

See the S&P 500 From a New Lens



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Know What you Own

- A granular look into the companies in the S&P 500 show the index is a collection of 262 business activities and over 2,500 individual product lines.
- 124 companies in the index report at least one business line with no attributable revenue. This can provide insights into a company's R&D efforts.
- By market cap weight, 62% of the S&P 500 has business lines in two or more sectors, a greater degree of diversification than is apparent from primary business classification alone.

Introduction

Our Know What You Own series focuses on helping investors understand the business risks embedded in commonly used benchmarks, including the quantification of themes like technology and real assets that cut across sectors. When investors evaluate benchmarks or managers, exposure data is often aggregated to simplify analysis and decision making. While this can be helpful, you risk losing nuances. Using the granularity provided by our Functional Information System (FIS[®]) industry classification system, we take a deep dive into the S&P 500 and identify some of the nuances embedded in the benchmark's holdings and share some interesting and fun facts that will shed new light on this well-known benchmark.

Defining Granularity

When discussing an index or a manager's portfolio, we often speak in terms of exposure to a specific primary sector, such as Healthcare or Financials. These primary

sectors, however, are just the top layer of a detailed taxonomy or tree structure. Exhibit 1 summarizes the structure embedded in FIS.

Users can drill down into as much or as little detail as desired. For example, making decisions on exposures or allocations based on the eight primary sectors may be too generic. Looking at a benchmark or portfolio using Level 2 Sub-Sector data (24 categories) or Level 3 Industry grouping (72 categories) may provide a more appropriate level of detail.

Exhibit 1. FIS Sector Taxonomy



Exhibit 2 takes each of the eight primary sectors within the S&P 500 (Level 1 above) and breaks them down all the way to the number of product lines (Level 6 above) in each sector. This provides insights into the breadth and depth of each sector and the

benchmark overall.

Exhibit 2. S&P 500 Sector Classification Detail Down to Product Line

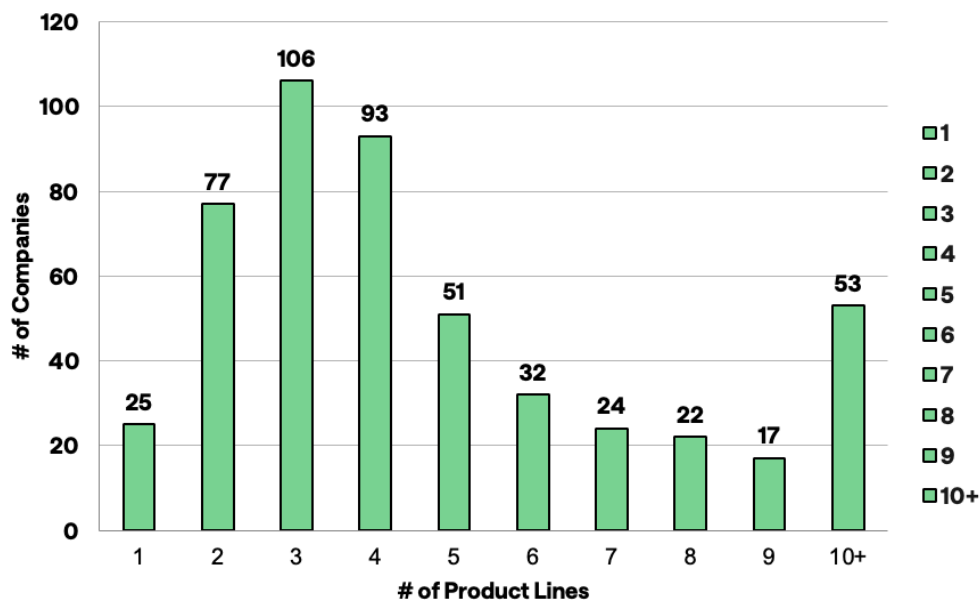
Primary Sector	# Companies	# Sub-Sectors	# Industries	# Sub-Industries	# Business Activities	# Product Lines
Industrials	98	4	10	29	58	623
Financials	78	3	9	19	34	303
Information	74	3	8	21	33	398
Healthcare	69	3	11	20	31	278
Energy	53	2	6	12	17	157
Info. Tools	50	3	8	30	31	362
Consumer	45	4	12	23	36	283
Food	33	2	6	17	22	136
Total	500	24	70	171	262	2540

While we think of the S&P 500 as a representation of 500 of the largest companies in the U.S. public equity market, we can also think of the benchmark as a massive conglomerate, a collection of 262 different business activities with over 2,500 product lines. While Industrials has the largest number of business activities (58) and product lines (623), Information Tools has the most sub-industries (30), highlighting the breadth of technology classifications within FIS. Food and Energy have the fewest categories across the board, highlighting a higher level of homogeneity when compared to the other primary sectors.

Product Lines

The S&P 500 has over 2,500 product lines, which means the average company in the index reports on five distinct product lines in their annual report. Exhibit 3 assesses the distribution of the number of product lines by company in the S&P 500.

Exhibit 3. S&P 500 Companies by Number of Product Lines



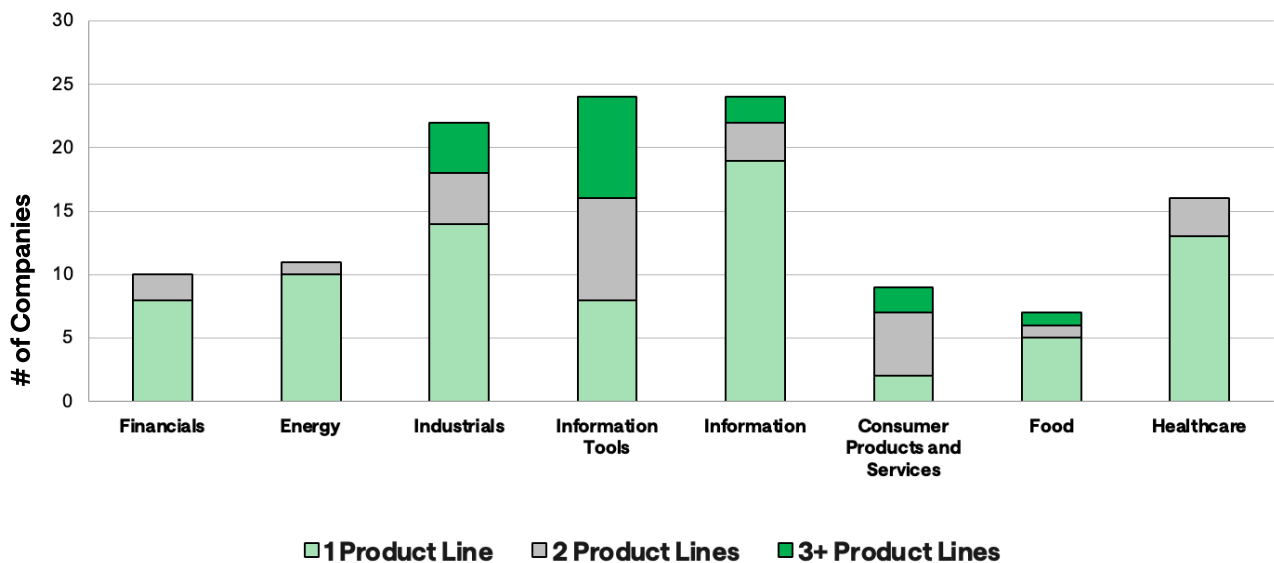
S&P 500 companies by number of product lines as of 9.30.2023. Source: Syntax, S&P Dow Jones Indices.

While most companies have a handful of product lines, roughly 10% of the index has companies with 10 or more product lines. Some fun facts about product lines include:

- 3M has 23 product lines.
- The newest product line is “Commercial Electric Truck Fleet Consulting”.
- The longest product line name is “Artificial Intelligence-Based Customer Experience and Servicing Software using Artificial Intelligence, Perpetual License”.

Interestingly, many companies in their financial statements also include product lines with no revenue attributable to them. Alphabet (Google) is a good example: they report nine product lines without attributable revenue, including autonomous driving (Waymo) and quantum computing. Exhibit 4 looks at the distribution of unattributable revenue product lines by sector. Not surprisingly, the tech-related sectors, Information Tools and Information, lead the way, followed by Industrials.

Exhibit 4. Distribution of Unattributable Revenue Product Lines by Primary Sector



S&P 500 companies by number of product lines with unattributable revenue as of 9.30.2023.
Source: Syntax, S&P Dow Jones Indices.

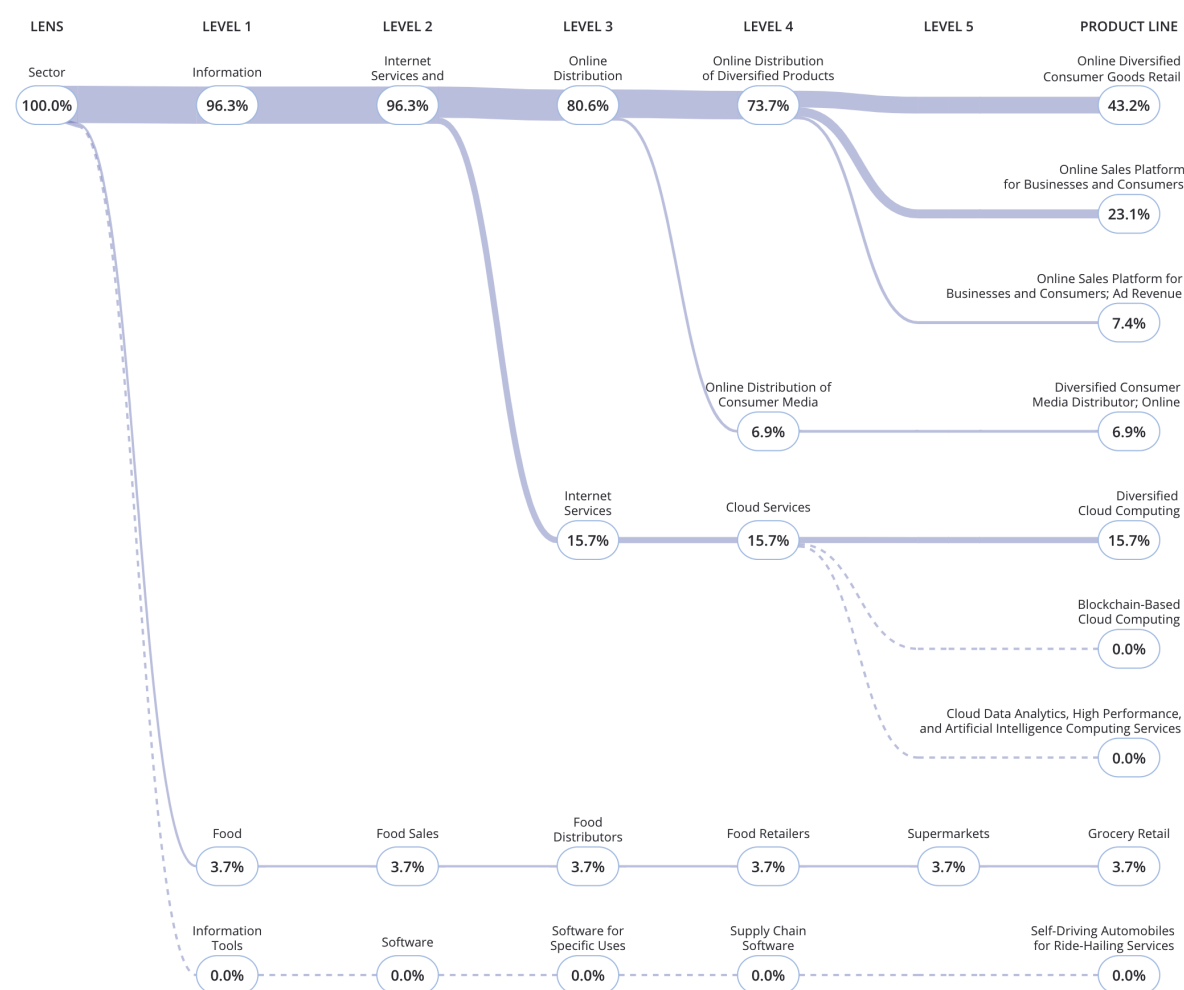
To further illustrate this point, the graphic in Exhibit 5 shows the business structure of Amazon, which includes three product lines with no attributable revenues: Blockchain Based Cloud Computing, Cloud Data Analytics / High Performance and AI Computing Services, and Self Driving Automobiles for Ride Hailing Services.

Across the S&P 500, we find:

- 124 companies report at least one business line with no attributable revenue.
- 42 companies report blockchain activities without attributable revenue.
- 17 companies report a product line involved with Artificial Intelligence with no revenue.

Regarding AI, it will be interesting to see how the reporting around AI changes next year given how it burst onto the scene in 2023. This unattributable revenue product line information is useful as it can provide insights on the R&D efforts of both companies and industries. Emerging businesses often first appear as secondary and tertiary exposures of larger companies, and these insights can be hidden when companies are analyzed only based on their primary sector.

Exhibit 5. Amazon's Product Lines



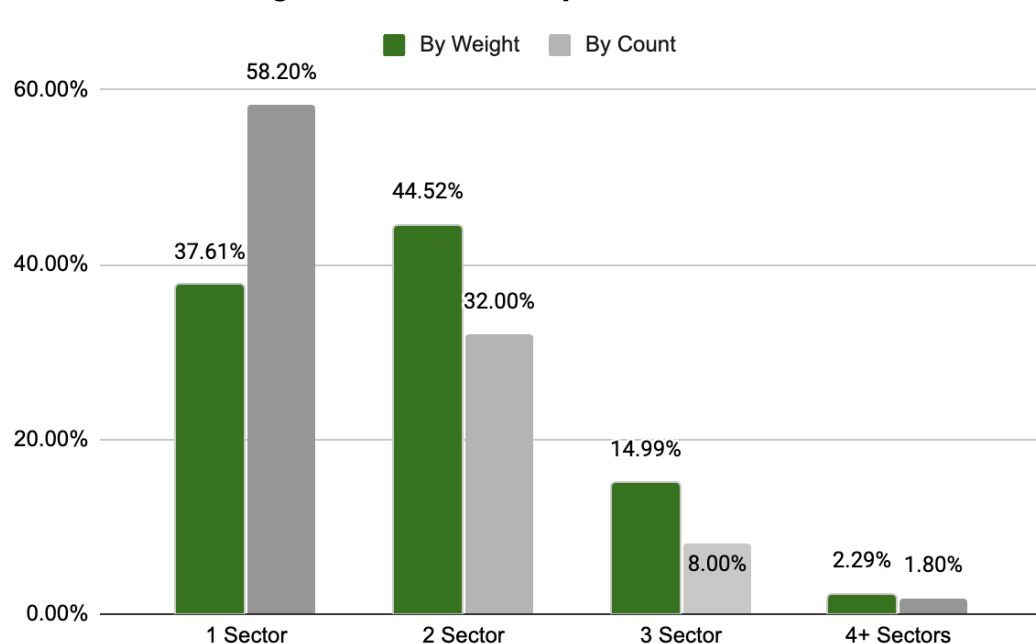
Product Lines for Amazon.com by the FIS Sector Taxonomy based on Amazon.com FY 2022 reporting. Dashed lines indicated product lines with non-attributable revenue. Source: Syntax.

Companies With Businesses in Multiple Sectors

Having identified that the majority of S&P 500 companies have multiple product lines, a logical next question is to look at how many companies are involved in one, two, or more sectors. Exhibit 6 identifies the distribution of S&P 500 companies by the number of different sectors they have businesses in, displaying the distribution by both weight and company count.

The results show that by weight, 38% of companies belong to a single sector, while most companies (62%) have businesses in multiple sectors, with two sectors being the most common (45%). 15% of companies have businesses in three sectors, and just 3% have exposure to four or more sectors. The results by count show 58% of companies have their businesses concentrated in one sector, with 42% in two or more sectors - that is, smaller companies are more likely to be focused.

Exhibit 6. Percentage of S&P 500 Companies with Businesses In One or More Sectors



S&P 500 companies by number of product lines in 1, 2, 3, or 4+ FIS sectors by weight and count, as of 9.30.2023. Source: Syntax, S&P Dow Jones Indices.

Disney is a good example of a company that falls into multiple sectors. Disney's primary sector classification is Information (74.5%) tied to its Media and Internet related businesses (e.g., TV networks, movies, streaming services). It also has exposure to the Financial sector (17.7%) driven by its real estate-based theme parks and hotel business, and exposure to the Food sector (7.8%) tied to its food concessions and restaurants at theme parks and resorts. In total, roughly 25% of Disney's business is outside of its primary Information sector.

Sometimes companies are difficult to put in a specific box. Exhibit 7 provides three examples of firms with large exposures outside of their primary sector classification.

- Snap On:** The company manufactures and markets tools, equipment, diagnostics, and repair information and systems. Its primary industry classification is in the Consumer sector tied to 37% of its revenue being associated with tools sold to consumers; however, it has 63% of its revenue tied to business lines in three other sectors (Industrials, Information Tools, and Financials).
- Costco:** The company generates half of its revenue from Food, its primary sector. Its next largest segment is Consumer related goods (28.8%), followed

by Energy (20.5%). Interestingly, classifying Costco by their primary business line would ignore their fossil fuel exposure, which may be a concern for some investors.

- **Agilent Technologies:** The company provides application focused solutions to the life sciences, diagnostics, and applied chemical markets worldwide. It has 59% of its revenue tied to healthcare, but also has 41% of its revenue split between the Energy and Industrials sectors.

Exhibit 7. Sample Companies With Large Non-Primary Sector Exposures

Company	Snap-On Inc.	Costco	Agilent Technologies
Primary Sector	Consumer	Food	Healthcare
Primary Sector Rev. %	37.3%	50.7%	59.2%
Non-Primary Sector Rev. %	62.7%	49.3%	40.8%
Financials	6.7%	-	-
Energy	-	20.5%	21.0%
Industrials	27.1%	-	19.8%
Info. Tools	28.9%	-	-
Information	-	-	-
Consumer	37.3%	28.8%	-
Food	-	50.7%	-
Healthcare	-	-	59.2%

Revenue % by sector for three example companies based on FY 2022 reporting. Source: Syntax.

Random and Not-So-Random Facts

One of the benefits of the FIS classification system is that individual company attributes are tagged so we can identify specific company exposures, and those exposures can then be aggregated for an index or any public equity portfolio. To give you a flavor, below are a handful of interesting attributes and the number of companies in the S&P 500 with the noted attribute:

- Contracts with the government representing more than 10% of revenue: 45

- Involved with uranium extraction and processing: 3
- Have a Software-as-a-Service (SaaS) product line: 58
- Are in the cruise line business: 3

The ability to screen on hundreds of different attributes provides not only the random facts above, but more importantly, can answer ad hoc queries quickly and accurately. Below we have identified the number of companies associated with relevant recent topics of interest:

- 22 companies have integrated circuits as their primary business.
- 7 firms have cybersecurity software revenue greater than 50% of total revenue.
- 68 companies in the S&P 500 have revenues aligned with UN Sustainable Development Goal 3: Good Health and Wellbeing.

Conclusion

Syntax's FIS industry classification system can uncover unique insights and fun facts on the S&P 500. From this new lens, we can consider the S&P 500 as a collection of 262 business activities and 2,500 product lines, each contributing unique business characteristics that combine to create the risk and return characteristics of the index as a whole. This new perspective paints a more nuanced picture of how one of the world's most important benchmarks works under the hood. Investors can use Syntax's Affinity tool to uncover more insights like this, for the S&P 500 or for any portfolio.

About Syntax

Syntax LLC is a financial data and technology company that codifies business models into a relational system we call Affinity Data™. Syntax operates through three segments: Affinity Data™, Syntax Direct™, and Syntax Indices™. Using its patented FIS® technology inspired by systems sciences, the Affinity Data™ segment offers the most comprehensive, granular, and accurate product line revenue data available on the market. The Syntax Direct™ segment then uses this abundance of data to facilitate the near instantaneous creation and ongoing management of direct indexing solutions and rules-based equity portfolios through a fully automated platform. The Syntax Indices™ segment offers customized and proprietary indices, including core global benchmarks and micro- and macro-thematic, smart beta, defined outcome, and target volatility indices. These indices are foundational for a range of financial products, such as ETFs, UITs, and structured products. Learn more at www.syntaxdata.com.

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