Cliff's Perspective

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Is (Systematic) Value Investing Dead?

May 8, 2020

No it's not. Quite the opposite. I didn't want to keep you in suspense. Now for some detail.

My colleagues have written a great paper (IMHUO[1]) examining the issue (and sharing this blog's title). It goes without saying that we have a horse in this race (OK, we have a whole team of horses in this race). But I do hope you'll read their work and agree that the questions were asked and answered fairly. Their answer is frankly not surprising for a strategy that's "worked"[2] through the 1920s – when a lot of stocks were railroads, steel, and steamship companies – through the Great Depression, WWII, the 1950s – which included some small technological changes like rural electrification, the space race and all the technology that it spanned – the internet age (remember these same stories for why value was broken back in 1999-2000?[3]), and eight seasons of Full House and then, God help us, Fuller House. Value certainly doesn't depend on technological advancement being stagnant! But in a time when it's failed for quite a while (again, that just happens sometimes even if it's as good as we realistically think it is[4]), it's natural and proper that all the old questions get asked again. Is now different? For instance, are the accounting measures we use to measure value not capturing the fact that we are now living in an era when a handful of "global winners" are able to capture excess monopoly rents? Are too many people now aware of the strategy for it to work going forward?[5] Might overreliance on the price-to-book factor, and the oft-alleged inadequacy of that factor for today's world, be the issue? These are quite common criticisms of value strategies today.

Besides just an inherent discomfort with randomness, part of the issue is confusion about why value works at all. It does not depend on getting big events or trends right. It does not depend on having perfect accounting information.[6] Certainly, it does not require a lack of massive technological change over time. No matter what the situation, it simply needs investors to net overreact. Companies that are cheap need to tend to be a bit too cheap

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[1] **I**n **M**y **H**umble and of course **U**nbiased **O**pinion.

[2] I remind everyone again that to a statistician, or pretty much everyone in investing, "works" means more often than not for a reasonably positive long-term, risk-adjusted return. Remember, the market's Sharpe ratio is about 0.4 long term. If a "factor" achieves just that and is uncorrelated with the market, it adds to a portfolio. But, like the market itself, it can have a down decade without even approaching a -2 standard deviation event.

[3] We have been down this road before arguing against the insanity of the tech bubble and in favor of the value factor in places like here and here.

[4] For footnote 4 see footnote 2. I'm meta-footnoting.

[5] I find this one particularly nonsensical and often respond "if the strategy is so popular that it won't work anymore, someone forgot to tell the prices!" Or alternatively, copying Yogi Berra, "that strategy is so popular nobody does it anymore!"

[6] I say "perfect" for a reason. More accurate is always better. But some inaccuracy doesn't necessarily destroy – and certainly doesn't reverse a value strategy – it just adds noise, lowering the Sharpe ratio (a negative, but not certain doom). In fact, we know we never have perfect measures of valuation. They all contain some "noise." This is why we have always preferred combining many reasonable value measures rather than choosing one allegedly best way.

for whatever set of facts exists at that time, and expensive companies need to tend to be a bit too expensive.[7] For instance, it's OK if there's more monopoly power for a few firms today than before (or any other thing being different this time), as long as humans will still tend to overdo estimates of how powerful and long-lasting those monopolies will be, and vice versa for cheap stocks that lack these advantages. We see no evidence that humans are now much more rational and less error-prone than they used to be.[8] Furthermore, the systematic version of value almost always relies on extreme diversification. Therefore, stories that apply to a handful of stocks *start out* unlikely to be driving the overall factor performance or the cheapness of the factor we see today. But that is exactly what we need to prove or disprove below.

My colleagues' paper goes into great detail on these issues and, again, I really hope you read it. I can't add much directly to what they've already done. But I can do, if anything, a simpler, more brute-force experiment that I think is quite illuminating. This experiment constructs the classic Fama-French HML value factor[9] (using the much maligned price-to-book factor) and then starts tweaking it – both in the direction of getting closer to the way many of us quants actually implement it (e.g., using multiple measures not just price-to-book, and moving past just capitalization weighting), and then, the real meat of this post, systematically dropping stocks in a variety of ways. The stocks dropped will be ones that best fit the stories for why value is unable to be measured today like it was in the past. For each of these tests I report the historical value spread through time (which we originated way back in the stone age of 1999 when we went through round one, for us, of "value has been terrible and will never work again because everything is different now").

Part 1: Simple Academic Value Portfolios

A. Value Spreads Using Price-to-Book

Let's start with the very basics. Below is a chart of the value spread (the ratio of how "expensive" expensive stocks are vs. cheap stocks – a chart we sometimes call "the value of value").[10] See here or here if you need a refresher. These value spread analyses require decisions both on which value factor is used and how its attractiveness is measured. The simplest choice, and the one that aligns best with the academic and practitioner literature, is to use price-to-book sorting (the HML factor) and to evaluate it with a matching value spread based on price-to-book. This is indeed what I show in many of the charts below, but the tables will also report value spreads using multiple value measures for these price-to-book sorted portfolios. The idea is to stay reasonably consistent with the literature but also to check that price-to-book is not driving the bus (the major exception for using price-to-book sorting is one later chart where I study a price-to-sales sorted portfolio as a robustness check[11]). In Figure 1, following Fama and French, I use the whole U.S. stock universe and do not exclude industries nor neutralize industry exposures.[12]

[7] As usual, I will only use the "behavioral" explanation of value here but we do respect the "risk-based" explanation and you can substitute that in as desired. It's just too cumbersome to refer to both consistently.

[8] Seriously, for those arguing markets or the world have gotten much more rational over time, have you turned on the TV (and not just to the financial channels)?

[9] Of course we'll use the AQR "Devil" version. Otherwise we stick initially to the Fama-French designs: we include both U.S. large-cap and small-cap stocks and we do no industry-neutralization. We'll soon check other methodologies that test these choices.

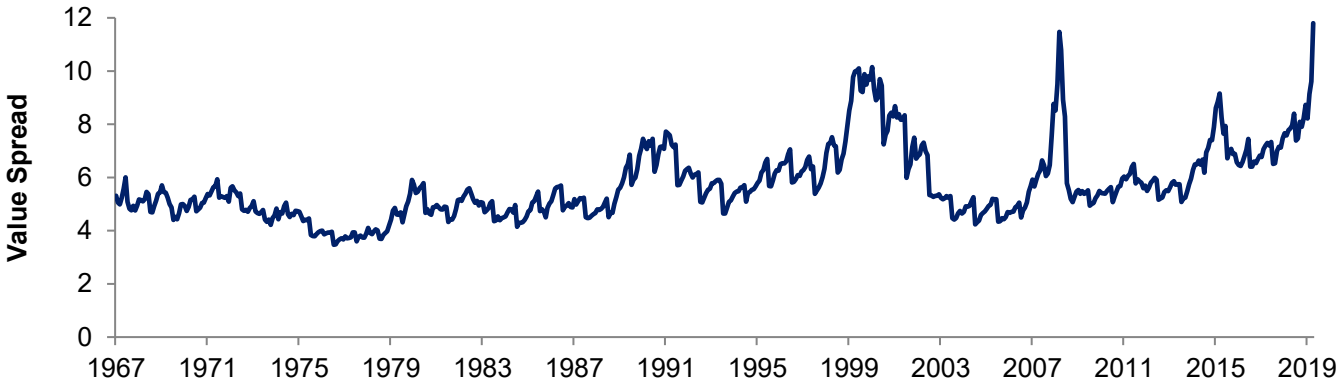
[10] To get a bit pedantic, the chart is equivalently the P/B of the expensive stock portfolio divided by the P/B of the cheap, or the B/P of the cheap stock portfolio divided by the B/P of the expensive.

[11] That is, just because you formed a long-short portfolio on price-to-book, you're free to judge it on, say, price-to-sales. If it looks very cheap on price-to-sales, it's not a result of some problem with book value, even if you created the portfolio that way.

[12] In all the spread calculations, we winsorize at the 1st and 99th percentiles to cull outliers. I'm going to present quite a few versions of this graph, and admittedly it's a bit boring as they are all pretty similar. Of course that similarity is my entire point! We'll find we can't change this basic result, that cheap stocks are now super cheap vs. expensive stocks as compared to history, by throwing out stocks that may be the most subject to "it's different this time" arguments (defined in multiple ways).

Figure 1

Price-to-Book Spread, Academic Style
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

So the expensive stocks are sometimes only <4x as expensive as the cheap stocks, the median is that they are 5.4x more expensive, but today they are almost 12x more expensive. For those first-time listeners, 12x is a lot! Here are some stats we'll use repeatedly. It is now (March 31, 2020) at the 100th percentile vs. the 50+ years of history we have.[13] Another stat I like to examine is the amount the current reading is over median, divided by the maximum ever reading over median. This complements the percentile as it includes magnitude. Sometimes the 97th percentile is pretty close to the maximum ever, sometimes it's further away. Here, again obviously, this measure is now at 100% (when you're at the 100th percentile there is no difference in these measures). Finally, while it's a somewhat flawed statistic for an autocorrelated and somewhat skewed series, I'll report the standard deviation event (STD) of the final reading largely to compare across our various tests. Here it's +4.5.

So it's wide. Really, really wide. Who cares? Many criticize value, and in particular price-to-book as a way to measure value, arguing that it's no longer relevant today and therefore neither is this spread. Some of these arguments are that the strongest firms today have higher intangible value than in the past, something perhaps not captured in book value, and the related argument that the best firms have far more monopoly power today than in the past.[14] That is, it's a global "winner-take-all" world and value measures just don't apply anymore. Some also argue that the flows into index funds have driven the biggest, most expensive names up wildly. This argument also implies this trend is just getting started and it's easy to predict it continues so the value spreads we report are going to infinity (otherwise it's just an explanation how value got cheap, not for why it's unattractive going forward[15]).

[13] Notes that are this long (sorry) always come at a lag to the data. Market-watchers are likely well aware that value's performance in April and early May was again poor, and while we're still calculating end-of-April spreads it is very unlikely the results of this note will have changed given this. If anything, they're likely even more extreme.

[14] Again, if book was still measured well, this really wouldn't matter. All that would be required is people overreact to this information. As noted, my colleagues' paper delves further into the topic of intangible value.

[15] You have to look out for this common flip in causality. Explanations for how we got here are not the same as explanations for why something won't work going forward. For instance, while we think this is overdone, some believe, and they are likely directionally right even if nowhere near right in magnitude (it doesn't explain that much), that value is super-cheap because interest rates are so low. Even if that were 100% true (and, again, we have serious doubts about the theory, questions about what rates to use, and empirically we find bond returns only explain a small amount of value returns and an even smaller amount when industry bets are not taken), it would be an explanation of how we got here, not a prediction for value going forward – value would still be super cheap today; we would just know the reason why it's super cheap.

B. Value Spreads Using Other Measures Tell Us Pretty Much the Same Thing

In order to address these critiques, step one is just to look at other measures besides price-to-book. We're going to continue with the Fama-French HML portfolio construction methodology (creating portfolios by sorting on price-to-book), but we're going to calculate its cheapness today and through time using some additional measures.[16] I examine three others. One is price-to-sales.[17] That's actually a far more relevant measure once we remove the industry bet (coming soon), as long-lasting cross-industry margin differences render this metric questionable. But, although it's misleadingly underwhelming, we'll report it here for consistency. The next two are one-year trailing and one-year forecasted price-to-earnings ratios.[18] Table 1 shows the statistics we've reported above for price-to-book (100%, 100%, +4.5) and adds them for these other three measures, as well as a composite of all four (note again, each time the sort is on price-to-book, what's different in each row is reporting the value spread of this portfolio using different measures).[19]

Table 1

Various Value Spreads, Academic Style
December 31, 1967 – March 31, 2020*

Value Spread Measure	Current Percentile	(Current – Median) / (Max – Median)	Current STD Event
Price-to-Book	100%	100%	+4.5
Price-to-Sales	83%	21%	+0.7
Price-to-Earnings (trailing)	100%	100%	+4.7
Price-to-Earnings (forecast)	99%	82%	+3.9
Composite	100%	92%	+4.3

* Forecasted Price-to-Earnings starts January 31, 1976.

Source: AQR, CRSP, XPressFeed. "Composite" is a combination of the four value measures in this table. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

With the exception of price-to-sales, again a measure that's flawed when allowing cross-industry bets, things look pretty darn cheap no matter how we measure them (and even price-to-sales is 83rd percentile – not dirt cheap but not too shabby – we'll have to wait until we remove the industry bets to see that one soar!).

C. Excluding Certain Stocks Doesn't Change the Story

Using measures other than price-to-book should help a lot if price-to-book is flawed. But we can do better. Now we are going to systematically throw out stocks based on a variety of criteria. For instance, today we would like to examine the value spread versus history if you didn't include the likes of, say, Amazon, Apple, Facebook, Google, Microsoft, Netflix, or Tesla (MAGFANT). But we can't throw just those, and only those, out today as it's arbitrary and causes an apples-to-oranges problem when comparing to the past. We need to find systematic ways of tossing stocks we worry might be hard to value today that we can apply consistently over the whole 50+ years. I try three (and mention some others in the footnotes).

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[16] That's what's relevant. If the portfolio sorted on book is truly cheap on other measures, it doesn't really matter if book itself, which you used to create the portfolios, has some flaws – the portfolio is still cheap measured in a very robust way. But, later on we'll also try sorting on another measure (recall that we always can make a separate decision about how the factor portfolio is sorted/created and how its cheapness is evaluated).

[17] Actually it's sales-to-enterprise value but that's ponderous to say over and over. Since sales comes before interest payments in the income statement it should rightly be compared to enterprise value (the sum of the company's stock and bond market values, not just the stock value like for the other measures). We do this, I just call it price-to-sales here for convenience. Feel free to make the substitution in your mind every time!

[18] Unlike all of our other measures, which start 12/31/1967, forecasted price-to-earnings starts 1/31/1976. Another thing to note is while I call it one-year ahead forecasted earnings it's actually a blend of one- and two-year forecasts weighted to average a year out.

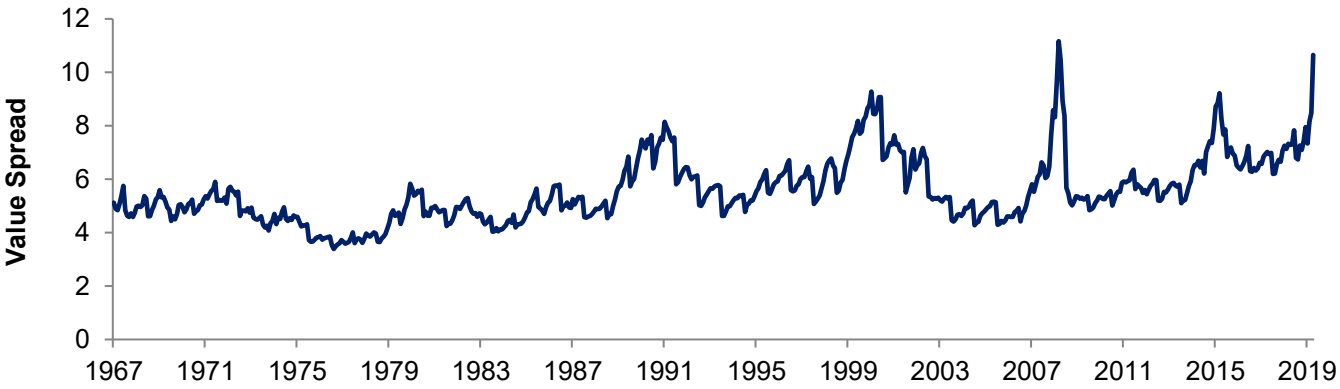
[19] To form the composite I divide all four series by their respective medians, otherwise the naturally bigger ratios would dominate, and then average those four (three before forecasted price-to-earnings is available).

Systematically Exclude Some Industries

First let's toss out the tech, telecom, and media industries.[20] Note again we're not just tossing out tech today but from the whole value spread history from 1967-2020. Figure 2 shows this value spread using price-to-book (to create the portfolios and to measure the price of the expensive divided by the cheap) and always through time excluding these industries:

Figure 2

Price-to-Book Spread, Academic Style, Excluding Technology, Media and Telecom Stocks
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Note some intuitive features of this graph. Throwing out the tech (and telecom/media) industries reduces the overall median value spread a tiny bit (from 5.4 to 5.3) as tech has averaged expensive. But tech is not driving the extreme valuations today vs. the past. On price-to-book, today is still near the 100th percentile (I usually round but here I have to note it's the 99.8th percentile). Its current deviation over median is 91% of the maximum deviation over median (that maximum occurred near the end of the GFC[21]). The composite of all four measures is even more extreme. Using all four valuation measures to judge this ex-tech HML spread, we're at the 100th percentile (so also the maximum deviation over median ever). Thus, we think price-to-book actually slightly understates the case!

Systematically Exclude Mega-Caps

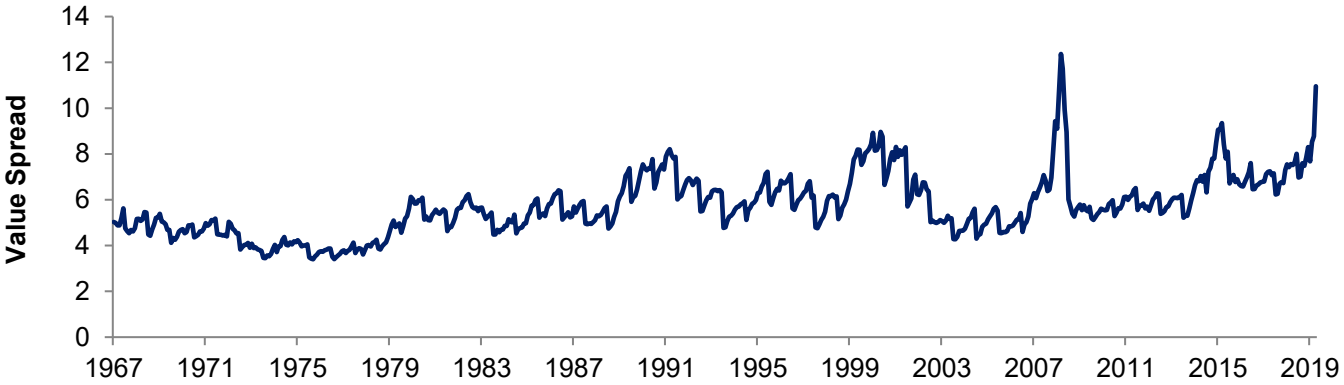
Now let's drop the mega-caps, perhaps an even more direct way of getting at where the monopoly power of "winners who take all" resides. In this exercise I drop the top 5% of our universe by market value of equity. For perspective, today this excludes all of the seven stocks in our MAGFANT list (that is, all seven are absolutely not a part of the final point in the graph below):

[20] We toss out five industries consistently through time. They are GICS code 4510 (Software & Services), 4520 (Technology Hardware & Equipment), 4530 (Semiconductors & Semiconductor Equipment), 5010 (Telecommunication Services), and 5020 (Media & Entertainment). Today these would remove Apple, Facebook, Google, Microsoft and Netflix from our representative list of potential "monopoly" growth stocks. Other measures we'll explore will toss out even more of them. We've also tried tossing out only tech and the results are extremely similar.

[21] We will see the prior maximum generally alternates between the tech bubble and the GFC as we vary the methodology.

Figure 3

Price-to-Book Spread, Academic Style, Excluding the 5% Largest Stocks
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

This exclusion has a bit more bite – but only a tiny bit. The current reading of the price-to-book spread still rounds to the 100th percentile (it's 99.6th) and is 79% of the maximum achieved during the GFC. Using the composite of the four measures, it's just about the same percentile (though actually it's up to 87% of the maximum cheapness versus median – as again it's not price-to-book driving this finding, it's even holding it back slightly). Even if we never allowed trading in the largest 5% of stocks, something that eliminates the stocks today most often discussed as a problem for the value strategy, today's valuation spread would still compare exceptionally favorably to history.[22] Later we will see that excluding mega-caps has even less bite when we get closer to how most quants actually implement (I've started with the academic version of value that's least like what many quants like us actually do and actually, while super cheap, is generally not as cheap as the more realistic measures to come.)[23]

Systematically Exclude the Most Expensive Stocks

Now let's get yet more direct. Let's just remove the top 10% most expensive stocks on price-to-book every month for 50+ years. Of course a true value strategy would generally not ignore the most expensive stocks (while value strategies are diversified, that's where many value strategies eat their breakfast, lunch, and dinner). But we're not trying to form a better value strategy. Rather, we're trying to see how dependent the cheapness of our value strategy today is on the extremes as compared to the past.[24] I'm not even going to show you the chart as I know you're getting sick of them and this one is exceptionally similar to the others (and there are more to come so I'm pacing myself). On price-to-book, consistently measured over only the 90% of non-super expensive stocks, today we're at almost the 100th percentile, the deviation over median is at 89% of the maximum deviation over median ever (again the maximum was at the end of the GFC), and if we switch from price-to-book to the composite of the four valuation measures, we're at "round-to-the-100th" percentile and all the way up to 96% of the maximum deviation over median. Once again only price-to-sales does not look super cheap (69th percentile – not super cheap but certainly not expensive), and again, this is going to change once we control for industries – something necessary to make price-to-sales meaningful. We wouldn't want to remove the most expensive stocks from our value stock universe – but again, the strategy is so diversified they really aren't driving things, and critiques of value investing that depend on these extremes really have no leg to stand on.

[22] By the way, the obvious corollary here is that those who want to implement value but are terrified of the mega-caps need not bet on them. In a later footnote we report results of historical backtests under these restrictions that support this idea (not that we recommend it).

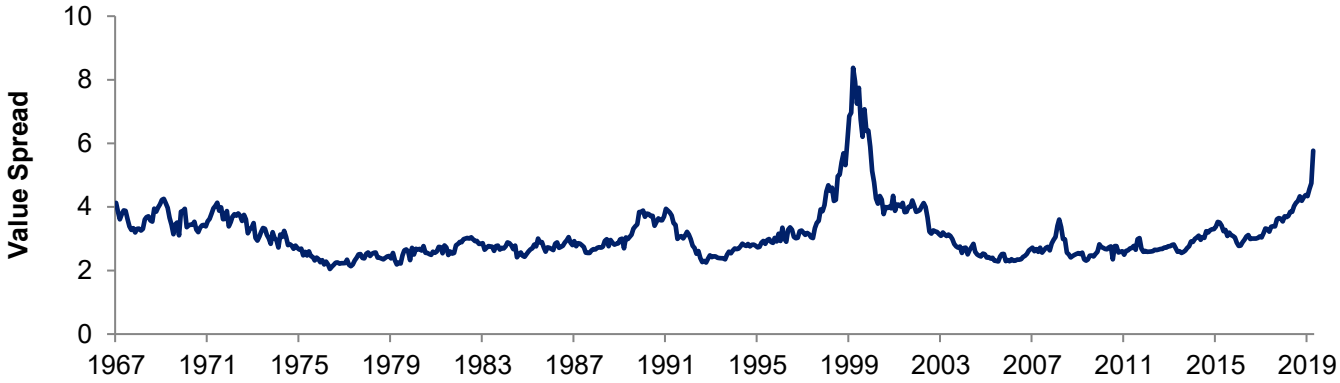
[23] If instead of removing the 5% biggest mega-caps we removed the 10% of the companies with the largest sales, you get even cheaper readings today versus history.

[24] Today this would remove five of our seven MAGFANT stocks (it removes Amazon, Apple, Microsoft, Netflix, and Tesla; but not Facebook or Google). So those five are not affecting the current value spread whatsoever in this exercise. It also confirms that most of these stocks are indeed very expensive on the simple price-to-book factor.

By the way, for anyone wondering why the tech bubble doesn't look even more extreme (that is, the spreads we've been looking at were quite wide in the tech bubble but the widest occurred in the GFC), in Figure 4 we present the same graph but over just industry bets (so this is the price of the most expensive 1/3 of industries divided by that of the cheapest 1/3 through time[25]):

Figure 4

Price-to-Book Spread, Academic Style, Industry Bets Only
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Ah, now there's our old-friend the tech bubble. Today is actually pretty extreme comparing valuations across industries through time but is not close to dethroning the 1999-2000 king of across-industries bubbles. Luckily, we don't have to bet on industries to bet on value.

Part 2: Simple Within-Industry Value Portfolios

A. Value Spreads Using Price-to-Book

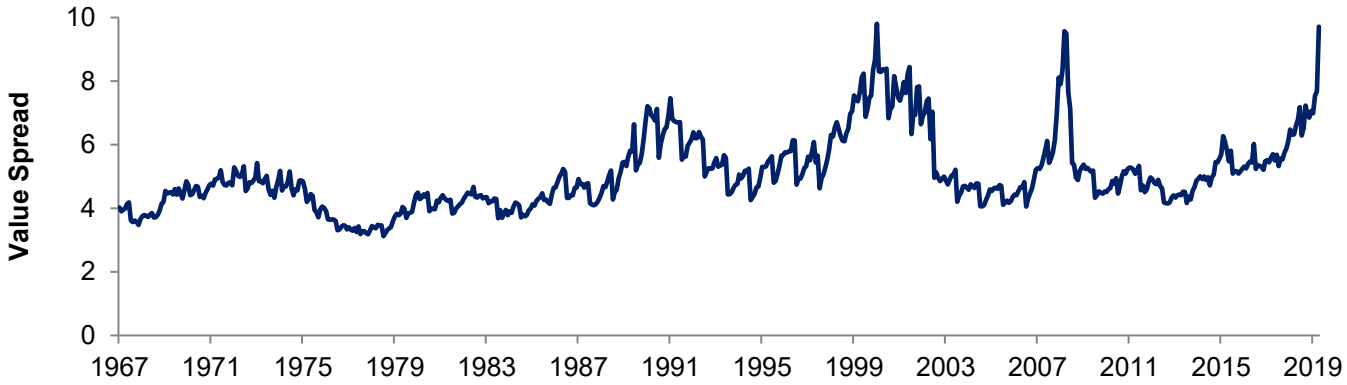
Now, let's get even more realistic, with realistic meaning how AQR – and we presume many but not all other quants, particularly those trading long and short – really creates portfolios. Let's create an HML factor that ranks stocks on how their price-to-book compares to their own industry, not to the whole marketplace. That is, it's industry-neutral HML, balanced long and short within each industry.[26] Figure 5 shows the price of the expensive divided by the price of the cheap through time.

[25] As we'll discuss very soon, this inter-industry value comparison is not how we trade the value factor.

[26] Removing the industry bet is not new stuff for us – the first draft of this paper was 1994.

Figure 5

Price-to-Book Spread, Academic Style, Industry-Neutral
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

I know this is getting a little boring but, yes, value (the spread in value between cheap and expensive – the absolute value of value stocks is another topic for another time) is really exceptionally cheap today. It's rounding to the 100th percentile and is 98% of the way toward the maximum over median.

B. Value Spreads Using Other Measures Tell Us Pretty Much the Same Thing

Now, let's look at all four measures (i.e., not just price-to-book) for this same industry-neutral portfolio:

Table 2

Various Value Spreads, Academic Style, Industry-Neutral
December 31, 1967 – March 31, 2020*

Value Spread Measure	Current Percentile	(Current – Median) / (Max – Median)	Current STD Event
Price-to-Book	100%	98%**	+4.0
Price-to-Sales	99%	71%	+2.8
Price-to-Earnings (trailing)	100%	88%	+4.1
Price-to-Earnings (forecast)	100%	100%	+6.8***
Composite	100%	100%	+5.0

* Forecasted Price-to-Earnings starts January 31, 1976.

** You see 100th percentile but only 98% of maximum above median because it wasn't really quite the 100th percentile, it just rounded to that.

*** The forecasted price-to-earnings spread also really exploded today when measured intra-industry. That very well might be 100% correct – and directionally all the valuation spreads shoot up recently so again the direction is likely spot on – though I do worry that some of it may be due to asynchronous updating of future earnings estimates during the COVID-19 crisis (that would be coincidental as I can't see why this would systematically happen faster for expensive than cheap stocks within the same industry, but it's certainly possible). Our results are not at all dominated by this one of four measures, so I mention this only for completeness.

Source: AQR, CRSP, XPressFeed. "Composite" is a combination of the four value measures in this table. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

The biggest difference is in price-to-sales which, when measured allowing big industry bets (i.e., Table 1, which follows Fama and French), was 83rd percentile but only 21% of the way to maximum over median valuation. Price-to-sales is now 99th percentile and at 71% of maximum. Remember, we included it earlier for consistency, but price-to-sales is not a measure that we think is very meaningful for comparing across industries. We do think it's meaningful for comparisons within industries as we're doing here. When we measure it in this more meaningful way, its spread is also very high today. The composite spread of all four measures is now at a clear maximum over 50+ years.

C. Excluding Certain Stocks Doesn't Change the Story

You know what comes next, right? We're going to again start removing stocks systematically, this time from this "industry-neutral" version of the value spread, to check again if some of the "world has changed" theories may be driving the current super-cheapness of the value strategy. Here I only report the stats for the composite of the four valuation measures as of 3/31/2020 while consistently removing some stocks through time according to three different rules (so, to back up, this is judging our "no betting on industries" HML based on the composite of the four valuation measures we've been studying under different and consistent rules for removing certain types of stocks):

Table 3

Composite Value Spreads, Academic Style, Industry-Neutral
December 31, 1967 – March 31, 2020*

What's Removed	Current Percentile	(Current – Median) / (Max – Median)	Current STD Event
Nothing Removed	100%	100%	+5.0
Remove Tech / Telecom / Media Industries	100%	100%	+5.4
Remove 5% Mega-Caps**	100%	100%	+5.6
Remove 10% Most Expensive Stocks***	100%	100%	+4.3

* Forecasted Price-to-Earnings starts January 31, 1976.

** If instead we remove the 10% highest sales (instead of market-capitalization) stocks within each industry you get 100%/100%/+5.0. Dominating sales in your industry is possibly a better measure of the monopoly effects many worry about. Yet it changes nothing.

*** For removing the 5% mega-caps and 10% most expensive stocks we do it within each industry here. If the industry contains so few stocks that 5% or 10% doesn't round to at least 1 stock, we still remove the largest cap or most expensive single stock.

Source: AQR, CRSP, XPressFeed. "Composite" is a combination of the four value measures in this table. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Yes, I know, this is perhaps the most boring table ever. But that's kind of the point. Comparing apples-to-apples within industries, and not relying just on price-to-book but on four well-established valuation measures, we are currently clearly the cheapest ever – and this result is completely bullet-proof to all the methods of consistently removing extremes I have tried (and I've tried a lot!).[27] What we're trying to do is find methods that capture the idea of some companies being monopolistic or "winner-take-all companies" who are creating new technologies and disruptive businesses and just consistently throw them out of the sample. The results show that they are not what is driving the extreme value spreads that we see today in the systematic value strategy, and it's not really a close call.[28]

[27] If I had to choose the method most likely to show the effect of "now being different" without regard to the academic or practitioner norms it's probably removing the largest stocks in each industry. If I had to choose the most robust valuation method it's probably price-to-sales (as long as we're not taking industry bets). Price-to-sales is not a pure measure either – companies have some latitude in reporting sales too – but it's perhaps less subject to "manipulation" and a more stable measure than the others. Looking at just this combination today, we're at the 99th percentile vs. history and 94% of the way to the max ever. On the other three valuation measures we're at 100 for both (that's why the composite in the table is a solid 100). This result, that industry-neutral value is super cheap, is about as robust as they come!

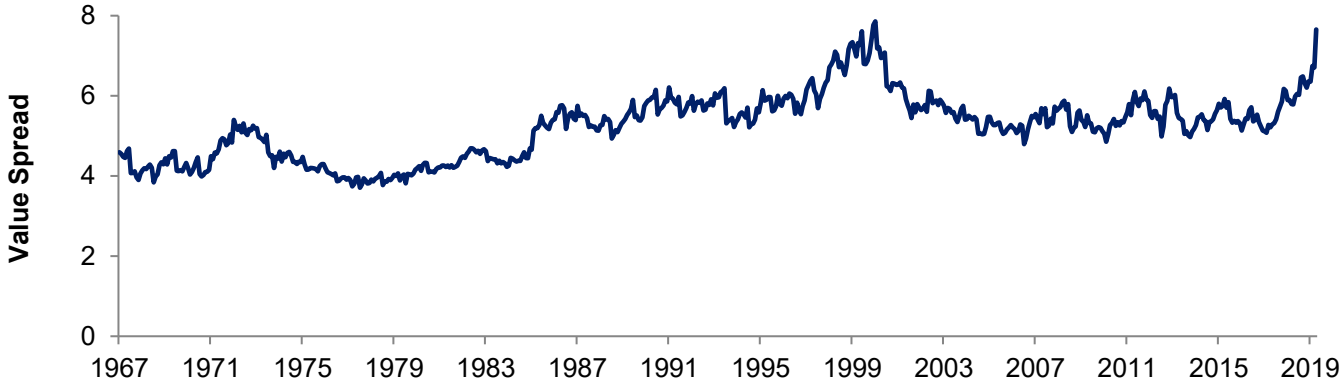
[28] By the way, value has also had a terrible run outside the USA where the "winner-take-all" arguments might apply but likely far more weakly, as they generally don't have their own MAGFANTs. Yet again, that's really not it…

D. Sorts on Price-to-Sales Also Gives Pretty Much the Same Story

All of the sorts in this discussion, save this next one, sort on price-to-book. Again, even if price-to-book is now flawed (a very big "if" that we do not fully concede), if this sort produces portfolios that are cheap on all the other measures, even excluding price-to-book, it certainly means price-to-book is not the main issue and rather a potential distraction. But, just for completeness, let's look at a sort on price-to-sales. This uses the same methodology as our last chart/table – the Fama-French HML construction but without taking industry bets – but this time it sorts the stocks using industry-relative price-to-sales, not price-to-book.[29] Below is the price-to-sales spread (the P/S of the expensive P/S portfolio chosen within each industry divided by the P/S of the cheap P/S portfolio chosen within each industry and averaged across industries):

Figure 6

Price-to-Sales Spread, Industry-Neutral Portfolio Sorted on Price-to-Sales
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Price-to-book, the scapegoat for much of value investing's difficulties, does not make an appearance above. It's not used for the sort or the cheapness measure in the graph. The sort was on price-to-sales and the ratio reported is the price-to-sales of the expensive portfolio divided by that of the cheap portfolio. It currently rounds to the 100th percentile and is 92% of the way to the maximum deviation over median (which for this measure occurred during the tech bubble).[30] Now, as usual, just because we sorted on price-to-sales we don't have to measure the long-short portfolio using only price-to-sales (as in Figure 6). Judging this price-to-sales sorted long-short portfolio now on the composite of the four measures, it is 100th percentile cheap (exceeding the tech bubble by a fairly decent margin). Figure 7 graphs the composite valuation measure for the price-to-sales sorted long-short portfolio (so price-to-book makes an appearance only as one of the four valuation measures in the composite, but not in the sort that created the cheap and expensive portfolios):[31]

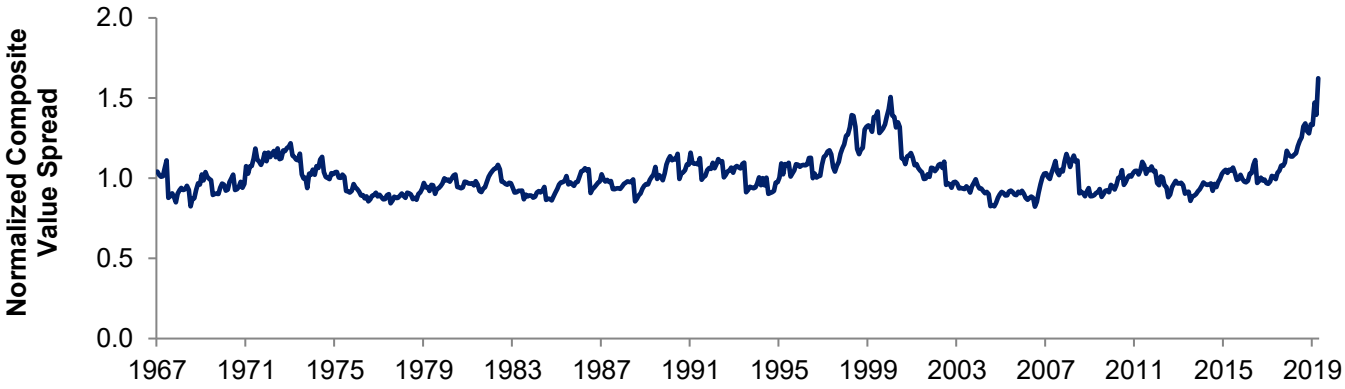
[29] So it's three tweaks to Fama-French's HML: (1) using up-to-date prices, (2) going long the cheapest and short the most expensive stocks within each industry, not across all firms, and (3) replacing price-to-book with price-to-sales. In addition, there are some methodological choices for how to do intra-industry (that also apply to our earlier intra-industry sort). Specifically, the intra-sort does not divide stocks into big and small groups first. It directly sorts based on the value measure and goes long in the top 30% and short in the bottom 30% within industry. We use cap-weighted within industry and equal-weighted across industry portfolios. We do not follow Fama and French here in giving equal weight to small and large groups in the intra-industry sort; since we're equal weighting each industry, additionally splitting large and small equally would be fairly complicated given this choice.

[30] Curiously, unlike many of the other valuation series, this one based on P/S didn't get particularly cheap during the GFC. This is why we use composites! Each gives part of the picture, and we believe the composite gives a better one.

[31] The scale of this graph of the composite measures differs from the others. The others were ratios of valuations. So if the graph said 5 that meant the expensive stocks were 5x more expensive than the cheap ones on the measure in question. Here we normalize by dividing each measure by its median and averaging them, so 1.0 is the natural midpoint. You can see it's a right-skewed series spending most of its time below median but occasionally, notably again the tech bubble and now, shooting higher. We're currently at 64% above median, the highest ever.

Figure 7

Composite Value Spread, Normalized, Industry-Neutral Portfolio Sorted on Price-to-Sales
December 31, 1967 – March 31, 2020*



* Forecasted Price-to-Earnings starts January 31, 1976.

Source: AQR, CRSP, XPressFeed. "Composite" is a combination of Price-to-Book, Price-to-Sales, Price-to-Earnings (trailing), and Price-to-Earnings (forecasted). Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Today is the maximum ever and 23% more above median than the tech bubble peak. Again, this is a sort on intra-industry price-to-sales, not price-to-book, for you price-to-book haters! Value is simply exceptionally cheap any way you slice it and any way you try to reduce it by excluding whomever you think the culprits may be. In fact, it's record-cheap on what we think are common methods many quants use (like neutralizing the industry bet and using more measures than just price-to-book) and usually by a decent margin.[32,33]

Part 3: As Realistic as We're Going to Get Here

A. Value Spreads Using Price-to-Book

OK, one last method. While switching to intra-industry to get more realistic (and to make price-to-sales make more sense), I have still stuck to the Fama-French HML methodology of cap-weighting and using an all-cap universe (cap-weighting within industry but equal-weight across industries). To get even closer (but not all the way[34]) to how many real-world quants would trade a long-short portfolio, we look next at equal weight, not cap-weight, but only among the top 1000 stocks (still intra-industry). Once you go to equal weight you really can't consider small stocks and have a vaguely implementable portfolio.

Done this way, here's the graph of the price-to-book of the expensive divided by the cheap portfolio over the last 50+ years (and yes, we're back from our brief segue sorting on price-to-sales to again sorting on price-to-book – I hope I've convinced you it really doesn't change things):[35]

[32] And, yes, this too survives removing all the different stocks we screen out in the other runs.

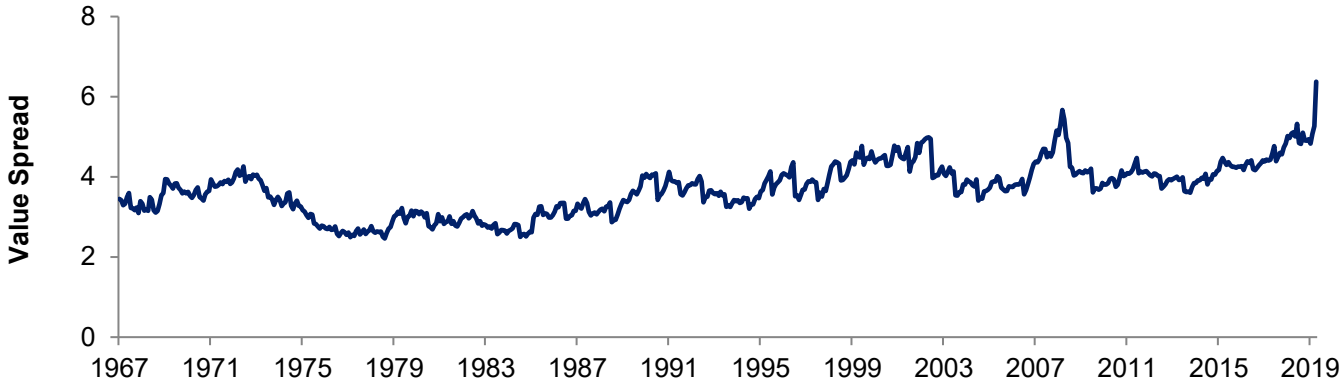
[33] Of course, we have also tried this yet more ways. Creating the portfolio not on any single measure but on a composite of the four measures and then measuring the value spread of that portfolio on a composite of value measures yields an even cheaper portfolio versus history today!

[34] Lots of other small differences remain. For instance, we'd get even closer if we used some "signal weighting" (the cheaper you are the bigger your weight) not just equal weighting among the top 1/3 cheapest and most expensive stocks.

[35] You may note that the spread here is of smaller magnitude than in our first graph of the Fama-French HML version of value (and subsequent versions). Eliminating all stocks smaller than the top 1000 and removing cross-industry differences lowers the average spread not just today but in general. Of course, a portfolio implemented this way is also less risky per $1 long and $1 short and thus the same spread is more meaningful. Anyway, the final spread is still economically quite large (expensive stocks are more than 6x more expensive than the cheap stocks even after eliminating industry bets and eliminating all but the 1000 biggest stocks) and is clearly the highest in history.

Figure 8

Price-to-Book Spread, Equal-Weighted Top 1000 Stocks, Industry-Neutral
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Yes, as we get more realistic, today starts to look more and more extreme versus history. The value sell-off in 1Q2020 during the COVID-19 crisis has kicked it up to a whole new level (and value looked very cheap before that). The final reading (3/31/2020) minus the median is 36% higher than the prior GFC maximum.[36] But, again that's just price-to-book. You know what's next by now…

B. Value Spreads Using Other Measures Tell Us Pretty Much the Same Thing (Again)

You want to see how the other measures besides price-to-book stack up today using this methodology, right?

Table 4

Various Value Spreads, Equal-Weighted Top 1000 Stocks, Industry-Neutral
December 31, 1967 – March 31, 2020*

Value Spread Measure	Current Percentile	(Current – Median) / (Max – Median)	Current STD Event
Price-to-Book	100%	100%	+4.2
Price-to-Sales	99%	75%	+2.7
Price-to-Earnings (trailing)	100%	100%	+3.1
Price-to-Earnings (forecast)	100%	100%	+5.5
Composite**	100%	100%	+5.0

Note: Using only the largest 1000 US stocks.

* Forecasted Price-to-Earnings starts January 31, 1976.

** And if, like me, you have a nagging worry the forecasted price-to-earnings results are a bit too good to be true (directionally right but showing value too cheap as perhaps some, but not all, forecasts have been updated for the COVID-19 crisis) so you look at a composite over only the other three measures, we're at 100th percentile, 100% of maximum deviation, and a +4.4 standard deviation event.

Source: AQR, CRSP, XPressFeed. "Composite" is a combination of the four value measures in this table. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Only price-to-sales is not at the absolute maximum and even it is very, very cheap. The composite is at a clear maximum (and is a whopping 66% higher than the previous maximum!).

[36] As a quick check using Fama-French data, HML from Ken French's website has just posted its worst quarter (1Q2020) ever when judged back to 1963 (when their 5-factor model starts). It's the second-worst ever if you look back to 1926 – surpassed only by one quarter in the Great Depression when the long-short portfolio was likely much more volatile (so adjusted for that, 1Q2020 is very likely the most extreme value drubbing ever). While the relationship between value's performance and the value spread widening or tightening is not one-to-one due to "wedges", especially fundamentals changing, it is still strong and it is quite intuitive that we're seeing extremely big value spread widening after such a disastrous quarter for value (again this is not specific to AQR or our data – the value carnage is ubiquitous).

C. Excluding Certain Stocks Doesn't Change the Story (Again)

Now, only looking at the composite measure, but doing our standard removals but applied to this latest and most realistic methodology, you get the following comparing the composite of the four valuation measures today versus 50+ years of history:

Table 5

Composite Value Spreads, Equal-Weighted Top 1000 Stocks, Industry-Neutral*
December 31, 1967 – March 31, 2020**

What's Removed	Current Percentile	(Current – Median) / (Max – Median)	Current STD Event
Nothing Removed	100%	100%	+5.0
Remove Tech / Telecom / Media Industries	100%	100%	+5.1
Remove 5% Mega-Caps* **	100%	100%	+5.4
Remove 10% Most Expensive Stocks	100%	100%	+5.0

* Composite value spread uses four signals: Price-to-Book, Price-to-Sales, Price-to-Earnings (trailing), and Price-to-Earnings (forecasted). This portfolio is industry-neutral and equal-weighted using the largest 1000 US stocks.

** Forecasted Price-to-Earnings starts January 31, 1976.

*** Reported here is the composite over all four measures. If we remove the mega-caps within each industry and do the composite over the other three measures excluding forecasted price-to-earnings you get, oh you know, 100%, 100%, +4.7 STD.

Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

Obviously, excluding all the potential bad boys we can think of changes absolutely nothing (unless you consider a +5.0 possibly going to +5.4 important). The mispricings are too ubiquitous and diversification too great for these stories to hold any water.

D. Is Cheap "Too Cheap", or is Expensive "Too Expensive"?

Another interesting thing to see, using this final methodology, is whether the very wide value spreads today come more from the cheap or the expensive side. We've generally been examining the price of the expensive divided by the price of the cheap, leaving out the middle 1/3 of stocks. Next we graph the price of the usually-ignored middle stocks (using the same within-industry price-to-book sort as above on this top 1000 universe – note, again, we are sorting on price-to-book to create the portfolio but the composite gives equal weight to each of the four valuation measures) divided by the price of the cheap (using our composite measure with units of 1.0 meaning "at median") and the price of the expensive divided by the price of the middle (we switch the middle from the numerator to the denominator so both series are higher when the "value of value" is higher). We also separately plot the difference in these series:

Figure 9: Composite Value Spread, Equal-Weighted Top 1000 Stocks, Industry-Neutral
December 31, 1967 – March 31, 2020**

Figure 9A: Value Spreads of Middle/Cheap and Expensive/Middle

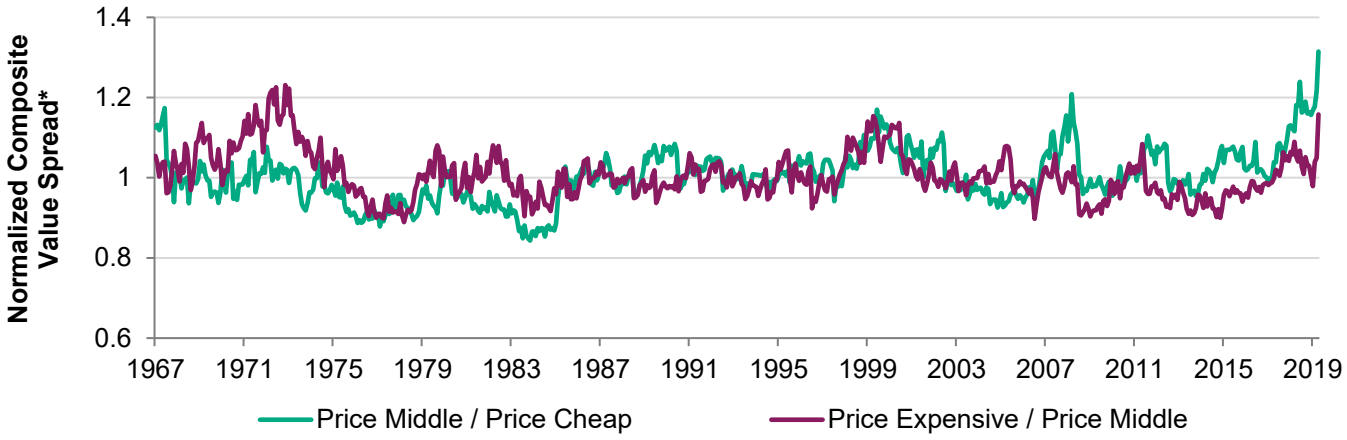
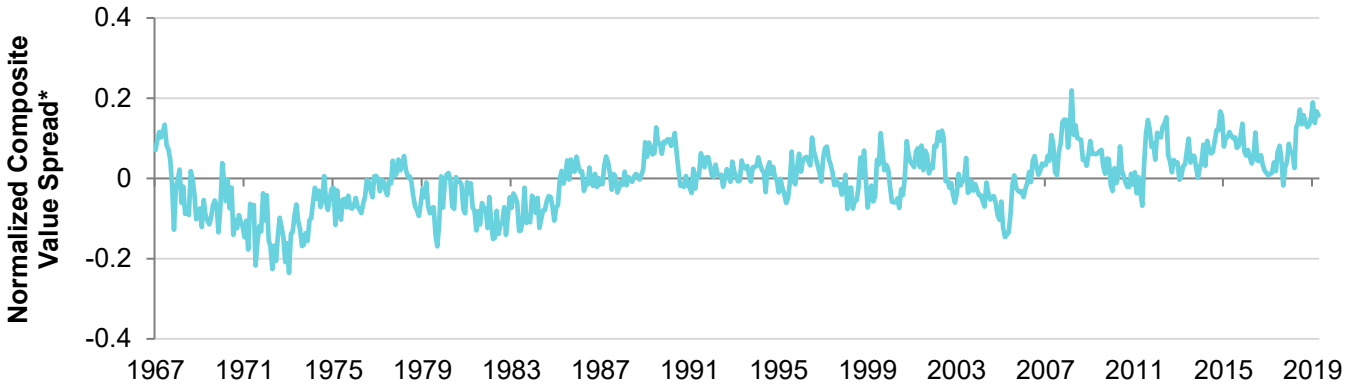


Figure 9B: Differences in Value Spreads between Middle/Cheap and Expensive/Middle



* Composite value spread is a combination of Price-to-Book, Price-to-Sales, Price-to-Earnings (trailing), and Price-to-Earnings (forecasted).

** Forecasted Price-to-Earnings starts January 31, 1976.

Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

While both lines in Figure 9A show the value factor to be cheap today (middle stocks are more expensive than cheap ones versus history, and expensive stocks are more expensive than middle ones versus history), it's clear that more of what's going on today is coming from the cheap, not the expensive, side (you see that in Figure 9A and in the difference graph in Figure 9B). The tech bubble saw rather balanced contributions to the value spread from the expensive and the cheap side, but only when trading intra-industry like we're now analyzing. Not surprisingly, if we re-ran this analysis but now allowing industry bets (closer to the classic HML factor, though still using the top-1000 universe), you'd see similar results today (both the expensive and cheap are contributing to the very wide value spread but more is coming from the cheap than expensive side) but very different results in the tech bubble. During the tech bubble, if you allow industry bets the very attractive value spread was mostly driven by the short (expensive side) as expensive industries dominated. I think that's pretty intuitive. But importantly, today looks more like a relative depression in value stock prices rather than like euphoria in the expensive stocks (though there's definitely a lot of both). I think this is important, as most of the arguments and ex post rationales for value's difficulties – and for the cynical view that today's cheapness might not really reflect a more attractive strategy because of some "world has changed" reason – generally come from theories about the expensive "monopoly" "winner-take-all" stocks. We've already seen that excluding them is not a big deal – value is still super cheap. Now we see that even including them, today's super-wide value spreads come more from many diversified, discounted cheap stocks than from a few super-expensive global winner firms.[37]

[37] While we haven't heard it yet, if enough people learn of these findings, we are fully prepared for when the stories for why value won't ever work again switches from the "winners-who've-taken-all" stocks to all-new stories about the industry-relative cheap stocks. We don't know what those stories will be but there's always an ex post story! Rest assured, we'll be here to debunk (or not, we'll report either way) these stories after the ex-posters come up with them!

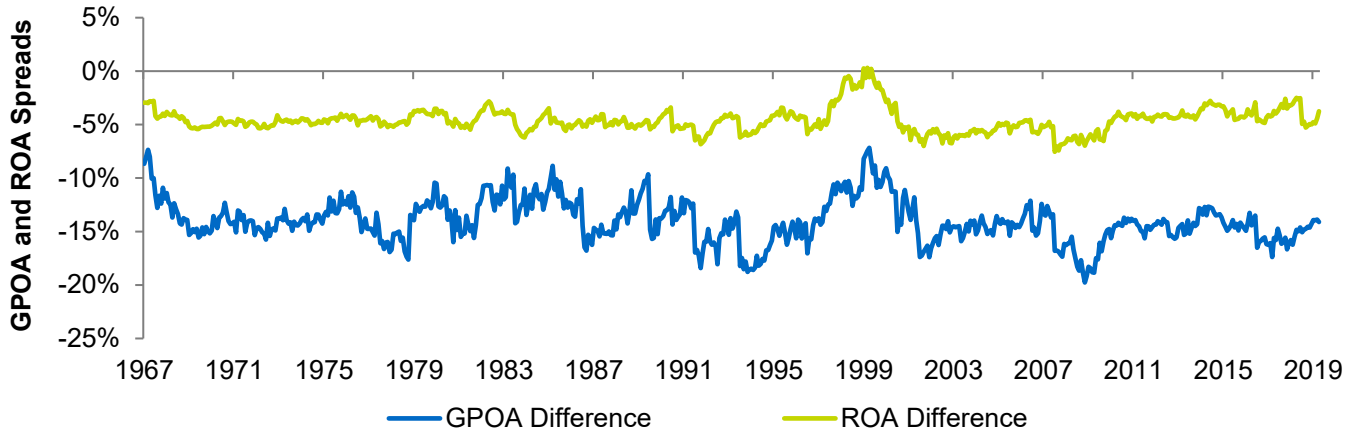
E. Cheap Companies Don't Look Particularly "Cheap for a Good Reason" Either

OK, just one more thing (I promise). Perhaps the cheap companies, while truly super cheap on any measure or methodology and the absolute cheapest on the most realistic measures, simply deserve to be. Maybe the cheap companies are just far lousier versus the expensive companies than usual. I look at three things here for this final top 1000 intra-industry price-to-book sort (there are many others that can be explored but this result is quite robust). One, following Novy-Marx, is the gross profitability of the cheap minus expensive portfolios. Two is the return-on-assets (ROA) of the cheap minus expensive portfolios.[38] Three is the leverage (debt-to-equity) ratios of the cheap and expensive portfolios. I do this using the same most realistic (for us) final methodology as just above (top 1000 stocks, equally weighted portfolios, intra-industry). For profitability and ROA I take differences (i.e., the gross profitability of the cheap minus the expensive) and for leverage I take ratios (the debt-to-equity of the cheap divided by that of the expensive).

Figure 10 plots the gross profitability of the cheap portfolio minus the gross profitability of the expensive portfolio (and the same for ROA):

Figure 10

Gross Profitability and Return-on-Assets Spreads, Equal-Weighted Top 1000 Stocks, Industry-Neutral, Price-to-Book Sort
December 31, 1967 – March 31, 2020



Source: AQR, CRSP, XPressFeed. Please see Appendix for more detail on data and assumptions. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Hypothetical data has inherent limitations, some of which are disclosed in the Appendix.

The median difference of the gross profitability of the cheap minus the gross profitability of the expensive portfolio is -14% over the last 50+ years (the cheap portfolio's median gross profitability is 27% vs. 41% for the expensive portfolio). This makes sense. Value is a great long-term strategy (again, IMHUO), but you do usually end up purchasing stocks that are in worse current shape. Even value enthusiasts rarely argue that value stocks are currently better companies, but rather—I think—most value investors would say they are often worse companies selling at even lower prices than their worseness justifies (sorry about "worseness"). So, what's the difference in gross profitability today? Well, it's -14%, almost precisely at median (52nd percentile, if you must know). For ROA (adjusted for interest expense) the median difference over the 50+ years in cheap versus expensive stocks is -5%. The current difference is -4% which is actually the 85th percentile, so on this measure cheap stocks look

[38] I define ROA here as income before extraordinary items adding back after-tax interest expenses divided by the average total assets over the period. Note, both measures that I use here for profitability suffer from some imperfections. It is important to make sure we are capturing relevant and recurring operating expenses and properly adjusting for non-recurring items. It is also important that we ensure that the numerator, what you are potentially distributing, is consistent with the denominator, the capital that generated the profits. Coming up with perfect measures of this is tricky, and I have used some standard metrics here to avoid over-complicating the subject. It is also why I present multiple versions to ensure this analysis is not suffering from cherry picking. It isn't.

better than they normally do (though -4% vs. -5%, even if 85th percentile, is not a very big advantage economically). Basically, systematic profitability differences are simply not driving today's super-wide valuation differences.[39,40]

Next, the ratio of the debt-to-equity (book value of equity) of the cheap to the expensive portfolio has a historical median value of 81% (the cheap are somewhat less levered on this measure on average). So, how does today compare to history? Today, debt-to-book-equity (of the cheap divided by the expensive) stands at 66%, substantially below the 81% median value (that's 28th percentile based on 50+ years of history). Cheap stocks are less leveraged than expensive ones in the absolute and versus this average historical tendency. Putting all of this together, neither profitability nor leverage differences look particularly bad for cheap stocks today and clearly do not explain or justify today's super-wide value spreads (or make cheap stocks look particularly scary versus history).[41] In fact, it's a bit (only a bit) of the opposite.

OK, I started out saying we have a horse in this race, and now I've beaten it well past death…

Summary

Value is exceptionally cheap today, and it gets cheaper (and becomes clearly the cheapest ever) the closer our analysis gets to realistic implementations.[42] Measured in the most realistic way (for us) neither tech bubble nor the GFC can lay claim to the cheapest "value of value" anymore. Sadly, looking back, and wonderfully (yes IMHUO) going forward, today has that honor.

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[39] Looking at our old friends the tech bubble and the GFC, the gross profitability and ROA spreads were very different in each. In the GFC the spreads were both lower than usual, meaning cheap stocks gave up more gross profitability and ROA than any other time for 50+ years. This was still ex post a great time to buy value, the cheapness argument dominated, but you had to stomach buying (and selling) even worse (better) companies than usual for the value factor. The tech bubble was the value investor's dream (though a nightmare to get there). There were super-wide value spreads and cheap stocks gave up less profitability than ever before (gross profitability was about tied with the beginning of the sample for giving up the least ever, and ROA was quite clearly giving up the least ever for cheap versus expensive by a large margin. In fact, very briefly at the tech bubble peak, and at only this moment in the 50+ years we study, cheap stocks actually had a higher ROA than expensive stocks – setting up a value investor's dream of super-duper cheap companies that were actually on this measure better companies). In each case it was a great time to buy value, and we are quite satisfied to be facing super cheap prices today and no extra give-up in profitability versus historical norms (and, as we'll soon see, less leverage than normal).

[40] One of the few measures where expensive stocks look better is ROE (i.e., the spread in ROE is wider today than normal). But as we document next, expensive stocks are more leveraged versus cheap stocks than normal, and the difference in ROE vs. ROA is a matter of leverage (ROE = ROA x Leverage when everything is measured in terms of book value). So, holding ROA constant, which as we show is about normal for cheap versus expensive stocks, more leverage should mechanically widen the spread in ROE, but that doesn't tell us about whether cheap companies are worse today from a fundamental profitability perspective, which is what matters here. Similarly, if you used market rather than book value equity in calculating leverage you would indeed find cheap stocks to be considerably more levered versus expensive ones than historical norm. But, in essence, we already knew that as the whole exercise here is predicated on the market value of expensive stocks (as compared to book) currently being super high versus cheap stocks. If your market value is inflated of course your leverage calculated using market value is deflated (as market equity is in the denominator).

[41] While the leverage ratios here for cheap vs. expensive stocks today show cheap to be normally or somewhat below normally leveraged versus expensive ones, the results for the absolute (not cheap vs. expensive, which represents a long-short position, but the long-only portfolios themselves) are somewhat different. Both expensive and cheap firms today are indeed more leveraged than historical norm (70th and 82nd percentile versus history for the cheap and expensive portfolios, respectively, using book leverage). This is not our issue here as we're looking at long-short portfolios (cheap versus expensive). But, if you're concerned about overall leverage in the market there is some evidence it is high (though these readings of 70th and 82nd ain't the 100th percentile we're used to seeing in this essay!). Again, not the topic here but food for thought.

[42] We are focused here on the historical and current cheapness of cheap versus expensive. But it does beg the question I've left out until now: how do these exclusions affect the returns of the strategies themselves? Recall our exclusions get rid of tech/telecom/media, mega-caps, and the most expensive stocks. I examine the returns for the top 1000 intra-industry strategy studied here last as the most realistic of our tests. Well, the long-term Sharpe ratio of the regular value long-short strategy done in this manner is 0.37. It goes up to 0.45 if we removed tech/telecom/media (and the improvement in returns has a t-stat of +2.44, so it's more than just noise by conventional standards), the other two saw trivial drops in Sharpe (perhaps a bit surprising that dropping the most expensive 10% wasn't more costly). But it's more complicated than this. We don't just invest in value but value, momentum, low risk, quality, etc. In particular the value/momentum relationship is vital because of their high negative correlation. The Sharpe of pure momentum (using same methodology) is 0.59 but goes down to 0.56 (a -1.62 t-stat drop) removing tech/telecom/media, falls to 0.57 (-0.92 t-stat) removing mega-caps, and plummets to 0.51 (-3.16 t-stat) if we remove the top 10% most expensive stocks. The fellow codgers out there might remember this one showing that momentum works better in expensive stocks than cheap stocks – so this is perhaps not shocking. Finally, we look at a 60/40 long-short portfolio of value/momentum (roughly equal volatility contributions, as momentum is a bit more volatile). The Sharpe of this portfolio without exclusions is 1.12. It rises to 1.23 (t-stat of +1.47) if we remove tech/telecom/media from both value and momentum. It falls to 1.07 if we remove mega-caps (t-stat of -0.56). Finally it plummets to 0.98 if we remove the 10% most expensive stocks (t-stat of -2.5). I guess with the full benefit of impossible hindsight we'd remove tech/telecom/media if we could cheat – but going forward I certainly would not do so based on a +1.47 t-stat over 50+ years (and no theory). We certainly wouldn't remove the most expensive stocks based on both first principles and terrible historical results – and in fact, in our most alpha-oriented portfolios, we already go the other way, boosting the weight of momentum slightly among expensive stocks. Bottom line – like the value spreads we study, there are not earth-shaking differences in returns from these exclusions, again highlighting that systematic strategies are diversified and not dependent on a few stocks, even 5-10% of them chosen to be outliers.

As my colleagues show with both data and economic argument, this is very unlikely to be the result of common "the world has changed" arguments that you often hear today – and, frankly, you always hear such stories about whatever strategy has been going through very tough times. There is a cottage industry in explaining ex post (rarely ex ante) why a strategy going through a lot of pain is now permanently broken.

I show what my colleagues show but in a different, more brute-force but perhaps even clearer way, and come to the same strong conclusion. Value is super cheap today and this is not coming from only the potentially "broken" price-to-book measure (it isn't even very dependent on it) nor is it due to a group of winner-take-all monopolistic companies. It is not coming exclusively from the tech industries, it is not coming from mega-caps, and it is not coming from the most expensive stocks. Rather it is a pervasive phenomenon.[43] Investors are simply paying way more than usual for the stocks they love versus the ones they hate (and measured using our most realistic implementation this is the clear maximum they've ever paid) and doing it in a highly diversified way up and down the cross-section of stocks.

Might investors be right for a reason my colleagues don't capture in the many things they look at and I don't capture by excluding some industries, the huge stocks, or the most expensive stocks? Might the explanation lie somewhere other than big differences today in leverage or profitability for expensive versus cheap stocks as compared to history (because I show that these are not big today versus history)? Sure. It's also technically possible the NBA restarts tomorrow and the NY Knicks take the championship.[44] But in both cases we will take the other side! I mean, you don't need Occam's razor here to prefer the simplest explanation – that there's a very large mispricing[45] going on right now throughout the cross-section of stocks – you just need Occam's butter knife.[46]

Of course, none of the above answers the always vexing question of when.[47] If value investing was like driving my four kids on a long car ride, we'd be very deep into the "are we there yet?" stage of the ride, and value investors are justifiably in a world of pain. Could we hit new highs in the value spread (and incur more losses for value) from here? Sure we could (we do think this gets increasingly unlikely as spreads widen more and more but sadly there's certainly no provable limit). Regarding timing, could systematic value come back very quickly over say a few months, or slowly over a few years? We don't know. Good investing isn't about sure things and certainly rarely about precise timing. Sure things are usually about cheating, and if it's not cheating it almost always gets arbitraged away really fast.[48] Good investing is about being on the right side of the odds and sticking with good strategies, if (a big "if" we have hopefully taken great strides to dispelling here), after careful examination, you are convinced they are not broken.[49]

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[43] Another way to view this whole exercise is the way we, and we presume other systematic quants, build portfolios is very diversified, and is simply not that sensitive to the inclusion or exclusion of any handful (even a large handful like 10% of the stocks) as one might imagine. Thus, many stories you hear, like the common ones we mention repeatedly that mostly apply to a handful of stocks, are just not driving the bus and certainly don't invalidate value going forward. Yeah, we could've just asserted that up front, but that's not nearly as much fun as looking at 100 varieties of the same graph! More relevant, it's likely much less convincing without the evidence.

[44] I shouldn't be so sarcastic (but, come on, it's kind of my thing). It's certainly possible that the market is pricing things at larger extremes than ever before but because, separate from all the things my colleagues study, and all I try to examine (i.e., it's not just some stocks or industries, and not showing up in profitability or leverage), the market correctly sees that future growth will be much more disparate (much better for expensive than cheap stocks) and very ubiquitous across highly diversified portfolios, even if not coming from the many common-sense things I study. As I say above, this isn't about sure things, it's about the odds and checking everything you can think of. The odds (yet again IMHUO) seem pretty great and the robustness checks have been extensive (that is, I've tortured the reader for a really long time)!

[45] Again, I focus on the mispricing story, but you could also equivalently say we have not explained why the rational risk premium for owning cheap versus expensive is not super high today. Not close.

[46] I thought I came up with that and was pleased with myself. I'm like the 1000th person to come up with it and likely heard it elsewhere. But I'm still pleased I repeated it here. Full disclosure – I next tried Occam's Spork and found I was late to that too! So now I have to live with my technology department knowing I typed "Occam's Spork" into my search engine.

[47] We have some hard-earned experience with this difficulty… One of the investing aphorisms I'm trying to coin is some version of "forecasting what will happen is very hard, but sometimes possible for mortals, forecasting when it will happen is best left to God." I have to get it short enough to fit on a t-shirt though.

[48] We've mentioned this many times before but remember, the only silver lining of a strategy being very hard to stick with through its tough times is it's also much less likely to be arbitraged away than one might think.

[49] This issue of "when" does not just apply to systematic value or systematic quant strategies, but rather is ubiquitous in investing. For example, the stock market goes up on average, but predicting "when" doesn't appear to be our collective strong suit. Also, for instance, how the COVID-19 pandemic will affect cheap versus expensive stocks in the same industry is a clear wild card today. And then there are the murder hornets... Again, this is about the odds not certainty.

Having gone through this very bad 2+ years for multifactor[50] stock selection portfolios with value the primary culprit, it is essential that we challenge ourselves to review various proposed explanations for value's losses. My colleagues do that in their paper. Likewise, I do it here looking hard at many variants of the value spread designed to capture the most widespread critiques (if you've finished this, you are rolling your eyes at me merely saying "many variants" as I think I shot past "many" a while ago!) in particular whether the cheapness of value investing is caused by some narrow super-company subset of the market or deep inadequacies in the popular price-to-book measure, as many of the stories imply. After extensive, exhaustive and exhausting examination, we find absolutely zero support for this worry.

We think the medium-term odds are now, rather dramatically, on the side of value, with no "this time is different" explanation we can find (and we've tested a lot of them!) holding a drop of water and no other period in the 50+ year history matching today.[51] It has certainly been excruciating getting here, but here we are, and it's never looked cheaper looking forward.

This is where long-term investors make their bones.[52]

[50] Some more narrow factor portfolios, and investment products built around them, have indeed done well over this time period, including at AQR. For instance, various forms of "defensive" factor investing have done extremely well (and not because they take less risk but because the beta-zero factors have worked).

[51] That is considering all our tests with the most weight given to the tests most similar to typical real-world systematic long-short portfolios, now is clearly the cheapest "value of value" ever.

[52] I need at least one Godfather reference in a blog this long. And Wikipedia says this phrase has moved over time from a purely heinous reference to now applying to positive actions as well.

Appendix

Data Information

Earlier Data Sources: AQR, XpressFeed, IBES. Pricing and accounting data are from the union of the CRSP tape and the Compustat/XpressFeed Global database. The universe is all available common stocks in the merged CRSP/XpressFeed data.

The academic HML approach ("HML Devil") in this article uses a book-to-price factor built over a U.S. all-cap universe that combines the NYSE, AMEX and NASDAQ. It is similar to the Fama-French HML factor, except that up-to-date prices are used. The raw version of the factor ranks stocks over the entire universe. The intra-industry version ranks stocks within industries only so as to take no industry bets, whereas the inter-industry version ranks only industries. The "Equal Weight" versions use only the largest 1000 stocks in the universe. The industry classification is based on SIC (Standard Industrial Classification) codes before 1986 and MSCI GICS (Global Industry Classification Standard) codes after 1986. For intra-industry factors, we use the Fama-French 48 industries (which is based on SIC) before 1986 and GICS Group since 1986. The long side of each portfolio includes the best (cheapest) 30%, while the short side includes the worst (richest) 30%. The long and short sides are market-cap weighted, unless specified otherwise (i.e., when they are equal-weighted). The value spread uses the book-to-price of these book-to-price portfolios, unless specified otherwise (e.g., when it uses Price-to-Sales, Price-to-Earnings (trailing), and Price-to-Earnings (forecast)). The "Composite" approach is constructed by 1) dividing each series (namely Book-to-Price, Price-to-Sales, Price-to-Earnings (trailing), and Price-to-Earnings (forecast)) by its in-sample median, then 2) equal-weighting the four series. (Dividing by the median first is to avoid the measure with the largest magnitude driving the average).

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