

White Papers



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The Effect of Selection Bias in the S&P 500 Index During the Recession of 2008-2009

Abstract

The composition of the S&P 500® Index is dynamic in the sense that any component company will have its index weight adjusted should its market capitalization significantly change and, in the extreme, may even be removed from the Index and replaced by another. During the period of severe economic stress in 2008-09, such rebalancing and substitution resulted in a large number of household-name firms being reduced in representation or removed altogether from the Index. The effect of this selection bias creates a more robust and more bullish Index and this, in turn, provides insight for the S&P 500 Index trader.

The S&P® 500 is a product of Standard & Poor's which is a division of The McGraw-Hill Companies. The Index includes 500 leading companies in leading industries of the U.S. economy weighted by market capitalization and covers approximately 75% of the U.S. equities market.

The Index is maintained by the S&P Index Committee, a team of Standard & Poor's economists and index analysts, who meet on a regular basis. They decide which companies to remove from the Index and which ones to add. The criteria for inclusion are as follows:

- **U.S. Company.** Determining factors include location of the company's assets and revenues, its corporate structure, its SEC filing type, and its exchange listings.
- **Market Capitalization.** Companies with market cap in excess of US\$ 4 billion. This minimum is reviewed from time to time to ensure consistency with market conditions.
- **Public Float.** There must be public float of at least 50%.
- **Financial Viability.** Companies should have four consecutive quarters of positive as-reported earnings, where as-reported earnings are defined as GAAP Net Income excluding discontinued operations and extraordinary items.
- **Adequate Liquidity and Reasonable Price.** The ratio of annual dollar value traded to float adjusted market capitalization for the company should be 1.0 or greater. Very low stock prices can affect a stock's liquidity.
- **Sector Representation.** Companies' industry classifications contribute to the maintenance of a sector balance that is in line with the sector composition of the universe of eligible companies within the defined market cap range.
- **Company Type.** All U.S. common equities listed on the NYSE (including NYSE Arca and NYSE Amex) and the NASDAQ stock market. REITs (excluding mortgage REITs) and business development companies (BDCs) are also eligible for inclusion. Closed end funds, ETF's, ADR's, ADS's and certain other types of securities are ineligible for inclusion.

Companies in the Index that substantially violate one or more of the criteria for Index inclusion or that are involved in merger, acquisition, or significant restructuring such that they no longer meet the inclusion criteria are removed from the Index.

Substitution Changes to the S&P 500 Index

Changes to the component companies of the S&P 500 are made as needed, with no annual or semi-annual reconstitution. These changes are announced on the Standard & Poor's web site at www.indices.standardandpoors.com and have the appearance as below:

The screenshot shows the Standard & Poor's website interface. The main navigation bar includes 'United States | Change', 'Register | Log In', and a search bar. Below this, there are four main menu items: 'MY HOMEPAGE', 'PRODUCTS & SERVICES', 'RESEARCH & KNOWLEDGE', and 'ABOUT S&P'. The 'Indices' section is highlighted, and the 'S&P 500' page is displayed. The page has tabs for 'Data', 'Overview', 'Index News', 'Index Changes', and 'Research'. The 'Index News' tab is selected, showing a list of news items. Two red arrows point to the first and third news items in the list.

S&P 500				
Data	Overview	Index News	Index Changes	Research
<ul style="list-style-type: none"> Index News Archive 				
1-10 of 686				
View 10 Per page				
Title	Date			
Standard & Poor's Announces Changes to U.S. Indices	2009-02-24 17:15:00			
> Weatherford International Ltd. (WFT) in the S&P 500	2009-02-18 14:30:00			
Standard & Poor's Announces Changes to U.S. Indices	2009-02-13 17:15:00			
S&P 500 Dividends Projected to Decline 13.3% in 2009; Worst Annual Decline Since World War II	2009-02-06 09:45:00			

Expanding the announcement hyperlink provides specific information on the company or companies being removed from the Index along with justification and their corresponding replacements. Below is a copy of a substitution to the S&P 500 Index effective December 31, 2008.

S&P 500 INDEX – December 31, 2008			
	COMPANY	GICS ECONOMIC SECTOR	GICS SUB-INDUSTRY
ADDED	SCANA	Utilities	Multi-Utilities
	Owens-Illinois	Materials	Metal & Glass Containers
	FLIR Systems	Information Technology	Electronic Equipment & Instruments
DELETED	Merrill Lynch	Financials	Investment Banking & Brokerage
	Wachovia	Financials	Diversified Banks
	National City	Financials	Regional Banks

Index Substitution During the Recession of 2008-2009

Substitutions to the S&P 500 Index occur constantly, yet during the recession of 2008-2009, an inordinately high number of substitutions occurred as corporate market values suffered, involving many large and established firms. Below is a list of some well-known companies that were removed from the Index in the last half of 2008 and early 2009.

Anheuser-Busch	Unisys Corp.
Liz Claiborne	Wm. Wrigley Jr. Company
Merrill Lynch	Wachovia
National City	Wendy's International Inc.
Washington Mutual Inc.	Lehman Brothers Holdings Inc.
Federal Home Loan Mortgage Corp.	OfficeMax Inc.
Federal National Mortgage Association	Circuit City Stores Inc.
Countrywide Financial Corp.	The Bear Stearns Companies Inc.
Commerce Bancorp	

To round off this list is General Motors Corp. which was removed from the S&P 500 Index after the close of trading on Tuesday, June 2, 2009 coincidental with the company filing for Chapter 11 bankruptcy protection.

Rebalancing the Index

Companies in the S&P 500 Index are weighted according to their market capitalizations and this calculation is performed regularly every 3 months in March, June, September and December. Companies whose market value falls more so than the others are rebalanced to have a lower weight in the index, while relatively stronger companies have their weights increased. This can also lead to a change in sector representation to better reflect the current market climate.

What's the Effect?

Substitutions and rebalancing create a de facto selection bias in the Index which, in turn, creates a stronger, more bullish Index. While this is always going on, the number of such adjustments rose significantly during the 2008-09 recession producing a notable Index effect. Weaker companies are in general replaced by stronger ones. Stronger sectors are represented more than weaker ones.

As the economy begins to recover from the recession, the Index would be expected to show significant strength, even to overstate the comprehensive state of financial health of the corporate sector in general and overall economy, as it has shed a significant number of its weak component firms and replaced them with relatively strong firms, firms that were strong enough to tolerate the recession.

Implications for Traders

As a result of selection bias, the S&P 500 Index may recover sooner and the recovery, when it happens, could be quicker and more aggressive than one might otherwise expect based on the progress of economic activity as gauged by standard indicators. The S&P 500 or E-mini® trader should look to establish outright long positions in the Index sooner rather than later and then should continue to hold or even to add to such positions as the Index moves off its low. Performance of the Index will likely lead the recovery of the general economy meaning that if you wait for confirming economic statistics, it may be too late – a good portion of the Index rally may have already passed.

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