# Table of contents

**Russell 3000 – Mirroring the US equity market**  
3

**Introduction**  
3
   US equity performance vs other asset classes  
5
   US equity performance in different economic regimes  
6
   Real equity returns  
10

**US equity valuations over time**  
11

**The changing structure of the US economy**  
15
   Sector shifts – from manufacturing to services  
15
   Top 10 Stocks – from Energy to Technology  
19

**Large- and small-cap US equity markets**  
20
   Performance: Large cap vs. small cap  
21
   Sector weights: Large cap vs. small cap  
23
   Valuations: Large cap vs. small cap  
27

**Summary**  
29

**References**  
30
Introduction

The Russell US Indexes were created in 1984 by the Frank Russell Company (now part of FTSE Russell) with the goal of providing accurate representation of the investable US equity market. When initially introduced, the Russell indexes provided five years of simulated back-history so that a historical record would exist, enabling investors to use the indexes at launch without requiring a live track record to be accumulated. As a result, there are now 40 years of performance, characteristics and sector data available for the major indexes within the Russell US Index family as of year-end 2018. The depth and detail of this available information allows us to take a deeper historical view of the US equity market to help investors understand its dynamics and how US equity fits into their overall asset allocation.

The Russell Indexes serve three key purposes for investors:

- As performance benchmarks for active strategies
- As the underlying basis for passive investment products
- As a proxy for US equities in asset allocation decisions

As of December 31, 2018, there were over $7 trillion of active strategies using one or more Russell indexes as a performance benchmark, and over $1 trillion of passive investment products using a Russell index as their underlying portfolio. Less quantifiable but still important are the number of investors who use the Russell indexes as a US equity proxy in their asset allocation process, whether that be for tactical or strategic asset allocation decisions.

In this report, we take advantage of four decades of information to observe how the US equity markets have reflected the overall growth in the US economy as well as the shift from a largely industrial economy to one that is more technology and service focused.

We observe that the US equity market has provided a meaningful risk premium relative to other asset classes such as bonds and cash and has delivered returns in excess of inflation over longer investment horizons. We also examine some of the distinctions between large and small US companies—notably, how the relative sector allocations to each have shifted, how large and small US companies have performed differently over the past 40 years, and how valuation levels for large and small companies are quite similar when companies with negative earnings are excluded from the analysis.

Russell 3000 – Mirroring the US equity market

The US equity market is the largest publicly traded securities market in the world. As of December 31, 2018, there were over 4,000 equity securities trading on major US securities exchanges, representing more than $27 trillion in total market capitalization. Not all traded securities are necessarily investible, however, especially for larger investors. Some securities may be too small to accommodate any meaningful investment or have low levels of liquidity. Other securities may represent non-US companies or have fund structures that are not

---

1 NYSE, NYSE/ARCA, NYSE/AMEX, NASDAQ
truly reflective of an investment in a US company. One of the motivations for creating the broad market Russell 3000 Index in 1984 was to accurately represent the US equity investible opportunity set using transparent, easy-to-understand rules.

The original research done by Russell in the early 1980s determined that roughly 98% of the investible US equity market could be represented by the largest 3000 companies. To represent the entire market would require an index to hold thousands of very small and possibly illiquid companies. As a matter of practicality and simplicity, Russell chose to include 3000 companies in its broad market index. In this regard, the structure of the US equity market has been consistent; over the past 40 years, the Russell 3000 has represented approximately 98% of the investible US equity market.

The US equity market is a reflection of the US economy. Although the market capitalization of the US equity market and the Gross Domestic Product (GDP) of the US economy are different measures, both are similar in scale and have shown similar growth historically. Exhibit 1 shows the aggregate market capitalization of companies included in the Russell 3000 alongside US GDP over the past 40 years. The index has grown from just under $1 trillion in total market capitalization at year-end 1978 to almost $30 trillion at year-end 2018. That compares to US GDP of $2.5 trillion in 1978 and of $20.9 trillion in 2018.

---

Exhibit 1. Russell 3000 year-end total market capitalization and nominal US GDP (USD trillions)

![Bar chart showing the growth of Russell 3000 Total MktCap and US GDP from 1978 to 2018.]

Source: FTSE Russell. Data based on Russell 3000 Index universe, from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.

---

2 Market capitalization is a measure of value; GDP is a measure of output.
US equity performance vs other asset classes

US equity is typically a large asset class allocation for long-horizon US investors, both institutions and individuals. However, there are some investors for whom this may not be the case: for example, pension plans and insurance companies with relatively certain liabilities, or investors with shorter investment horizons. For investors with longer investment horizons who are willing to accept additional volatility, US equities represent a large investment opportunity set and have produced meaningful nominal and real returns relative to other asset classes such as bonds and cash.

The past 40 years has also been a relatively favorable macroeconomic environment for equities, characterized by robust GDP growth, low inflation and falling interest rates. As shown in Exhibit 2, starting with an index of 1.0, after 40 years, the cumulative performance of the US equity market, as represented by the Russell 3000, would have grown to 77.33, compared to 23.47 for US corporate bonds, 16.30 for US government bonds and 5.24 for US three-month Treasury bills.

Exhibit 2. Cumulative performance for major US asset classes (log scale)

Source: FTSE Russell. Data from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.
Exhibit 3 shows the annualized return and standard deviation for each of these return series. We also compare these values with the US inflation rate (US CPI), which provides an indication of how much inflation would have reduced these nominal returns.

Exhibit 3. US equities, bonds and cash – annualized return and volatility

<table>
<thead>
<tr>
<th></th>
<th>US Equity (Russell 3000)</th>
<th>US Corp Bonds (FTSE BIG Corp)*</th>
<th>US Gov’t Bonds (FTSE BIG Gov’t)*</th>
<th>Cash (FTSE T-Bill)</th>
<th>US CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annualized Return</strong></td>
<td>11.5</td>
<td>8.2</td>
<td>7.2</td>
<td>4.2</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Annualized Standard Dev</strong></td>
<td>15.1</td>
<td>6.7</td>
<td>5.3</td>
<td>1.0</td>
<td>1.3</td>
</tr>
</tbody>
</table>


The incremental return of US government bonds over risk-free US T-bills was 3.0%, which represents the additional return required to compensate for taking maturity risk. The excess return of US corporate bonds over US government bonds was another 1.0%, which was compensation for taking default risk. US equity achieved a 7.3% excess return relative to US T-bills and a 3.3% risk premium relative to US corporate bonds. As evidenced by the corresponding return volatility, the extra return of stocks over bonds has compensated for the additional risk taken by equity investors who are shareholders compared to the risk taken by holders of a company’s debt.

US equity performance in different economic regimes

Examining performance over a 40-year span provides information regarding the long-term risk and return of various asset classes and can help investors to form more realistic expectations going forward. Given the volatility of US equity, an investor’s experience over shorter horizons can be dramatically different from what long-term averages indicate, particularly over different macroeconomic environments. Exhibit 4 highlights the return and risk for the Russell 3000 for some of the distinct macroeconomic sub-periods of the past 40 years.

Exhibit 4. Russell 3000 – Risk & return over different economic regimes (%)

<table>
<thead>
<tr>
<th>Macro-economic regime</th>
<th>Annualized Return</th>
<th>Annualized Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>All 40 years (1979-2018)</td>
<td>11.5</td>
<td>15.1</td>
</tr>
<tr>
<td><strong>Macro-economic regime</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Moderation (Dec 1978–Dec 1994)</td>
<td>14.6</td>
<td>15.4</td>
</tr>
<tr>
<td>Goldilocks (Dec 1994–Sep 2000)</td>
<td>23.4</td>
<td>14.4</td>
</tr>
<tr>
<td>TMT Correction + Rebound + GFC (Sep 2000– Mar 2009)</td>
<td>-4.6</td>
<td>16.2</td>
</tr>
<tr>
<td>New Normal (March 2009 - current)</td>
<td>14.9</td>
<td>13.1</td>
</tr>
</tbody>
</table>

Source: FTSE Russell. Data from January 1979 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.
Looking at these periods, the Russell 3000 experienced double-digit annualized rates of return in all but a single time span — from September 2000 to March 2009, which covered the bursting of the technology-media-telecom (TMT) bubble and subsequent correction and the global financial crisis (GFC). During this eight-plus-year period, the Russell 3000 lost almost 5% and demonstrated much higher volatility than during other periods. This dramatically different experience highlights the key risk of equity investment — that is, the risk of substantial losses during the holding period. Even though there were significant market drops in each of the other sub-periods, the period from September 2000 through March 2009 included two substantial market shocks that resulted in negative performance over a fairly long horizon.

Despite some substantial drawdowns, investors have experienced a positive risk premium from US equity over the past 40 years as compensation for bearing extra risk over long holding periods. Absent the risk premium, the capital markets would not function as intended because there would be little incentive for taking investment risk.

While the risk premium is never guaranteed over any particular period, the US equity market has historically demonstrated “mean reversion” in that over time the market returns to some sort of long-term average. Periods of negative market performance are generally followed by periods of positive performance and vice versa. The depth of drawdowns and the time to recovery (reversion to the mean) is impossible to predict. Exhibit 5 highlights some of the major drawdowns experienced over rolling one-year periods for the Russell 3000 since 1979.

Exhibit 5: Russell 3000 – monthly rolling-one-year returns relative to long-term annual average return (arrows mark the months to return to long-term average)

Source: FTSE Russell. Data from December 1979 to December 2018. Data based on the Russell 3000 Index Universe. All results based on back-tested data. Past performance is no guarantee of future results. Please see end for important legal disclosures.
The average one-year return for the Russell 3000 has been 13.1% since 1979. After the market drop in October 1987, it took 12 months for the market to rebound to the long-term average. It took almost three years (34 months) for returns to revert after the TMT correction in 2000, and 24 months to recover after the GFC drawdown of more than 40%. After the more recent downturn in 2015, it took only 18 months to return to more normal levels.

So, what holding period would have provided the highest chance of a positive return over this history for holding US equities? Exhibit 6 shows annualized returns for the Russell 3000 for monthly rolling five-, 10- and 20-year holding periods over the last 40 years.

### Exhibit 6. Russell 3000 – Annualized monthly rolling five-, 10- and 20-year holding period returns (%)

![Graph showing annualized returns for Russell 3000](https://example.com/graph.png)

Source: FTSE Russell. Data from January 1979 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.

Holding a risky asset class like US equities over longer periods provides a higher probability of a positive investment experience than shorter horizons but still does not guarantee there will not be negative outcomes. While the realized returns for all the five- and 10-year holding periods were substantially positive in the first 20 years of the entire period examined, there were a number of five- and 10-year periods in the past 20 years during which performance would have been very low or even negative. Exhibit 7 summarizes the average annualized return and average annualized standard deviation for the different holding periods and shows the percentage of periods where the holding period returns were positive.
Exhibit 7. Russell 3000 – Average return, standard deviation and frequency of positive returns by holding period

<table>
<thead>
<tr>
<th>Return Horizon</th>
<th>Average Return</th>
<th>Standard Deviation</th>
<th>% of time &gt; 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year</td>
<td>13.1</td>
<td>16.9</td>
<td>81%</td>
</tr>
<tr>
<td>5 Year</td>
<td>11.6</td>
<td>7.5</td>
<td>90%</td>
</tr>
<tr>
<td>10 Year</td>
<td>10.8</td>
<td>5.2</td>
<td>95%</td>
</tr>
<tr>
<td>20 Year</td>
<td>10.8</td>
<td>2.9</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: FTSE Russell. Data from January 1979 to December 2018. Periods are overlapping and calculating from monthly data. Past performance is no guarantee of future results. Please see end for important legal disclosures.

Clearly, having a longer holding period reduces the risk of a capital loss. The average volatility of longer periods decreases substantially, and the chances of achieving a positive return increase. The average annualized return for rolling 20-year horizons was 10.8% with a standard deviation of 2.9%, versus an average return of 11.6% for five-year holding periods and a standard deviation of 7.5%.

Of these historical holding periods, any 20-year holding period would have produced positive returns 100% of the time over the last 40 years. Ten-year holding periods would have produced positive returns 95% of the time and five-year periods would have produced positive returns 90% of the time. While there is no guarantee that a future 20-year holding period will also produce a positive return, this analysis confirms that longer holding periods have increased the likelihood of doing so over the last 40 years.

The rolling-20-year data also reveal another insight that may influence investor’s expectations about US equity market performance going forward – even though the average of 20-year annualized returns over the past 40 years was 10.8%, they have been declining over time and are now approximately 6%. Typically, strategic asset allocation expectations are informed by looking at long-term behaviors of asset classes, so investors who have become accustomed to double-digit US equity market returns may need to adjust their expectations going forward as they make allocation decisions for their portfolios.
Real equity returns

For investors concerned about asset class returns relative to inflation, a similar holding period analysis can be performed that includes a measure of inflation such as the US Consumer Price Index (CPI). Exhibit 8 summarizes the percentage of time that major US asset classes outperformed the US CPI for different holding periods.

Exhibit 8. Percent of time that US asset classes outperformed US CPI

<table>
<thead>
<tr>
<th>Return Horizon</th>
<th>US Equity</th>
<th>US Gov’t Bonds</th>
<th>US Corp Bonds</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year</td>
<td>61%</td>
<td>58%</td>
<td>61%</td>
<td>59%</td>
</tr>
<tr>
<td>5 Year</td>
<td>81%</td>
<td>95%</td>
<td>98%</td>
<td>67%</td>
</tr>
<tr>
<td>10 Year</td>
<td>92%</td>
<td>100%</td>
<td>100%</td>
<td>72%</td>
</tr>
<tr>
<td>20 Year</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>87%</td>
</tr>
</tbody>
</table>

Source: FTSE Russell. Data from January 1979 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.

Over one-year horizons, all three major US asset classes outperformed inflation roughly 60% of the time over the past 40 years. Extending the holding period increased the percentage of periods in which US equity, US bonds, and US T-bills exceeded inflation. However, even for the 20-year holding periods, US T-bills did not beat inflation 100% of the time. Notably, investors holding US T-bills would have seen the real value of their wealth decrease in 13% of the 20-year holding periods. By contrast, US bonds have outstripped the CPI in 100% of the 10- and 20- year periods, reflecting their attractive real returns over this period of generally decreasing inflation.

On the other hand, US equities did not always beat inflation, especially over shorter time horizons, reflecting the volatility of equity returns relative to that of inflation. For five- and 10-year holdings periods, stocks exceeded the CPI 81% and 92% of the time, respectively. Historically, an investor in US equity would require a 20-year holding period to have beaten the CPI 100% of the time. So, although US equity has provided a return premium to US bonds and T-bills on average over long horizons, it has not always beaten inflation over shorter holding periods.
US equity valuations over time

A common question for investors, especially after strong market performance, is “is the market overvalued?” There are a number of ways that market valuation can be measured. Most are typically expressed as a multiple of price relative to some other metric such as price/earnings, price/book, etc. The price/earnings, or PE, ratio relates the price per share paid for a stock relative to its earnings per share. Its inverse, the earnings/price (EP) ratio reflects the “earnings yield” of a stock, which is analogous to dividend yield (dividends/price). At the index level, the earnings yield also provides an indication of the risk premium that is being required for holding stocks.

Exhibit 9 shows two pairs of PE ratios for the Russell 3000 from December 1978 through December 2018, with the solid lines showing time series measures and the dotted lines showing the period average. The green pair shows measures for P/E including negative earnings, while the gray pair excludes negative earnings. The difference between the two can be largely explained by the line showing the percent of stocks with negative earnings.

Exhibit 9: Russell 3000 P/E ratios (LHS) and % of stocks with negative earnings (RHS)

Source: FTSE Russell. Data from December 1978 to December 2018.
PE ratios can be highly volatile, as the multiples paid for individual stocks can rise substantially during periods of market exuberance and contract as risk appetites wane. Note that some of the more excessive valuation periods (such as in late 2009) are not necessarily a reflection of higher valuations being placed on the average company; rather, it is largely the result of there being a greater number of companies with negative earnings.

Companies with negative earnings reduce the aggregate earnings for the Russell 3000, which causes the PE ratio to increase, all else being equal. When the number of companies with negative earnings increases, it can cause the PE ratio to spike. In December 2009, 18% of companies in the Russell 3000 had negative earnings, resulting in an index average PE of 34.8×. To adjust for this, the PE ratio can be calculated by excluding companies with negative earnings; as the chart above shows, doing so reduces the PE ratio generally and during periods when a greater number of companies are reporting negative earnings.

Another commonly used valuation measure is the Cyclically Adjusted PE ratio (CAPE), developed by Robert Shiller. The motivation behind the CAPE ratio is to reflect a longer-term average of earnings rather than the most recent 12-month period. To do this, earnings need to be adjusted for inflation to make them comparable over the longer period. Exhibit 10 shows the year-end CAPE ratio for the Russell 3000 alongside the trailing 12-month PE (both including and excluding negative earnings) from December 1988 through December 2018.

Exhibit 10: Russell 3000 – Year-end PE ratios

![Graph showing PE ratios for Russell 3000 from 1988 to 2018](image)

Source: FTSE Russell. Data from December 1978 to December 2018. *CAPE = cyclically adjusted PE.

---

The CAPE ratio suggests that companies in the Russell 3000 were substantially overvalued in the mid-1990s compared to the more traditional PE measures, mainly because earnings for Russell 3000 companies grew more rapidly beginning in the early 1990s than in the late 1980s, and the 10-year average earnings used in the CAPE ratio lagged the actual 12-month earnings through the early 1990s. In periods of rising earnings, the CAPE ratio will generally lag the trailing 12-month PE ratios, and vice versa. As shown in the previous PE chart, the large jump in the trailing 12-month PE (including companies with negative earnings) in 2009 was due to a relatively high percentage of Russell 3000 companies with negative earnings. The CAPE ratio shows a less extreme result during this period, reflecting the smoothing effect from the averaging of earnings over 10 years.

US valuations also indicate a consistent premium over non-US companies. Exhibit 11 shows historical PE ratios for the Russell 3000 and the FTSE Developed ex US Index from December 2003 through December 2018.

Exhibit 11. PE Ratio (LHS) and Valuation Premium (RHS) – Russell 3000 and FTSE Developed ex US

![PE Ratio and Valuation Premium Chart]

Other than a relatively brief period between 2008 and 2010, US companies have traded at higher valuations than non-US companies, on average 25% higher over the period. Since 2012, the premium has generally been widening, with a fairly large jump in early 2018 as PE levels for both US and non-US stocks began dropping, but more so for non-US stocks. At the end of 2018, the US stock valuation premium was at a near record high of more than 60%. The spike in valuations in late 2009 caused by large numbers of companies with negative earnings is much less pronounced for non-US companies, suggesting that fewer non-US companies had negative earnings than US companies over this period.
A comparison between the US and non-US performances shows that despite a consistent valuation premium for US companies, US stocks do not necessarily outperform their non-US peers. Exhibit 12 shows the cumulative performance of the Russell 3000 and the FTSE Developed ex US Index over the same period as the valuation analysis.

Exhibit 12: Cumulative performance – Russell 3000 and the FTSE Developed ex US Indexes (USD, Log Scale)

US stocks underperformed non-US stocks on a cumulative basis from the end of December 2003 through the end of 2012. However, since that time, US stocks have consistently outperformed, registering almost a 50% higher cumulative return since mid-2014. The US valuation premium also expanded during this time, indicating that much of the relative outperformance of US stocks over non-US stocks was driven by multiple expansion rather than their superior earnings growth.

Source: FTSE Russell. Data from December 2003 to December 2018.
The changing structure of the US economy

Sector shifts – from manufacturing to services

The availability of an extended series of equity market data also allows us to study changes in the structure of the US economy as reflected in Russell 3000 performance. The US has experienced a massive shift in the nature of its economy over the last half century. The US has traditionally been a manufacturing economy, supplying a variety of raw materials, consumer and industrial products domestically and abroad.

Over the past 40 years, there has been a marked shift from the manufacturing of physical products to more information driven and service-oriented businesses. The historical sector weights in the Russell 3000 provide tangible evidence of this evolution. Exhibit 13 shows the historical year-end Russell 3000 sector weights to nine broad sectors of the US market since 1978.

Exhibit 13. Russell 3000 – Historical sector weights

Source: FTSE Russell. Data based on the Russell Global Sector (RGS) classification for the Russell 3000 Index universe, from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.
There has been a substantial shift in the US economy away from industrial sectors such as Energy, Materials and Processing, and Producer Durables to more service-oriented sectors such as Technology, Health Care and Financial Services. Exhibit 14 illustrates this dynamic.

Exhibit 14. Russell 3000 – Historical weights for Industrials and Service-Oriented Sectors

The combined weight of the three industrial sectors has decreased substantially over the past 40 years, from 47% at the beginning of the period to 19% by year-end 2018. Over that same time frame, the combined weight of the three service-oriented sectors went from 16% of the Russell 3000 to almost 56%.

The performance of each US economic sectors has also differed dramatically over this period. Exhibit 15 shows the excess performance of each sector relative to the Russell 3000 starting with an index of 1.0. Values greater than 1.0 indicate outperformance relative to the Russell 3000, whereas values less than 1.0 indicate underperformance.
Consumer Staples – which are makers and sellers of consumer products that are generally resistant to economic downturns – had by far the best overall performance over the period. Beginning in the early 1980s, this sector began outperforming the other sectors dramatically and it continued to do so through 2018. Technology was the only other sector to perform better, albeit only briefly, during the TMT bubble of the late 1990s/early 2000s. Returns of the Consumer Staples sector at the end of 1978 were three times that of the Russell 3000 by the end of the period.

Providing additional evidence of the shift in the US economy, the Health Care and Technology sectors recorded the second and third strongest sector performances, whereas Energy, Materials and Processing, and Producer Durables registered the weakest performances, ultimately lagging the Russell 3000 by the end of the 40-year period. Consumer Discretionary and Financial Services companies had cumulative returns approximately equivalent to that of the Russell 3000 over the same time frame.
A risk analysis highlights that economic sectors, while diversified against company-specific risk, can still have above-average volatility. That’s because they are exposed to similar systematic factors. For example, Financial Services and Utilities have tended to be more sensitive to interest rates and Energy companies have typically been more sensitive to commodity prices. Exhibit 16 plots the annualized return and standard deviation for each sector and the Russell 3000 over the 40-year period.

Exhibit 16. Russell 3000 sectors – Annualized return and volatility (%)

As shown above, with the exception of Utilities, all of the economic sectors have been more volatile than the Russell 3000, a result of being less diversified than the broad index. Utilities – which are heavily regulated and thus tend to have more muted yet stable growth – showed the lowest volatility and were among the weakest performers of the group. The stocks of technology companies – which typically have faster growth rates but also face more uncertainty in their business models – had the highest volatility and one of the highest returns of the group.

The industrial sectors (Energy, Producer Durables, Materials and Processing) appeared to have an inverse relationship between risk and return: they had below-market returns but above-market volatility. Conversely, Consumer Staples had the best cumulative performance among the sectors over the last 40 years but also the second-to-lowest volatility, only slightly higher than the Russell 3000.

A comparison of the relative performance of Russell 3000 sectors and the earlier analysis showing the dramatic shift sector weights raises an interesting question: If the Consumer Staples sector had substantially higher performance than all the other sectors, why did its weight in the Russell 3000 Index not increase proportionally relative to the other sectors?
Sector weights generally change as a result of relative performance and net capital flows. All other things equal, those sectors that have better performance than other sectors should see their relative weight increase, and vice versa. However, in addition to performance, the index must account for capital flows into and out of the index, which can also change the relative weights of index sectors. Common examples of significant capital flows are acquisitions, initial public offerings and special cash dividends. These types of events change the amount of capital in the index but do not affect performance. For example, if a Russell 3000 member is acquired by a non-Russell 3000 company this will result in a capital flow out of the index, and also out of that company’s sector. Reclassification of a stock from one sector to another can also occur from time to time but these changes tend to be infrequent and thus represent a smaller source of capital flows between sectors. It is safe to assume that corporate activity is the largest source of capital flows among the Russell 3000 sectors and, thus, Consumer Staples must have seen relatively higher outflows than other sectors.

Top 10 Stocks – from Energy to Technology

Another indicator of the shift in the US economy is the change in the relative dominance of the largest companies. To highlight this, exhibit 17 shows the Top 10 holdings in the Russell 3000 as of December 31, 1978, and as of December 31, 2018.


<table>
<thead>
<tr>
<th>Company Name</th>
<th>Sector</th>
<th>Index Weight</th>
<th>Company Name</th>
<th>Sector</th>
<th>Index Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>Producer Durables</td>
<td>5.0%</td>
<td>Microsoft</td>
<td>Technology</td>
<td>3.1%</td>
</tr>
<tr>
<td>AT&amp;T</td>
<td>Utilities</td>
<td>4.6%</td>
<td>Apple</td>
<td>Technology</td>
<td>3.0%</td>
</tr>
<tr>
<td>Exxon</td>
<td>Energy</td>
<td>2.5%</td>
<td>Amazon.com</td>
<td>Consumer Discretionary</td>
<td>2.4%</td>
</tr>
<tr>
<td>General Motors</td>
<td>Consumer Discretionary</td>
<td>1.8%</td>
<td>Alphabet</td>
<td>Technology</td>
<td>2.5%</td>
</tr>
<tr>
<td>General Electric</td>
<td>Consumer Discretionary</td>
<td>1.2%</td>
<td>Berkshire Hathaway</td>
<td>Financial Services</td>
<td>1.6%</td>
</tr>
<tr>
<td>Eastman Kodak</td>
<td>Consumer Discretionary</td>
<td>1.1%</td>
<td>Johnson &amp; Johnson</td>
<td>Health Care</td>
<td>1.4%</td>
</tr>
<tr>
<td>Royal Dutch Petroleum</td>
<td>Energy</td>
<td>1.0%</td>
<td>JPMorgan Chase &amp; Co</td>
<td>Financial Services</td>
<td>1.3%</td>
</tr>
<tr>
<td>Standard Oil of Indiana</td>
<td>Energy</td>
<td>1.0%</td>
<td>Facebook</td>
<td>Technology</td>
<td>1.2%</td>
</tr>
<tr>
<td>Schlumberger</td>
<td>Energy</td>
<td>0.9%</td>
<td>Exxon Mobil</td>
<td>Energy</td>
<td>1.1%</td>
</tr>
<tr>
<td>Standard Oil of California</td>
<td>Energy</td>
<td>0.9%</td>
<td>Pfizer</td>
<td>Health Care</td>
<td>1.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20.1%</strong></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>18.6%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: FTSE Russell. Data based on Russell 3000 Index universe, from December 1978 and December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.

---

4 Such as when the Dutch company InBev acquired Anheuser Busch in 2008.
5 For example, IBM was re-classified from a Producer Durable company to Technology in 1995.
Only Exxon has remained among the top 10 stocks after the entire 40-year period. IBM, once 5% of the Russell 3000 Index and one of the most recognized companies in the world, is now the 44th largest company in the index. General Electric, General Motors and Standard Oil of California (now Chevron) are still in the Russell 3000 Index but are no longer among the 10 largest companies. Standard Oil of Indiana merged with British Petroleum (a non-US company) in 1998, and Royal Dutch and Schlumberger were reclassified as non-US companies in 1981 and 1984, respectively.

The change in sector makeup of the Top 10 companies is apparent. Half of the top 10 at the end of 1978 were energy companies, whereas at the end of 2018 Technology companies are more represented. Also of note, five of the top ten companies in 2018 were all created within the last 50 years.6

Large- and small-cap US equity markets

While other popular US equity market indexes may have a longer historical record,7 the Russell family is unique in that it covers the majority of the US equity market (the Russell 3000 Index), which can then be segmented along a number of dimensions, most notably by size, as represented by the Russell 1000 Index (large cap) and the Russell 2000 Index (small cap). Since their creation in 1984, these Russell indexes have been constructed on the basis of a consistent rules-based methodology, which makes them highly useful for understanding the performance and characteristics of US large cap and small cap stocks.

Russell was one of the pioneers in representing the size dimensions of the US equity market in index form. The existence of a small-cap premium has been documented in academic research since 1981.8 But it was not until Russell’s work in the early 1980s that a practical index was produced that accurately represented smaller stocks. Russell’s manager research identified the large and small cap segments based on its observations of active manager behavior; some active managers specialized in selecting larger companies while other managers focused on the smaller end of market capitalizations. The notion that large and small cap stocks could have unique characteristics was confirmed by empirical research done by Fama and French in 1992.9

Since the index data inception date of December 31, 1978, the Russell 1000 has been defined as the largest 1,000 stocks in the Russell 3000 by market cap and the Russell 2000 Index has been defined as the smallest 2,000 stocks in the Russell 3000. The large-cap segment can also be further divided into the top 200 mega-cap stocks (Russell Top 200) and the bottom 800 stocks within the Russell 1000 (Russell Midcap) to provide more granularity for the large-cap segment of the US market. However, the Russell 1000 and Russell 2000 dominate investor usage as benchmarks.

7 The Dow Jones Industrial Average was created in 1896.
Performance: Large cap vs. small cap

Both academic and practitioner research confirmed that large-cap stocks behave differently than small-cap stocks. Exhibit 18 shows the performance of the Russell 1000 and Russell 2000 Indexes over the past 40 years, starting with an index level of 1.0.

Exhibit 18. Performance of the Russell 1000 and Russell 2000 Indexes (log scale)

Source: FTSE Russell. Data from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.

While there have been periods during which the Russell 1000 outperformed the Russell 2000 and vice versa, the Russell 1000 has had a modest performance advantage over its small-cap counterpart over the entire 40-year period. Rather than contradicting the extensive academic research asserting the existence of a small-cap premium, this simply indicates that the size premium is not guaranteed over any particular time period, even fairly lengthy ones. Exhibit 19 repeats the earlier Russell 3000 sub-period performance analysis for both the Russell 1000 and Russell 2000.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Annualized return</th>
<th>Annualized Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 years (1979-2018)</td>
<td>11.5</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>Economic Regime</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Moderation (Dec 1978–Dec 1994)</td>
<td>14.6</td>
<td>14.7</td>
</tr>
<tr>
<td>Goldilocks (Dec 1994–Sep 2000)</td>
<td>24.3</td>
<td>15.2</td>
</tr>
<tr>
<td>TMT Correction + Rebound + GFC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Sep 2000–Mar 2009)</td>
<td>-4.7</td>
<td>-1.1</td>
</tr>
<tr>
<td>New Normal (March 2009- current)</td>
<td>14.9</td>
<td>14.2</td>
</tr>
</tbody>
</table>

Source: FTSE Russell. Data based on Russell 3000 Index universe, from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.

Despite underperforming the Russell 1000 over the entire period, the Russell 2000 had much higher volatility, of 19.2% annualized versus 15.0% for the Russell 1000.

During the Great Moderation between 1978 and 1994, the small-cap index held a slight performance advantage, registering an annualized return of 14.7% versus 14.6% for the Russell 1000. The Russell 2000 had been much more volatile than the Russell 1000, consistent with long-term patterns.

Large-cap stocks substantially outperformed small-cap stocks during the Goldilocks period, with the Russell 1000 outpacing the Russell 2000 by almost 10% (1,000 basis points) on an annualized basis. This was a period during which widespread enthusiasm in the Internet-driven “New Economy” drove up valuations, particularly for technology, media and telecom (TMT) stocks, some of which had little (or no) earnings. This had the dual effect of creating many large companies (by virtue of inflated stock prices) with stellar performance. When the TMT bubble burst and the equity market corrected beginning in 2000, small-cap stocks that hadn’t soared to the lofty valuations of their large-cap peers fell far less. The Russell 2000 dropped 1.1% for the period, versus a decline of 4.7% for the Russell 1000.

More recently, in the New Normal period beginning at the trough of the GFC in March 2009, large-cap stocks have once again outpaced small-cap stocks, largely reflecting the extraordinary outperformance of the so-called “FAANG” stocks (Facebook, Amazon, Apple, Netflix and Google), which combined represent almost 10% of the Russell 1000.
Sector weights: Large cap vs. small cap

Just as economic sector analysis of the Russell 3000 revealed a shift in the US economy from manufacturing to services over the last 40 years, the sector makeup of the Russell 1000 and Russell 2000 Indexes can also help illuminate the economic factors underlying their performance. Exhibit 20 summarizes the relative sector weight differences between the Russell 1000 and Russell 2000 at December 31, 1978, and at December 31, 2018.

Exhibit 20. Relative sector weights – Russell 2000 vs. Russell 1000 Indexes (% difference)

Source: FTSE Russell. Data based on Russell 3000 Index universe, from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.
For the most part, the differences in sector weights between the two indexes are less extreme now than they were 40 years ago. Large Russell 2000 underweights in Energy and Utilities and overweights in Consumer Discretionary and Materials & Processing in 1978 have narrowed materially and are now much closer to their counterparts in the Russell 1000. Perhaps most dramatic is the shift in relative weight for the Technology sector. At year-end 1978, the Russell 2000 was roughly 3% overweight in Technology versus the Russell 1000; that had shifted to a 7% underweight by the end of 2018. Exhibit 21 highlights this trend over the past 40 years.

Exhibit 21. Technology sector weights – Russell 2000 relative to the Russell 1000 (% difference)

In the 1980s and for most of the 1990s, the Russell 2000 had a consistently higher weight in Technology than the Russell 1000. As technology companies were accorded increasingly higher (and unrealistic) valuations in the mid-to late 1990s, however, the weight of Technology stocks in the Russell 1000 began to exceed that of similar companies in the Russell 2000, representing an overweight of more than 8%. This overweight abruptly vanished when the market corrected, and the large Technology stocks fell in value. Despite the extreme reversal in the relative weighting of Technology companies in the Russell 1000 and 2000, the relationship appears to have widened again in recent years as companies like Microsoft, Apple, Facebook and Google have come to dominate the Technology sector.
In addition to sector weighting differences between the Russell 1000 and Russell 2000 Indexes, the historical performance of certain sectors has also differed significantly. Exhibit 22 shows the cumulative performance of the Russell 2000 economic sectors relative to that of their Russell 1000 counterparts.

Exhibit 22. Excess cumulative returns – Russell 2000 vs Russell 1000 (%)

Source: FTSE Russell. Data based on Russell 3000 Index universe, from December 1978 to December 2018. Past performance is no guarantee of future results. Please see end for important legal disclosures.
There were also some striking performance divergences in some sectors. Energy and Technology companies in the Russell 2000 significantly underperformed their Russell 1000 counterparts, and Russell 2000 Financial Services and Utilities significantly outperformed. These performance differences largely reflect the distinct composition of the underlying industries within the broader sectors of the two indexes. As an example, exhibit 23 highlights the relative historical weights for some of the key industries that make up the Energy sector for the Russell 1000 and Russell 2000.

Exhibit 23. Energy industry weights – Russell 2000 relative to the Russell 1000 (% difference)

The Russell 1000 Energy sector is dominated by large Integrated Oil companies like Exxon and Chevron (vertically integrated companies involved in exploration, production, and distribution), whereas the Russell 2000 Energy sector is diversified across more specialized industries, including Oil Well Equipment & Services and Crude Oil Producers.

Similarly, the Financial Services sector of the Russell 2000 is dominated by regional banks, while the Russell 1000 is more diversified across large national banks, insurance companies and real estate investment trusts (REITs). In many cases, these differing proportions within the large-cap and small-cap sectors can lead to significant variances in a sector’s performance between the two indexes.
Valuations: Large cap vs. small cap

Small-cap stocks have historically traded at a premium to large-cap stocks, on average. However, much of this premium is driven by the higher proportion of companies with negative earnings in the Russell 2000. As discussed earlier, this has the effect of raising the PE on average and, in some cases, can even produce extreme results. Exhibit 24 shows historical PE ratios and the percentage of companies with negative earnings for the Russell 1000 and Russell 2000 since year-end 1978.

Exhibit 24: PE ratios (LHS) and percent of companies with negative earnings (RHS) – Russell 1000 and Russell 2000

As this Exhibit shows, the PE ratio for the Russell 2000 is consistently higher than the Russell 1000, except for a brief period in the late 1990s, when large TMT stocks were trading at extreme valuations. Similar to our earlier valuation analysis of the Russell 3000, because the Russell 2000 has a greater preponderance of companies with negative earnings than its large-cap counterpart, its PE ratio has tended to be higher. In late 2009, more than one-third of Russell 2000 constituents reported negative earnings, causing the PE ratio to spike above 300×.

Removing negative-earnings companies provides an alternative view of relative valuations between large and small companies, as illustrated in Exhibit 25.
After removing companies with negative earnings, the average historical PE ratio for the Russell 1000 and Russell 2000 is actually quite similar. The long-term average PE for the Russell 1000 was $17.4 \times$, versus $17.6 \times$ for the Russell 2000. This analysis also shows that valuations on large-cap stocks were above those of the small-cap stocks for a longer period of time in the late 1990s and early 2000s.

Within the past five years, valuations for both indexes have neared their 40-year highs outside of the TMT bubble but have recently retracted. At the end of 2018, the PE ratios excluding companies with negative earnings for both the Russell 1000 and Russell 2000 were below their 40-year averages.
Summary

As the embodiment of the world’s largest economy, the US equity market represents one of the most diversified opportunity sets for investors. The Russell 3000 Index has accurately reflected the performance, structure and characteristics of the US equity market since its inception, making it an excellent reference for investment analysis and decision-making.

Over the past 40 years, the US equity market, as represented by the Russell 3000, has provided a meaningful risk premium relative to other asset classes, in both nominal and real terms. The likelihood that an investor will realize this premium has historically increased with the length of the holding period, even though US equities are typically more volatile than other standard asset classes. Although US equities have produced double-digit annualized investment returns over the past 40 years, more recent experience suggests that investors may want to assume more conservative returns when setting expectations for the future.

As the US economy has shifted from an industrial basis to a more information-driven, service-oriented focus, so have the economic sector weights for the Russell 3000. Forty years ago, roughly half of Russell 3000 companies were involved in the production of basic materials, energy, or capital goods. Today, however, roughly half of the Russell 3000 companies are involved in technology, health care or financial services.

PE ratios for the Russell 3000 have averaged 19.4× over the last 40 years. When companies with negative earnings are excluded from the index, however, the average PE drops almost 10%, to 17.4×.

US stocks have consistently traded at a premium to non-US stocks for the past 15 years. The valuation premium for the Russell 3000 PE over the FTSE Developed ex US Index has averaged 25% and recently climbed as high as 60%. Some of the recent outperformance of US markets over non-US markets can potentially be attributed to multiple expansion rather than higher earnings growth.

The Russell 1000 and Russell 2000 Indexes provide additional insights into the distinct performance profiles of large and small stocks. While there has been no clear performance advantage of large cap stocks over small cap stocks over the past 40 years, there have been important differences in performance over shorter periods, and these distinctions are primarily driven by the industries that make up the broader sector designations. PE ratios for Russell 2000 stocks have been consistently above those of Russell 1000 stocks. However, when companies with negative earnings are excluded from the indexes, valuations were almost identical.

This analysis is by no means an exhaustive summary of the data available for the Russell US Index family. Hopefully, the insights provided in this paper provoke additional questions about the US equity market that can be addressed in future research, and other researchers can take advantage of this long time series of equity index data.
References


About FTSE Russell

FTSE Russell is a leading global provider of benchmarks, analytics and data solutions with multi-asset capabilities, offering a precise view of the markets relevant to any investment process. For over 30 years, leading asset owners, asset managers, ETF providers and investment banks have chosen FTSE Russell indexes to benchmark their investment performance and create investment funds, ETFs, structured products and index-based derivatives. FTSE Russell indexes also provide clients with tools for performance benchmarking, asset allocation, investment strategy analysis and risk management.

To learn more, visit ftserussell.com; email info@ftserussell.com; or call your regional Client Service Team office

<table>
<thead>
<tr>
<th>EMEA</th>
<th>North America</th>
<th>Asia-Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td>+44 (0) 20 7866 1810</td>
<td>+1 877 503 6437</td>
<td>Hong Kong +852 2164 3333</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tokyo +81 3 4563 6346</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sydney +61 (0) 2 8823 3521</td>
</tr>
</tbody>
</table>


FTSE Russell® is a trading name of FTSE, Russell, FTSE Canada, MTSNext, Mergent, FTSE FI, YB. “FTSE®”, “Russell®”, “FTSE Russell®”, “MTS®”, “FTSE4Good®”, “ICB®”, “Mergent®”, “The Yield Book®” and all other trademarks and service marks used herein (whether registered or unregistered) are trademarks and/or service marks owned or licensed by the applicable member of the LSE Group or their respective licensors and are owned, or used under licence, by FTSE, Russell, MTSNext, FTSE Canada, Mergent, FTSE FI, YB. FTSE Russell International Limited is authorised and regulated by the Financial Conduct Authority as a benchmark administrator.

All information is provided for information purposes only. All information and data contained in this publication is obtained by the LSE Group, from sources believed by it to be accurate and reliable. Because of the possibility of human and mechanical error as well as other factors, however, such information and data is provided “as is” without warranty of any kind. No member of the LSE Group nor their respective directors, officers, employees, partners or licensors make any claim, prediction, warranty or representation whatsoever, expressly or impliedly, either as to the accuracy, timeliness, completeness, merchantability of any information or of results to be obtained from the use of the FTSE Russell Products or the fitness or suitability of the FTSE Russell Products for any particular purpose to which they might be put. Any representation of historical data accessible through FTSE Russell Products is provided for information purposes only and is not a reliable indicator of future performance.

No responsibility or liability can be accepted by any member of the LSE Group nor their respective directors, officers, employees, partners or licensors for (a) any loss or damage in whole or in part caused by, resulting from, or relating to any error (negligent or otherwise) or other circumstance involved in procuring, collecting, compiling, interpreting, analysing, editing, transcribing, transmitting, communicating or delivering any such information or data or from use of this document or links to this document or (b) any direct, indirect, special, consequential or incidental damages whatsoever, even if any member of the LSE Group is advised in advance of the possibility of such damages, resulting from the use of, or inability to use, such information.

No member of the LSE Group nor their respective directors, officers, employees, partners or licensors provide investment advice and nothing contained in this document or accessible through FTSE Russell Products, including statistical data and industry reports, should be taken as constituting financial or investment advice or a financial promotion.

Past performance is no guarantee of future results. Charts and graphs are provided for illustrative purposes only. Index returns shown may not represent the results of the actual trading of investable assets. Certain returns shown may reflect back-tested performance. All performance presented prior to the index inception date is back-tested performance. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index was officially launched. However, back-test data may reflect the application of the index methodology with the benefit of hindsight, and the historic calculations of an index may change from month to month based on revisions to the underlying economic data used in the calculation of the index.

This publication may contain forward-looking assessments. These are based upon a number of assumptions concerning future conditions that ultimately may prove to be inaccurate. Such forward-looking assessments are subject to risks and uncertainties and may be affected by various factors that may cause actual results to differ materially. No member of the LSE Group nor their licensors assume any duty to and do not undertake to update forward-looking assessments.

No part of this information may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the applicable member of the LSE Group. Use and distribution of the LSE Group data requires a licence from FTSE, Russell, FTSE Canada, MTSNext, Mergent, FTSE FI, YB and/or their respective licensors.