

Bloomberg Digital Payments Index Methodology

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Bloomberg

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Introduction

The Bloomberg Digital Payments Index is constructed to track the performance of companies that facilitate digital payments on e-commerce sites or in-person on mobile devices. To be included in the index companies should generate a portion of revenue from software, hardware or services supporting digital payments, with a strategy for growth.

Section 1: Index Overview

Name	Bloomberg Digital Payments Index
Ticker	BPAY (Price Return) BPAYT (Total Return) BPAYN (Net Return)
Currency	USD
Inception Date	2021-10-22
Base Date	2015-04-20
Publication	Weekdays

Section 2: Bloomberg Thematic Research

Bloomberg Intelligence (BI) Theme Baskets

Bloomberg Intelligence (BI) research delivers an independent perspective providing interactive data and research across industries and global markets, plus insights into company fundamentals. The BI research team helps clients make more informed decisions in the rapidly moving investment landscape.

BI theme baskets are constructed to track companies with direct exposure to major market forces that cross industries and regions. Companies are deemed to have direct exposure by a combination of BI analyst expertise and data analytics, with analyst approvals the primary factor to determine inclusion or exclusion. Eligible companies are actively traded public entities.

Changes in the methodology may be made periodically to ensure representativeness, accuracy and integrity. Material changes to the methodology are reviewed and approved by the theme-basket committee.

Basket Construction

Theme baskets are constructed in a multistep process. First, global BI analysts propose companies and key terms associated with the theme. Next, company filings for the universe of actively traded public companies are scraped for occurrences of theme key terms. This affirms proposed companies and suggests for inclusion those that may have been overlooked. Third, proposed companies are back-tested to determine how closely they all trade together as a group. This identifies companies trading substantially differently than the group. Finally, the theme-basket committee reviews the analyst proposals, key-term document

scraping and correlation back-test to collate a ticker list of high confidence.

1. Company Proposals

BI analysts suggest companies for inclusion in the theme basket. The suggestions are based on approval questions, such as "Is the company materially exposed to the theme?" and "Is the company a good representation of exposure compared to peers?" The theme-basket committee coordinates evaluation to ensure consistent approval thresholds are employed across analysts and teams. Analysts covering global markets across industries and asset classes provide a comprehensive source of expertise to tap for member suggestions. There is no strict minimum or maximum number of companies in a basket, rather each basket is built to reflect the theme's breadth.

2. Key-Term Document Scraping

BI analysts identify key terms that companies exposed to the theme are likely to include in filings. Terminal functionality, including DS<GO>, and programs scrape these filings for hits on the key terms. These methods include synonym-matching technology to reduce variability in frequency counts due to corporate communication style. Documents scraped include publicly available company filings on the Terminal, such as earnings calls, presentations and quarterly reports. Research reports and news stories are not scraped.

3. Additional Screening

Proposed basket members are back-tested (where applicable) to measure consistency in trading as a group. Daily price changes are compared to the group's mean (trimmean excluding the high and low outliers) daily price changes. This approach affirms companies with strong correlation and high confidence p-values are affirmed. Companies having a weak or indeterminate correlation and p-value may be re-evaluated for inclusion. A 0.05 p-value threshold is employed. The back-test's time-frame is as appropriate theme-to-theme and can be as long as several years or as short as a few months.

Basket Maintenance

The Theme-Basket committee is comprised of theme basket seniors, basket leads and a basket associate. Theme basket seniors work in conjunction with BI's sector content leaders and regional content leaders to decide which baskets to embark on, which to deprecate and the overall theme basket offering. Each basket has one or more corresponding lead analysts from an industry team that is highly exposed to the basket. The basket leads coordinate points of discussion for the quarterly meetings and solicit feedback on the membership list and proposed new constituents. The basket associate maintains the BI BSKTG<GO> dashboard, theme basket index securities and records discussions and decisions made at quarterly meetings.

The theme-basket committee meets monthly to review basket membership. At the first two meetings of each calendar quarter, the committee reviews constituents to determine whether they remain directly exposed to the theme, and considers whether non-members have become more exposed. At the third meeting of each calendar quarter, the committee finalizes membership changes and schedules those additions and removals for the upcoming quarter. Refer to Index Maintenance section rebalancing details.

Section 3: Index Eligibility Process

Parent Universe

In order to be eligible for the Bloomberg Digital Payments Index, a security must be a member of the Bloomberg Global Equity Index. Please refer to the Bloomberg Global Equity Index methodology through the link below for additional details.

[Bloomberg Global Equity Indices Methodology](#)

Sector Eligibility

A security must be classified as belonging to the digital payments ecosystem as determined by the Bloomberg Intelligence Theme-Basket committee.

Market Capitalization Eligibility

A security must have a minimum free float market capitalization of \$500 million.

Liquidity Eligibility

A security must have a minimum 90-day average value traded of \$5 million.

Section 4: Index Construction Process

All securities that satisfy the Index Eligibility Process are considered for inclusion in the Index.

If the number of Index eligible issuers is less than 32, then the next issuers by relaxing Liquidity Eligibility are selected until such time that 32 issuers are considered for inclusion in the Index. If, after relaxing the Liquidity Eligibility, the number of issuers remains below 32, then the next issuers by relaxing Market Capitalization Eligibility and Liquidity Eligibility are selected until such time that 32 issuers are considered for inclusion in the Index.

Changes in the methodology may be made periodically to ensure representativeness, accuracy, and integrity.

Index Weighting

The index securities are modified market capitalization weighted. The initial weight of each issuer is determined by dividing the free float market capitalization of each issuer by the sum of the free float market capitalizations of all the issuers in the index.

Using a two-step capping process, the initial weights are distributed such that the top 8 issuers by free float market capitalization are subject to a 5% cap. Issuers after the top 8 by free float market capitalization are subject to a 2.5% cap. Any excess weight from

capping is then redistributed proportionally to the remaining uncapped issuers. If there are multiple securities per issuer, then the issuer weight is redistributed proportionally to all of the securities within the issuer based on the free float market capitalization of each security.

If, after the Index Selection Process is applied, the number of issuers in the Index is less than or equal to 20, then the Index issuers are equal weighted. If the number of issuers in the Index is greater than 20 and less than 32, then the bottom-tier cap (2.5%) is relaxed and the weight equally redistributed among all the remaining uncapped issuers such that the bottom-tier cap is still less than the top-tier cap (5%) and the weights sum to 1. If it is not possible to redistribute the weights such that the bottom-tier cap is still less than the top-tier cap, then the Index issuers are equal weighted.

Index Rebalance and Reconstitution

The Index is reconstituted quarterly in January, April, July, and October. The Index is rebalanced quarterly in conjunction with the Index Reconstitution.

Selection Dates

The Index Eligibility Process is applied using data as of any business day in the first week January, April, July, and October.

Index Weighting is determined using prices, float, and shares outstanding as of any business day in the first week January, April, July, and October.

Index Announcement Dates

The Index reconstitutions are announced after the close on the 2nd Friday in January, April, July, and October, respectively.

Index Effective Dates

The Index reconstitutions and rebalances go effective after the close on the 3rd Friday in January, April, July, and October, respectively.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Selection Date	First Week	X			X			X			X		
Announcement Date	2 nd Friday	X			X			X			X		
Effective Date	3 rd Friday	X			X			X			X		

Section 5: Index Maintenance

Index Calculation

Refer to the [Bloomberg Global Equity Indices Methodology](#) for index calculation details.

Deletion Policy

Index securities are not deleted outside of the semi-annual Index Reconstitution except in the case of a delisting.

Addition Policy

Index securities are not added outside of the Index reconstitution.

Replacement Policy

Index securities are not replaced outside of the Index reconstitution.

Corporate Actions

Refer to [Bloomberg Global Equity Indices Non-Market Cap Corporate Action Methodology](#) for the treatment of corporate actions.

Stakeholder Engagement

Bloomberg Index Services Limited (“BISL”) is in regular and ongoing engagement with its users through various channels, including via help desks, sales personnel, and direct communication with product personnel. To help ensure that the Index remains an accurate representation of global equities defined in the methodology, BISL endeavors to meaningfully incorporate these engagements into improvements in processes and service. Prior to any material change that might meaningfully impact users, BISL consults more broadly with stakeholders, where appropriate, before a recommendation is presented to the Product, Risk & Operations Committee (“PROC”) for approval. This concept of shared ownership enables BISL to produce the most relevant Index and helps ensure responsiveness to user needs.

Risks

The following is a summary of certain risks associated with the Index but is not meant to be an exhaustive list of all risks associated with the Index. Although the Index is designed to be representative of the markets it is measuring, it may not be representative of every use case. There is also inherent, though transparent, judgment in its construction, as outlined in this methodology. The Index is designed for general applicability and not to address the individual circumstances and needs of users. BISL does not advise about the usefulness of the Index to a particular circumstance; users are therefore encouraged to seek their own counsel for such matters. This methodology is subject to change, which may impact its usefulness to users. Although efforts will be made to alert

users of any change, every individual user may not be aware of them. Such changes may also significantly impact the usefulness of the Index. BISL may also decide to cease publication of this Index. BISL maintains internal policies regarding user transitions, but no guarantee is given that an adequate alternative is available generally or for a particular use case. Markets for stocks, as with all markets, can be volatile. As the Index is designed to measure this market, it could be materially impacted by market movements, thus significantly affecting the use or usefulness of the Index for some or all users. Also, certain equity markets are less liquid than others – even the most liquid markets may suffer periods of illiquidity. Illiquidity can have an impact on the quality or amount of data available to BISL for calculation and may cause the Index to produce unpredictable results.

Limitations of the Index

Though the Index is designed to be representative of the markets it measures or otherwise aligns with its stated objective, it may not be representative in every case or achieve its stated objective in all instances. It is designed and calculated strictly to follow the rules of this methodology, and any Index level or other output is limited in its usefulness to such design and calculation.

Markets can be volatile, including those market interests that the Index measures or upon which the Index is dependent to achieve its stated objective. For example, illiquidity can have an impact on the quality or amount of data available to the administrator for calculation and may cause the Index to produce unpredictable or unanticipated results.

In addition, market trends and changes to market structure may render the objective of the Index unachievable or to become impractical to replicate by investors.

In particular, the Index measures global equity markets. As with all equity investing, the Index is exposed to market risk. The value of equities fluctuate with the changes in economic forecasts, interest rate policies established by central banks and perceived geopolitical risk. The Index does not take into account the cost of replication and as a result a tracking portfolio's returns will underperform the Index with all else equal. As the Index is designed to measure those markets, it could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users.

In addition, certain Sub-Indices may be designed to measure smaller subsets of the Index such as specific styles, size, and sector. Some of these Sub-Indices have very few qualifying constituents and may have none for a period of time. During such period, the Sub-Index will continue to be published at its last value, effectively reporting a 0% return, until new constituents qualify. If no constituents are expected to qualify (due to changes in market structure and other factors), the Sub-Index may be discontinued. In such an event, this discontinuation will be announced to index users.

Section 6: Benchmark Oversight and Governance

Benchmark Governance, Audit and Review Structure

BISL uses two primary committees to provide overall governance and effective oversight of its benchmark administration activities:

- The Product, Risk & Operations Committee ("PROC") provides direct governance and is responsible for the first line of

controls over the creation, design, production and dissemination of benchmark Indices, strategy Indices and fixings administered by BISL, including the Index. The PROC is composed of Bloomberg personnel with significant experience or relevant expertise in relation to financial benchmarks. Meetings are attended by Bloomberg Legal & Compliance personnel. Nominations and removals are subject to review by the BOC, discussed below.

- The oversight function is provided by Bloomberg's Benchmark Oversight Committee ("BOC"). The BOC is independent of the PROC and is responsible for reviewing and challenging the activities carried out by the PROC. In carrying out its oversight duties, the BOC receives reports of management information both from the PROC as well as Bloomberg Legal & Compliance members engaged in second level controls.

On a quarterly basis, the PROC reports to the BOC on governance matters, including but not limited to client complaints, the launch of new benchmarks, operational incidents (including errors & restatements), major announcements and material changes concerning the benchmarks, the results of any reviews of the benchmarks (internal or external) and material stakeholder engagements.

Index and Data Reviews

The Index Administrator will periodically review the Indices (both the rules of construction and data inputs) on a periodic basis, not less frequently than annually, to determine whether they continue to reasonably measure the intended underlying market interest, the economic reality, or otherwise align with their stated objective. More frequent reviews may be done in response to extreme market events and/or material changes to the applicable underlying market interests.

Criteria for data inputs include reliable delivery and active underlying markets. Whether an applicable market is active depends on whether there are sufficient numbers of transactions (or other indications of price, such as indicative quotes) in the applicable constituents (or similar underlying constituent elements) that a price (or other value, as applicable) may be supplied for such constituent(s).

Other than as set forth in this methodology, there are no minimum liquidity requirement for Index constituents and/or minimum requirements or standards for the quantity or quality of the input data. The review will be conducted by product managers of the Index in connection with the periodic rebalancing of the Index or as otherwise appropriate.

Any resulting change to the methodology deemed to be material (discussed below) will be subject to the review of the PROC under the oversight of the BOC, each of which committees shall be provided all relevant information and materials it requests relating to the change. Details regarding the PROC and BOC are described above. Material changes will be reflected and tracked in updated versions of this methodology.

Material changes related to the Index will be made available in advance to affected stakeholders whose input will be solicited. The stakeholder engagement will set forth the rationale for any proposed changes as well as the timeframe and process for responses. The Index Administrator will endeavor to provide at least two weeks for review prior to any material change going into effect. In the event of exigent market circumstances, this period may be shorter. Subject to requests for confidentiality, stakeholder feedback and the Index Administrator's responses will be made accessible upon request.

In determining whether a change to an Index is material, the following factors shall be taken into account:

- The economic and financial impact of the change;
- Whether the change affects the original purpose of the Index; and/or
- Whether the change is consistent with the overall objective of the Index and the underlying market interest it seeks to measure.

Internal and External Reviews

BISL's Index administration is also subject to Bloomberg's Compliance function, which periodically reviews various aspects of its businesses to determine whether it is adhering to applicable policies and procedures, and assess whether applicable controls are functioning properly. In addition, Bloomberg may from time to time appoint an independent external auditor with appropriate experience and capability to review adherence to benchmark regulation. The frequency of such external reviews will depend on the size and complexity of the operations and the breadth and depth of Index use by stakeholders.

Expert Judgement

The Index is rules-based, and its construction is designed to consistently produce values without the exercise of expert judgment or discretion. Nevertheless, BISL may use expert judgment or discretion with regards to the following:

- Index restatements
- Extraordinary circumstances during a market emergency
- Data interruptions, issues, and closures
- Significant acquisitions involving a non-Index company

When expert judgment or discretion is required, BISL undertakes to be consistent in its application, with recourse to written procedures outlined in the methodology of the Index and internal procedures manuals. In certain circumstances exercises of expert judgment or discretion are reviewed by senior members of BISL management and Bloomberg Compliance teams, and are reported to the PROC, BISL's governance committee, which operates under the supervision of BISL's oversight function, the BOC. BISL also maintains and enforces a code of ethics to prevent conflicts of interest from inappropriately influencing index construction, production, and distribution, including the use of expert judgment or discretion.

Data Providers and Data Extrapolation

The Index is rules-based, and its construction is designed to consistently produce Index levels without the exercise of discretion. The Index is produced without the interpolation or extrapolation of input data.

In addition, the Index Administrator seeks to avoid contributions of input data that may be subject to the discretion of the source of such data and instead seeks to use input data that is readily available and/or distributed for a number of non-index or benchmark creation purposes. Accordingly, the index requires no 'contributors' to produce and no codes of conduct with any such sources are required.

Conflicts of Interest

The Index confers on BISL discretion in making certain determinations, calculations and corrections from time to time. In making those determinations, calculations and corrections, the Index Administrator has no obligation to take the needs of any Product Investor or any other party into consideration. BISL is committed to avoiding and, where necessary, managing actual or potential conflicts of interest in the BISL decision-making process and has established a Conflicts of Interest Policy to minimize or resolve actual or potential conflicts of interest. BISL does not create, trade or market Products.

Restatement Policy

BISL strives to provide accurate calculation of its indices. However, to the extent a material error in index levels is uncovered following publication and dissemination, a public notification will be made alerting of such error and the expected date of a revised publication, if warranted.

An error to an equity Index in excess of 3 basis point over one day will automatically be reviewed for restatement. If the Index in error is a Primary Index (listed below) and has occurred in the last 2 business days, a restatement will be made for all impacted indices. Errors occurring beyond the last 2 business days will be evaluated on a case-by-case basis.

Real-time indices are not considered for restatement, all real-time dissemination is considered indicative.

Primary Indices:

Bloomberg US Large Cap Equity Index (B500T)

Bloomberg Developed Markets Large & Mid Cap Index (DMTR)

Bloomberg Emerging Markets Large & Mid Cap Index (EMTR)

If the error affects a non-Primary Index the following factors will be reviewed to determine whether to restate. Not all conditions need to be present to warrant a restatement, and certain factors may be more determinative than others depending on the circumstances of the given error.

- The relative importance of the data field impacted by the error;
- When the error occurred and when it was discovered;
- The number of indices and sub-indices affected;
- Whether the impacted indices are linked to tradable products;
- The magnitude of the error;
- The burden of restatement on client re-processing relative to the impact of the error;
- The impact of the restatement on analytical tools.

Best efforts will be made to address errors in non-Primary indices as outlined in the table below:

Event	Action (If discovered within 2 business days)
Missed Corporate Action	
Spin-off	Restate indices and reissue file
Regular Cash Dividend	
Special Cash Dividend	
Stock Split	
Stock Dividend, Bonus	
Mergers & Acquisition	Update made the next business day; no restatement and no reissuance of files
Delisting	
Reclassification	
Change in Listing	
IPO incorrectly added	Update made at next rebalance
Rebalance	
Incorrect Add	Unless the error is discovered during pro-forma period, update will be made at next rebalance
Incorrect Removal	
Share changes	

Appendix: ESG Disclosure

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
Item 1. Name of the benchmark administrator.	Bloomberg Index Services Limited ("BISL")
Item 2. Type of benchmark or family of benchmarks.	Equities
Item 3. Name of the benchmark or family of benchmarks.	Bloomberg Digital Payments Index
Item 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
<p>Item 5. Where the response to Item 4 is positive, please list below, for each family of benchmarks, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.</p>	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
<p>Item 6. Where the response to Item 4 is positive, please list below, for each benchmark, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816, depending on the relevant underlying asset concerned.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall not be disclosed for each constituent of the benchmark, but shall be disclosed at an aggregated weighted average value of the benchmark.</p> <p>Alternatively, all of this information may be provided in the form of a hyperlink to a website of the benchmark administrator included in this explanation. The information on the website shall be easily available and accessible. Benchmark administrators shall ensure that information published on their website remains available for five years.</p>	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
Hyperlink to the information on ESG factors for each benchmark:	Not applicable
Item 7. Data and standards used	
(a) Data input. (i) Describe whether the data are reported, modelled or sourced internally or externally. (ii) Where the data are reported, modelled or sourced externally, please name the third party data provider.	Not applicable
(b) Verification and quality of data. Describe how data are verified and how the quality of those data is ensured.	Not applicable
(c) Reference standards Describe the international standards used in the benchmark methodology.	Not applicable
Date on which information has been last updated and reason for the update:	November 2022, Update

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For additional information, email indexhelp@bloomberg.net or press the <HELP> key twice on the Bloomberg Terminal*

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