

Indxx Global Internet of Things Thematic Index:
Methodology

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Indxx Global Internet of Things Thematic Index

Index Description

The Indxx Global Internet of Things Thematic Index is designed to track the performance of companies listed in developed markets that are expected to benefit from the increased adoption of the Internet of Things (IoT), including companies involved in the development and manufacturing of semiconductors and sensors for IoT applications, customized end-to-end integrated IoT products and solutions, and standardized IoT applications across a diverse set of segments including but not limited to smart grids, smart homes, smart cities, connected cars and the industrial internet.

Creation of Master list

Investable Universe

- The Index is designed to include the most liquid and investable universe of companies listed on developed markets exchanges as defined by Indxx. For more information, please refer to the document 'Country Classification and Investability Requirements', by visiting the 'Index Documents' section on <http://www.indxx.com/announcements.php>
- Companies must have a minimum market capitalization of \$100 million and a minimum average daily turnover for the last 6 months greater than or equal to \$2 million.
- The stock must have traded on 90% of the eligible trading days in the last 6 months. In case a security does not have a trading history of 6 months (e.g., IPOs), such a security must have started trading at least 3 months before the start of the Reconstitution/Rebalancing Process, and should have traded on 90% of the eligible trading days for the past 3 months.

Free Float

All constituents must have a minimum free float equivalent to 10% of shares outstanding.

Geographical Focus

The security should have its primary listing in developed markets as defined by Indxx.

Maximum Price

Securities trading at a price of \$10,000 or above are ineligible for inclusion in the index. This rule is not applicable for existing constituents. Existing constituents would remain in the Index irrespective of their stock price.

Security Type

- Common Stock, ADR, GDR
- In case ADR for a security is available, it will be considered for inclusion over other security types.

Security Selection

The security selection process is based on research performed by Indxx and entails the following steps:

- An extensive research is undertaken with focus on identifying the industries and business segments that are expected to benefit from the increased adoption of IoT. The industries identified through this research-based approach are subject to change at every annual reconstitution.
- As of July 2016, Indxx has identified the following industries and business segments to be the most relevant to the Internet of Things theme:
 - **Semiconductors and Sensors:** Companies that provide the necessary technology hardware for IoT implementation, which includes developers and manufacturers of semiconductors and sensors with primary IoT applications.
 - **Networking Infrastructure/Software:** Companies that provide end-to-end IoT solutions with complete (or partial) ecosystem covering sensor-embedded objects, networking and computing devices, big data analytics, IoT software services and IoT security.
 - **Equipment, Vehicle and Infrastructure/Building Technology:** Companies that are involved in developing and providing IoT products and services for industrial and governmental applications including but not limited to smart grids, smart meters, smart cities, connected cars and the industrial internet. This segment does not include companies which are primarily consumers of industrial IoT products and services.
 - **Consumer IoT Technology:** Companies that are involved in developing and providing IoT products and services for consumer applications with a focus on developing innovative solutions including but not limited to smart security, smart home solutions and wearable connected devices. This segment does not include companies which incorporate IoT solutions as a minor component or value-added feature in their products.
- Companies that derive a significant portion of their revenues from the above industries/segments or have stated their primary business to be in products and services focused on the above industries/segments are eligible for inclusion in the index. Companies that have demonstrated these industries/segments to be growth focus areas through internal R&D investments, joint ventures, partnerships and/or acquisitions are eligible for inclusion in the index. In addition, companies with diversified revenue streams that (1) are identified as critical to the IoT ecosystem due to scale in certain IoT technologies and services, (2) have a distinct business unit focused on IoT products and services, and (3) have a core competency that is expected to also benefit from the increased adoption of IoT are eligible for inclusion in the index.
- The top 'pure-play' IoT companies by market capitalization will form the final portfolio. The index is capped at 100 companies. If fewer than 100 companies qualify to be eligible for inclusion, all these companies would be a part of the final portfolio.
- If fewer than 20 companies qualify to be eligible for inclusion, the index committee would consider a secondary list of companies with diversified revenue streams. These companies must have a marginal presence in IoT ecosystem.

Weighting

- The Index is modified market cap-weighted at the time of reconstitution with a single security cap of 6% and a single security floor of 0.3%.
- A single security weight cap of 2% and an aggregate weight cap of 30% is applied to companies with diversified revenue streams that (1) are identified as critical to the IoT ecosystem due to scale in certain IoT technologies and services, (2) have a distinct business unit focused on IoT products and services, and (3) have a core competency that is expected to also benefit from the increased adoption of IoT. The excess weight is proportionately distributed among the remaining securities.
- The aggregate weight of the top eight holdings is capped at 45%, and all remaining securities are capped at 4.75%.
- A sub-industry weighting cap of 50% is also applied to the index.
- Security-level market capitalization is considered for calculating weights.

Buffer Rules

Buffer Rules are employed to reduce Portfolio Turnover. The following Buffer Rules are applicable:

Market Capitalization

An existing index constituent shall continue to remain in the index even if its Market Capitalization doesn't meet the previously defined minimum market capitalization criteria, but remains within +/- 20% of this limit.

Liquidity

An existing index constituent shall continue to remain in the index even if its Liquidity is below the previously defined Average Daily Traded Value limit, but remains within +/- 30% of this limit.

Continued Representation in the Portfolio

Additionally, an existing index constituent shall continue to remain in the index if it is part of top 120 companies by market cap, even if it isn't a part of the top 100 constituents.

Reconstitution and Rebalancing Rules

- The index follows an annual reconstitution and rebalancing schedule. The new portfolio becomes effective at the close of last trading day of June each year. This day is called the 'Effective Day.'
- The security selection and portfolio creation process starts on the close of the nearest Friday falling at least one month before the effective day, called the 'Selection Day.'
- The final portfolio constituents are shortlisted from a selection pool of all eligible securities selected based on the data as of the Selection Day.
- Weights are calculated at the close of the seventh trading day prior to the Effective Day. Index Shares are frozen using weights as of this day.
- The index follows a mid-term review for IPOs. Any new addition to the portfolio at the time of review will be added at its weights which will be calculated at the close of seventh trading day prior to the Effective Day and its shares will be frozen using its weights as of this day.
- Any new addition following the mid-term review will be effective on the last trading day of December where divisor will be adjusted to reflect the change in market value.

Corporate Actions

The following corporate actions (such as stock splits, special dividends, spin-offs and rights offerings) are applied to Price Return indices on the ex-date or earlier as decided by the Index Committee.

Corporate Action	Description	Treatment	Adjustment
Company addition and deletion	In case a constituent is added, removed or replaced with another constituent in the Index.	In case of addition and deletion from an index, the divisor is adjusted to reflect the change in market value.	Divisor Adjustment
Stock Split	A stock split is a decision by the company's board of directors to increase the number of shares that are outstanding by issuing more shares to current shareholders. After a split, the stock price will be reduced since the number of shares outstanding has increased.	Stock splits will be adjusted for on the ex- date. The number of shares will increase times the adjustment factor for the split.	No divisor adjustment is required since the share count and price changes are offsetting.
Rights Issue	Rights Issue gives existing shareholders the right to purchase a proportional number of new shares at a discount to the market price on a stated future date. The rights issued to a shareholder have a value, thus compensating current shareholders for the future dilution of their existing shares' value.	Rights Issue impacts the number of shares as well as price thereby impacting the index divisor reflecting an increase in market cap. The Index committee will decide whether to participate in the rights issue or not. If the subscription price is greater than or equal to the stock closing price, Indxx would not participate in the rights issue.	Divisor Adjustment
Spin-Off	Spin off is the creation of an independent company through the sale or distribution of new shares of an existing business/division of a parent company.	The Index Committee will decide on one of the following options based on internal research.	
	Spun-Off company is not added, only the parent company remains in the Index.	Spin-Off will be adjusted for by changing the divisor to account for the change in market value (reflecting market value of the Spun-Off entity).	Divisor Adjustment
	Spun-Off company added to the Index, another company replaced.	The divisor is adjusted to account for the impact of deletion of a company from the Index.	Divisor Adjustment
	Spun-Off company added to the Index, no company removed.		No Divisor Adjustment
Delisting	Delisting refers to the practice of removing the stock of a company from a stock exchange so that investors can no longer trade shares of the stock on that exchange.	The security would be removed from the index, and the invested amount in the delisted security will be reinvested into the index.	Divisor Adjustment

Acquisition	<p>A corporate action in which a company buys most, if not all, of the target company's ownership stakes in order to assume control of the target firm. There could be three different cases:</p> <ul style="list-style-type: none"> - Target Company is a part of the index, acquiring company is not; - Acquiring Company is a part of the index, target company is not; - Target and Acquiring companies are a part of the index <p>The treatment below is followed for all the three scenarios.</p>	The Target company would be removed from the index and the Index Committee will decide on one of the following options based on internal research.	
	All cash takeover	No change to acquirer	Divisor Adjustment
	Partial stock takeover	Share change to acquirer	Divisor Adjustment
	All stock takeover	Share change to acquirer	Divisor Adjustment
Merger	<p>Merger is the combination of two or more companies, generally by offering the stockholders of one company securities in the acquiring company in exchange for the surrender of their stock.</p>	<p>The Target company is removed from the Index.</p> <p>The Index Committee will decide if the Surviving company should be added to the Index. If added, the divisor will be adjusted to reflect the increase in the number of shares.</p>	Divisor Adjustment
Bankruptcy	<p>Bankruptcy is a legal proceeding involving a person or business that is unable to repay outstanding debts.</p>	The security would be removed from the index, and the invested amount in the acquired security will be reinvested into the index.	Divisor Adjustment
Temporary Delisting / Prolonged Trading Suspension	<p>A temporary delisting/trading suspension occurs when a security stops trading on the stock exchange for a certain time period. This usually occurs when a publicly-traded company is going to release significant news about itself.</p>	The security would be removed from the index based on the Index Committee's decision and the invested amount in the acquired security will be reinvested into the index.	Divisor Adjustment
Special Dividends	<p>When a company pays a special dividend, the share price of the company declines by the amount of the dividend.</p>	The Divisor is adjusted to reflect a fall in the price of the company paying the special dividend.	Divisor Adjustment
Bonus Issue of Shares	<p>A bonus share is a free share of stock given to current/existing shareholders in a company, based upon the number of shares owned by them.</p>	The issue of bonus shares increases the total number of shares issued and owned, it does not increase the value of the company. The ratio of number of shares held by each shareholder remains constant.	No Adjustment

Total Return Indices

Total Return Index

In addition to all the above mentioned corporate actions, ordinary cash dividends will be applied on the ex-date for calculating TR Indices.

Adjustment in the Index

All dividend payments will be reinvested in the index, by adjusting the divisor in the total return index on the ex-dividend date.

Index Policy

Index Committee Policy

The Index Committee is responsible for setting policy, determining index composition, and administering the indices in accordance with the Indxx index methodology. The Index Committee reserves the right to use qualitative judgment to include, exclude, adjust, or postpone the inclusion of a stock. Continued index membership of a constituent is not necessarily subject to the guidelines provided in each of the Indxx index methodology. A stock may be considered for exclusion by the Index Committee on the basis of corporate governance, accounting policies, lack of transparency and lack of representation, despite meeting all the criteria provided in each of the Indxx index methodology.

Announcements

Announcements of additions and deletions of constituents, due to various corporate actions mentioned above, in the middle of the year will be decided by the Index Committee. This will be communicated to the client well ahead of time. Also important news items as well as corporate actions with respect to all the constituents of the index will be informed to the client on a weekly basis.

Holiday Schedule

The index is calculated when the U.S. equity markets are open. In situations where an exchange is forced to close early due to unforeseen events, the index will be calculated based on the closing prices published by the exchange, or if no closing price is available, the last regular trade reported for each stock before the exchange closed.

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