

Overview

Concern arose over the volatility presented in the dataset when calculating mean, median and IQR of the annual growth rate of dividend payout in a non-managed dividend portfolio. The goal is to ensure a YoY growth rate of 3-5% which is average for an income focused dividend portfolio.

Using SAS, an analysis should prove outlier dividend growths skewed the data so much so that it gave the portfolio the illusion of having double what is considered the average dividend growth rate. By the end, a more realistic growth rate should be established that will lead to a better understanding of how individual stocks effect the average dividend growth rate and overall, the trajectory of the investment portfolio.

Data & Models

Dividend Info 2023												
NOTE: XCLN has Q4 has 0.002\$ of difference in raw data												
Year	Stock	Q1	dQ1	Q2	dQ2	Q3	dQ3	Q4	dQ4	growthAverage	divPayout	growthAveragePRCT
2023	BMO	\$1.43	0.0288	\$1.47	0.0279	\$1.47	0	\$1.51	0.0272	0.020975	Q	2.097
2023	BNS	\$1.03	0	\$1.03	0	\$1.06	0.029	\$1.06	0	0.00725	Q	0.725
2023	CM	\$0.85	0.0787	\$0.87	0.0232	\$0.87	0	\$0.90	0.0344	0.034075	Q	3.407
2023	TD	\$0.96	0	\$0.96	0	\$0.96	0	\$1.02	0.0625	0.0208333333	Q	2.083
2023	RY	\$1.32	0.0315	\$1.32	0	\$1.35	0.027	\$1.35	0	0.014625	Q	1.462
2023	GWO	\$0.52	0.0612	\$0.52	0	\$0.52	0	\$0.52	0	0.0153	Q	1.530
2023	LIF	\$0.50	-0.2857	\$0.65	0.3	\$0.95	0.4615	\$0.45	-0.5263	-0.012625	Q	-1.262
2023	TDOC	\$0.04	-0.6236	\$0.04	0	\$0.04	0	\$0.06	0.8285	0.051225	Q	5.122
2023	TXF	\$0.39	-0.0487	\$0.33	-0.1538	\$0.38	0.1538	\$0.33	-0.1538	-0.050625	Q	-5.063
2023	VEQT	\$0.00	0	\$0.00	0	\$0.00	0	\$0.69	0.0294	0.0294	A	2.940
2023	XCLN	\$0.00	0	\$0.12	2.4444	\$0.00	0	\$0.12	-0.161	1.1417	BA	114.170
2023	XGD	\$0.00	0	\$0.17	-0.06	\$0.00	0	\$0.10	-0.4	-0.23	BA	-23.000
2023	ZSP	\$0.23	0.454	\$0.23	0	\$0.23	0	\$0.23	0	0.1135	Q	11.350

Above is the raw data - It shows (in order) the year, stock ticker, quarter dividend payout (1 for every quarter), delta quarter over quarter (again, one for every quarter), annual average growth, frequency of dividend payout as well as the average growth in percent at the end. SAS doesn't do well with percentages, so I manually separated into it's own variable.

Right away, we can see that the growth average of XCLN and XGD are far different than the rest of the data.

Results – FIGURE 1

Figure 1a

The MEANS Procedure

Analysis Variable : growthAveragePRCT					
N	Mean	Median	Std Dev	Std Error	Quartile Range
13	8.89	2.08	32.60	9.04	2.68

Figure 1b

The UNIVARIATE Procedure
Variable: growthAveragePRCT

Moments			
N	13	Sum Weights	13
Mean	8.88948716	Sum Observations	115.563333
Std Deviation	32.5895594	Variance	1062.73127
Skewness	3.20755835	Kurtosis	11.2053047
Uncorrected SS	13780.0741	Corrected SS	12752.7753
Coeff Variation	366.720361	Std Error Mean	9.041491

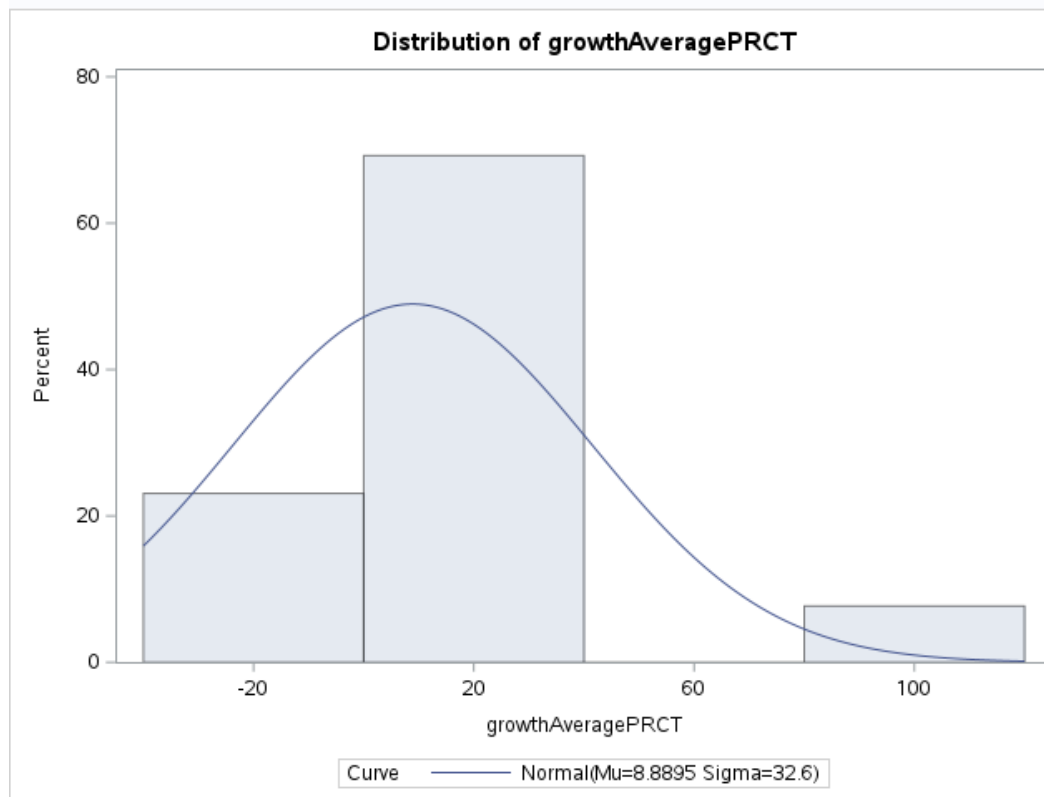
Running PROC MEANS and PROC UNIVARIATE statements confirms the amount of stocks being analyzed. It also generates the mean, median, standard deviation, standard error of the mean and the IQR among other things (*Figure 1a and 1b*).

Note how the mean and median are very far apart. The standard error of 9 shows us the volatility of the data set, possibly due to outliers. The lower value of the IQR tells us that the data points are fairly close in range to each other, however, the large standard deviation of over 32 contradicts the latter assumption, telling us that there is a large distribution between the data.

PROCing a histogram can visualize the measurements (*Figure 1c*).

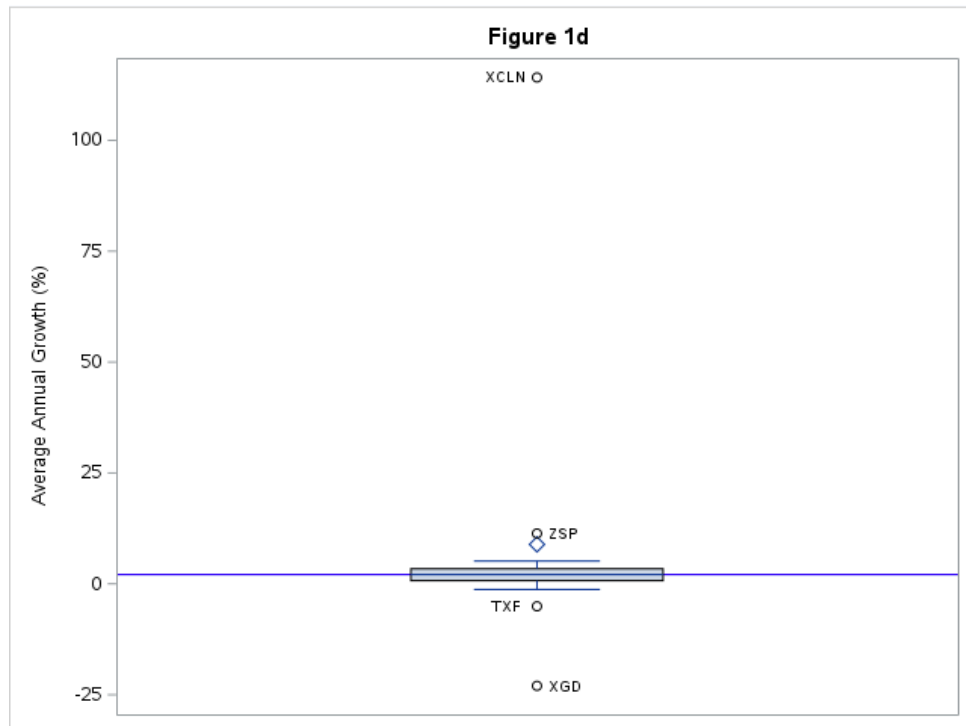
Figure 1c

The UNIVARIATE Procedure



The chart visually depicts the measurements of data and we can conclude that indeed the though most of the data is centralized to an extent, the outliers are what's causing the variation in our Std Dev measurements.

Figure 1d shows, in a better way, the extent of the variation.



Results – FIGURE 2

Since the mean can't (and shouldn't!) be used, I clean the data of the outliers and re-run the PROC statements to ensure some consistency within the data (*Figure 2a, 2b*).

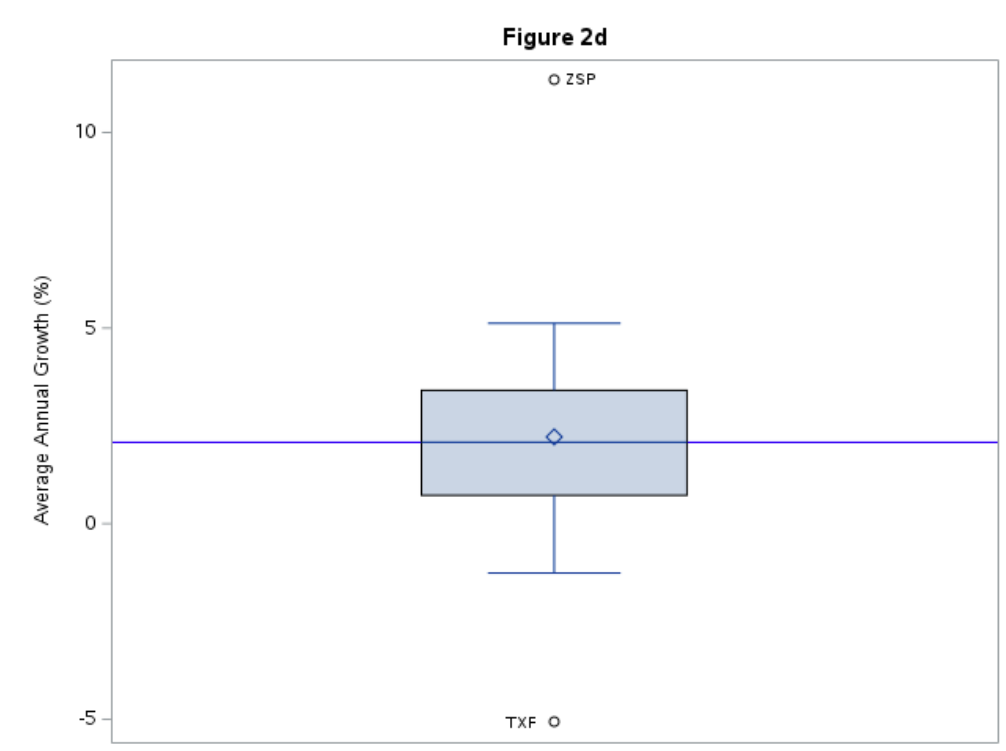
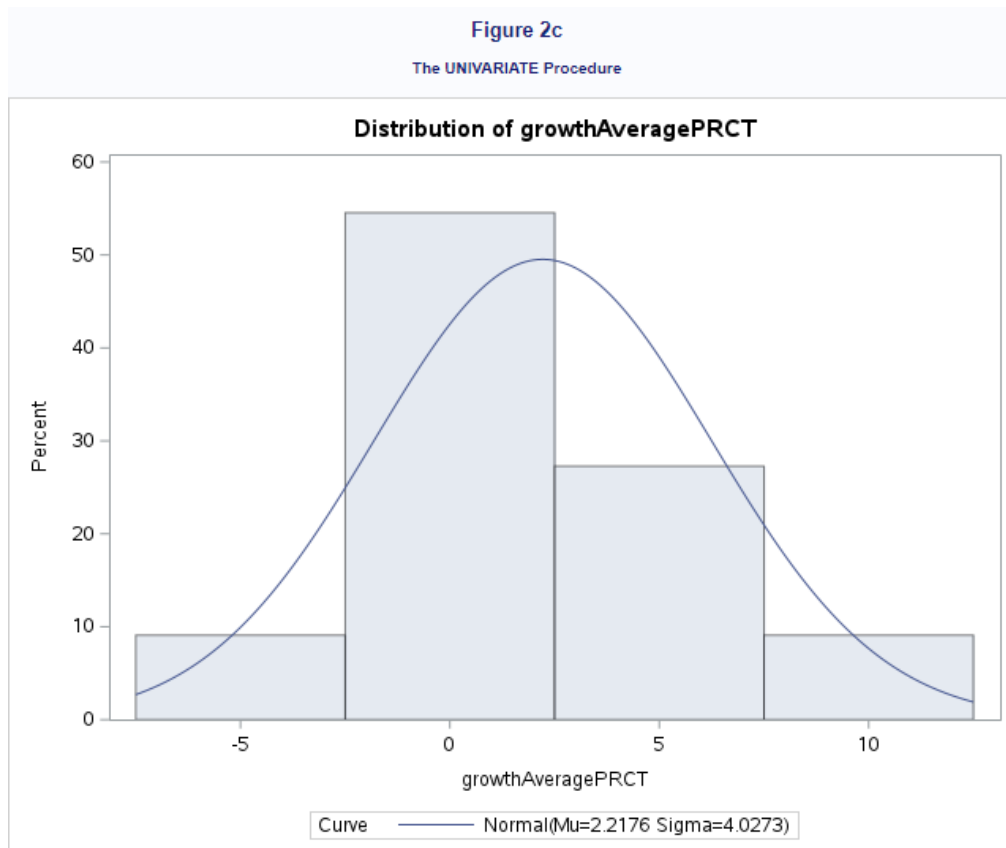
Figure 2a					
The MEANS Procedure					
Analysis Variable : growthAveragePRCT					
N	Mean	Median	Std Dev	Std Error	Quartile Range
11	2.22	2.08	4.03	1.21	2.68

We note that the mean and median are much closer together than the first iteration. More importantly, the median is still the same as the sets of analysis.

The Std Dev is still high however it's still in line with what the IQR is telling us, meaning that there isn't a lot of contradictory diagnostic information. Even the Kurtosis in *Figure 2b* is significantly lower, telling us that the data is a tad bit too peaked with a bit of a longer tail than what is considered normal (because there is still unfavorable data), but it's still better than previous iterations of the analysis.

Figure 2b			
The UNIVARIATE Procedure			
Variable: growthAveragePRCT			
Moments			
N	11	Sum Weights	11
Mean	2.21757575	Sum Observations	24.3933333
Std Deviation	4.02729593	Variance	16.2191125
Skewness	0.66642653	Kurtosis	2.79589596
Uncorrected SS	216.28519	Corrected SS	162.191125
Coeff Variation	181.608043	Std Error Mean	1.21427541

When we run statements to see the data in a histogram and vertical box chart, we can see that the data is much more accurate as analysis will yield more accurate results (*Figure 2c & 2d*).



Conclusion

- The average growth of this dividend portfolio is about 2.08%, however the outliers push it to appear as 8%.
- War in Ukraine and the middle east couple with inflation and the slow recovery of GDP from Canada can attribute to the slow/stagnate growth of historically good bank dividends.
- ZSP (SMP500 ETF) is most likely over-performing.
- XCLN has performed historically poorly, thus the increase in dividends to make it more appealing. However, it being a clean energy ETF (one of the only ones), makes it appealing as it diversifies the portfolio.
- TXF is a covered call tech ETF and as such has had lots of growth via equity but because of the poor performance of tech in later 2023 resulted in shaky and sub optimal dividend growth.