QQM-Methodology (Quotes Quality Metrics)

The Quotes Quality Metrics (QQM) methodology is designed for measuring the quality of quotes and is applicable to all securities traded on SIX Swiss Exchange.

Methodological Rules

Securities classification

> **Securities types**: See here
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> **Swiss Derivative Map**: See here

Aggregation Level

The QQM metrics are generated for each individual security and not for aggregated classes of securities. TheSVSP classification only supports the convenient sorting and filtering of individual securities, but does not trigger any aggregation of results.

> Rule 1
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> **QQM Metrics are generated for individual securities and aggregated for each trading day (one row of data per security per day).**

Dimensions applied to quantify the quoting quality

Posting firm quotes on the SIX Swiss Exchange Quote book means putting market makers' capital at risk in order to provide ongoing liquidity for potential buyers/sellers of own listed structured products. The quality of market making activity is consequently described by the following dimensions:

☐ Daily average spread (in %) of posted quotes

☐ Daily average size (in units and monetary value) of quotes

☐ Daily availability of double-sided quotes during official trading hours (as % of official trading hours; alternatively as % of effective tradable window on expiry day)

☐ Daily availability of quotes (including one-sided ones) during official trading hours (as % of official trading hours; alternatively as % of effective tradable window on expiry day)

☐ Daily Last Buy Quote Price & Size (units) Daily Last Sell Quote Price & Size (units)

Rule 2 – Computation of daily average spread

All double-sided quotes generated by the Market Maker are used to calculate the daily average spread value. The daily average spread value is the time weighted average of all intraday spread records.
Only two sided quotes during official trading hours are taken into consideration. The duration of quotes is measured in seconds.

$$Spread_{Ti} := \frac{AP_{Ti} - BP_{Ti}}{(AP_{Ti} + BP_{Ti})/2}$$

Where AP = Ask Price (Sell Quote) und BP = Bid Price (Buy Quote)

The weighting factor is the duration of individual quotes during official trading hours. The spread value is denominated in %.

$$Average\_Spread_{Instrument} = \frac{\sum_i Spread_{Ti} * Duration_{Ti}}{\sum_i Duration_{Ti}} * 100$$

Example for Rule 2

Issuer Group Name	Symbol	Valor Number	ISIN	Long Name	Expiration Date	SVSP Code	Trading Currency	Average Spread	Average Buy Quote Size (units)	Average Sell Quote Size (units)	Average Buy Quote Size (value)	Average Sell Quote Size (value)
XYZ Corp	AACHF	2670001	CH0026700001	USD/CHF Wechselkurs/	30.12.2009	130	CHF	0.54%	5'000	5'000	56'032	56'334
XYZ Corp	ABCHF	2670002	CH0026700002	USD/CHF Wechselkurs/	30.12.2009	130	CHF	0.99%	5'000	5'000	30'116	30'415
XYZ Corp	ACCHF	2670003	CH0026700003	USD/CHF Wechselkurs/	30.12.2010	130	CHF					
Global Bank	ADCHF	2670004	CH0026700004	German Basket ABC	30.12.2010	460	USD					
Global Bank	AACHD	2670005	CH0026700005	German Basket ABC	30.12.2012	460	EUR	0.82%	250'000	250'000	24'205'310	24'405'310
Global Bank	BBCHF	2670006	CH0026700006	German Basket ABC	30.12.2012	460	CHF	0.31%	250 000	250 000	24 390 188	24 465 188
Global Bank	BCCHF	2670007	CH0026700007	German Basket ABC	30.12.2012	220	CHF	0.92%	250'000	250'000	21'642'337	21'842'346
Investment Group I	BDCHF	2670008	CH0026700008	Enel/CDE 08-09	30.12.2014	310	EUR	5.86%	100	100	497	527
Investment Group I	BECHF	2670009	CH0026700009	EON/CDE 08-09	30.12.2009	399	USD	1.90%	1'000	1'000	52'263	53'263
Investment Group I	BFCHF	2670010	CH0026700010	BP/CDE 08-09	16.02.2011	220	EUR					

Rule 3 – Computation of the daily quote size

All quotes posted by the Market Maker are used to calculate the average daily quote size (units and monetary value). This dimension is the time weighted average of all intraday quotes updates. Buy and sell sizes (units and monetary value) are computed and displayed separately. Only two sided quotes during official trading hours are taken into consideration. The duration of quotes is measured in seconds.

3.1 Average Quote Size (Unit = number of securities)

$$Average\_Buy\_Quote\_Size(units) = \frac{\sum_i Duration_{Ti} * Buy\_Volume_{Ti}}{\sum_i Duration_{Ti}}$$

Example for rule 3.1

Issuer Group Name	Symbol	Valor Number	ISIN	Long Name	Expiration Date	SVSP Code	Trading Currency	Average Spread	Average Buy Quote Size (units)	Average Sell Quote Size (units)	Average Buy Quote Size (value)	Average Sell Quote Size (value)
XYZ Corp	AACHF	2670001	CH0026700001	USD/CHF Wechselkurs/\	30.12.2009	130	CHF	0.54%	5'000	5'000	56'032	56'334
XYZ Corp	ABCHF	2670002	CH0026700002	USD/CHF Wechselkurs/\	30.12.2009	130	CHF	0.99%	5'000	5'000	30'116	30'415
XYZ Corp	ACCHF	2670003	CH0026700003	USD/CHF Wechselkurs/\	30.12.2010	130	CHF					
Global Bank	ADCHF	2670004	CH0026700004	German Basket ABC	30.12.2010	460	USD					
Global Bank	AACHD	2670005	CH0026700005	German Basket ABC	30.12.2012	460	EUR	0.82%	250'000	250'000	24'205'310	24'405'310
Global Bank	BBCHF	2670006	CH0026700006	German Basket ABC	30.12.2012	460	CHF	0.31%	250 000	250 000	24 390 188	24 465 188
Global Bank	BCCHF	2670007	CH0026700007	German Basket ABC	30.12.2012	220	CHF	0.92%	250'000	250'000	21'642'337	21'842'346
Investment Group I	BDCHF	2670008	CH0026700008	Enel/CDE 08-09	30.12.2014	310	EUR	5.86%	100	100	497	527
Investment Group I	BECHF	2670009	CH0026700009	EON/CDE 08-09	30.12.2009	399	USD	1.90%	1'000	1'000	52'263	53'263
Investment Group I	BFCHF	2670010	CH0026700010	BP/CDE 08-09	16.02.2011	220	EUR					

3.2 Average Quote Size (Monetary value)*

$$Average\_Buy\_Quote\_Size(value) = \frac{\sum_i Duration_{Ti} * Buy\_Volume_{Ti} * Price_{Ti}}{\sum_i Duration_{Ti}}$$

*The monetary value is expressed in the corresponding trading currency of the security

Example for rule 3.2

Issuer Group Name	Symbol	Valor Number	ISIN	Long Name	Expiration Date	SVSP Code	Trading Currency	Average Spread	Average Buy Quote Size (units)	Average Sell Quote Size (units)	Average Buy Quote Size (value)	Average Sell Quote Size (value)
XYZ Corp	AACHF	2670001	CH0026700001	USD/CHF Wechselkurs/\	30.12.2009	130	CHF	0.54%	5'000	5'000	56'032	56'334
XYZ Corp	ABCHF	2670002	CH0026700002	USD/CHF Wechselkurs/\	30.12.2009	130	CHF	0.99%	5'000	5'000	30'116	30'415
XYZ Corp	ACCHF	2670003	CH0026700003	USD/CHF Wechselkurs/\	30.12.2010	130	CHF					
Global Bank	ADCHF	2670004	CH0026700004	German Basket ABC	30.12.2010	460	USD					
Global Bank	AACHD	2670005	CH0026700005	German Basket ABC	30.12.2012	460	EUR	0.82%	250'000	250'000	24'205'310	24'405'310
Global Bank	BBCHF	2670006	CH0026700006	German Basket ABC	30.12.2012	460	CHF	0.31%	250 000	250 000	24 390 188	24 465 188
Global Bank	BCCHF	2670007	CH0026700007	German Basket ABC	30.12.2012	220	CHF	0.92%	250'000	250'000	21'642'337	21'842'346
Investment Group I	BDCHF	2670008	CH0026700008	Enel/CDE 08-09	30.12.2014	310	EUR	5.86%	100	100	497	527
Investment Group I	BECHF	2670009	CH0026700009	EON/CDE 08-09	30.12.2009	399	USD	1.90%	1'000	1'000	52'263	53'263
Investment Group I	BFCHF	2670010	CH0026700010	BP/CDE 08-09	16.02.2011	220	EUR					

Rule 4 – Availability of quotes during trading hours

The maximum time span for posting quotes encompasses the entire daily trading window for warrants and structured products (09:15 -17:15 for most of them). Interest rates warrants might have a slightly different daily trading window. Please refer to the SIX Swiss Exchange guides for details on trading hours.

SIX Swiss Exchange - Trading Guides

Should the market maker post quotes on the Market Maker Book without interruption for a single securitiy during trading hours, the availability ratio is 100%. Considering the official trading hours, this represents a maximum of 28'800 seconds every day for most of the tradable securities.
As an exception the effective trading window is taken into consideration on the day of expiry.

4.1 Double sided quotes availability ratio (excluding one-sided quotes)

Only two sided quotes during official trading hours are taken into consideration in that dimension. The duration of quotes is measured in seconds. The availability rate of quotes is expressed in % of the maximum possible trading window for this security.

$$Daily\ Quote\ Availability\ rate = \frac{\sum_i Quote\_n\ Deletion\ Timestamp\ -Quote\_n\ Insertion\ Timestamp}{Duration\ of\ Trading\ window}*100$$

Example for rule 4.1

Issuer Group Name	Symbol	Valor Number	ISIN	Long Name	Expiration Date	SVSP Code	Trading Currency	Average Buy Quote Size (units)	Average Sell Quote Size (units)	Average Buy Quote Size (value)	Average Sell Quote Size (value)	Double Sided Quotes Availability Ratio	Quotes Availability Ratio
XYZ Corp	AACHF	2670001	CH0026700001	USD/CHF Wechselk	30.12.2009	130	CHF	5'000	5'000	56'032	56'334	99.88%	99.88%
XYZ Corp	ABCHF	2670002	CH0026700002	USD/CHF Wechselk	30.12.2009	130	CHF	5'000	5'000	30'116	30'415	98.65%	98.65%
XYZ Corp	ACCHF	2670003	CH0026700003	USD/CHF Wechselk	30.12.2010	130	CHF					0.00%	4.00%
Global Bank	ADCHF	2670004	CH0026700004	German Basket ABC	30.12.2010	460	USD					0.00%	0.00%
Global Bank	AACHD	2670005	CH0026700005	German Basket ABC	30.12.2012	460	EUR	250'000	250'000	24'205'310	24'405'310	98.11%	98.11%
Global Bank	BBCHF	2670006	CH0026700006	German Basket ABC	30.12.2012	460	CHF	250 000	250 000	24 390 188	24 465 188	97.49%	97.49%
Global Bank	BCCHF	2670007	CH0026700007	German Basket ABC	30.12.2012	220	CHF	250'000	250'000	21'642'337	21'842'346	97.52%	97.52%

4.2 Availability ratio for quotes (incl. one-sided quotes)

Prices for deeply out-of-the money securities often tend towards 0. In such cases market makers tend to post only one sided-quotes displaying for example 0.00 (bid) vs. 0.01 (ask). We consequently introduce an additional quote availability indicator encompassing one-sided quotes as well.
The duration of quotes is measured in seconds. The availability rate of quotes is expressed in % of the maximum possible trading window for this security. The Quotes Availability Ratio is always either equal to or greater than the Double Sided Quotes Availability Ratio.

Example Rule 4.2

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$$Daily\ Quote\ Availability\ rate = \frac{\sum_i Quote\_n\ Deletion\ Timestamp - Quote\_n\ Insertion\ Timestamp}{Duration\ of\ Trading\ window} *100$$

Example for rule 4.2

Issuer Group Name	Symbol	Valor Number	ISIN	Long Name	Expiration Date	SVSP Code	Trading Currency	Average Buy Quote Size (units)	Average Sell Quote Size (units)	Average Buy Quote Size (value)	Average Sell Quote Size (value)	Double Sided Quotes Availability Ratio	Quotes Availability Ratio
XYZ Corp	AACHF	2670001	CH0026700001	USD/CHF Wechselk	30.12.2009	130	CHF	5'000	5'000	56'032	56'334	99.88%	99.88%
XYZ Corp	ABCHF	2670002	CH0026700002	USD/CHF Wechselk	30.12.2009	130	CHF	5'000	5'000	30'116	30'415	98.65%	98.65%
XYZ Corp	ACCHF	2670003	CH0026700003	USD/CHF Wechselk	30.12.2010	130	CHF					0.00%	4.00%
Global Bank	ADCHF	2670004	CH0026700004	German Basket ABC	30.12.2010	460	USD					0.00%	0.00%
Global Bank	AACHD	2670005	CH0026700005	German Basket ABC	30.12.2012	460	EUR	250'000	250'000	24'205'310	24'405'310	98.11%	98.11%
Global Bank	BBCHF	2670006	CH0026700006	German Basket ABC	30.12.2012	460	CHF	250 000	250 000	24 390 188	24 465 188	97.49%	97.49%
Global Bank	BCCHF	2670007	CH0026700007	German Basket ABC	30.12.2012	220	CHF	250'000	250'000	21'642'337	21'842'346	97.52%	97.52%

Stop Trading/suspension events are ignored by QQM computation algorithm; the limited frequency of such events has a neglectable impact on overall QQM results.

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Rule 5 – Last Best Buy + Last Best Sell Quote Price + Last Best Buy + Last Best Sell Quote Size (units)

A security displaying 6.00 (bid) vs. 12.00 (ask) has a spread of 66.6% according to Rule 2. Another security displaying 0.01 (bid) vs. 0.02 (ask) will have the same spread of 66.6%. We understand that in the case where securities display quotes with market value nearby zero, the spread size provides limited value-adding information, being mainly driven by the minimum possible tick size.

In order to make QQM data set more meaningful at first glance, we also display information about the current quote value of the security. Last Best Buy Quote Price/Last Best Sell Quote Price fields only have indicative character. QQM metrics do not provide any official end-of-day security valuation.

Example for rule 5

Issuer Group Name	Symbol	Valor Number	ISIN	Long Name	Expiration Date	SVSP Code	Trading Currency	Last Best Buy Quote Price	Last Best Sell Quote Price	Last Best Buy Quote Size (units)	Last Best Sell Quote Size (units)
XYZ Corp	AACHF	2670001	CH0026700001	USD/CHF Wechselkurs/	30.12.2009	130	CHF	0.10	0.15	40'000	40'000
XYZ Corp	ABCHF	2670002	CH0026700002	USD/CHF Wechselkurs/	30.12.2009	130	CHF	2.30	2.40	10'000	10'000
XYZ Corp	ACCHF	2670003	CH0026700003	USD/CHF Wechselkurs/	30.12.2010	130	CHF	0.01	0.02	50'000	50'000
Global Bank	ADCHF	2670004	CH0026700004	German Basket ABC	30.12.2010	460	USD				
Global Bank	AACHD	2670005	CH0026700005	German Basket ABC	30.12.2012	460	EUR	33.33	44.44	11'111	22'222

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