SOFTWARE INVESTING: RIDING THE ROLLERCOASTER

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Within WisdomTree's suite of thematic equity strategies, both the WisdomTree Cybersecurity Fund (WCBR) and WisdomTree Cloud Computing Fund (WCLD) are tracking indexes that focus largely on software-as-a-service (SaaS) companies. There is an overall feeling of concern as we reach the halfway mark in 2024, as we are receiving questions from investors and seeing a range of articles discussing the slowing growth rates in these types of stocks.

In what follows, we combine a sense of recent history with some data that we can pull in from our Fund Comparison software, available through the WisdomTree website.

Figure 1: Standardized Returns

Fund/Index Name	Fund Ticker	Fund Inception Date	Fund Expense Ratio	YTD	1-Year	3-Year	5-Year	10-Year	Since Fund Inception
WisdomTree Cybersecurity Fund (NAV)	WCBR	Jan 28, 2021	0.45%	1.10%	39.35%	6.87%	N/A	N/A	2.02%
WisdomTree Cybersecurity Fund (MP)	WCBR	Jan 28, 2021	0.45%	1.60%	39.29%	6.52%	N/A	N/A	2.01%
WisdomTree Cloud Computing Fund (NAV)	WCLD	Sept 6, 2019	0.45%	-0.29%	17.45%	-10.16%	N/A	N/A	7.50%
WisdomTree Cloud Computing Fund (MP)	WCLD	Sept 6, 2019	0.45%	-0.31%	17.45%	-10.38%	N/A	N/A	7.49%
S&P 500 Index				10.56%	29.88%	11.49%	15.05%	12.96%	

Source: WisdomTree; specifically, data is from the PATH Fund Comparison Tool, accessed as of 5/30/24. NAV denotes total return performance at net asset value. MP denotes market price performance. **Past performance is not indicative of future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data quoted.**

For the most recent month-end and standardized performance and to download the respective Fund prospectuses, click the relevant ticker: WCBR and WCLD.

What's Driving the Software Rollercoaster?

The Fund Comparison tool allows one to see, quite quickly, a range of summary information. What is immediately noticeable is a quantification of the so-called SaaS return rollercoaster:

- WCBR and WCLD, for their common return history,[1] which goes back to January 2021, have an annualized standard deviation of roughly 28%. Viewed in isolation, 28% doesn't mean much, but over the same period, the S&P 500 Index had an annualized volatility of 17%. This means that the annualized volatility of WCBR and WCLD has been more than 50% higher than that of what many people view as "the market."

- If any investment strategy has a volatility approaching 30% annualized, that is telling us that the returns experienced have been wildly different at different points in time. This coincides with the experience we hear when speaking to investors: some of them may have had a positive experience, while others—mostly the ones we speak with—have had a negative experience.

What Has Caused the Nearly 30% Annualized Volatility?

There is no way to isolate a singular cause for share prices moving in different ways at different times, but if we step back and think about what has characterized asset price behavior since January 2021, there is one macroeconomic variable that has dominated above all others.

- In 2021, for the most part, developed market central banks had interest rates at or near 0%, and many were engaged in policies that were also expanding monetary bases. Policies such as this have the potential to push valuations of riskier assets higher. Many times, SaaS companies are new to public markets and showing how they can use software to solve specific problems in more efficient ways. Lower interest rates lower the opportunity cost of capital that needs to be employed to run these businesses in order for them to achieve scale.
- In 2022, developed market central banks changed course to fight inflation, raising interest rates at a historic pace. SaaS returns were extremely challenged, as were the returns of most asset classes. Even though WCLD and WCBR were challenged, return-wise, because most asset prices were also delivering negative returns, there was less contrast, and it was less noticeable.
- In 2023, the market started to employ a more "forward-looking" character. We found it interesting that from the end of October 2023 to the end of the year, market participants were discounting in a strong view that the U.S. Federal Reserve was going to cut its policy rate early in 2024. There was a massive upward response in the share prices of riskier, more speculative tech companies. WCBR and WCLD certainly were positively impacted. However, this behavior injected risk into these strategies in that, while we cannot say that the share prices were rising solely due to interest rates (a factor that the companies do not directly influence), it was a main reason. If the market needed to adjust, possibly because the U.S. Federal Reserve was slower to cut rates, it's possible that a chunk of the higher valuations at the end of 2023 was based on an assumption of a rate cut.
- 2024 has been a year defined largely by the need to continually push any expectation of a U.S. Federal Reserve policy rate cut further and further into the future. Unfortunately, the revenue growth of the companies within WCBR and WCLD is not enough to cancel out the adjustment to a "higher-for-longer" interest rate policy.

In what follows, we quantify this thinking using illustrations from the Fund Compare tool.

In figure 2, many may not directly remember that WCBR was up almost 70% during 2023 since the character of returns observed in 2024 has been very different. WCLD was only up about 40%. Both of these strategies dramatically outperformed the S&P 500 Index during 2023.

What's clear is that most of this outperformance came during the last two months of 2023, so we have to zoom in there.

Figure 2: 2023 Returns of WCBR and WCLD Were Quite Strong

Source: WisdomTree; specifically, data is from the PATH Fund Comparison Tool, accessed as of 5/30/24. NAV denotes total return performance at net asset value. MP denotes market price performance. **Past performance is not indicative of future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data quoted.**

In figure 3, we zoom in on the period from October 31, 2023, to December 31, 2023. Both WCBR and WCLD were up roughly 30%. We cannot say that this move was solely due to expectations of lower interest rates—but we can say that it was a major factor that did create a risk of a mispricing if the path of interest rates was going to stay higher for longer.

Figure 3: Zooming in on the Final Two Months of 2023

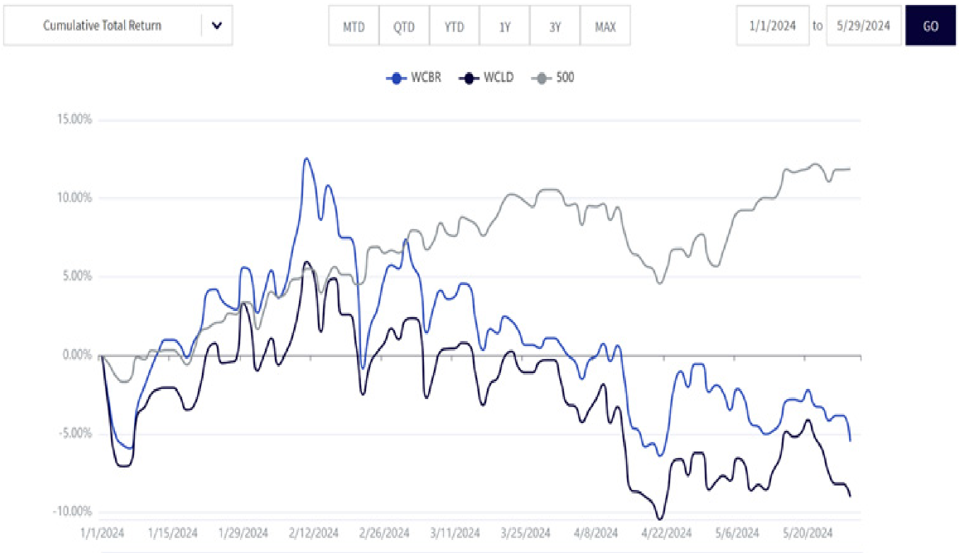
Source: WisdomTree; specifically, data is from the PATH Fund Comparison Tool, accessed as of 5/30/24. NAV denotes total return performance at net asset value. MP denotes market price performance. **Past performance is not indicative of future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data quoted.**

In figure 4, we see the challenge faced by WCBR and WCLD in 2024. Now, most of the underlying constituent companies are growing revenues, year-over-year, above 10%. Some are growing revenues above 20% or even above 30%. But the growth is not accelerating and getting investors anywhere near as excited as they might have been in 2020 or 2021. In short, the growth we are experiencing is not enough to cancel out the negative impact on valuations of higher-for-longer interest rates.[2]

WCBR and WCLD are underperforming the S&P 500 Index, but we'd caution against benchmarking these rather narrow, high-volatility strategies against such a broad benchmark since we expect the return experience to always be dramatically different.

We believe that, with the higher risk of WCBR and WCLD, the time horizon needs to be extended, and anyone who needs to place a lot of focus on the 2024 performance results in a portfolio may face a significant risk of a negative return contribution from these strategies.

Figure 4: The Performance Challenges of 2024



Source: WisdomTree; specifically, data is from the PATH Fund Comparison Tool, accessed as of 5/30/24. NAV denotes total return performance at net asset value. MP denotes market price performance. **Past performance is not indicative of future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data quoted.**

Valuation vs. Growth: The Critical Question in Software

Yes, WCBR and WCLD are also "expensive" from a valuation perspective. But figure 5 shows valuations were significantly higher in 2021 when interest rates were at or near zero. The massive rallies in WCLD and WCBR at the end of 2023 were likely largely driven by interest rate expectations. But, interest rate expectations can change and are independent of company results. Maybe it is accurate to indicate that as we started 2024, these stocks, in many cases, were too expensive IF the U.S. Federal Reserve was not going to cut its policy rate quite quickly.

Figure 5: Price-to-Sales Ratios over Time for WCBR, WCLD and the S&P 500 Index

Source: WisdomTree; specifically, data is from the PATH Fund Comparison Tool, accessed as of 5/30/24.

Now, anytime software companies are in focus, we caution investors to look at valuation without looking at growth. Figures 6a and 6b indicate measures of both sales growth and

EBITDA[3] growth, looked at from both a median and a weighted average basis.

- In our view, this speaks to why investors waiting for software-focused strategies to have the same or even lower valuations than the S&P 500 Index could be waiting a very long time. Structurally, these businesses tend to grow sales and EBITDA a lot faster than the broad-based benchmark. Obviously, that doesn't mean they always outperform, but since investors tend to be willing to pay for growth, it makes it hard to see "valuation discounts" with WCBR and WCLD.
- The reason why we show both sales growth AND EBITDA growth is that we are seeking to show something that represents the top line of the income statement—before any expenses are considered—and then a measure that is closer to the concept of "operating earnings," which does include various expenses related to running the day-to-day business. Still, we note that we do not show measures of bottom-line earnings since significant portions of companies within WCBR and WCLD are not profitable, meaning they do not have positive net income as of the most recent reporting period.

Figure 6a: Measures of Sales Growth

Figure 6b: Measures of EBITDA Growth

Conclusion: The World Needs Cybersecurity and Cloud Computing

There's a large divergence between what the world thinks about the themes of cybersecurity and cloud computing through their actions and the share price performance of the companies within WCBR and WCLD.

As we adopt more AI, we will need more cybersecurity since AI is just a tool—it can be used in negative ways and positive ways. The more that different industries adopt, the more they have to secure. We don't know which cybersecurity companies will be the long-term winners—that is why we like a basket and ETF approach—but the topic is only getting more important.

Nvidia is getting the lion's share of attention in the technology space. If we think about who is buying the chips, it is the companies that offer the largest public cloud computing infrastructure. The world is spending hundreds of billions of dollars over a period of years to build more compute infrastructure in the cloud than we have ever had. However, we do not know yet which companies will be the long-term winners based on what they are using AI to do.

This divergence from the potential of the theme and the current share price performance signals a time to invest IF one has a time horizon of multiple years. This is because with big technology shifts, very little happens in the earlier years of the transition, but in the later years, the compounding effect of the growth can be quite large. Volatility will likely remain quite high—but if we follow the spending, the world loves and needs both cybersecurity and cloud computing.

Figure 7: Other Information about WCBR and WCLD, as of 4/30/24

Fundamentals	WisdomTree Cybersecurity Fund	WisdomTree Cloud Computing Fund
Objective	The WisdomTree Cybersecurity Fund is designed to track, before fees and expenses, the total return performance of the WisdomTree Team8 Cybersecurity Index. Team8 is a financial venture firm with expertise in cybersecurity meant to evaulate the cybersecurity focus of each constituent, and WisdomTree is applying its financial acumen from building indices for many years. Weighting tilts toward companies that are more broadly focused on cybersecurity activities as well growing their revenues faster.	The WisdomTree Cloud Computing Fund is designed to track, before fees and expenses, the total return performance of the BVP Nasdaq Emerging Cloud Index. Bessemer Venture Partners (BVP) is a financial venture firm with expertise in software and cloud computing companies, meant to run a semi-annual review of each constituent as well as the overall market of possible constituents. Nasdaq is the third-party calculation agent for the Index, which is equal-weighted.
Price to Sales Ratio	7.47x	5.34x
Price to Book Ratio	7.76x	6.19x
Price to Cash Flow Ratio	36.39x	36.75x
Est. Price to Earnings Ratio	42.79x	35.54x
Est. Price to Earnings Ratio (excludes firms with negative earnings)	40.69x	32.94x
% of Firms with Negative Earnings	43.97%	61.03%
Total Expense Ratio	0.45%	0.45%
Total Assets Under Management (USD, millions)	$93.71	$532.90

Sources: WisdomTree; specifically, the Fund Compare Tool, with data quoted as the most recently available as of 5/30/24. Due to certain complexities of fundamental aggregation for the Price-to-Sales, Price-to-Book, Price-to-Cash-Flow, Est. Price-to-Earnings, Est. Price-to-Earnings (excludes firms with negative earnings) and % of firms with negative earnings, statistics are as of April 30, 2024, the most recently available in the Fund Compare tool as of this time. Total Expense Ratio and Total Assets Under Management are current as of May

[1] Specific period of calculation: January 27, 2021, to May 29, 2024.

[2] Growth rates are sourced from Bloomberg and represent the year-over-year sales growth of the most recent quarterly financial report of the respective constituents within WCBR or WCLD, available as of May 30, 2024.

[3] EBITDA stands for Earnings before Interest, Taxes, Depreciation and Amortization and allows investors to go down the income statement and get closer to a measure of "Operating Earnings.'"

Important Risks Related to this Article

For current holdings, please click the respective ticker: WCLD, WCBR. Holdings are subject to risk and change.

There are risks associated with investing, including the possible loss of principal.

WCLD: The Fund invests in cloud computing companies, which are heavily dependent on the internet and utilizing a distributed network of servers over the internet. Cloud computing companies may have limited product lines, markets, financial resources or personnel and are subject to the risks of changes in business cycles, world economic growth, technological progress and government regulation. These companies typically face intense competition and potentially rapid product obsolescence. Additionally, many cloud computing companies store sensitive consumer information and could be the target of cybersecurity attacks and other types of theft, which could have a negative impact on these companies and the Fund. Securities of cloud computing companies tend to be more volatile than securities of companies that rely less heavily on technology and, specifically, on the Internet. Cloud computing companies can typically engage in significant amounts of spending on research and development, and rapid changes to the field could have a material adverse effect on a company's operating results. The composition of the Index is heavily dependent on quantitative and qualitative information and data from one or more third parties, and the Index may not perform as intended. Please read the Fund's prospectus for specific details regarding the Fund's risk profile.

WCBR: The Fund invests in cybersecurity companies, which generate a meaningful part of their revenue from security protocols that prevent intrusion and attacks to systems, networks, applications, computers and mobile devices. Cybersecurity companies are particularly vulnerable to rapid changes in technology, rapid obsolescence of products and services, the loss of patent, copyright and trademark protections, government regulation and competition, both domestically and internationally. Cybersecurity company stocks, especially those which are internet related, have experienced extreme price and volume fluctuations in the past that have often been unrelated to their operating performance. These companies may also be smaller and less experienced companies, with limited product or service lines, markets or financial resources and fewer experienced management or marketing personnel. The Fund invests in the securities included in, or representative of, its Index regardless of their investment merit, and the Fund does not attempt to outperform its Index or take defensive positions in declining markets. The composition of the Index is heavily dependent on quantitative and qualitative information and data from one or more third parties, and the Index may not perform as intended. Please read the Fund's prospectus for specific details regarding the Fund's risk profile.

For the top 10 holdings of WCLD please visit the Fund's fund detail page at https://www.wisdomtree.com/investments/etfs/megatrends/wcld

For the top 10 holdings of WCBR please visit the Fund's fund detail page at https://www.wisdomtree.com/investments/etfs/megatrends/wcbr

For standardized performance and the most recent month-end performance click here NOTE, this material is intended for electronic use only. Individuals who intend to print and physically deliver to an investor must print the monthly performance report to accompany this blog.

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