indxx

Indxx Artificial Intelligence and Big Data Index

Methodology

March, 2018

Table of Contents

Indxx Artificial Intelligence and Big Data Index

Index Description

The Indxx Artificial Intelligence and Big Data Index is designed to track the performance of companies listed or incorporated in developed markets that are positioned to benefit from the development and utilization of Artificial Intelligence ("AI") technology in their products and services, as well as companies that produce hardware used in Artificial Intelligence applied for the analysis of Big Data. The index intends to reflect the performance of companies engaged in applications of AI including but not limited to: AI developers, AI-as-a-service("AIaaS"), AI hardware, and quantum computing.

Creation of Master List

Investable Universe

- Securities with primary listing or incorporation in the following countries are eligible for inclusion: United States, Canada, Taiwan, South Korea, Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Israel, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, Australia, Hong Kong, Japan, New Zealand, or Singapore. In addition, ADRs and GDRs of companies incorporated or with primary listing in China are eligible for inclusion.

- Companies must have minimum market capitalization of $US 2 billion for Category 1 and $US 500 million for Category 2. Each category is described in more detail below.

- Companies must have minimum average daily turnover for the last 6 months greater than or equal to $US 2 million for both Category 1 and Category 2.

- 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 meet at least one of the following criteria (A) minimum free float equivalent to 10% of shares outstanding or (B) minimum free float market capitalization of $US 1 billion.

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 an ADR for a security is available, it will be considered for inclusion over other security type

Security Selection

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

- Each security that has passed the investable universe criteria will be screened for the Factset Industries as mentioned below as per their respective categories of Artificial Intelligence Developers (Category 1) and "Artificial Intelligence and Big Data Analytics Hardware" (Category 2). In the case that a security qualifies for both inclusion in Category 1 and Category 2, the security will be included in the Category for which it scores higher in the research framework defined below.

- As of March 2018, Indxx has identified the following Factset industries to be eligible for selection for the respective categories:

Category 1		
Sub - Categories	**Description**	**Factset Industries**
Artificial Intelligence Developers	This category includes companies that develop AI and use AI in their own products. Companies that have developed internal AI capabilities (organically or through acquisition) and are applying artificial intelligence technology to enhance their products and services are the focus. AI applications include but are not limited to language/image processing and recognition, automated communications, threat detection, recommendation generation, and other predictive analytics. The companies are considered for inclusion in this category based on the level of AI involvement of the companies.	• Advertising/Marketing Services • Aerospace & Defense • Biotechnology • Cable/Satellite TV • Computer Communications • Computer Peripherals • Computer Processing Hardware • Data Processing Services • Electronic Equipment/Instruments • Financial Publishing/Services • Industrial Conglomerates • Industrial Machinery • Information Technology Services • Insurance Brokers/Services • Internet Retail • Internet Software/Services • Medical Specialties • Miscellaneous Commercial Services
Artificial Intelligence-as-a-Service ("AIaaS")	Companies that provide artificial intelligence capabilities to their customers as a service. Companies in this segment typically offer cloud-based platforms that allow their customers to apply	• Packaged Software • Semiconductors • Telecommunications Equipment • Other Consumer Services

artificial intelligence techniques without needing to make a direct investment in AI-related infrastructure.	

Category 2		
Sub - Categories	**Description**	**Factset Industries**
Artificial Intelligence Hardware	Companies that produce semiconductors, memory storage and other hardware that is utilized for artificial intelligence applications.	• Computer Communications • Computer Peripherals • Computer Processing Hardware • Data Processing Services • Electronic Production Equipment • Information Technology Services • Internet Software/Services • Miscellaneous Commercial Services • Packaged Software • Semiconductors • Telecommunications Equipment • Electronic Components • Electronic Equipment/Instruments • Financial Publishing/Services • Industrial Machinery • Insurance Brokers/Services • Tools & Hardware • Electrical Products • Electronics/Appliance Stores • Electronics/Appliances • Engineering & Construction • Industrial Conglomerates • Miscellaneous • Miscellaneous Manufacturing
Quantum Computing	Companies that are at the forefront of developing quantum computing technology, which is in the process of being commercialized and is expected to have significance in AI and big data applications in the future.	

- The Factset Industries are reviewed at each annual reconstitution.
- After the initial screening of Factset Industries described above, extensive research is undertaken with a focus on identifying the business segments that facilitate Artificial Intelligence and Big Data

5

analysis in their respective categories. Only those companies that provide direct exposure to AI or have stated their primary business to be in products and services focused on AI products, services, or utilization are eligible for inclusion in the index.

- As the last step of the research process, the remaining companies are scored by the extent of their exposure to AI using a proprietary framework described in more detail below.

- The following are the examples of criteria that are utilized in this framework for the assessment of Category 1 Companies:

Category 1		
Sample Exposure Category	**Description**	**Definitions**
Application of AI in Core Products/Services	Company demonstrates the application of AI in products/services defined as "Core"	"Core" - company utilizes AI in majority of the products and services in most of its products.
Provider of AI- as-a-service (AIaaS)	Provides AI capabilities such as those listed above to other companies in a "software-as-a-service" structure (platform for leveraging AI technology without requiring investment in infrastucture)	Company provides AIaaS platform as a complete AI solution to customers; typically leverages cloud infrastructure and eliminates need for customer to invest directly in AI related infrastructure.
Acquisition of AI Company	Company has made a significant acquisition of an AI company	Acquisition must have occurred after 2012
Significant R&D Investment into AI	Company has made a significant R&D investment into AI	Company has publicly announced and/or clearly stated an R&D investment into AI.

- The following are the examples of criteria that are utilized in this framework for the assessment of Category 2 Companies:

Category 2		
Sample Exposure Category	**Description**	**Definitions**
Hardware is utilized specifically for AI applications (data center, autonomous vehicles) as per company/product details	Companies that are developing hardware that is designed specifically for AI applications (not all producers of GPUs, FPGAs, etc. are designing hardware for AI applications specifically)	The primary "business segments" where hardware is being used for AI applications are (1) data centers/cloud and (2) embedded systems such as autonomous vehicles
Developing quantum computing hardware/technology	Computing that utilizes quantum-mechanical phenomena; has yet to be fully commercialized but significant R&D in the area	Companies that are developing quantum computing hardware/technology - typically this is being done by large technology companies with significant R&D budgets and existing computing capabilities
Producer of Graphics Processing Units (GPUs)	Electronic circuit designed to rapidly alter/manipulate memory; increasingly utilized in AI applications	Companies that produce GPUs
Producer of Field Programmable Gate Arrays (FPGAs)	Integrated circuit designed to be configured after it is manufactured (customizable); gaining adoption in AI applications	Companies that produce FPGAs

- A final composite score shall be arrived by combining the scores each company receives through the research framework.

- Each company will be assigned a final percentage score ("Exposure Score") based on the composite score that the company receives in its Category, relative to the total possible score of its Category.

- The top 60 securities from Category 1 and top 25 securities from Category 2 will be selected for the final security selection based on their Exposure Score. Companies must have a positive Exposure Score to be eligible for inclusion.

- If there is a tie-breaker for inclusion among the securities being scored, then the tied securities will be selected for inclusion based on the highest ADTV as of the reconstitution date.

- If there are fewer securities in either category than the target count as defined above, then all the remaining securities with positive Exposure Scores are considered for inclusion in the final portfolio.

Reconstitution & Rebalancing Rules

Annual Reconstitution

- The index follows an annual reconstitution schedule. The newly reconstituted portfolio becomes effective at the close of last trading day of January 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 determined from the selection pool of all eligible securities using the research process described above, and are 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.

Semi-Annual Rebalance and IPO Review

The index is rebalanced semi-annually based on the weighting scheme described in more detail below.

In addition, to effectively capture IPO's, the index constituents will be reviewed on a Semi-Annual basis. New additions to the portfolio become effective on the close of trading on the last trading day of July. This is called the 'effective day'.

- The cut-off date for consideration of new IPOs shall be at least one month before the review effective day. This day is called the 'review selection day'.

- The weights are calculated at the close of the seventh day prior to the effective day. Index Shares are frozen using weights as of this day.

To be eligible for inclusion, the IPO must have been listed at least 3 calendar months prior to the Review Selection Day. Additionally, the security must have traded on 90% of the eligible trading days for the past 3 months from the Review Selection Day.

If an IPO meets the above criteria, as well as the market cap and liquidity criteria defined earlier in their respective Categories, it will be considered for inclusion in the portfolio. It will be included in the index if it receives an Exposure Score that is higher than the lowest scoring company in its respective Category. At the semi-annual rebalance and IPO review, it is possible for a Category to exceed its respective security limit because of an IPO addition.

Weighting

- The Index is modified market cap-weighted at the time of reconstitution with a security cap of 3%. Securities with an Exposure score less than 20% receive a security cap of 1%.

- The excess weight is proportionately distributed among the remaining uncapped securities. While retaining the 3% limit for securities with an Exposure Score greater than 20% and the 1% limit for securities with an Exposure Score less than 20%.

- Once the capping for the securities is fulfilled, the securities would be checked for a minimum weigh floor of 0.30%. Any security with a weight less than or equal to 0.30% will be given a weight of 0.30%. The weights of the remaining uncapped securities will be proportionately reduced.

- 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.

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.	Stock splits will be adjusted for on the ex- date. The number of shares will increase times the adjustment factor for the split and the stock price will be reduced since the number of shares outstanding has increased.	No divisor adjustment
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
Corporate Action	Description	Treatment	Adjustment

Acquisition	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: - 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 The treatment below is followed for all the three scenarios.	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 Partial stock takeover All stock takeover	No change to acquirer Share change to acquirer Share change to acquirer	Divisor Adjustment Divisor Adjustment Divisor Adjustment
Merger	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.	The Target company is removed from the Index. 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.	Divisor Adjustment
Bankruptcy	Bankruptcy is a legal proceeding involving a person or business that is unable to repay outstanding debts.	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	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.	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	When a company pays a special dividend, the share price of the company declines by the amount of the dividend.	The Divisor is adjusted to reflect a fall in the price of the company paying the special dividend.	Divisor Adjustment
Bonus Issue of Shares	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.	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 marketplace 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 marketplace on a weekly basis.

Holiday Schedule

The index is calculated all days except Saturdays and Sundays. 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.

Disclaimer

This methodology document and all information contained herein including, without limitation, all text, data, graphs, charts, visuals and theory (collectively, the "information"), were created by and is the sole property of Indxx, LLC. Redistribution, reproduction and/or photocopying of this document in whole or part is prohibited without written permission from Indxx. All information in this document provided by Indxx is impersonal and not tailored to the needs of any person, entity or group. None of the information constitutes an attempt at an offer to sell (or an attempt of an offer to buy), or a promotion or recommendation of, any security, product, investment vehicle or any trading strategy, and Indxx does not endorse, approve or otherwise express any opinion regarding any issuer, security, financial product, instrument, or trading strategy. None of the information, Indxx indices, models, other products or services contained herein is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and should not be relied on as such. A decision to invest in any investment fund or other vehicle should not be made based solely on information or statements contained in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks, fees and expenses associated with investing, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other vehicle. Historical data, analysis and performance of Indxx indices should not be taken as an indication or guarantee of any future performance. Indxx does not guarantee the accuracy and/or completeness of any Indxx index, any data included herein, or any data from which it is based, and Indxx shall have no liability for any errors, omissions, or interruptions therein. All information in these materials in provided "as is" and the content may change without notice.

For more information on the index, please email info@indxx.com.
Learn more at www.indxx.com.