

<b>1</b>	<b>Defining and Calculating Liquidity Ratios .....</b>	<b>3</b>
1.1	Annual Traded Value Ratio.....	3
1.2	Frequency of Trading.....	4
<b>2</b>	<b>Minimum Trading Days Required .....</b>	<b>6</b>
<b>3</b>	<b>Adjustments to Liquidity Ratios .....</b>	<b>7</b>
3.1	Suspension .....	7
3.2	IPO month Extrapolation.....	7
3.3	Weekend Trading .....	8
3.4	Inclusion Factor .....	8
<b>4</b>	<b>Maintenance of Liquidity Ratios .....</b>	<b>9</b>
4.1	Universe.....	9
4.2	Periodic Maintenance .....	9
<b>5</b>	<b>Correction Policy .....</b>	<b>11</b>
	<b>Appendix I: Examples of Adjustments to Liquidity Ratios.....</b>	<b>13</b>

# 1 Defining and Calculating Liquidity Ratios

Liquidity is one of the key criteria used by MSCI to determine investable securities.

MSCI measures the liquidity of security by:

**Annual Traded Value Ratio (ATVR):** This ratio mitigates the impact of extreme daily trading volumes and considers the free float-adjusted market capitalization of securities.

**Frequency of Trading (FOT):** This ratio ensures trade continuity over a period.

ATVR and FOT aim to select securities with strong short-term and long-term liquidity.

ATVR and FOT are calculated at the individual security level and are computed over a period of one or multiple months, with 3-Month and 1-Year period values used as key liquidity indicators.

## 1.1 Annual Traded Value Ratio

The ATVR of each security is calculated in 4-steps:

1. **Daily Traded Value:** Computed by multiplying the number of shares traded during the day with the closing price of that security
2. **Median Daily Traded Value:** Computed as the median of the daily traded values in a given month, excluding days with no trading volume
3. **Monthly Median Traded Value:** Computed using the median daily traded value, multiplied by the number of days in the month that the security traded
4. **Annual Traded Value Ratio:** The ATVR is computed by dividing the Monthly Median Traded Value of a security by its free float-adjusted security market capitalization at the end of the month and annualizing it by multiplying it with 12

1-Month ATVR =

$$\frac{\text{Median} \left[ \text{Daily Security Volume} * \frac{\text{Price}}{\text{FX rate}} \right] * \text{No. of days security traded in the month}}{\text{End of the month free float adjusted security market capitalization}} ] * 12$$

The 1-Year ATVR is obtained by taking the average of the monthly median traded value ratios of the previous 12 months and annualizing it by multiplying it by 12. Similarly, the 3-month ATVR is obtained by taking the average of the monthly median traded value ratios of the previous 3 months and annualizing it by multiplying it by 12.

MSCI uses consolidated trading values for securities listed in the USA and Canada and single exchange values for other markets.

In general, MSCI uses free float-adjusted security market capitalization after the application of any relevant adjustment factors, as stated in Section 3.4 below.

The 1-Year ATVR is not calculated when 12 months of monthly traded value ratios are not available and 3-month ATVR is not calculated when 3 months of monthly traded value ratios are not available. The ATVR values are rounded to two decimals.

## 1.2 Frequency of Trading

The Frequency of Trading is determined by dividing the number of days a security traded by the maximum possible number of trading days on the stock exchange within that period.

The FOT values are computed at security level. The values range between 0 and 100 and are rounded.

1 – Month FOT =

$$\frac{\text{Total Days security traded on the Exchange (Volume } \geq 0 \text{)}}{\text{Maximum number of Trading days available on the Exchange}}$$

The 1-Year Frequency of Trading is determined by dividing the number of days a security traded during the previous 12-month period by the maximum possible number of trading days within this period. Similarly, the 3-month Frequency of Trading is determined by dividing the number of days a security traded during the previous 3-month period by the maximum possible number of trading days within this period.

The maximum number of trading days available on the exchange will exclude the exchange holidays.

The 1-Year FOT is not calculated if 12 months of trading is not available and 3-month FOT is not calculated if 3 months of trading is not available.

## 2 Minimum Trading Days Required

A minimum number of trading days is required each month to compute ATVR and FOT, ensuring ratios are based on representative data rather than skewed numbers.

**ATVR:** Minimum trading days required to compute 1-Month ATVR is 5 days.

**FOT:** Minimum days required to compute 1-month FOT is 1 day.

To calculate minimum days, both trading days as well as potential trading day will be considered.

Potential trading days are defined as days when security was available for trading on the exchange, but it did not trade (i.e., volume traded was 0 and the exchange was open).

After a company's initial public offering (IPO), trading volume may spike in the first few days, which does not reflect the long-term average. Therefore, the first three days of trading are excluded from calculations in the month of IPO. Additionally, there must be at least five trading days, excluding the first three days, to calculate the monthly median value.

### 3 Adjustments to Liquidity Ratios

#### 3.1 Suspension

Adjustments are made to the ATVR and FOT ratios for the days when security is under trading suspension.

**ATVR:** The suspended days are added back to the number of days in the month the security traded to derive the monthly median traded value.

**FOT:** The suspended days are excluded from the maximum possible number of trading days in the period.

When security is suspended for the entire period of the relevant ATVR or FOT calculations:

**ATVR:** The values are not calculated.

**FOT:** The values will be equal to 100%.

Please refer to Example 1 of Appendix I: Examples of Adjustments to Liquidity Ratios for more details.

#### 3.2 IPO month Extrapolation

For securities that meet the minimum days to compute ATVR, the 1-Month ATVR computation for the IPO month will be computed using available trading days for the security and extrapolated over the total number of trading days available for the month. MSCI will adjust the relevant monthly median traded value by considering the market trading days prior to the listing of security.

1 – Month ATVR in IPO Month =

$$\left[ \frac{\text{Median} \left[ \text{Daily Security Volume} * \frac{\text{Price}}{\text{FX rate}} \right] * (\text{No. of days security traded in the Month} + \text{Pre IPO Days})}{\text{End of the month Security Closing Mcap} * \text{Factor}} \right] * 12$$

Pre IPO-Days = Count of Exchange Traded days from start of the month till the IPO date.

Please refer to Example 2 of Appendix I: Examples of Adjustments to Liquidity Ratios for more details.

### 3.3 Weekend Trading

For countries with weekend trading (Saturdays and/or Sundays), the ATVR and FOT computation includes the trading volume and prices on those days.

ATVR and FOT values are computed on the last weekday of each month. If the last trading day is a weekend, the calculation is done on the previous working day, excluding weekend prices and trading volumes after the calculation day.

Please refer to Example 3 of Appendix I: Examples of Adjustments to Liquidity Ratios for more details.

### 3.4 Inclusion Factor

The ATVR FIF Adjusted Ratio is calculated using the Foreign Inclusion Factor (FIF) and the ATVR DIF Adjusted Ratio using the Domestic Inclusion Factor (DIF), following the MSCI Global Investable Market Indexes (GIMI) Methodology available at: <https://www.msci.com/index-methodology>. In some cases of FIF/DIF changes due to changes in the inclusion factors, MSCI may modify the ATVR values accordingly.

For securities that are newly added to the universe, the earliest available FIF/DIF will be applied for the months preceding the addition of security to the universe.

In case of a security's FIF/DIF is zero at Index Review or during the relevant calculation period:

**ATVR:** The values are computed as 0.

**FOT:** It is not applicable.

Please refer to Example 4 of Appendix I: Examples of Adjustments to Liquidity Ratios for more details.



## 4 Maintenance of Liquidity Ratios

### 4.1 Universe

The universe is aligned with the MSCI Free Float Data Product. For details, please refer to the MSCI Free Float Data Methodology available at: <https://www.msci.com/index-methodology>.

### 4.2 Periodic Maintenance

The Annual Traded Value Ratio and Frequency of Trading data is updated monthly. The Investability data product file is delivered within five business days post the previous month end date.

MSCI sources market data information from third party vendors as well as from publicly available information made available by the stock exchanges to calculate liquidity.

Every month, the liquidity ratios are calculated for the latest 1-year period and the corresponding four consecutive quarters.

The table below shows the period used for each calculation month.

Calculation Month	1-Year Period	3-Month Period 1 (P1)	3-Month Period 2 (P2)	3-Month Period 3 (P3)	3-Month Period 4 (P4)
December	January-December	October-December	July-September	April-June	January-March
November	December-November	September-November	June-August	March-May	December-February
October	November-October	August-October	May-July	February-April	November-January
September	October-September	July-September	April-June	January-March	October-December
August	September-August	June-August	March-May	December-February	September-November

July	August-July	May-July	February-April	November-January	August-October
June	July-June	April-June	January-March	October-December	July-September
May	June-May	March-May	December-February	September-November	June-August
April	May-April	February-April	November-January	August-October	May-July
March	April-March	January-March	October-December	July-September	April-June
February	March-February	December-February	September-November	June-August	March-May
January	February-January	November-January	August-October	May-July	February-April

For example, for the calculation month of September 2024, the 1-Year ATVR and FOT ratio will be computed for the period from October 2023 to September 2024, the 3-Month ATVR and FOT for P1 (July-September 2024), P2 (April-June 2024), P3 (January-March 2024) and P4 (October-December 2023).

## 5 Correction Policy

Any corrections to data will be updated and reflected in the Investability data product as early as practicable.

If there are any changes to the liquidity ratios due to corrections in underlying data, technical issues, anomalies, or incompleteness, announcement will be published by MSCI with the revised liquidity ratios. If the changes do not meet the above criteria, no announcement is made by MSCI.

MSCI reserves the right to handle specific cases differently if more appropriate.

## APPENDICES

## Appendix I: Examples of Adjustments to Liquidity Ratios

### Example 1: Suspension

In a scenario where for a given month with 22 Exchange traded days, a security was suspended for 16 days and traded for 4 days.

Security will meet minimum days to compute both ATVR and FOT.

Trade Days [4] + Potential Trade Days [2] = 6 days, Greater than 5 days threshold

Potential trading days are defined as days when security was available for trading on the exchange, but it did not trade (i.e., volume traded was 0 and the exchange was open).

Median Daily Traded Value will be computed using the 4 days of traded volume available.

For Monthly Median Traded Value computation, the number of suspension days [16] will be included in the number of days that the security traded in the month, to compute the ATVR.

For Frequency of Trading computation, the suspended days [16] are excluded from the maximum possible number of trading days.

### Example 2: IPO Month Extrapolation

In a scenario where for a given month with 20 Exchange traded days, security was listed on the 11th day, traded for 8 days, and did not trade for 2 days.

Security will meet minimum days to compute ATVR.

Trade Days [8] + Potential Trade Days [2] – IPO Days [3] = 7 days, Greater than 5 days threshold

Potential trading days are defined as days when security was available for trading on the exchange, but it did not trade (i.e., volume traded was 0 and the exchange was open).

IPO Days are the first three days of trading that are excluded from calculations in the month of IPO.

While computing ATVR, Pre IPO days will be added to “Number of days security traded” as below:

Number of days security traded = Actual Number of days security traded [8] + Pre IPO-Days [10]

### Example 3: Weekend Trading

For a security listed in Saudi Arabia country where exchange trades on Sundays:

For the month of June 2024:

Last Working Day of the month – 28 June 2024 (Friday)

Last trading day of the security – 30 June 2024 (Sunday)

ATVR and FOT will be computed with data as of 28 June 2024

The weekend volume and prices for 30 June 2024 will not be considered for the liquidity data computation for the month of June 2024

### Example 4: Inclusion Factor

For security listed on a stock exchange on 1 January 2024

The 1-Month ATVR FIF Adjusted = 1-Month ATVR / FIF

3-Month ATVR FIF Adjusted = Average of 1-Month ATVR FIF Adjusted of previous 3 months

1- Year ATVR FIF Adjusted = Average of 1-Month ATVR FIF Adjusted of previous 12 months

Accordingly, 1-Month ATVR FIF Adjusted for June = 160%/0.5 = 320%

3-Month ATVR FIF Adjusted for June = Average of 159%, 161%, 320% = 213%

Month	FIF	1-Month ATVR	1-Month ATVR FIF Adjusted	3-Month ATVR FIF Adjusted	1-Year ATVR FIF Adjusted
January	1	150%	150%		
February	1	152%	152%		
March	1	160%	160%	154%	
April	1	159%	159%	157%	
May	1	161%	161%	160%	

June	0.5	160%	320%	213%	
July	0.5	165%	330%	270%	
August	0.5	163%	326%	325%	
September	0.5	166%	332%	329%	
October	0.5	170%	340%	333%	
November	0.5	172%	344%	339%	
December	0.5	175%	350%	345%	260%

## Contact Us

### About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

To learn more, please visit [www.msci.com](http://www.msci.com).

[msci.com/contact-us](http://msci.com/contact-us)

The process for submitting a formal index complaint can be found on the index regulation page of MSCI's website at: <https://www.msci.com/index-regulation>.

### AMERICA

United States	+ 1 888 588 4567 *
Canada	+ 1 416 687 6270
Brazil	+ 55 11 4040 7830
Mexico	+ 52 81 1253 4020

### EUROPE, MIDDLE EAST & AFRICA

South Africa	+ 27 21 673 0103
Germany	+ 49 69 133 859 00
Switzerland	+ 41 22 817 9777
United Kingdom	+ 44 20 7618 2222
Italy	+ 39 02 5849 0415
France	+ 33 17 6769 810

### ASIA PACIFIC

China	+ 86 21 61326611
Hong Kong	+ 852 2844 9333
India	+ 91 22 6784 9160
Malaysia	1800818185 *
South Korea	+ 82 70 4769 4231
Singapore	+ 65 67011177
Australia	+ 612 9033 9333
Taiwan	008 0112 7513 *
Thailand	0018 0015 6207 7181 *
Japan	+ 81 3 4579 0333

\* toll-free



## Notice and Disclaimer

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or redisseminated in whole or in part without prior written permission from MSCI. All rights in the Information are reserved by MSCI and/or its Information Providers.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information may include "Signals," defined as quantitative attributes or the product of methods or formulas that describe or are derived from calculations using historical data. Neither these Signals nor any description of historical data are intended to provide investment advice or a recommendation to make (or refrain from making) any investment decision or asset allocation and should not be relied upon as such. Signals are inherently backward-looking because of their use of historical data, and they are not intended to predict the future. The relevance, correlations and accuracy of Signals frequently will change materially.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on [www.msci.com](http://www.msci.com).

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of [msci.com](http://msci.com).

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such, provided that applicable products or services from MSCI ESG Research may constitute investment advice. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK) and MSCI Deutschland GmbH.

Please note that the issuers mentioned in MSCI ESG Research materials sometimes have commercial relationships with MSCI ESG Research and/or MSCI Inc. (collectively, "MSCI") and that these relationships create potential conflicts of interest. In some cases, the issuers or their affiliates purchase research or other products or services from one or more MSCI affiliates. In other cases, MSCI ESG Research rates financial products such as mutual funds or ETFs that are managed by MSCI's clients or their affiliates, or are based on MSCI Inc. Indexes. In addition, constituents in MSCI Inc. equity indexes include companies that subscribe to MSCI products or services. In some cases, MSCI clients pay fees based in whole or part on the assets they manage. MSCI ESG Research has taken a number of steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings. More information about these conflict mitigation measures is available in our Form ADV, available at <https://adviserinfo.sec.gov/firm/summary/169222>.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Dow Jones Indices. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Dow Jones Indices.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at <https://www.msci.com/privacy-pledge>.