stock indexes

DanielH

December 29, 2018

Standard & Poor's 500

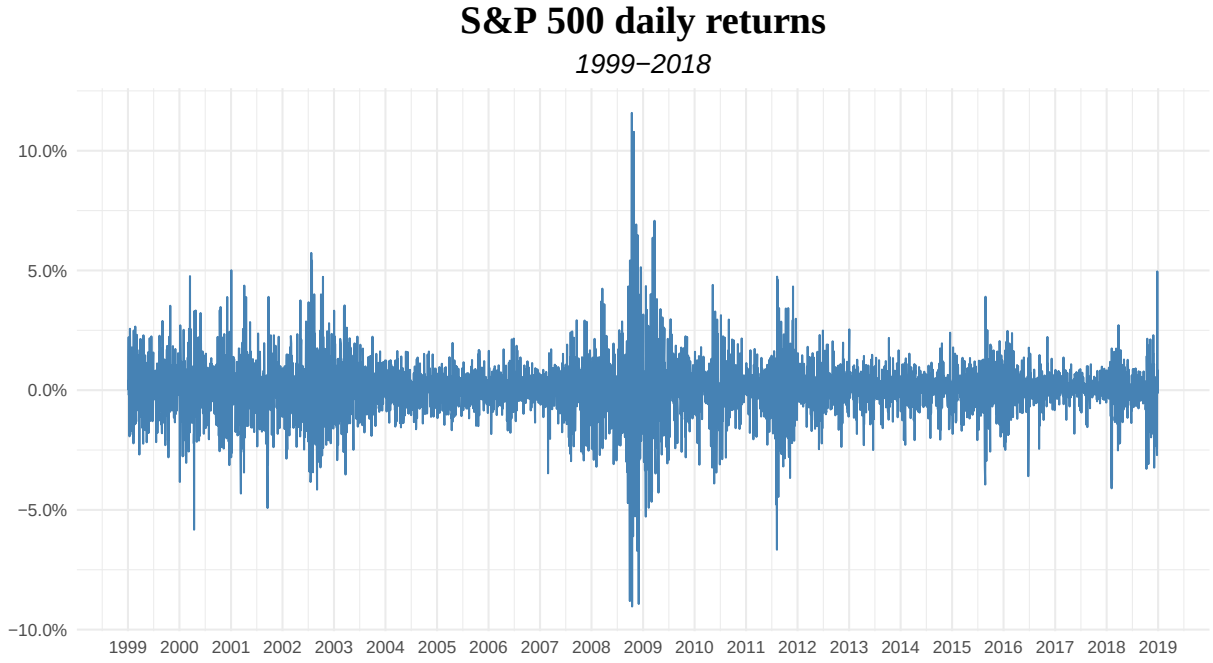
Standard & Poor's 500 Index (known commonly as the S&P 500) is a larger and more diverse index than the DJIA. Made up of 500 of the most widely traded stocks in the U.S., it represents about 80% of the total value of U.S. stock markets.

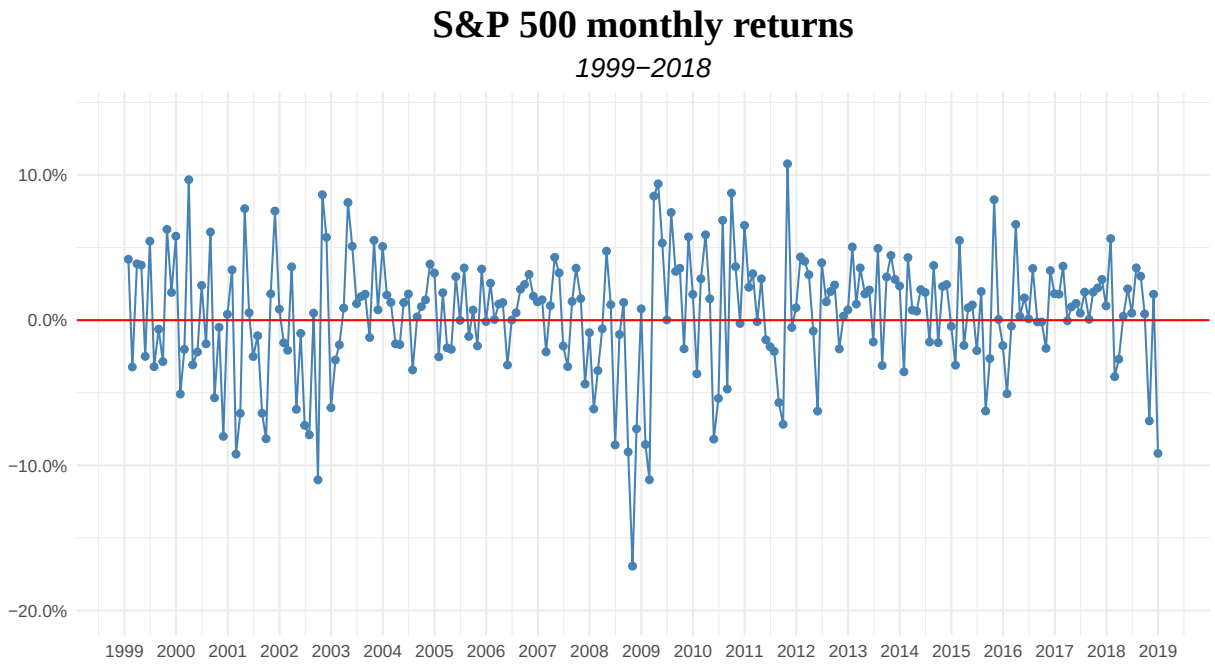
> In general, the S&P 500 index gives a good indication of movement in the U.S. marketplace as a whole.

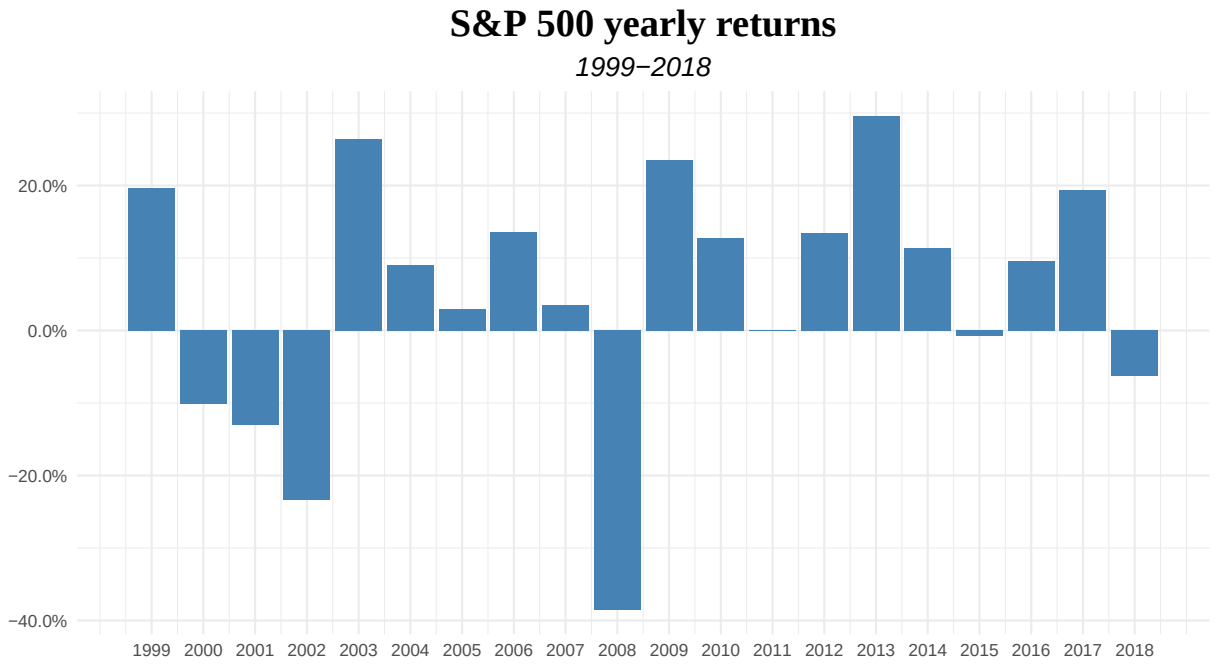
Because **the S&P 500 index is** market weighted (also referred to as **capitalization weighted**), every stock in the index is represented in proportion to its total market capitalization. In other words, if the total market value of all 500 companies in the S&P 500 drops by 10%, the value of the index also drops by 10%.

A 10% movement in all stocks in the DJIA, by contrast, would not necessarily cause a 10% change in the index. Many people consider the market weighting used in the S&P 500 to be a better measure of the market's movement because two portfolios can be more easily compared when changes are measured in percentages rather than dollar amounts.

> The S&P 500 index includes companies in a variety of sectors, including energy, industrials, information technology, healthcare, financials and consumer staples.







NASDAQ Composite

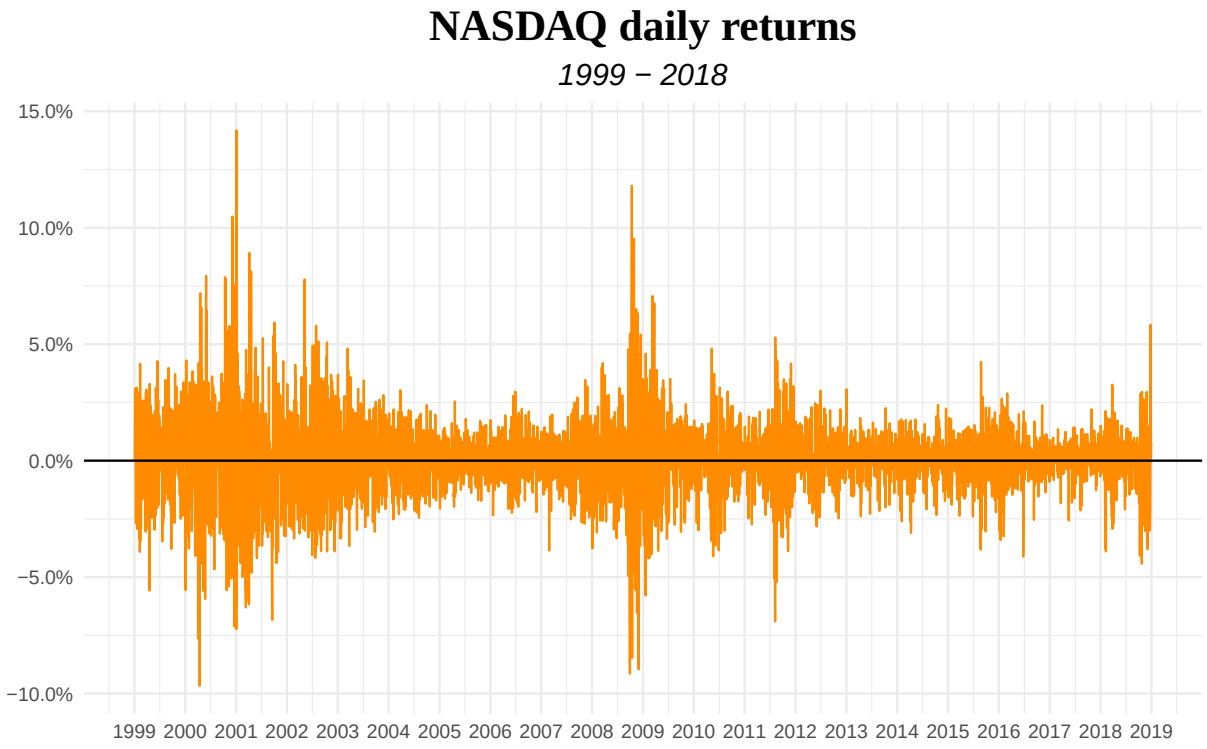
Most investors know that the Nasdaq is the exchange on which technology stocks are traded.

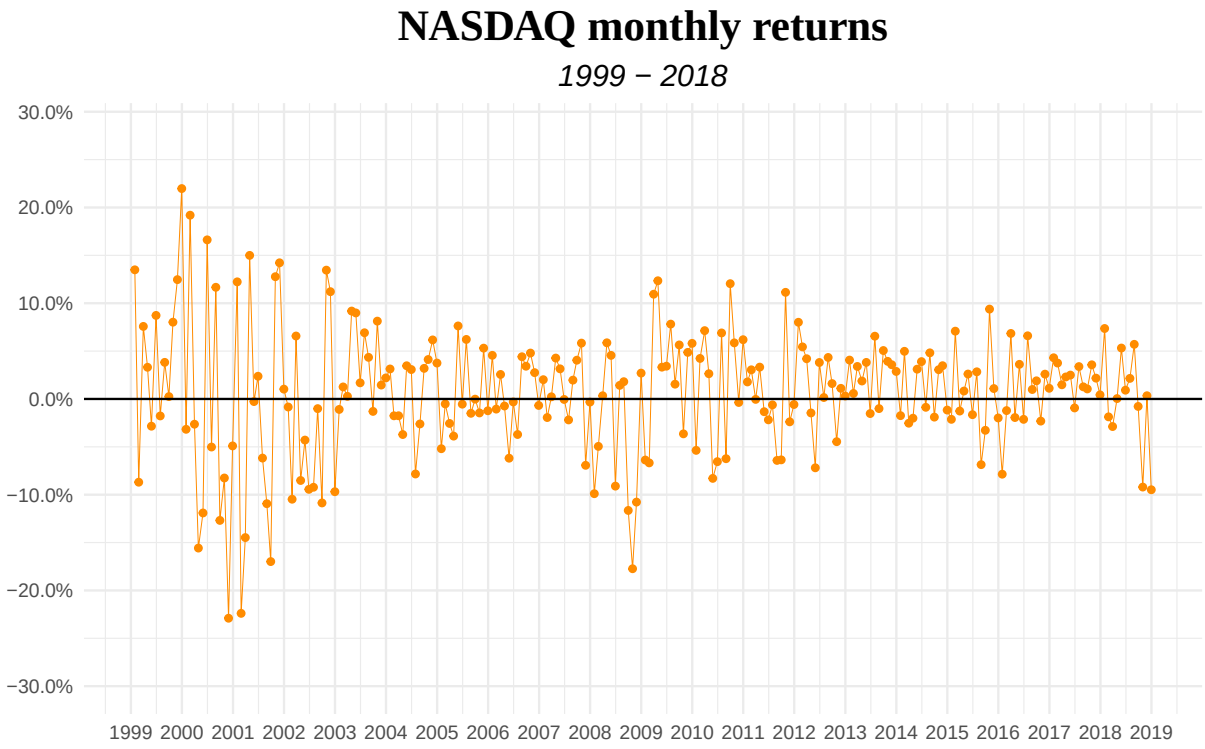
> The Nasdaq Composite Index is a market-capitalization-weighted index of all stocks traded on the Nasdaq stock exchange.

This index includes some companies that are not based in the U.S.

Although this index is known for its large portion of technology stocks, the Nasdaq Composite also includes stocks from financial, industrial, insurance and transportation industries, among others.

The Nasdaq Composite includes large and small firms but, unlike the Dow and the S&P 500, it also includes many speculative companies with small market capitalizations. Consequently, its movement generally indicates the performance of the technology industry as well as investors' attitudes toward more speculative stocks.




NASDAQ monthly returns
1999 − 2018
30.0%
20.0%
10.0%
0.0%
−10.0%
−20.0%
−30.0%
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019


NASDAQ yearly returns
1999 − 2018
100%
50%
0%
−50%
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

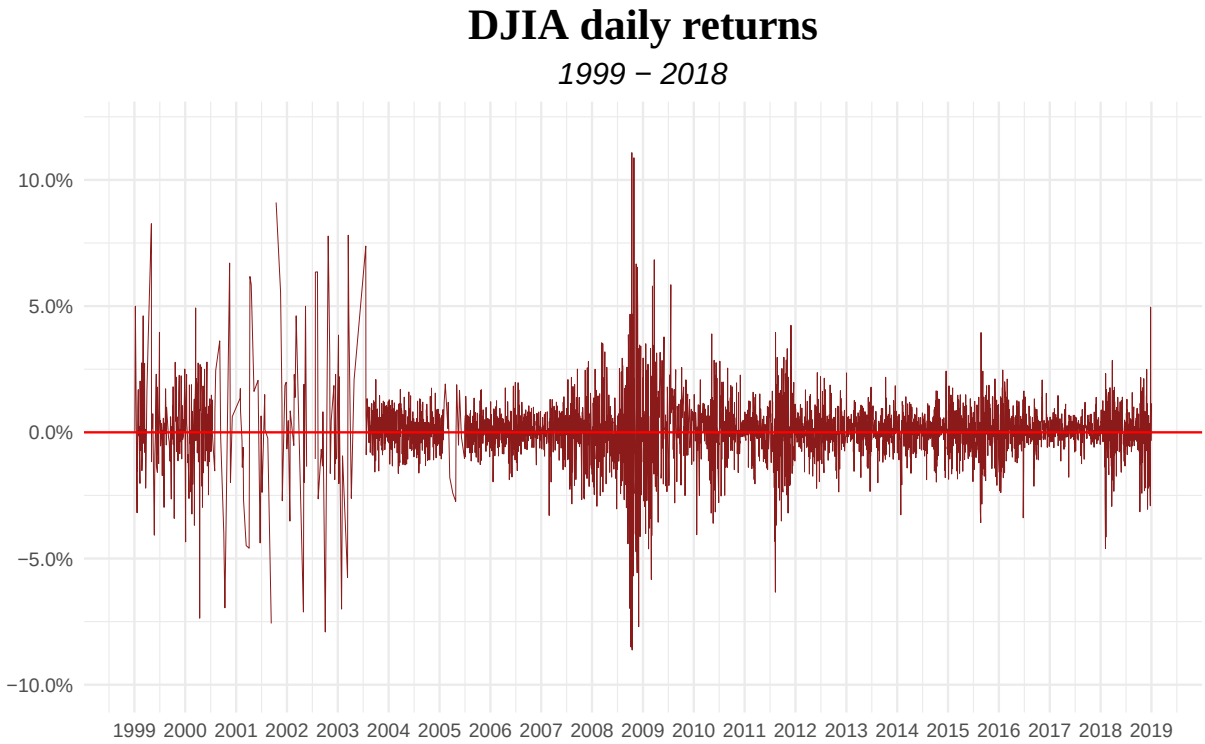
Dow Jones Industrial Average

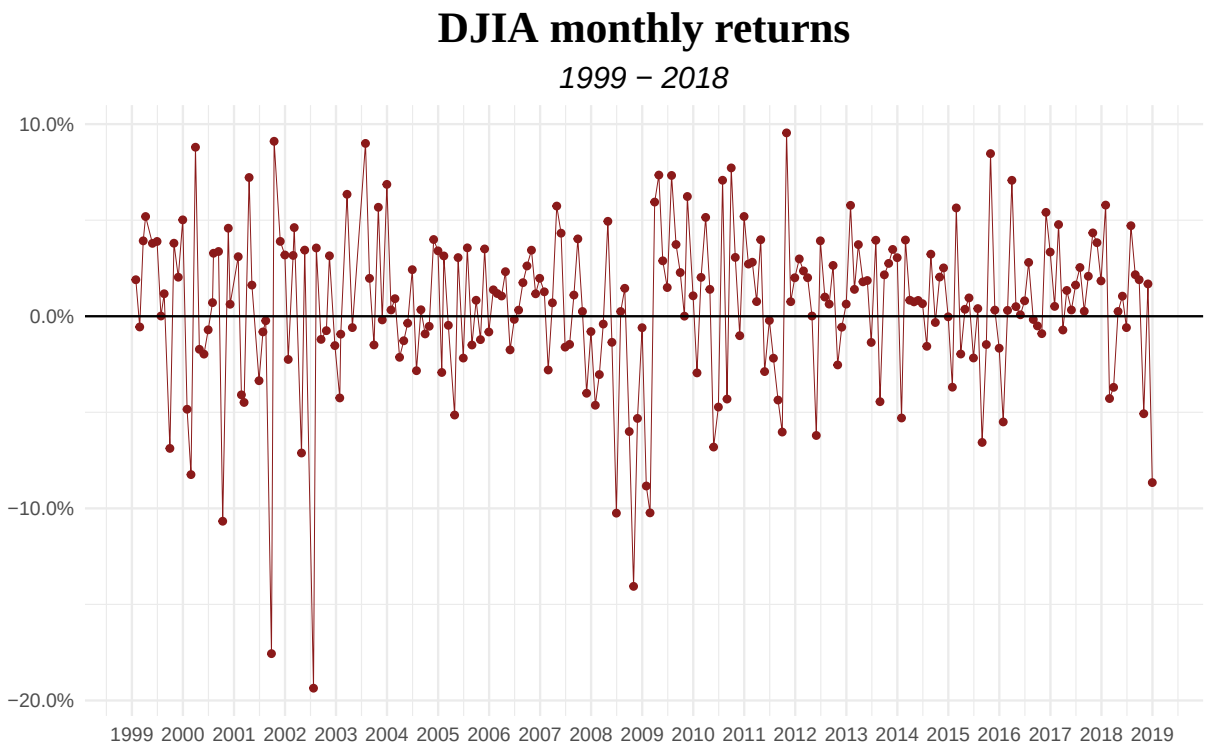
> The Dow Jones Industrial Average (*DJIA*) is one of the oldest, most well-known and most frequently used indices in the world. It includes the stocks of 30 of the largest and most influential companies in the United States.

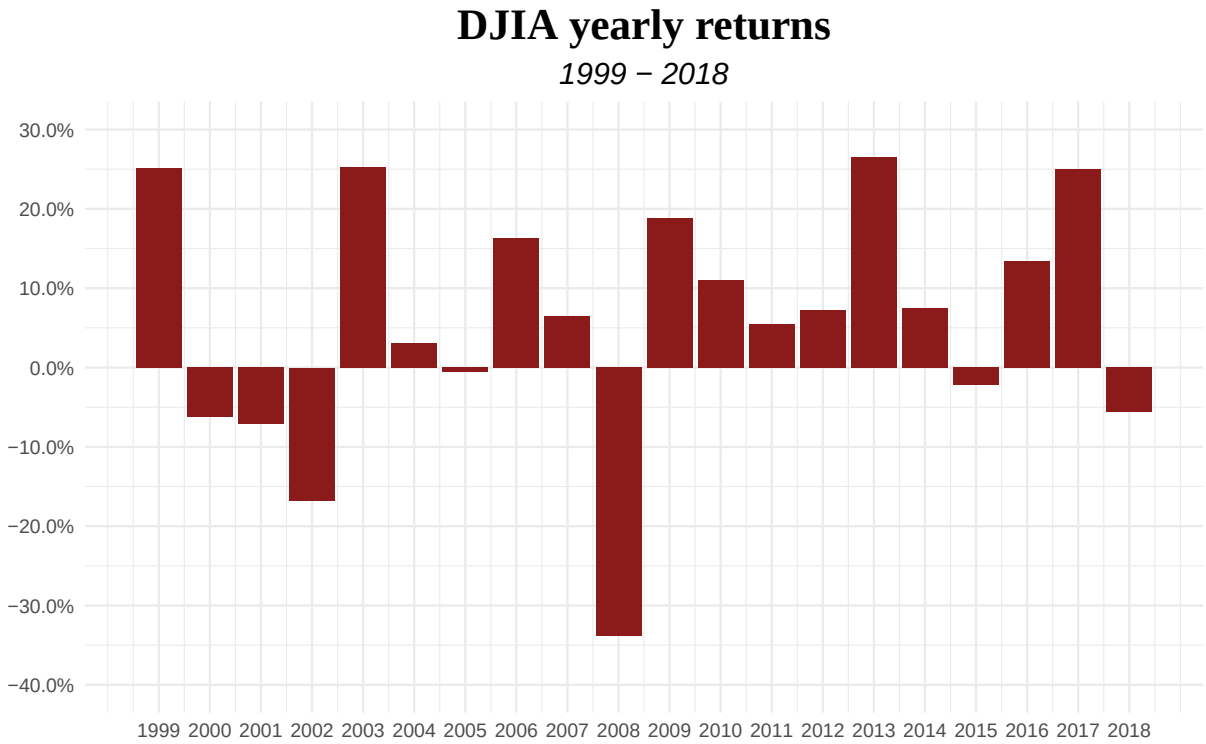
The DJIA is what's known as a price-weighted index. It was originally computed by adding up the per-share price of the stocks of each company in the index and dividing this sum by the number of companies—that's why it's called an average. Unfortunately, it is no longer this simple to calculate. Over the years, stock splits, spin-offs, and other events have resulted in changes in the divisor, making it a very small number (less than 0.2).

The DJIA represents about a quarter of the value of the entire U.S. stock market, but a percent change in the Dow should not be interpreted as a definite indication that the entire market has dropped by the same percent. This is because of the Dow's price-weighted function. The basic problem is that a $1 change in the price of a $120 stock in the index will have a greater effect on the DJIA than a $1 change in the price of a $20 stock, even though the higher-priced stock may have changed by only 0.8% and the other by 5%.

A change in the Dow represents changes in investors' expectations of the earnings and risks of the large companies included in the average. Because the general attitude toward large-cap stocks often differs from the attitude toward small-cap stocks, international stocks or technology stocks, the Dow should not be used to represent sentiment in other areas of the marketplace. On the other hand, because the Dow is made up of some of the most well-known companies in the U.S., large swings in this index generally correspond to the movement of the entire market, although not necessarily on the same scale.




DJIA monthly returns
1999 − 2018
10.0%
0.0%
−10.0%
−20.0%
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

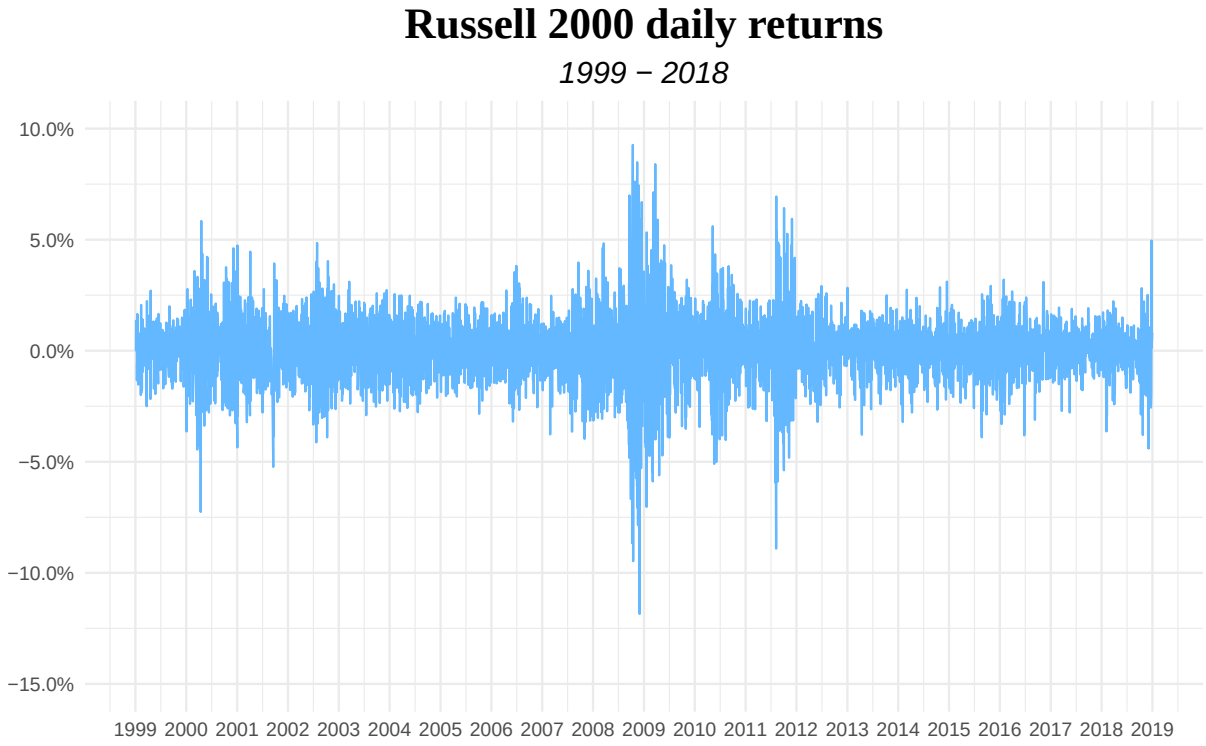

DJIA yearly returns
1999 − 2018
30.0%
20.0%
10.0%
0.0%
−10.0%
−20.0%
−30.0%
−40.0%
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

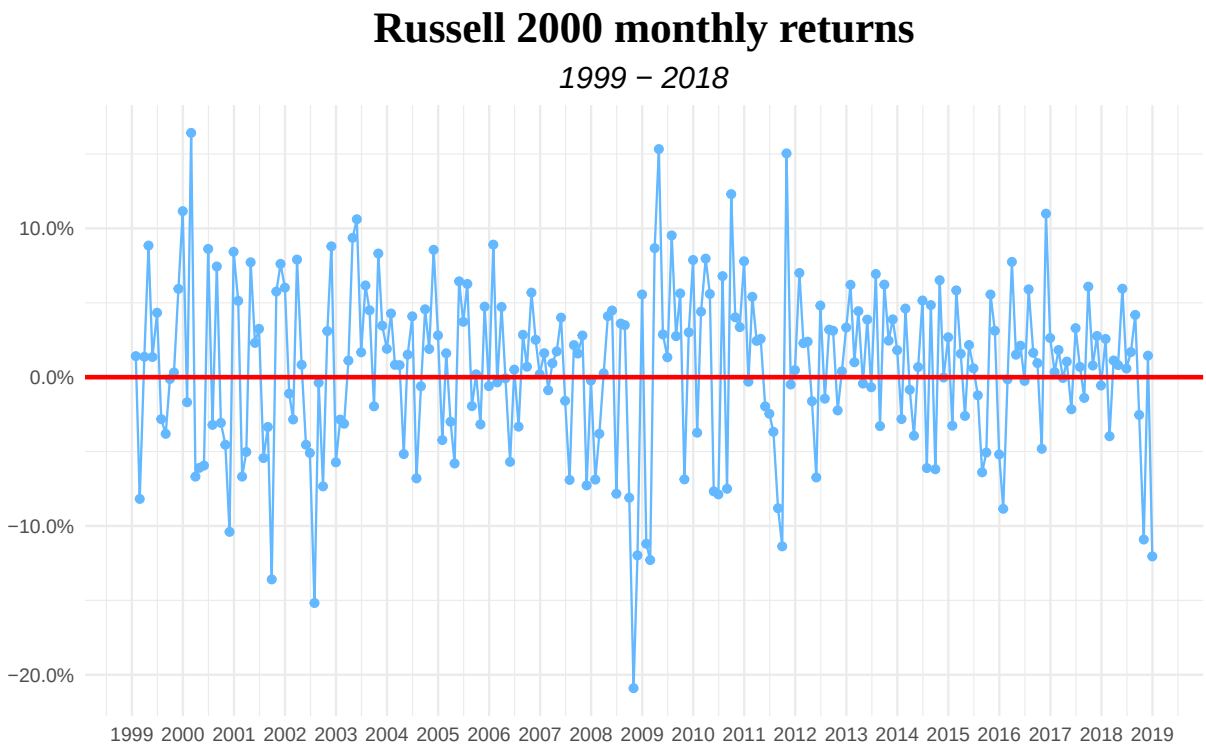
Russell 2000

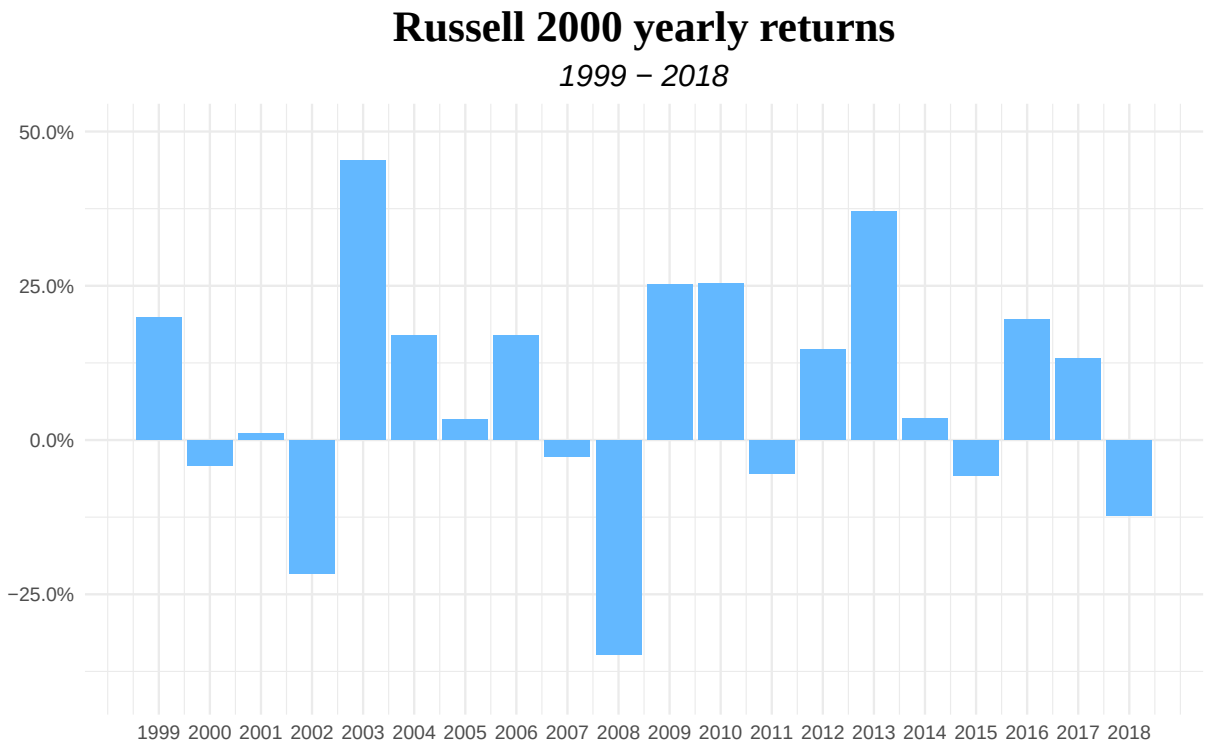
The Russell 2000 Index is a small-cap stock market index of the bottom 2,000 stocks in the Russell 3000 Index. The index is maintained by FTSE Russell, a subsidiary of the London Stock Exchange Group

> The Russell 2000 is by far the most common benchmark for mutual funds that identify themselves as "small-cap"

while the S&P 500 index is used primarily for large capitalization stocks. It is the most widely quoted measure of the overall performance of the small-cap to mid-cap company shares.

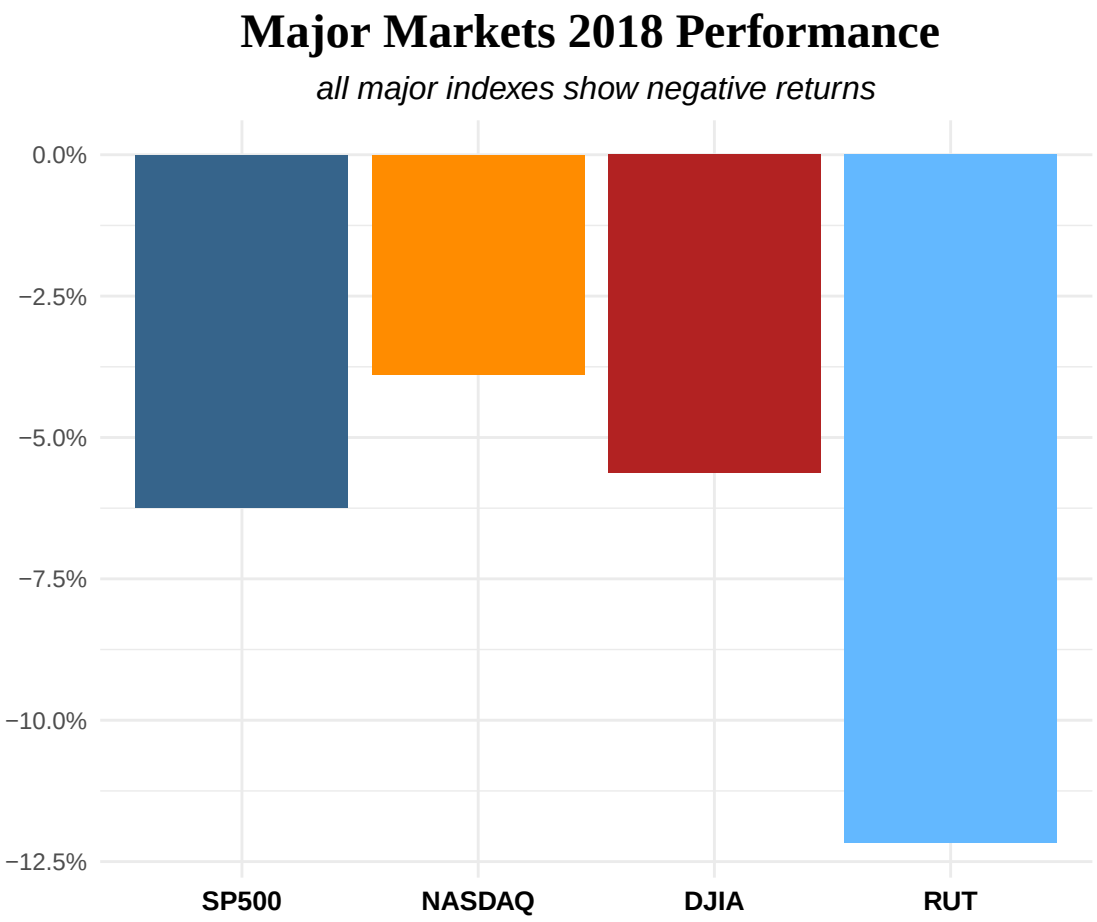






total returns 2018

Here we want to look at the performance of our four indexes for the year 2018



As we can see in 2018 all four indexes had a negative return. The biggest drop, -12% was for the RUSSELL 2000 index. The S&P 500 lost 6.2%, the DJIA 5.63%. Interestingly enough, the NASDAQ, supposedly a pretty volatile market lost less than any other index.

total returns 1999-2018

Next, we want to look at returns for the last 20 years for all four markets we're considering. This can be useful to get an intuitive idea of the range of variations, of how often we have bearish years vs bullish ones and so on

Looking at the table we can see that the years between 1999 and 2003 show a very high volatility with huge gains and lossess. We also notice the great recession hitting in year 2008. Finally, last year, 2018, all indexes were negative

summary statistics, 1999-2008

As we can see the NASDAQ tends to be the market with the highest average return and the highest risk and this makes sense

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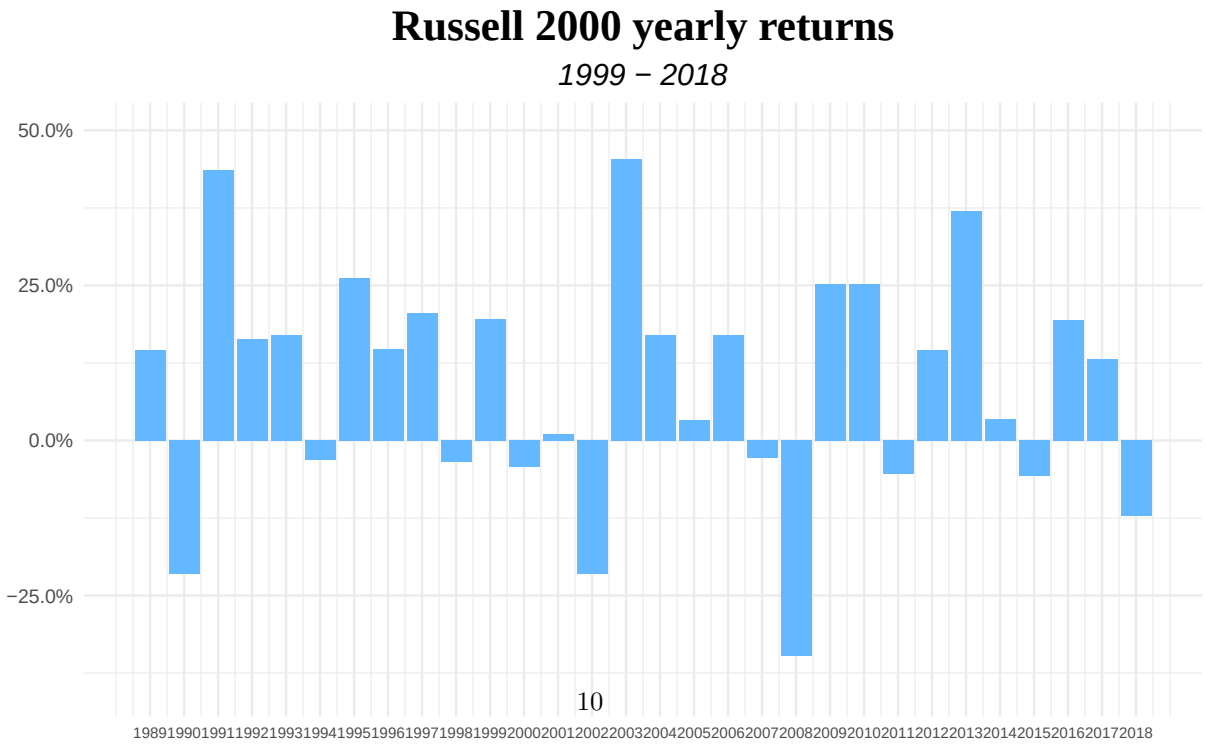
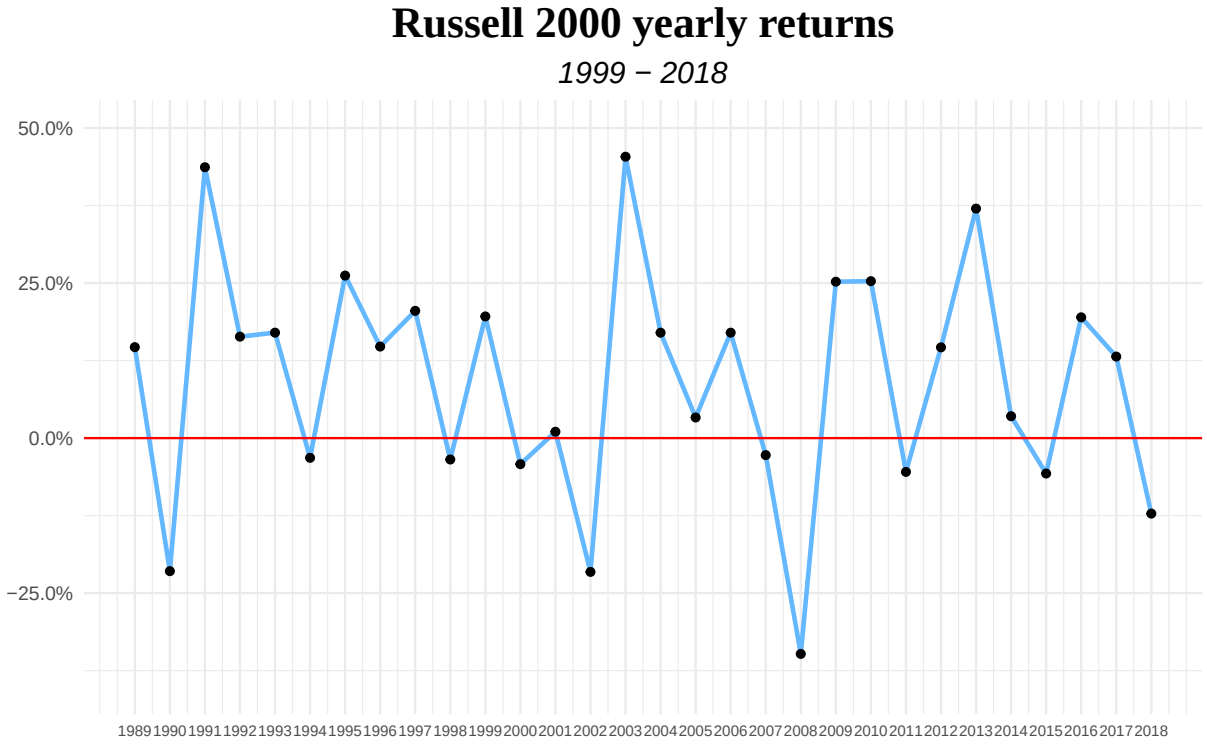
Table 1: 20 years of stock indexes returns

	SP500	NASDAQ	DJIA	RUT
2018	-6.24%	-3.88%	-5.63%	-12.18%
2017	19.42%	28.24%	25.08%	13.14%
2016	9.54%	7.50%	13.42%	19.48%
2015	-0.73%	5.73%	-2.23%	-5.71%
2014	11.39%	13.40%	7.52%	3.53%
2013	29.60%	38.32%	26.50%	37.00%
2012	13.41%	15.91%	7.26%	14.63%
2011	0.00%	-1.80%	5.53%	-5.45%
2010	12.78%	16.91%	11.02%	25.31%
2009	23.45%	43.89%	18.82%	25.22%
2008	-38.49%	-40.54%	-33.84%	-34.80%
2007	3.53%	9.81%	6.43%	-2.75%
2006	13.62%	9.52%	16.29%	17.00%
2005	3.00%	1.37%	-0.61%	3.32%
2004	8.99%	8.59%	3.15%	17.00%
2003	26.38%	50.01%	25.32%	45.37%
2002	-23.37%	-31.53%	-16.76%	-21.58%
2001	-13.04%	-21.05%	-7.09%	1.03%
2000	-10.14%	-39.29%	-6.18%	-4.20%
1999	19.64%	84.29%	25.18%	19.82%

Table 2: summary statistics 1999-2018

	SP500	NASDAQ	DJIA	RUT
mean	5.14%	9.77%	5.96%	7.76%
stdev	17.09%	30.44%	15.49%	19.43%
max	29.60%	84.29%	26.50%	45.37%
min	-38.49%	-40.54%	-33.84%	-34.80%





NOTE:

The previous two chunks containing functions from the KableExtra package are not rendered to pdf. . . the rendereing gets halted!!!

Check pages 10-12 from https://cran.r-project.org/web/packages/kableExtra/vignettes/awesome_table_in_pdf.pdf

The problem could be the `%` sign which has to be manually escaped. Look at the following links:

- https://www.google.com/search?q=knitr+kable+escape+dollar+sign&oq=knitr+kable+escape+dollar+sign&aqs=chrome..69i57.8607j0j8&sourceid=chrome&ie=UTF-8
- https://stackoverflow.com/questions/52037040/rmarkdown-kable-kableextra-printing-symbol-in-table-when-using-esca

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