Payden&Rygel

POINT of VIEW

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Our Perspective on Issues Affecting Global Financial Markets

INDEXING THE WORLD

Economist Friedrich Hayek mused, "The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design." We might draw the same lesson from a market index. From the dusty desks of newspaper men and academics to center stage in the global financial markets, market indices have become essential - if controversial - features of our modern investment landscape.

Indexing the World

What do Play-Doh and the Dow Jones Industrial Average have in common? Both were inventions whose original purpose had little to do with their most famous applications. In the case of Play-Doh, the ubiquitous children's play putty, Cleo McVicker originally thought he'd stumbled upon an ingenious wallpaper cleaner. Only after a family member suggested that the product might appeal to young children did Mr. McVicker wise up, "shape" his vision, and begin to sell his now globally famous play product.

For his part, Charles Dow wasn't dreaming up a benchmark for billions of dollars worth of institutional assets in 1896 when he created the Dow Jones Industrial Average. Instead, the stock index was a journalistic novelty meant to feed his ever hungry financial news media consumer base. In his 7 October edition of the Customer's Afternoon Letter, Dow computed the average share price of twelve companies, only one of which we know today: General Electric.

The use of today's indices, whether for stocks, bonds, volatility, credit default swaps, or commodities, is a far cry from the basic purpose Dow envisioned for his average. In what follows, we explore the rise of the market index. From the early days of hand calculations on the stained marble floor of the New York Stock Exchange, through the brilliant back-room tinkering of an engineer at 40 Wall Street, all the way to the grizzled but still-sharp neurons of John Bogle: information technology and the evolution of financial markets have waltzed through the decades, each benefitting and transforming the other. Like any good waltz, it is difficult to recognize who is leading and who is following.

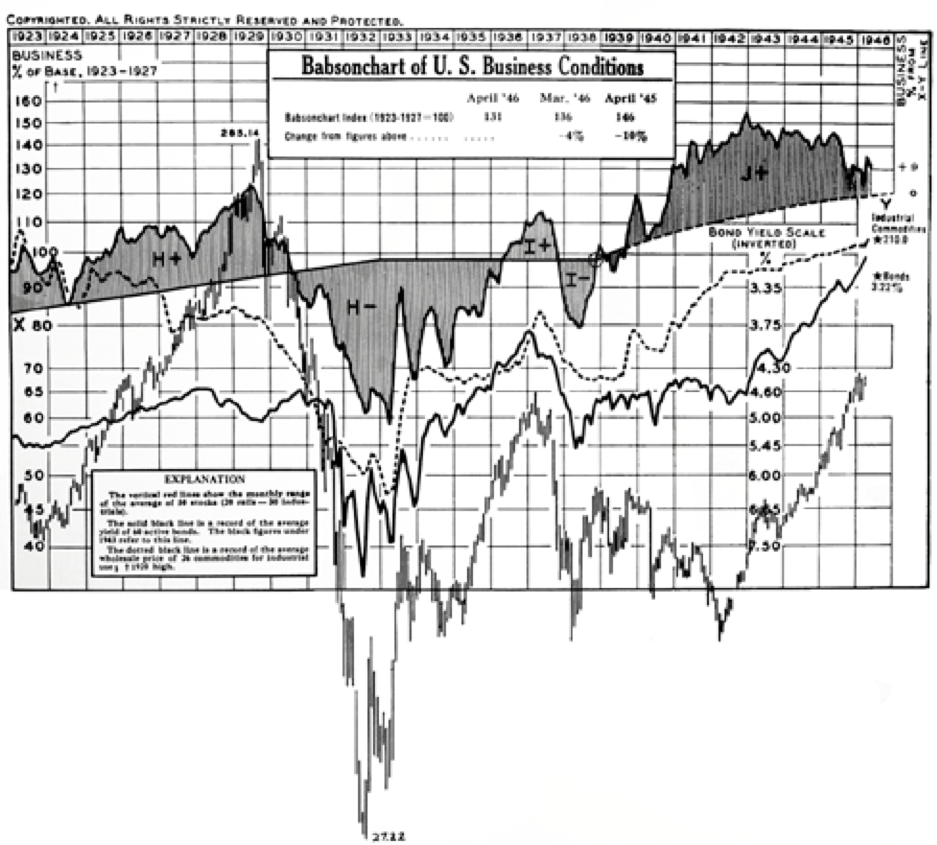
THE EARLY DAYS OF INDICES

Indices were born as the brainchild of information peddlers, not as the chief product of a financial institution. One of the most recognizable indices through the 20th century, the Dow Jones Industrial Average, was Charles Dow's best attempt to answer the perennial question, "How did the market do today?" His success brought fame and fortune. News outlets could scarcely hope for more than to be nearly synonymous with the ever exciting US stock market.

> **«JACK BOGLE OF VANGUARD FAME MAY HAVE MADE INDEXING FAMOUS, BUT HE DIDN'T INVENT IT. THE EARLIEST HISTORY OF SO-CALLED PASSIVE INVESTING ACTUALLY PLAYED OUT IN THE MIND OF ANOTHER ENGINEER, JOHN ANDREW "MAC" MCQUOWN»**

After Dow's untimely death in 1902, the calculation business lived on in the person of Arthur "Pop" Harris. According to Dow Jones lore, until 1946, "Pop calculated the Dow Jones average every hour on the hour for the Dow Jones News Service. On busy trading days, he sometimes bloodied his hands pulling out the ticker tape. Through all those years, the financial world would hold its breath for seven minutes after the New York Stock Exchange's closing bell, waiting for Pop, who was a small, skinny man, to finish his official calculations on a piece of newsprint."[1]

fig.1 BABSON'S ALL-INCLUSIVE ECONOMIC INDEX: WHO CARES IF IT'S RIGHT! IT LOOKED IMPRESSIVE



Source: Roger W. Babson Virtual Museum, Babson College

And it wasn't just the stock market indices which carried the imagination of market participants. Roger Babson, founder of the entrepreneurially-focused Babson College, made a fortune creating an economic index called the Babsonchart, or Compositplot (see figure 1). Based (very) loosely on Newton's third law of action and reaction, the chart displayed everything from stock prices to railroad haulings in one place.

The scientific veil apparently was enough to seduce clients into buying up Babson's' graphic gumbo. By 1920, the "Babson Statistical Organization had about 12,000 subscribers, bringing in revenue of about $1.35 million."[2] In 2015 dollars, Babson's annual haul would be more than $16 million in revenue, from a newsletter service alone!

So the newspaper and newsletter crowd invented and maintained early versions of economic and financial market indices. But, for the most part, these were self-contained entities, meant to inform or entice readers to subscribe. In the next step of the evolution of the market index, the advent of modern computing wrought special and wide-reaching changes on the business of market watching.

COMPUTING THE UNIVERSE

Where indices began as a moneymaking proposition for journalists, the introduction of computers into the world of finance caused a shift in the locus of indexing power. Especially in fixed income, computers made it possible to calculate and track more indices than ever and to sell or license such indices across the financial world. The once unassuming market trackers transformed into essential infrastructure.

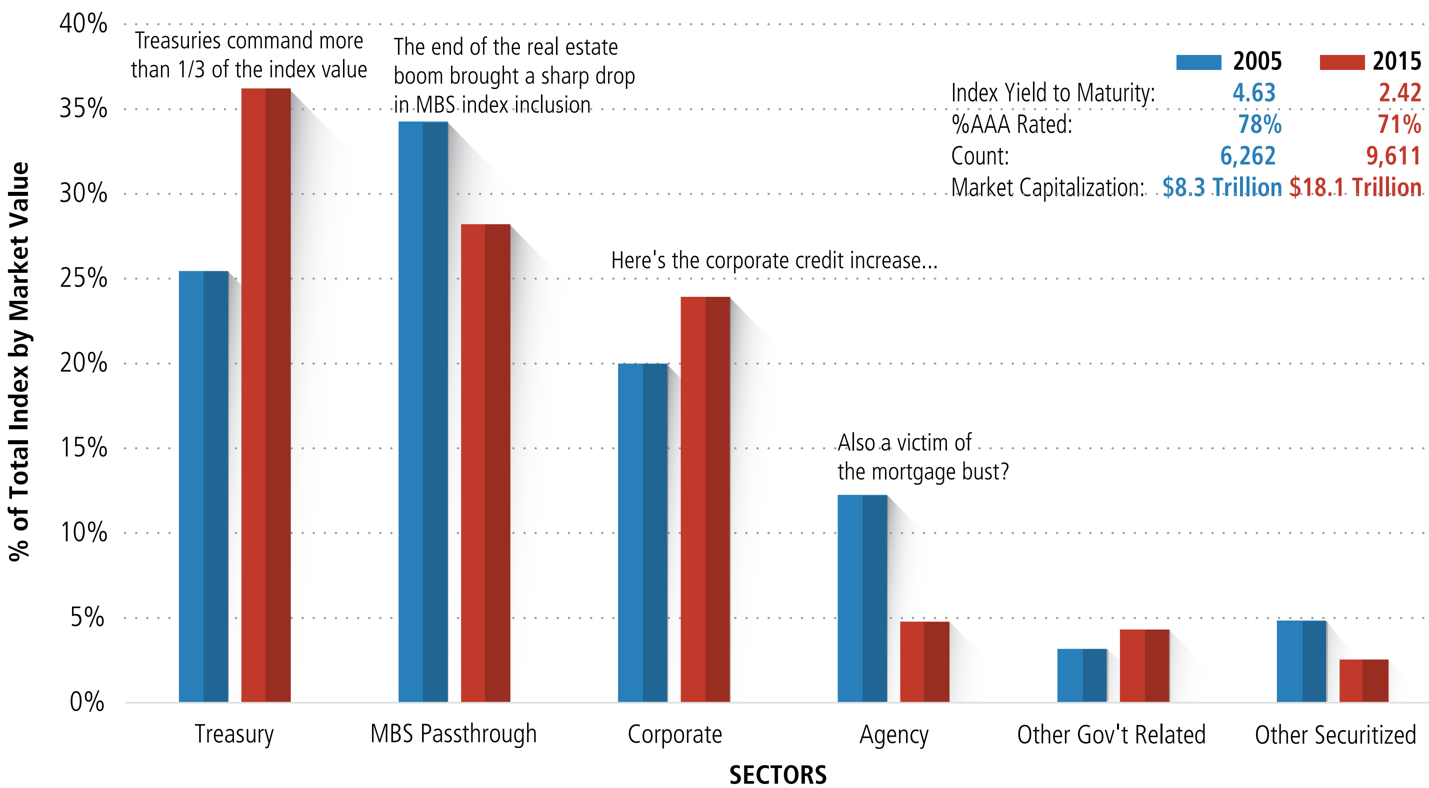
Perhaps the most notable progeny of indices and computers were index funds. Jack Bogle of Vanguard fame may have made indexing famous, but he didn't invent it. The earliest history of so-called passive investing actually played out in the mind of another engineer, John Andrew "Mac" McQuown. McQuown (employed and working on a math PhD) coordinated a group of professors at MIT and the University of Chicago who were testing hypotheses about the behavior of equity prices over time.[3] His ingenious work and prodigious work ethic would soon be in demand in finer environs.

These researchers were intent on discovering whether or not active investment managers could consistently and reliably outperform the market. It was out of this group–Nobel Prize winners Eugene Fama and Harry Markowitz among them–that the famous "efficient market hypothesis" would eventually emerge.

THE BIRTH OF THE INDEX FUND

As a result of his study, the former Navy man Mac McQuown went to work inventing a way to passively track common stocks "on the IBM 7090 in the service center in the basement of the Time-Life Building for $300 a weekend. The program took so long to run, and produced

fig.2 REBALANCING? CHANGES IN THE COMPOSITION OF THE US BARCLAYS BOND AGGREGATE



Source: Barclays

so many reams of uninterpretable data, that McQuown often crawled into his sleeping bag on the floor and slept while the program was running."

From the scuffed linoleum floors of the Time-Life Building, McQuown soon found himself in San Francisco, running Wells Fargo's Management Sciences division. In those primitive days, Wells Fargo lacked the computing power necessary to perform McQuown's index fund related analysis. Even after renting computing time from Standard Oil (who had a larger computer), McQuown's project needed still more binary brawn: only the University of California at Los Angeles had sufficient power to host and search McQuown's database.

«INDEED, WORKING ON THE BACK OF MASSIVE COMPUTING POWER, THE BARCLAYS GLOBAL AGGREGATE INDEX NOW INCLUDES 17,000 ISSUERS (AND EVEN MORE CUSIPS) WORTH A STAGGERING TOTAL OF $43.3 TRILLION»

Unbeknownst to the researchers, around the same time, the Samsonite Luggage corporate pension fund was getting antsy about having such a disjointed stock portfolio. In what can only be described as cosmic luck, just as the Wells Fargo Management Sciences group had worked through the gnarliest of the technical problems in tracking the equity market, Samsonite approached the bank and "asked if [Wells Fargo] could design a diversified portfolio that spanned the market." And so was born the first equity market index portfolio.

Among the other pioneers of computer indexing were a pair of young investment bankers employed at Kuhn Loeb & Co. These two were furiously developing a way to track the bond market. In a Wall Street Journal profile, Art Lipson reflected on his early work, "develop[ing] a database-management program to keep information on …[a list of] 254 government bonds and 3,355 corporate bonds–which allowed for calculations of a total return." Although it may be seemingly pedestrian in today's world, the $221 billion total return bond index that Mr. Lipson calculated would ultimately become what we know now as the Barclays US Aggregate Bond Index, the S&P 500 equivalent for bond investors.

THE FUTURE IS NOW

Where once Wells Fargo executives had to travel to Los Angeles to find sufficient computing power to run their indexing operation, today the integration of electronic information and finance is nearly pure. At the center of the swirling world of price quotes and trading remain the once innocent indices. Except that today, they are big business.

Indeed, working on the back of massive computing power, the Barclays Global Aggregate Index now includes 17,000 issuers (and even more CUSIPs) worth a staggering total of $43.3 trillion. Data from investment bank Barclays shows that more than $4 trillion worth of hard-won investment funds are benchmarked against their US Aggregate Index (see figure 2) alone.

In the equity markets, the growth of indices and strategies built off of them is also astounding. Mutual funds rely on indices as a raw material for their financial products. At the start of 1985, there were only three index funds available to investors who wished to track the performance of the S&P 500. Now, "funds indexed to the S&P 500 hold 33 percent of index mutual fund assets," roughly some $700 billion. In total, passively managed equity mutual funds account for 20% of all equity mutual fund assets.

Who calculates all of these? Excluding the banks, three companies dominate the market. The indices of S&P, Dow Jones, FTSE Russell and MSCI are the benchmark bosses for over $9.4 trillion worth of investor assets. The S&P 500 alone has in excess of $7.5 trillion benchmarked to it. But it takes work. Reporting from the Financial Times suggests that "S&P Dow Jones, the biggest indexing company, alone calculates more than 1 [million] indices each day." When asked why the company calculates so many indices, "Alex Matturri, chief executive of S&P Dow Jones Indices, [said]…'Because there's a demand for that.'"

INDEXING THE WORLD

Economist Friedrich Hayek mused, "The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design." We draw the same lesson from securities indices.

From the dusty desks of newspaper men and academics, to center stage in the global financial markets, indices have become essential creatures of our modern investment landscape. And recent trends, especially with regard to passive investment mandates, do not indicate that the future will be much different. As the demand for evermore nuanced investment strategy grows, so too will the number of indices.

SOURCES

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4 Ibid

5 Ibid

6 Cui, Carolyn. "Barclays Agg Had Modest Origin." Wall Street Journal, April 2, 2013. Accessed September 9, 2015

7 Barclays' POINT risk and index program.

8 Gruber, M. (1996). Another Puzzle: The Growth in Actively Managed Mutual Funds. The Journal of Finance, 51 (3)

9 Investment Company Institute

10 Authers, John. "Investing: The index factor." Financial Times, August 16, 2015. Accessed August 16, 2015.