

## Tao Value Q4 2019 Letter

February 26<sup>th</sup>, 2020

For the quarter ended December 31st, 2019, Tao Value recorded a return of +4.25%, compared to +8.75% of MSCI All Country World Index (ACWI). This brings our 2019 full year return to +17.88%, compared to +26.58% of 2019 full year return of ACWI.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year /YTD	MSCI ACWI	S&P 500
<b>2017</b>	+1.94%	+2.34%	+0.33%	+2.80%	+4.14%	+0.07%	+2.65%	+1.76%	+1.31%	+4.69%	+1.34%	+1.60%	<b>+27.91%</b>	<b>+23.97%</b>	<b>+21.83%</b>
<b>2018</b>	+2.07%	-3.85%	-3.74%	-0.80%	+4.81%	+2.99%	+2.20%	+4.16%	-0.87%	-7.26%	+3.79%	-5.53%	<b>-2.93%</b>	<b>-9.42%</b>	<b>-4.38%</b>
<b>2019</b>	+7.68%	+2.62%	+3.19%	+1.46%	-6.54%	+3.28%	+2.40%	-1.53%	+0.43%	+0.52%	+2.42%	+1.25%	<b>+17.88%</b>	<b>+26.58%</b>	<b>+31.22%</b>
<b>Since Inception (* January 1st, 2017)</b>													<b>+46.36%</b>	<b>+42.14%</b>	<b>+52.86%</b>
<b>Annualized</b>													<b>+13.54%</b>	<b>+13.64%</b>	<b>+16.69%</b>

### Contributors & Detractors

Contributors		Detractors	
Position	Performance (bps)	Position	Performance (bps)
Long 1268.HK	241	Long ADS	-61
Long SE	126	Long HUYA	-60
Long GOOG	94	Long CACC	-55

Our top contributors this quarters are **China Meidong Auto (ticker: 1268.HK)**, **Sea Ltd. (ticker: SE)** and **Alphabet (ticker: GOOG)**, adding 241 bps, 126 bps and 94 bps respectively. The largest detractor this quarter is **Alliance Data Systems (ticker: ADS)** with -61 bps. It was followed by **Huya (ticker: HUYA)** and **Credit Acceptance Crop (ticker: CACC)** contributing -60 bps and -55 bps respectively.

As of the end of this quarter, our top 3 positions are **Cash**, **Credit Acceptance (ticker: CACC)** and **Alphabet (ticker: GOOG)**. Collectively, they are 35% of the portfolio.

Below are brief comments on mentioned names:

**China Meidong Auto (ticker: 1268.HK)** was a new position established last quarter and it returned 48% during Q4. The outperformance exceeded our expectation. The luxury car segment remains the only bright spot of overall China auto market, still growing at 8%. We also saw Meidong executed well for the first half year, racking up 32% increase in number of stores, 57% increase of revenue & 50% increase of profit year over year. The management also indicated its future plan for growth mainly through acquisitions, for which we will keep and close eye on.

**Sea Ltd. (ticker: SE)** continued a strong momentum in its gaming business, raising its guidance again in its Q3 earning release. For e-commerce business, it started to ramp up the monetization by scaling back on certain shipping & handling subsidization. While it helps reduce the loss, it will be important to track

the growth trajectory after such incentives change. Sea is also showing up in many fund managers' recent quarter 13F filings, indicating strong demand from US institutional managers.

**Alphabet (ticker: GOOG)**, in December, announced to promote its Google division CEO Sundar Pichai to the CEO of the parent holding company - Alphabet, Inc. This should help align group's mission & vision, which is a positive for the long term. During its most recent Q4 earning announcement, Alphabet, for the first time, disclosed separate numbers for Youtube, which has an annual run rate of \$15 billion, growing 36% year-o-year. The \$15 billion may appear a huge number, however it only translates into less than \$8 for each of its 2 billion users. As a user, I believe the \$8/year is way under value for Youtube's services that I use, thus Youtube still has multi-folds growth path ahead of it. I also noticed a good sign that Alphabet started to deploy more cash for share buybacks, spending \$6.2 billion compared to \$2.7 billion last year.

**Alliance Data Systems (ticker: ADS)** dragged our portfolio by -61 bps this quarter. I believe it is moving toward the right direction of de-risking its retail portfolio, yet maybe in a slower than anticipated pace. One major update however is that ADS announced in November to name a new CEO Ralph Andretta, a long time Citi card business executive, just 5 months after they promoted the last CEO Melissa Miller from its own card business. The management shuffle seems excessive and created some uncertainty to our original thesis. Note that we believed ADS would use proceeds from selling non-core businesses wisely for stock buyback and improve per share earning power. I will watch out for new CEO's capital allocation plan.

**Huya (ticker: HUYA)** dragged -60 bps for our portfolio during the quarter. Its core e-sports streaming is facing intensifying competition from a few strong newcomers. For example, **Bilibili (ticker: BILI)** obtained exclusive broadcasting rights for League of Legend World Championship. Given this observation, I estimate the path to profitability for the e-sports streaming industry would be prolonged, yet Huya is and can remain the industry leader.

**Credit Acceptance (ticker: CACC)** contributed -55 bps to the portfolio. It is still facing the same challenge of signing up new dealers and ramping up newly signed dealers' volume. I has been a lasting theme for 3 quarters, I will be cautiously watching on this front and be ready to revisit my original thesis with new information.

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## Portfolio Updates

We added on our **Pinduoduo (PDD)** position on its seemingly abysmal earning release day when the price dropped 22%. We believe the misinterpretation by Mr. Market of its branding investing activity as full expense created a great opportunity to add our position. During Q3 19, PDD ramped up aggressively in its marketing expenses, and the management disclosed a very important detail on how they measure their branding investing effectiveness, which is by measuring the **behavior change** after users use coupons. CEO Colin Huang stated enthusiastically that “...we are pretty happy with the money -- every penny we spend. And we're very happy with reactions of the users...”. Generally, I don't take 100% of management comment's face value, however I evaluated the probability of either Huang was lying or being too dumb to design and interpret good A/B tests, are quite low. Retrospectively, it turned out a good buying point as the price has recovered 20% from then to quarter end.

We exited one of our worst performing positions - **Ashford Inc. (AINC)**. The thought process for such decision was simple. The continued price drop made the position an immaterial one. Since I have a process of not owning immaterial positions, I must choose between 1) make it material (i.e. buy more), or 2) exit it. After revisiting our initial thesis, I believe we understudied CEO Monty Bennett's incentive in his broader personal wealth context. The lesson is somewhat like what we learned from YY's Bigo acquisition. When the owner of a public company owns other businesses, they could unfairly transfer the public company's value to themselves by manipulating terms of the deals between the public entity and their other entities.

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## General and Market Commentary

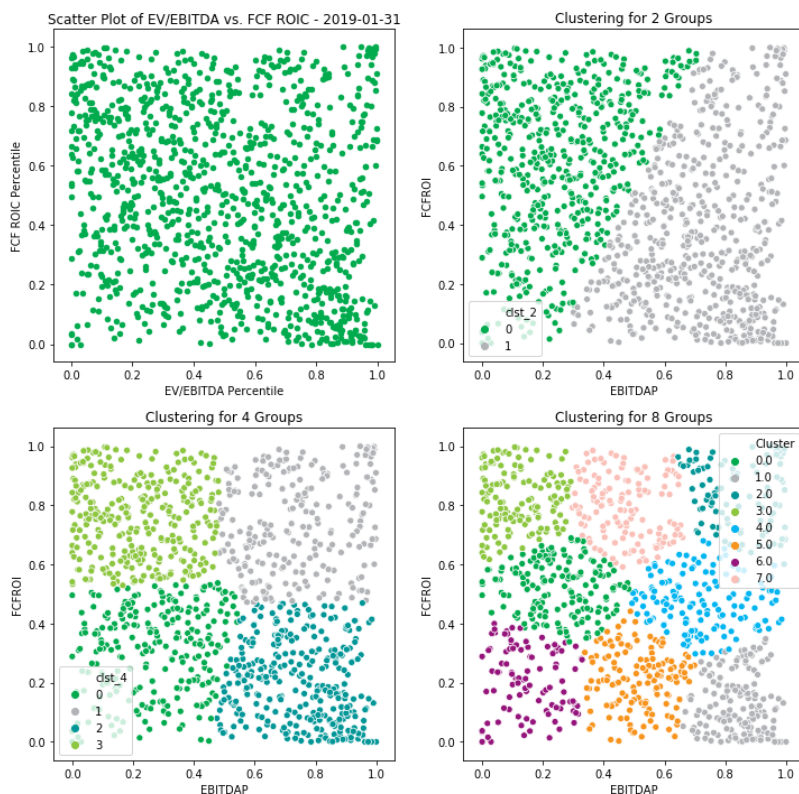
While I'm writing this letter, mainland China is haunted by one the largest epidemic outbreaks in recent decades - a novel coronavirus named COVID-19. It is quite disturbing to follow the news as each tick of the death toll is a tragedy for a family. The outbreak's impact on economy also raises strong concern on China's future, I personally believe it will be a temporary pain. In fact, it may even be a catalyst for accelerating certain next generational economic segments, like biotechnology & AI. For example, the video communication darling **Zoom (ticker: ZM)** got a strong boost, as it stood out as the most reliable workplace communication tool when the whole national need to work from home. When we look back at this history, I'm confident there will be resilient great businesses emerge stronger from this crisis.

In our last letter, I discussed my thoughts on incorporating more quantitative tools to enhance our investing process. In this letter, I will share with you some interesting researches I have conducted. This exploration is around the ever-mounting concern over systemic value strategies: Why did it not work for such an extended period? There are some theories on accounting inefficiency in capturing the economics of new economy business (e.g. software) which I discussed in one post last September. [\[Link\]](#) Here I tried to see further whether I can using machine learning tools to extract any pattern unobservable to human eyes.

## To Embark the Journey of Stock Clustering

In this exploration, I tried to use an unsupervised machine learning technique call K-Means Clustering [\[Link\]](#) to perform an alternative way of stock classification. The intuition is that we know value factor (book to market ratio) have failed to work on a large stock universe, as the accounting deficiency doesn't allow new economy business to reflect its true valuation through book value. But could there be better way of classifying stock so that we can see maybe value factor still works in certain types of stocks while not so in others? The advantage of such machine learning technique is that I don't have to tell the algorithm about how to do so, all I need is to define metrics (also called "features" in ML term) for it to use, and the algo will try to find patterns by itself to group similar stocks into "clusters".

I started from Joel Greenblatt's famous "Magic Formula", which looks at stocks from two dimensions: valuation & profitability. For valuation, I decided to look at EV/EBITDA ratio, and for profitability I chose to use Free Cash Flow Return on Invested Capital (FCFROI). The main reason is to measure cash flow profit, as opposed to accounting profit, albeit neither EBITDA nor FCF is perfect. One important note to remember for interpreting my charts throughout is that all factors are ranked by percentile and the direction is always from favorable (0) to adverse (1). For example, for EV/EBITDA factor, 0 is the cheapest stock, 1 is the most expensive stock, and for FCFROI, 0 is the most profitable, 1 the least profitable. Next, we decided we will conduct this research mainly focus on US Large Cap space (equivalent of Russell 1000).



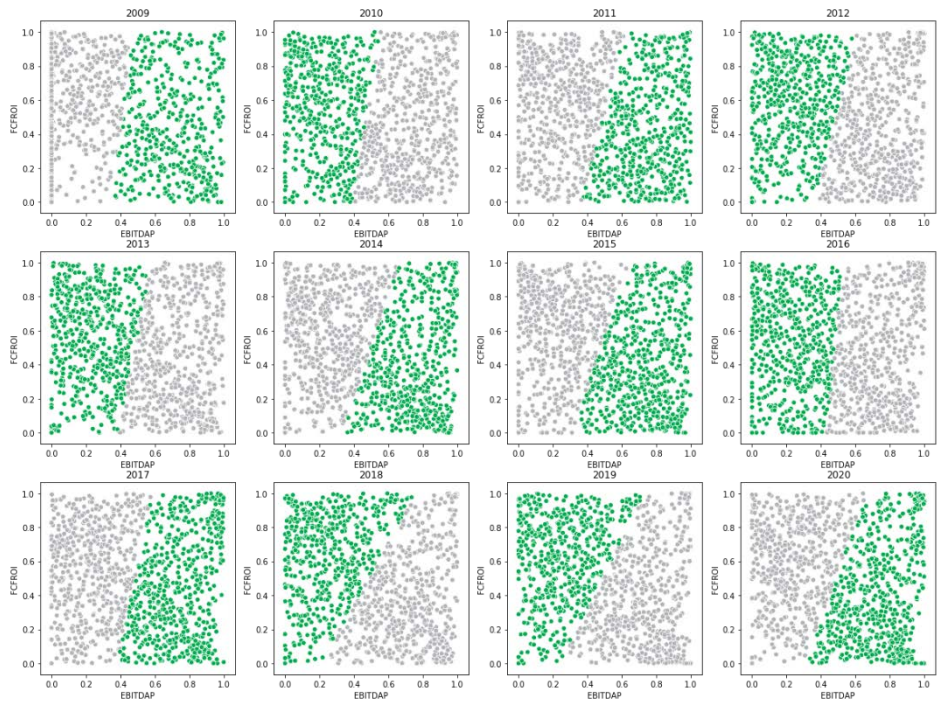
Source: Tao of Value

On the left we picked a single day snapshot (1/31/2019) as an example and demonstrated the scatter plot of these two metrics (top left), then the 2, 4 & 8 groups clustering. There are some interesting observations:

- The 2 groups clustering shows that EV/EBITDA is a primary axis in classifying stocks, as the boundary line rely more on valuation than on profitability.
- The 4 groups clustering shows a more "traditional" quadrant framework, and the bottom left is basically the "value corner" which had stocks having cheapest valuation and highest profitability.
- The 8 groups clustering also shows a quite structured classification, where both dimensions are cut up in 3 sections (low, median and high).

## A Time Story of the 2 Groups Clustering

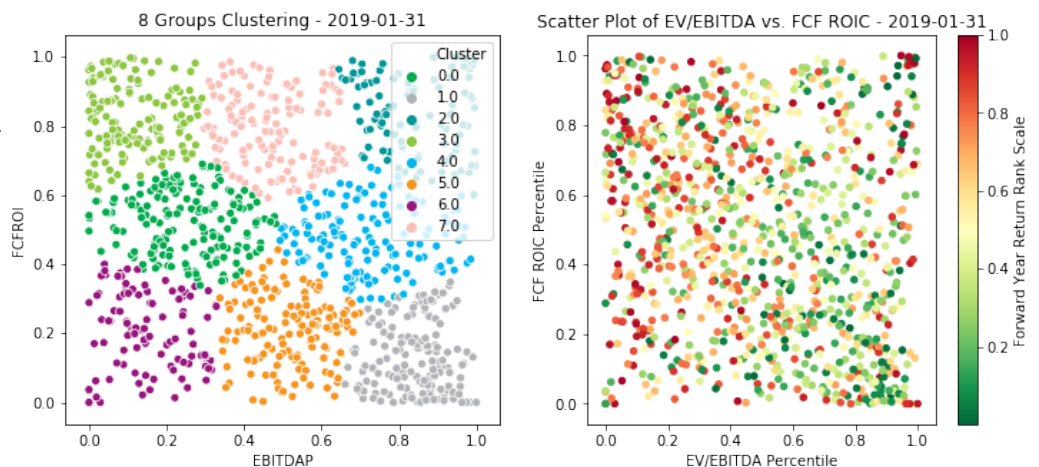
Based on what we observed from the 2 groups clustering on 1/31/2019, the valuation seems to be more influential factor. I wanted to see whether that observation held true over time. To the right is what I saw for data points at the end of January of each year from 2009 to 2020. Although it varies year over year, valuation still drives this two groups clustering. There are however some years profitability matters more (e.g. 2018 & 2019 where the slope of the boundary line flattening) and some years profitability matters less (e.g. 2009 & 2016, where the slope of the boundary line was very steep).



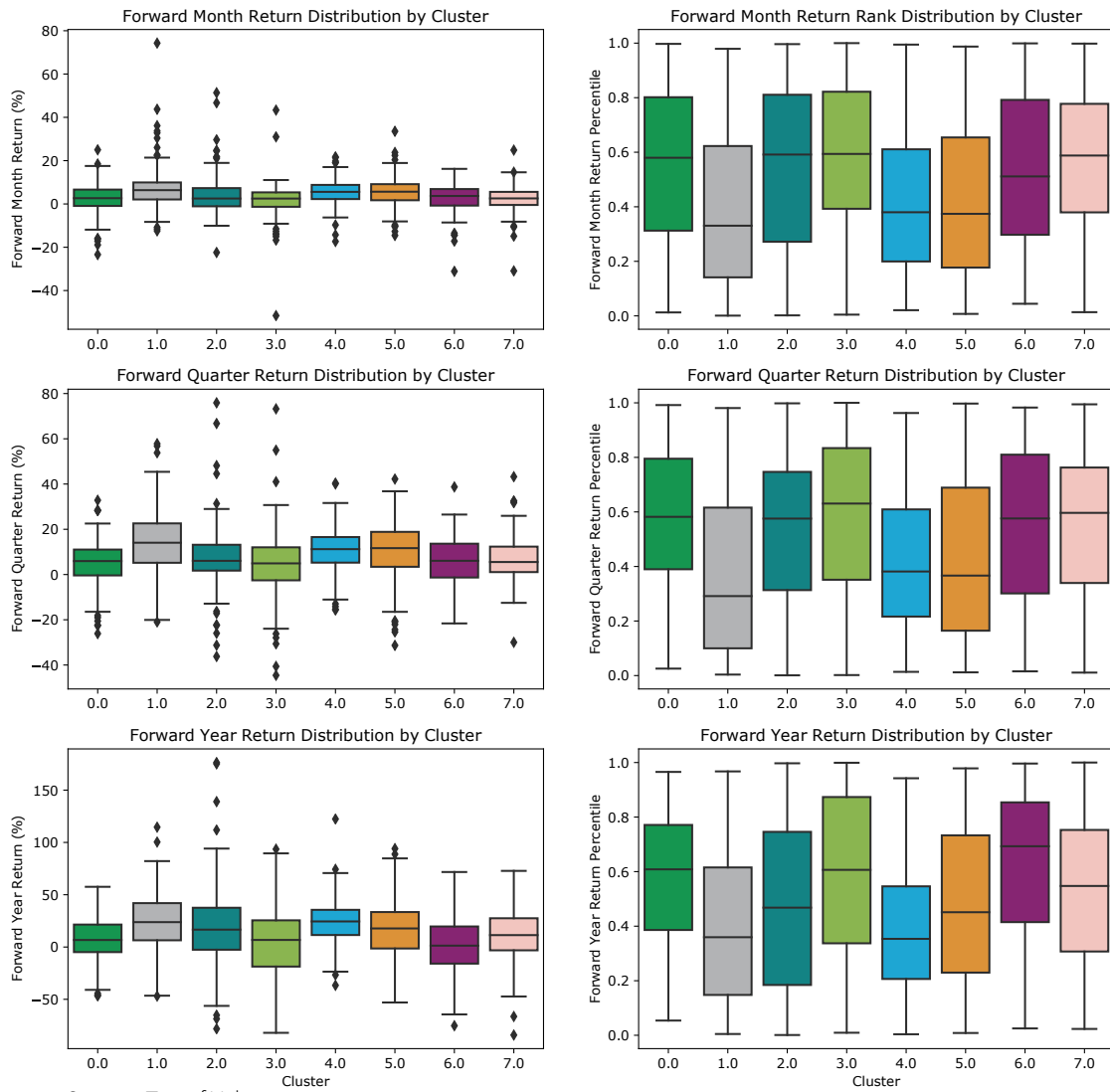
Anecdotally, we happened to see value as a factor performed the best in 2009 & 2016 yet squandered in 2018 & 2019. So, there may be some interesting implication of forward return for each cluster.

## Let's Talk About Money, I Mean, Returns

A natural extension from above observation is to look at forward performance of each cluster and see whether there is difference. For this practice, I will use the 8 groups clustering as of 1/31/2019 as an example, for the purpose of trying to capture nuances of smaller groups, as seen the left part of chart on the left. On the right you see the same scatter plot, with color scale representing forward year return percentile ranks (green means better return & red mean worse). You can probably see with naked eyes there is some pattern (i.e. greener towards bottom right, and redder towards left).



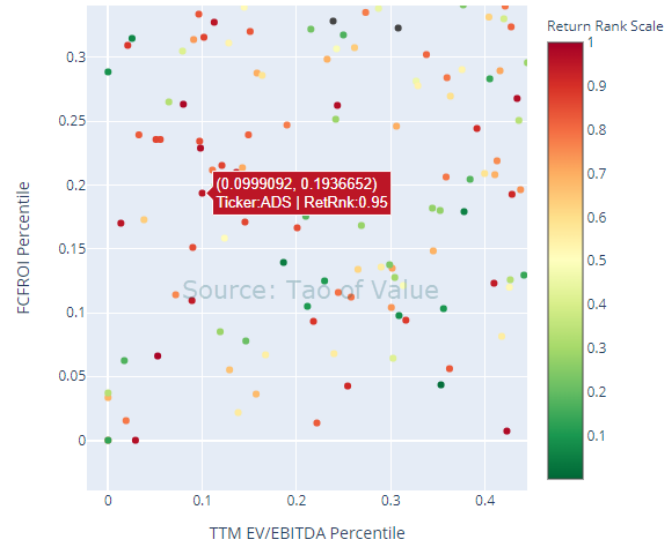
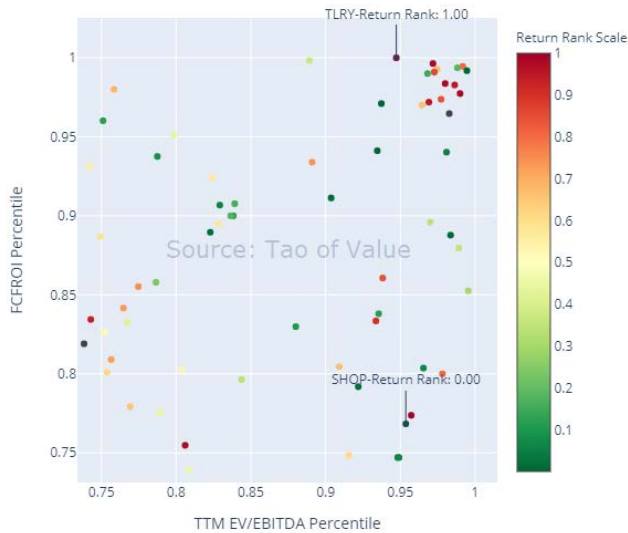
Below is the distribution of absolute return (left) & return rank (right) for forward looking 1 month, 3 month & 1 year from 1/31/2019 by cluster. A reminder of ranking direction is from favorable (0) to adverse (1), thus return ranks 0 means the best return among all stock, and 1 means the worst.



Source: Tao of Value

- By multiple measures, **Cluster 1** (bottom right from the scatter plot, or the most expensive but the most profitable stocks) turned out to be the best performing cluster for 2019.
- **Cluster 4** & **Cluster 5** are the rest two obvious outperformers after **Cluster 1**, on all three-holding period forward returns. All three of them form the right bottom corner (moderate to expensive & moderate to very profitable stocks).
- **Cluster 2** (top right corner, or the most expensive yet the least profitable stocks) had mixed forward performance. On 1-month forward return, its median is among the worst, yet on 1 year forward return basis, its median came in the 4th best. It's also notable that **Cluster 2** had very wide distribution, as some of those most topical names are in this cluster. For example, as seen below, both the top performing (ranked 0) **Shopify (Ticker: SHOP)** and worst performing (ranked

1) Tilray (Ticker: TLRY) are from this corner (see below left zoomed-in chart). It becomes obvious that accounting, even after adjusting for cash-based profit, still does a lousy job in describing businesses in this cluster.



- **Cluster 6** (i.e. the Magic Formula corner, or the cheapest & the most profitable stocks) tends to do worse towards longer holding period. From above right zoomed-in chart, we also see much more red dots than green ones, indicating more challenging environment for the “Magic Formula”. One of our losing position **Alliance Data Systems (Ticker: ADS)** was among them.

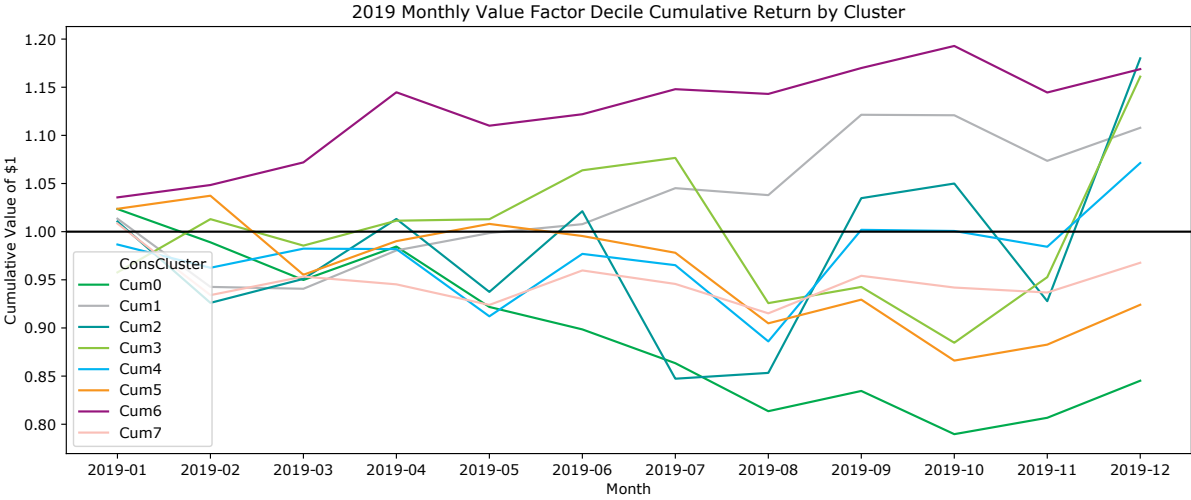
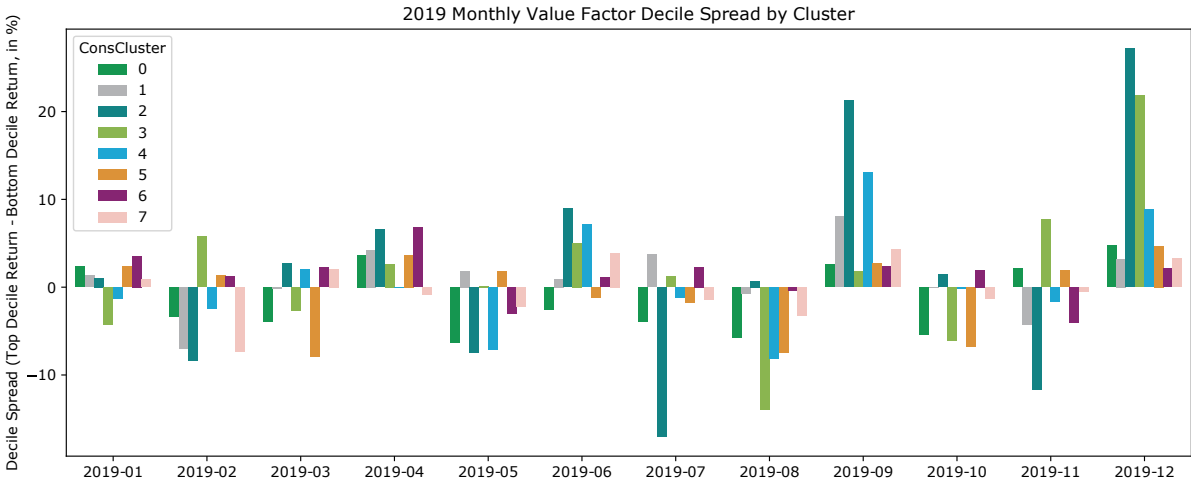
### How Did “Value” Do in Each Cluster?

By “Value”, I mean a decile long short strategy based on Book-to-Market ratio. We know that “Value” didn’t work well on a broad stock universe, what if we try to do “Value” in each cluster? That means instead of buying the cheapest 10% & shorting the richest 10% among all stocks, we do so in each cluster. Theoretically, if Clustering does its job and groups stocks by its own type, we should be able to avoid some of these accounting distortions. Or thinking anecdotally, among **Cluster 2** (top right corner, which a cross-sectional Value factor may end up shorting entirely), we may be able identify **SHOP** as a buy and **TLRY** as a short!

Below monthly performance summary showed some very fascinating findings:

- Among 8 clusters, 5 of them returned positively over 2019, this is very different picture compared to the overall lackluster Value factor performance over the same period. One thing to note is that we are looking at US Large Cap Value, which as a group did better than Mid & Small caps.
- **Cluster 6** (the “Magic Formula” corner) worked very well over 2019, totally 17% return! Also, even when it was down on 3 out of 12 months, the downside was limited.

- **Cluster 2** & **Cluster 3** (top right & left sections, or the least profitable + both cheap & expensive ones) returned similarly at 18% & 16% respectively, however with much more volatility. The performance was also heavily driven by two single months (Sep & Dec).
- **Cluster 0** (the middle left section, or cheap and moderately profitable stocks) is the worst performing cluster for “Value”, yielding -15%. This section may be where investors encounters the most “value traps” (moderate profitable on cash basis, and optically cheap).
- **Cluster 5** (the middle bottom section, or highly profitable and moderately valued stocks) was the second worst cluster for Value. Anecdotally, this section is the home for some of these “wide moat” names, e.g. **Apple (AAPL)**, **Microsoft (MSFT)**, **Transdigm (TDG)** & **Moody’s (MCO)**. In any case, this cluster may seem like a bad place to apply deep “value” factor like P/B ratio, as shorting any of these names wouldn’t make sense.
- Bottom line is that we do see *clusters demonstrate unique profiles* which some of them help “Value”, while some hurt it.



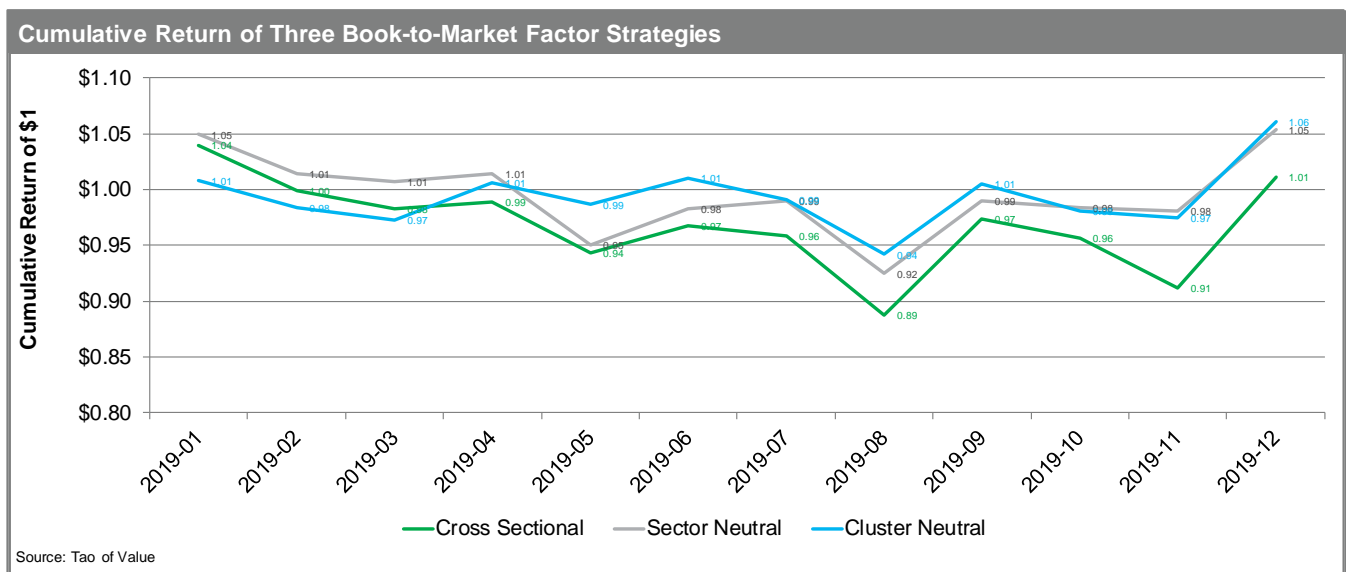
Source: Tao of Value



## Further Implication

In above analysis, although the algorithm uses ex-ante information only (i.e. TTM EV/EBITDA & TTM FCFROI) to perform clustering at each month end, I did “peek into the future” for the forward return. Thus, it is not immediately actionable until I build a predictive model to forecast whether “value” may or may not work for each cluster in future.

However, what was fully actionable is that I didn’t need to predict winning/losing cluster, rather I can simply do “Value” with a cluster neutral technique, that is to long the cheapest 10% stocks & short the richest 10% stocks within each cluster. Below is the cumulative return chart of three monthly rebalanced long-short value strategy (cross-sectional, sector neutral & cluster neutral). The cluster neutral shows promise as not only it improved the return the most, but also with the least volatility (14%, compared to Cross-sectional’s 19% & Sector Neutral’s 15%). Looking forward, with better intuition in understanding why certain clusters don’t work for Value, there are potential further improvements we can test (e.g. introduce more features & avoid the “wide moat” cluster altogether). One last thing to note is obviously that one year is a short period time, and it requires a longer time period of history to validate it further.



## Final Note

While the insights from such intense quantitative research may appear less actionable for discretionary strategies yet, I gained many intuitions and verified many “hunches” which certainly made me a better investor than I was. I’m confident these knowledge and new techniques I acquired along the way, once incorporated in our process, would add value to our long-term success. Some near-term ideas include screening, position weighting & more systematic portfolio reviewing to name a few examples. With that been said, I look forward to report to you next quarter.