

BlueStar Autonomous Driving Index

Index Methodology Guide 1.0

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Chapter 1: Introduction and Index Description

This document summarizes the methodology and rules used to construct, calculate, and maintain the BlueStar Autonomous Driving Index (“BAUT”).

BAUT is a rules-based index that tracks the performance of a group of globally-listed stocks of companies that, according to BlueStar Indexes, are “Autonomous Driving Companies”. The index focuses on companies involved in developing and marketing communication and A.I. technologies used in ADAS and Autonomous Driving systems, and those delivering products and services focused on innovative in-car experiences, vehicle sharing, and fleet tracking and management. Index components are reviewed semi-annually for eligibility, and the weights are re-set accordingly.

Companies may not apply and may not be nominated for inclusion in the Index. Companies are added or removed by BlueStar based on the methodology described herein. The BlueStar Index Advisory Committee advises on index methodology and decisions related to the definition of which companies shall be considered Autonomous Driving Companies. Whenever possible, BlueStar will publicly announce changes to the index on its website at least five trading days in advance of the actual change. The Index is calculated and maintained by Standard & Poor’s based on a methodology developed by BlueStar.

BAUT is calculated on a price, total return and net total return basis in real-time. The index is denominated in US Dollars (USD). The net total return index is disseminated in real-time via the CME Group, Inc (CME) and market data vendors every day the exchange of at least one index component is open. Real-time index values for the net total return index are available on Bloomberg by entering “BAUTNTR INDEX <GO>”, and end-of-day values are freely available on BlueStar’s website, www.bluestarindexes.com, and/or through market data vendors.

Chapter 2: Index Construction

This chapter outlines and defines the key steps in constructing and calculating the index, including: eligibility requirements, formulas, initial component selection, and special adjustments

2.1 Base Date and Value

BAUT has the following variants, base dates and values:

Name	Index Symbol	Base Date	Base Value
BlueStar Autonomous Driving Index (Price Index)	BAUT	Dec. 28, 2012	100
BlueStar Autonomous Driving Index Total Return	BAUTTR	Dec. 28, 2012	100
BlueStar Autonomous Driving Index Net Total Return	BAUTNTR	Dec. 28, 2012	100

2.2 Component Eligibility Requirements

All the following requirements must be met for a company’s security to be included in BAUT:

1. BlueStar screens a universe of thousands of global securities for companies leading in Autonomous Driving technology in one or more of the categories in the table below. In addition, BlueStar determines which companies shall be considered Leaders in their respective categories utilizing criteria also described in the table below. BlueStar screens company descriptions on bona-fide sources such as Bloomberg LP, as well as company annual filings and websites to identify the global universe of Autonomous Driving Companies.

Category	Description	Leadership Criteria
ADAS and AD Systems	Hardware and software for car connectivity and Artificial Intelligence (“A.I.”) processes for Autonomous Driving (“AD”) or Advanced Driver Assistance Systems (“ADAS”) including: communication/coordination with cellular networks, edge computing, and WiFi/Bluetooth used in automobile settings.	Technology that integrates with or direct suppliers of network access devices, and advanced modes of “Vehicle to-”, or “V2” communications such as millimeter wave detection and transmission, software defined radios, and C-V2X.
In-Car Experience & Smart-Parts	Infotainment and payment systems, connected car parts (ie: tires and steering systems), and vehicle diagnostics technology.	All in-car experience and smart-part manufacturers other than members of the Media industry.
Sensors and Chips	Sensors used to detect surroundings and traffic conditions, GPS, and machine learning processes.	Only those that are directly involved in developing and testing C-V2X technology.
Fleets	Involved in car-sharing, fleet ownership/renting, and logistics automation either directly or via investments.	Investment or ownership of vehicle or ride sharing services.
Automobile Manufacturers	Automobile manufacturers with the most advanced ADAS or AD offerings, subject to analyst evaluation.	Automobile manufacturers with C-2VX enables vehicles.

2. Companies included in the global universe of Autonomous Driving Companies are then screened to meet Index market capitalization and liquidity criteria. Only those companies included in the global universe of Autonomous Driving Companies which have a free-float percentage greater than 10%, market capitalization of at least \$150 million USD equivalent and a six-month average daily value traded of at least \$500,000 USD equivalent will be selected for inclusion in the index. For securities that do not have six months of average daily value traded data available, three months of data will be used and their eligibility for inclusion will be reviewed by the BlueStar Index Advisory Committee, which will consider factors such as liquidity over the time frame for which data is available and market capitalization.

3. Only those securities denominated in the following currencies may be included in the index:

Currencies			
US Dollar	Australian Dollar	Israeli Shekel	Japanese Yen
Euro	Canadian Dollar	British Pound	Swiss Franc
Hong Kong Dollar			

BlueStar will, in most cases, use the quantitative ranking and screening system described herein. However, subjective screening based on fundamental analysis or other factors may be used if, in the opinion of BlueStar Indexes, certain components should be included or excluded.

2.3 Initial Component Selection

The following steps are taken to select the initial components for BAUT at each semi-annual rebalance period:

1. Establish the list of index components according to Chapter 2.2
2. Determine the index weight of each security in the list of index components:
 - a. Determine whether each component is a Leader (LD) within their respective category, or not a Leader, collectively referred to as “Others” (OT).
 - b. Assign each component an Initial Weight as follows:

$$W'LD_i = 0.75 * \left(\frac{1}{N_{LD}} \right) \quad \text{AND} \quad W'NIT_i = 0.25 * \left(\frac{1}{N_{OT}} \right)$$

Where:

$W'TL_i$ = Initial Weight for Leaders component i
 $W'OT_i$ = Initial Weight for Others component i
 N_{TL} = Total number of Leaders index components
 N_{OT} = Total number of Others index components

- c. If the aggregate Initial Weight of securities denominated in US Dollars (USD) is greater than or equal to 75% then the weights as determined in step 2.b, above, will be each component's Final Weight
- d. If the aggregate Initial Weight of securities denominated in US Dollars (USD), as determined in step 2.b, above, is less than 75% then find each component's Final Weight by redistributing the weight of non-USD-denominated (NUSD) such that the aggregate weight of USD-denominated securities is equal to 75% as follows:

$$WUSD_i = W'USD_i + DIST_{USD} \quad \text{AND} \quad WNUSD_i = W'NUSD_i - DIST_{NUSD}$$

Where:

$$DIST_{USD} = \frac{.75 - AW_{USD}}{N_{USD}} \quad \text{AND} \quad DIST_{NUSD} = \frac{.75 - AW_{USD}}{N_{NUSD}}$$

And:

W_{USD} = Final Weight of USD-denominated index components
 W_{NUSD} = Final Weight of non-USD-denominated index components
 $W'USD_i$ = Initial Weight of USD-denominated index components
 $W'NUSD_i$ = Initial Weight of non-USD-denominated index components
 $DIST_{USD}$ = Weight to be added to each USD-denominated index component
 $DIST_{NUSD}$ = Weight to be subtracted from each non-USD-denominated index component
 AWN_{USD} = Aggregate Initial Weight of USD-denominated index components
 N_{USD} = Total number of USD-denominated index components
 N_{NIT} = Total number of non-USD-denominated index components

2.4 Dividend Treatment

The price index does not take normal dividend payments into account. Dividends are accounted for by reinvesting them daily. BAUT uses the ex-dividend date to determine the total daily dividends for each day. Special dividends require an index advisor adjustment, as described in Chapter 3, to prevent such distributions from distorting the price index.

2.5 Index Equations

1. The price index is calculated using the following basic equations:

$$I_{(t)} = \frac{\sum_{i=1}^n P_{i(t)} * S_{i(t)}}{D_{(t)}}$$

Where:

- $I_{(t)}$ = Index value at time (t)
- $D_{(t)}$ = Divisor at time (t)
- n = Number of stocks in the index
- t = The time that the index is calculated
- $P_{i(t)}$ = Price of stock i at time t in USD terms
- $S_{i(t)}$ = Number of assigned shares of stock i at time t

Where:

$$D_{(t)} = \frac{\sum_{i=1}^n P_{i(t-1)} * S_{i(t-1)}}{I_{(t-1)}}$$

Where:

- $I_{(t-1)}$ = Index value at time $t-1$
- $D_{(t)}$ = Divisor at time t
- n = Number of stocks in the index
- $P_{i(t-1)}$ = Closing price of stock i at time $t-1$ in USD terms
- $S_{i(t-1)}$ = Number of assigned shares of stock i at time $t-1$

Where:

$$D_{(0)} = \frac{\sum_{i=1}^n P_{i(0)} * S_{i(0)}}{I_{(0)}}$$

Where:

- $I_{(0)}$ = Index value at time 0 100
- $D_{(0)}$ = Divisor at time 0
- n = Number of stocks in the index
- $P_{i(t-1)}$ = Closing price of stock i at time 0 in USD terms
- $S_{i(t-1)}$ = Number of assigned shares of stock i at time 0

2. Assigned shares are the number of shares needed for each component such that the component conforms to the weighting distribution outlined in Chapter 2.3.2
3. Changes to the index composition require divisor adjustments to retain index continuity before and after specific events, as outlined in Chapter 3. Divisor changes are made according to the following equation:

$$D_{(t+1)} = D_{(t)} * \frac{\sum_{i=1}^n P_{i(t+1)} * S_{i(t+1)}}{\sum_{i=1}^n P_{i(t)} * S_{i(t)}}$$

Where:

$D_{(t+1)}$ = Initial Divisor after changes are made to the index

Chapter 3: Index Maintenance

This chapter describes the circumstances that require index changes, as well as the details on performing those changes

3.1 Divisor Changes

Changes to the index composition due to corporate actions or component eligibility changes will require adjustments to the index divisor, as follows:

*Spinoff**

1. Subtract the following from the price of the parent company:

$$\frac{\text{Spinoff stock price}}{\text{Share exchange ratio}}$$

2. Adjust the component's assigned shares such that its weighting is not changed because of the spinoff

Special Cash Dividend

1. Subtract special dividend from share price

Rights Offering

1. Subtract the following from the price of the parent company:

$$\frac{\text{Price of rights}}{\text{Rights ratio}}$$

2. Adjust the component's assigned shares such that its weighting is not changed because of the rights offering

Divisor changes are usually made on the date the corporate action becomes effective. For example, BAUT uses the ex-dividend date rather than the payment date to determine when making divisor adjustments.

*If a company being spun-off is only trading on a "when-issued" basis, the "when-issued" price will be used to adjust the parent company's closing price.

3.2 Details of Share Changes

Stock splits and reverse splits do not require index divisor adjustments because the corresponding change to the stock price equally offsets the number of assigned shares, therefore not affecting the component's influence in the index.

3.3 Scheduled Component Changes and Review

BAUT has a semi-annual review in June and December of each year. Fundamental data, prices and trading volumes are captured on the Tuesday before the second Friday of June and December. The new number of assigned shares for each component is determined based on the component's weight as determined in 2.3 and the closing price of that component on the Tuesday before the second Friday of June and December. Component changes are announced and made available after the close on the second Friday of June and December. Component changes are made after the close on the third Friday of June and December and are effective at the opening on the Monday following the third Friday of June and December.

3.4 Interim Component Changes

1. Component changes may occur between regularly-scheduled review periods if a specific corporate event makes an existing component ineligible. The following events may require a component's removal or replacement:

Merger or Acquisition

If a merger or acquisition results in one component absorbing another, the resulting company will remain a component and the absorbed company will be removed or replaced. If a non-component company absorbs a component company, the original component will be removed, unless the non-component company, after absorbing the assets of the component company, would be considered a Autonomous Driving company as described in Chapter 2.2. If a component is the target of an acquisition BlueStar may decide to remove or reduce the weight of that component after the "go-shop" period concludes in order to reduce potential volatility or liquidity risk in the index.

Spin-Off

If a company splits or spins off a portion of its business to form one or more new companies, the resulting company with the highest market value will remain a component if it meets the eligibility requirement. The remaining companies will be evaluated for eligibility and possible addition to the index.

Bankruptcy

A component company will be removed and replaced immediately after bankruptcy filing. Exceptions are made on a case-by-case basis. For example, a security may not be removed immediately if bankruptcy filing is not the result of operating or financial difficulties.

Delisting

A component company will be removed or replaced immediately after being delisted from its primary market.

Whenever possible, interim component changes are announced on BlueStar's publicly-available website at least three trading days prior to component changes becoming effective.

3.5 Unscheduled Component Weight Adjustments

Unscheduled component weight adjustments may occur between review periods if any component's weight increases by more than 300% from the component's weight at the most recent Index rebalance date. The weight of any such component will be reduced to the weight of the next-highest-weighted component. The absolute weight limit for any component between rebalance periods shall be 25%

If the aggregate weight of non-US-listed securities rises above 29% between regularly-scheduled rebalance periods, the index components will be rebalanced such that the aggregate weight of all non-US-listed securities will be 25% or less of the total index.

Whenever possible, unscheduled component weight adjustments are announced on BlueStar's publicly available website at least three trading days prior to the adjustments becoming effective.

Chapter 4: Index Calculation and Dissemination

This chapter summarizes calculation and dissemination practices, quality assurance practices, and the circumstances requiring calculation corrections.

4.1 Price Calculation

Price, total return, and net total return indexes for BAUT are calculated by Standard & Poor's on both an end-of-day and real-time basis. The BAUT is calculated using the last traded price for each company in the Index from the relevant exchanges and markets.

Index values are rounded to two decimal places and divisors are rounded to 14 decimal places.

4.2 Calculation Frequency and Dissemination

BAUT is calculated on a real-time basis beginning when the first traded price of any of the Index components is received by Standard & Poor's. Prices are delivered to CME every 15 seconds and subsequently published at that frequency. Net total return index values are available on a real-time basis through the Bloomberg information system under the index symbol "BAUTNTR INDEX". End-of-day net total return index values are posted on BlueStar's publicly available website, www.bluestarindexes.com.

If the exchange a stock is listed on is closed or if trading in a stock is suspended prior to the market opening, the stock's adjusted closing price from the previous day will be used in the Index calculation until trading commences. If trading in a stock is suspended while the relevant market is open, the last traded price for that stock will be used for all subsequent Index calculations until trading resumes.

4.3 Input Data

Standard & Poor's uses various quality assurance tools to audit, monitor, and maintain the accuracy of its input data. While every reasonable effort is taken to ensure high standards of data integrity, there is no guarantee against errors. Please refer to the Data Correction section for more detail.

The index closing price is calculated using the closing prices issued by the primary exchange for each component stock in the index. If the primary exchange changes the closing price of a component stock, the new price will be used to calculate the index closing price. A final check of closing prices is done between one hour and one and one-half hours after the close of markets. This timeframe may be expanded at S&P's discretion on days where trading volume is unusually large at the close. For example, futures and options expiration dates, and large index rebalancing dates often result in unusually large volume. Only changes received prior to this final check are used in the closing price calculation.

Real time index prices are calculated using spot prices for foreign exchange rates throughout each trading day. Official end-of-day index values are calculated using Reuters spot rates which are captured at 12:00 GMT.

4.4 Data Corrections

Incorrect index component data, corporate action data, or Index Divisors will be corrected upon detection. If such errors are discovered within five days of occurrence, they will be corrected that same day. If discovered after five days, adjustments will be handled on a case-by-case basis depending on the significance of the error and the feasibility of a correction.

Incorrect intraday index tick data will not be corrected. However, incorrect opening and closing values will be corrected as soon as possible after detection.

March 19, 2018



Appendices

This section provides additional information related to BAUT as well as changes to this document.

Appendix A. BlueStar Autonomous Driving Index Constituents

As of December 15, 2017

Company Name	Ticker	Exchange	Weight
ADVANCED MICRO DEVICES	AMD	Nasdaq	2.57%
ANALOG DEVICES INC	ADI	Nasdaq	2.57%
APTIV PLC	APTIV	NYSE	2.57%
AUTOLIV INC	ALV	NYSE	2.57%
AVIS BUDGET GROUP INC	CAR	Nasdaq	2.57%
CYPRESS SEMICONDUCTOR CORP	CY	Nasdaq	2.57%
ERICSSON (LM) TEL-SP ADR	ERIC	Nasdaq	2.57%
GOODYEAR TIRE & RUBBER CO	GT	Nasdaq	2.57%
INTEL CORP	INTC	Nasdaq	2.57%
LEAR CORP	LEA	NYSE	2.57%
MAGNA INTERNATIONAL INC	MGA	NYSE	2.57%
MAXIM INTEGRATED PRODUCTS	MXIM	Nasdaq	2.57%
MICROCHIP TECHNOLOGY INC	MCHP	Nasdaq	2.57%
NVIDIA CORP	NVDA	Nasdaq	2.57%
NXP SEMICONDUCTORS NV	NXPI	Nasdaq	2.57%
QUALCOMM INC	QCOM	Nasdaq	2.57%
SILICON LABORATORIES INC	SLAB	Nasdaq	2.57%
TELENAV INC	TNAV	Nasdaq	2.57%
TEXAS INSTRUMENTS INC	TXN	Nasdaq	2.57%
VERIFONE SYSTEMS INC	PAY	NYSE	2.57%
VISTEON CORP	VC	Nasdaq	2.57%
XILINX INC	XLNX	Nasdaq	2.57%
BRIDGESTONE CORP	5108	Tokyo	1.92%
CONTINENTAL AG	CON	Xetra	1.92%
DENSO CORP	6902	Tokyo	1.92%
FAURECIA	EO	EN Paris	1.92%
HELLA GMBH & CO KGAA	HLE	Xetra	1.92%
INFINEON TECHNOLOGIES AG	IFX	Xetra	1.92%
JTEKT CORP	6473	Tokyo	1.92%
NTT DOCOMO INC	9437	Tokyo	1.92%
SIXT SE	SIX2	Xetra	1.92%
STMICROELECTRONICS NV	STM	Brsaltaliana	1.92%
ACCENTURE PLC-CL A	ACN	NYSE	1.23%
ALPHABET INC-CL A	GOOGL	Nasdaq	1.23%
AMBARELLA INC	AMBA	Nasdaq	1.23%
BAIDU INC - SPON ADR	BIDU	Nasdaq	1.23%
FLIR SYSTEMS INC	FLIR	Nasdaq	1.23%
FORD MOTOR CO	F	NYSE	1.23%
GARMIN LTD	GRMN	Nasdaq	1.23%
GENERAL MOTORS CO	GM	NYSE	1.23%
HERTZ GLOBAL HOLDINGS INC	HTZ	NYSE	1.23%
ITURAN LOCATION AND CONTROL	ITRN	Nasdaq	1.23%
LATTICE SEMICONDUCTOR CORP	LSCC	Nasdaq	1.23%
SAMSUNG ELECTR-GDR	SMSN	London Intl	1.23%
SIRIUS XM HOLDINGS INC	SIRI	Nasdaq	1.23%
TESLA INC	TSLA	Nasdaq	1.23%
TRIMBLE INC	TRMB	Nasdaq	1.23%
BAYERISCHE MOTOREN WERKE AG	BMW	Xetra	0.58%
DAIMLER AG-REGISTERED SHARES	DAI	Xetra	0.58%
DIALOG SEMICONDUCTOR PLC	DLG	Xetra	0.58%
EUROPCAR GROUPE SA	EUCAR	EN Paris	0.58%
SOFTBANK GROUP CORP	9984	Tokyo	0.58%
TELIT COMMUNICATIONS PLC	TCM	London	0.58%
TENCENT HOLDINGS LTD	700	Hong Kong	0.58%
TOSHIBA CORP	6502	Tokyo	0.58%
VALEO SA	FR	EN Paris	0.58%
VOLKSWAGEN AG-PREF	VOW3	Xetra	0.58%

Appendix B. Index Stats and Allocations

As of December 15, 2017

Geographic Breakdown		
Country of Domicile	Number	Weight
United States	27	56.00%
Germany	7	9.42%
Japan	6	8.84%
Sweden	2	5.14%
Britain	3	3.73%
Switzerland	2	3.15%
France	3	3.08%
Netherlands	1	2.57%
Canada	1	2.57%
China	2	1.81%
South Korea	1	1.23%
Israel	1	1.23%
Ireland	1	1.23%
Sector Breakdown		
Sector	Number	Weight
Information Technology	29	55.21%
Consumer Discretionary	20	33.49%
Industrials	6	8.80%
Telecommunication Services	2	2.50%
Totals		
Totals	Number	Weight
Total	57	100.00%

Appendix C. Document Change History

A history of significant changes to this document is shown in the table below

Issue	Date	Change
1.0	March 19, 2018	Initial publication