Nasdaq Yewno Global Artificial Intelligence and Big Data Index

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Introduction

The Nasdaq Yewno Global Artificial Intelligence and Big Data Index® (NYGBIG®) is designed to track the performance of companies that are involved in Big Data, Cybersecurity, Cloud Computing, Deep Learning, Natural Language Processing, Image Recognition, and Speech Recognition & Chatbots.

At a high level, Artificial Intelligence can be broken down into two sub-disciplines: Applied AI is the optimization of a single task, and General AI is the broader application to a variety of tasks. Both Machine Learning – building machines or programs that use data to apply algorithms in a variety of new scenarios – and Deep Learning – wherein artificial neural networks "learn" to identify shapes and sounds – are sub-segments of AI powered by Big Data.

Big Data encompasses the collection of various datasets that capture behaviors, characteristics, patterns, trends, and associations of the real world, feeding the process of "training" AI to become more intelligent and disruptive. As more of the global economy moves towards digitization, the breadth and depth of Big Data will grow exponentially. In fact, it is estimated that 90% of all datasets have been generated within just the last five years, and our current expanse of data is expected to grow by a factor of 50 by 2025. The Nasdaq Yewno Global Artificial Intelligence and Big Data Index provides targeted exposure to this accelerating trend.

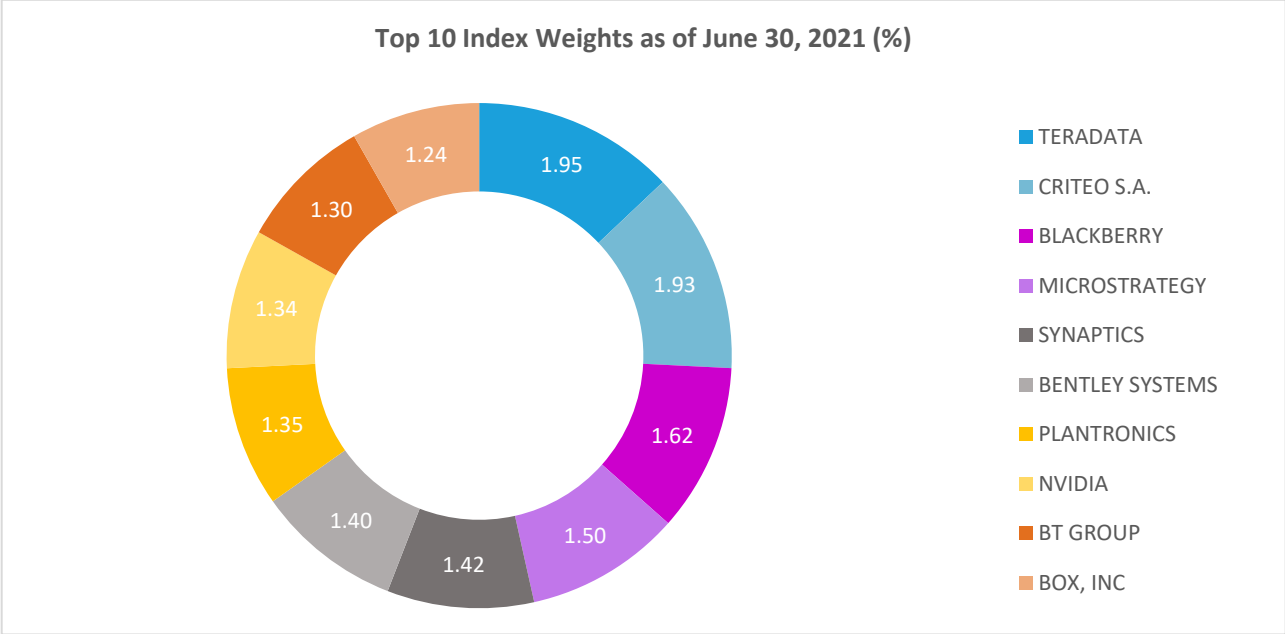
Methodology

Launched on November 12, 2018 with a base value of 1,000, the NYGBIG Index consists of 95 equally-weighted securities, rebalanced and reconstituted semi-annually in January and July. NYGBIG's constituents are selected from the Nasdaq Yewno Global Disruptive Technology Benchmark Index (NYDTB). All securities must have a minimum market cap of $500 million and a minimum six-month average daily dollar trading volume of $2 million. Additionally, 20% of each company's shares outstanding must be available to Foreign Institutional Investors (FII).

Securities are selected for inclusion in NYGBIG according to Yewno's Pure and Contribution Score method, which considers several sub-themes within the overarching theme of AI & Big Data and, to that end, assigns each security two scores based on patent filing activity. The Pure Score is a measure of how intensely a company is engaged in a theme, relative to all other themes for which it has recorded recent patent activity. The Contribution Score represents a company's share of overall patents recently filed by all other companies relating to the same theme (e.g., Natural Language Processing).

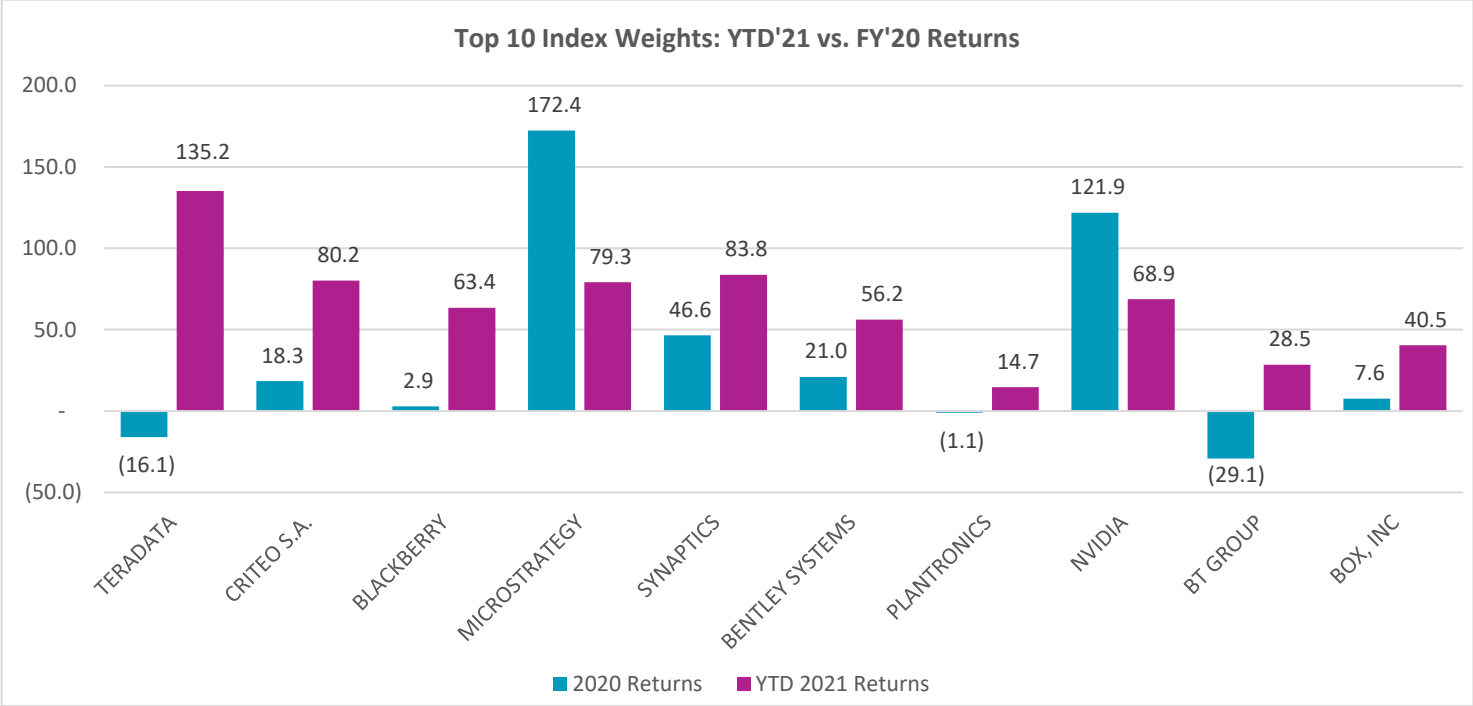
If currently in the index, securities within the top 50% of the Pure and Contribution Scores are selected. In addition, the top 35% securities by score are selected within each market cap size segment and sub-theme. An Intensity Score is then calculated for each security, denoting the number of times a security passed the filtering process. If the number of securities in the basket has not exceeded 100, a maximum of 5 securities from the remaining security pool can be added, given their Intensity Scores are higher than those already in the basket. The average Contribution Score percentile and the six-month average daily dollar traded volume are used as tiebreakers for selections.

Key Players in the Index

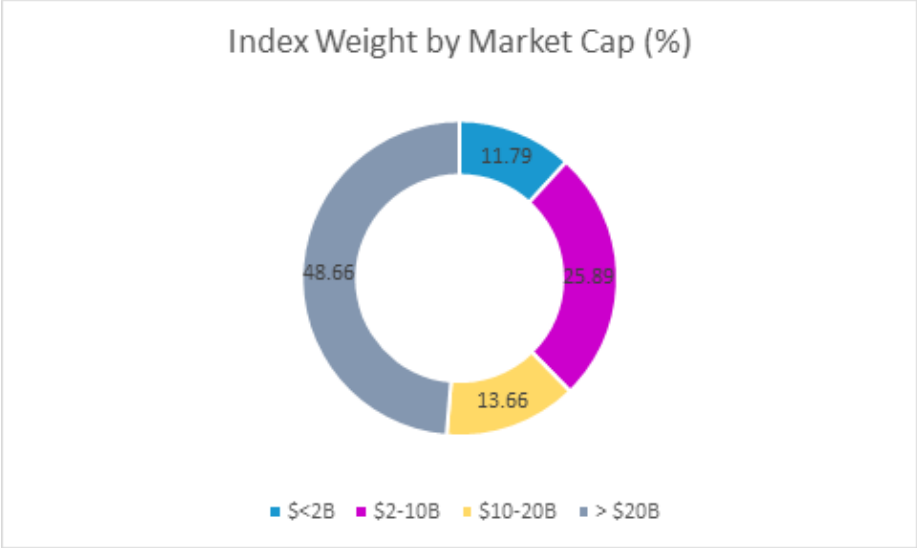


The top 10 constituents comprise about 15% of the index, with some variation in weightings driven by diverging price performance since the last reconstitution. Of the remaining 85 constituents, the smallest constituent's weight was only 0.62%.

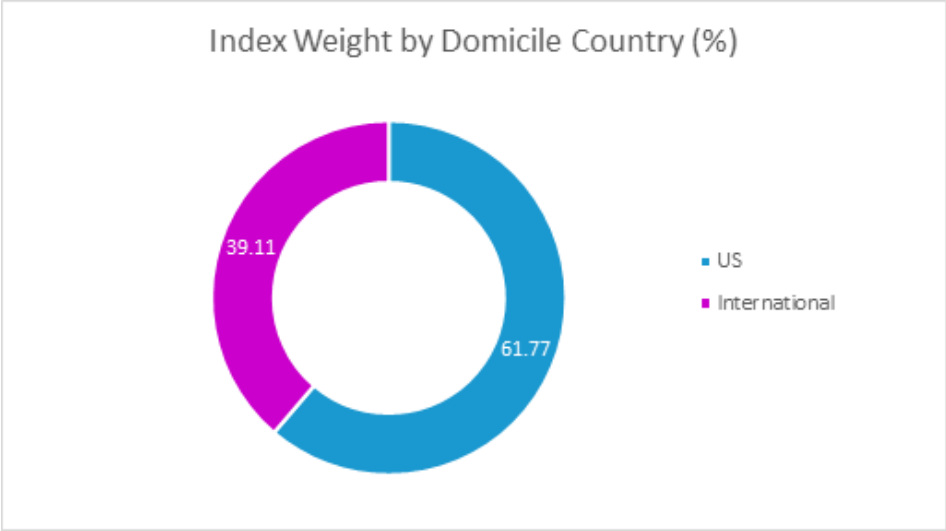
All of the top 10 constituents have seen positive 2021 YTD returns (as of June 30, 2021), averaging around an impressive 70%. Among the top weighted companies, Blackberry stands out as a surprising pick, given the obsolete nature of its smartphone that once dominated the cellular device market. However, the company made a pivotal switch in focus around 2010 and now is a major player in the cybersecurity market, overseeing and securing more than 500 million endpoints, utilizing techniques in machine learning and intelligence. It is important to note that while the company is poised to grow because of its surge in growth in the market, it may also grow due to growing interest among the speculative trading group WallStreetBets, which caused the infamous 1,400% growth of GameStop and 2,000% increase in AMC stock. Other constituents in the top 10 include Teradata, a management space for Cloud databases, Criteo, a Paris-based leading advertising and commerce data platform, Synaptics, an innovator in human interface technology such as touchpads and fingerprint biometrics, and NVIDIA, inventor of the GPU and maker of highly sought-after graphics cards. Bentley Systems, an infrastructure engineering software company, is another interesting stock in the top positions. It recently did IPO in September 2020 with only 10.75 million shares, all of which were already owned by employees. Due to the small number of public shares, investors may expect the stock to experience some volatility on the market. But it has traded steadily up since the IPO and is poised to continue its growth through partnerships and acquisitions of various other technology and engineering companies.



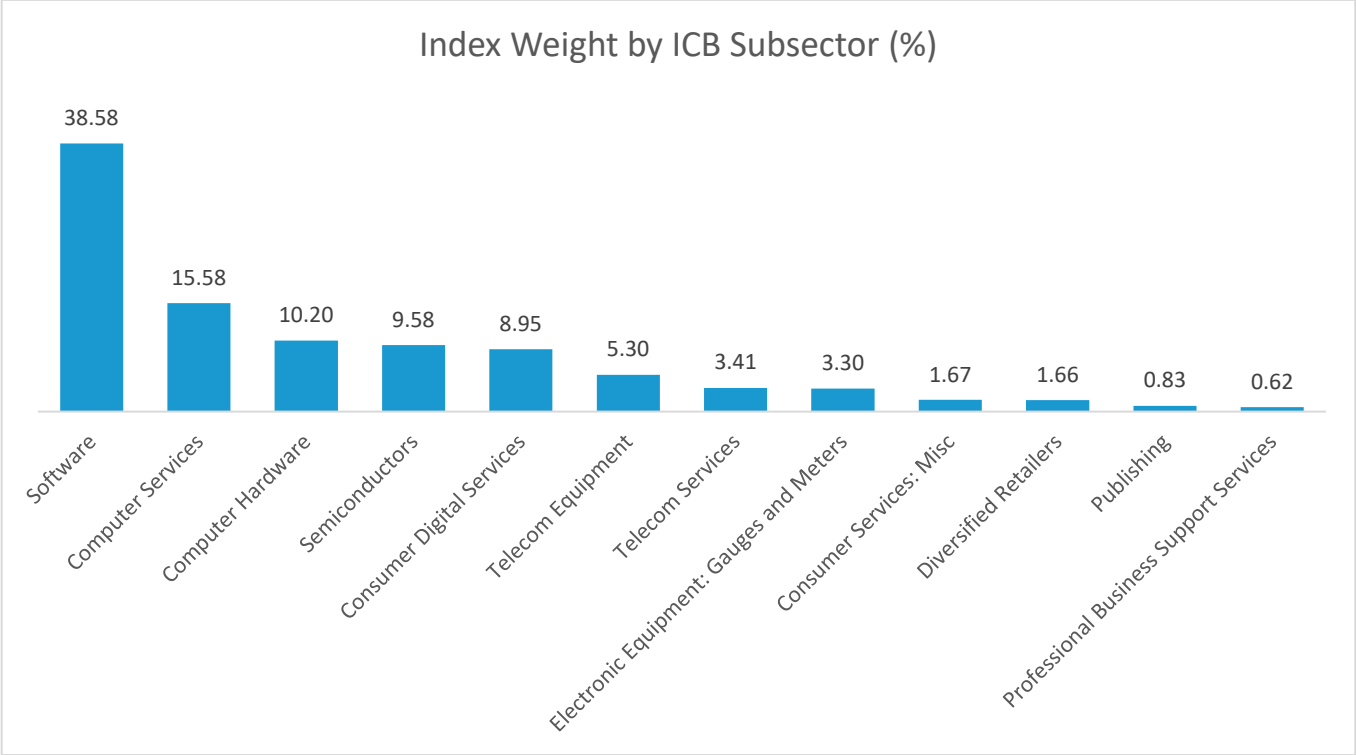
In FY '20, some companies had positive returns, with Microstrategy and NVIDIA doing especially well and Teradata and BT Group, a telecommunication holding company, doing relatively poorly. In examining why and how Microstrategy rose an impressive 172%, it is important to understand that the company, starting in August 2020, converted not only its cash reserves and bond investments but also a new $650 million of debt into Bitcoin tokens. Given that Bitcoin prices surged in the following nine months, it is no surprise that Microstrategy did very well that fiscal year, even it happened during the pandemic which had many of its competitors struggling. NVIDIA did very well also through the pandemic due to its launch of AI-driven data center platform and the strong online sales. All of the top 10 currently have positive returns in YTD '21 (as of June 30, 2021) as they continuously recover from the pandemic and, with Teradata and BT Group, bouncing back from the negative returns in FY '20.



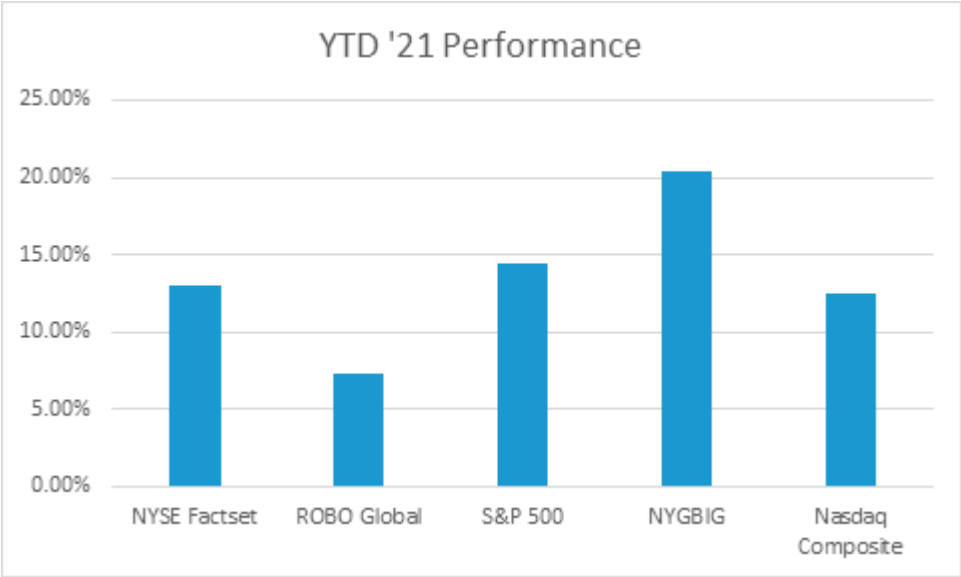
Most securities in the index are large cap, with almost half of them having a market cap above $20 Billion. Around one-fourth of the securities are mid-cap and only 12 percent are small-cap. This breakdown more heavily favors large-cap securities in contrast to ROBO Global's competing index.



Two-thirds of the index is made up of securities based in the United States while the other third are international holdings. In contrast, less than half of ROBO Global Robotics and Automation Index are based in the United States.



The index is primarily made up of companies that specialize in Software (~39%), Computer Services (~17%), and Computer Hardware (~10%), classified using ICB Industry Codes. The wide range of sector inclusions in the index capture the market performance of AI and Big Data across many industries. As mentioned, the use cases of Artificial Intelligence are extremely broad and even have applications in seemingly traditional industries such as Publishing and Telecommunications Services. One such example is Verizon, which uses AI to revolutionize its capabilities as a cable and internet provider. It has multiple analytics groups which work closely with customer care and digital operations departments to make internal processes more efficient and provide higher quality of service to its consumers. Perhaps another more familiar example is Uber. Uber leverages big data to analyze street traffic, GPS data, and public transport routes to provide the on-demand ride service that is widely used across the United States. Uber also makes use of AI and Machine Learning to optimize routes and provide accurate time of arrivals messages for drivers to send and allow for the ride-sharing Uber Pool.



As shown, NYGBIG is outperforming not only its competitors but also the broader market in 2021. It has materially outperformed both NYSE FactSet's and ROBO Global's AI & Big Data indexes and is also outpacing the Nasdaq Composite and S&P 500 indexes. Given the growing popularity and rapid deployment of AI and Big Data, the outstanding performance of the NYGBIG index signals that it is well positioned to capture this explosive new market. The index's performance can be attributed to not only Yewno's interesting methodology but also the performance of the major players within the index.

Future of Artificial Intelligence and Big Data

AI disruption is expected to occur in a variety of technological sectors with a broad reach. Industrial automation is expected to be the leader in the applications of AI. Instead of using machinery to perform one task repeatedly in the assembly line, it is expected that the robotics will become advanced enough to collaborate closely with humans. Further along the automation front are autonomous vehicles, which will eventually create the industry standard of self-driving vehicles. Looking into healthcare, the integration of more advanced robotics will allow for more accurate diagnosis and treatment, leading to better patient outcomes. In consumer retail, AI can both interact with consumers and help predict their needs, in addition to optimizing supply chains. Smart assistants can be used not only in the retail setting but in overall internet search efficiency.

AI and Big Data are expected to impact the world in unforeseen political, social, and economic ways as well. Perhaps the polarizing is the issue of governmental or worldwide oversight over increasing powerful artificially intelligent entities. While some believe that it should be more efficient to have a free market and allow companies compete for consumer demands, others believe that governments must have control over the important subjects of AI research and development. There are a number of policy options for consideration on both sides including accountability, transparency, public debate, and safety and control. On the Big Data front, since the fact that the more important data are often more sensitive, wide discussions are triggered on data privacy and data risk against individuals and organizations.

AI technology clearly has the potential to contribute greatly to economic growth. In fact, it is predicted to contribute to 14% of global GDP in 2030 (~ $15 trillion today) with an average additional growth of 1.7% of GDP per year by 2035. On the flip side, AI is uniquely positioned to replace jobs at an alarming rate, with a Bain study estimating that 20-25% of current jobs, around 40 million workers, will be displaced by 2030. Further, using machines more prevalently than humans in some roles will likely depress wages. Even though 20% of the workforce is estimated to be benefited from AI, those beneficiaries are mostly more skilled workers with higher income. It will widen the economic disparities across the board. Yet, despite these concerns, the economy itself is expected to benefit overall from the increased use of AI.

Conclusion

The Nasdaq Yewno Big Data and Artificial Intelligence Index is a top performer among competitor indexes such as the ROBO Global AI and Big Data Index and NYSE FactSet Global Robotics and Artificial Intelligence Index. It can be tracked through the Xtrackers Artificial Intelligence and Big data UCITS ETF (Ticker: XAIX), which is listed in Germany on Deutsche Boerse.

Sources: Nasdaq Global Indexes, Bloomberg, FactSet