



July 2, 2020



Reports of Value's Death May Be Greatly Exaggerated

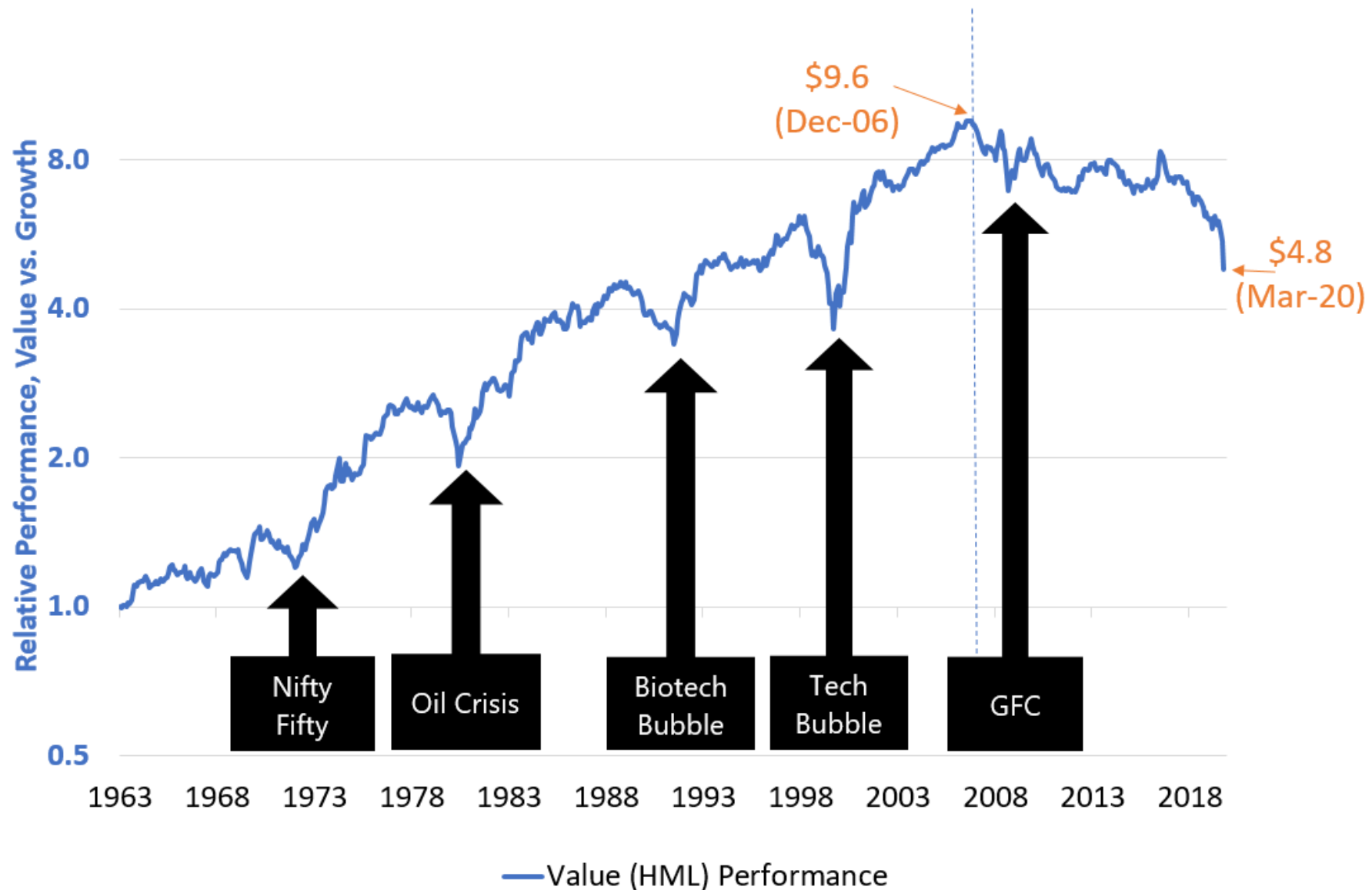
Campbell R. Harvey

Duke University and NBER

(Joint work with Rob Arnott, Vitali Kalesnik, and
Juhani Linnainmaa)

July 2020

Value has underperformed growth since 2006



Data for all exhibits from CRSP, Kenneth French website, and Research Affiliates

Why has value underperformed growth?

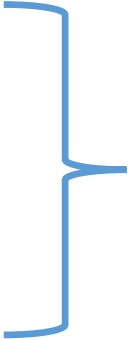
1. Did crowding reduce expected returns?
2. Different economic regime?
3. Different interest rate regime?
4. Less relative mean reversion?
5. Is value mismeasured?
6. Value has lagged because it has become cheaper?

Testable implications

1. Crowded trade?
 - Permanently narrow valuation spread
2. Different economic regime?
 - Growth permanently more profitable vs. value
3. Different interest rate regime?
 - Growth permanently more profitable vs. value
4. Less relative mean reversion?
 - Lower rate of price mean reversion
5. Is value mismeasured?
 - Potential to fix mismeasurement of intangibles
6. Value has lagged because it has become cheaper?
 - Relative valuations would explain the underperformance



Value is structurally impaired



Value suffered from temporary setback

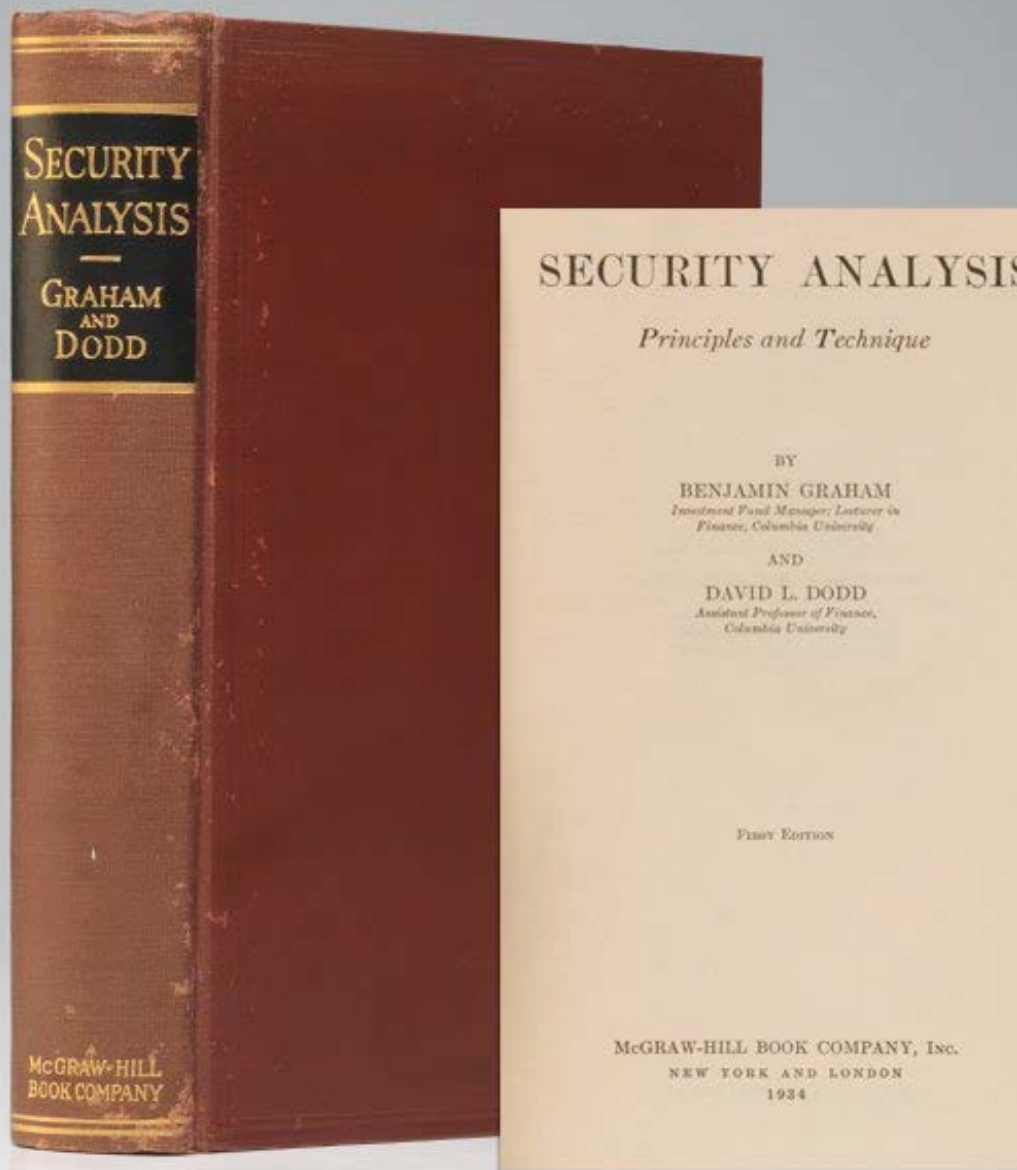
Diagnosing Value

Value investing is not new

Graham and Dodd, *Security Analysis* (1934):

- Derive *intrinsic value* of a company and compare it to the market price. Buy if cheap and sell if expensive.

“In general terms [intrinsic value] is understood to be that **value which is justified by the facts, e.g., the assets, earnings, dividends, definite prospects, as distinct, let us say, from market quotations established by manipulation or distorted by psychological excesses.** But it is a great mistake to imagine that intrinsic value is as definite and as determinable as is the market price. Some time ago intrinsic value (in the case of common stock) was thought to be the same as “**book value,**” i.e., it was equal to the net assets of the business, fairly priced. This view of intrinsic value was quite definite, but it **proved almost worthless** as a practical matter because neither the average earnings nor the average market price evinced any tendency to be governed by book value.”



Academic origins of value

- Basu (1977) — First academic evidence of superior performance of value strategies
 - Stocks with low P/E (value) outperform stocks with high P/E (growth).
- Fama and French (1992) — Risk-based theory of value
 - P/B becomes a standard academic definition of value.
- Lakonishok, Shleifer, and Vishny (1994) — Mispricing theory of value

Value is one of the strongest factors

United States, Jul 1963–Mar 2020

Factor	Year of Discovery	Average Return	Standard Deviation	t-stat	CAPM Alpha	t-stat
Market	1964	6.1	15.3	3.01		
Value	1977/90	3.2	9.8	2.50	4.1	3.23
Size	1975	2.1	10.3	1.52	0.9	0.65
Operating profitability	2013	2.8	7.7	2.72	3.5	3.49
Investment	2003	2.6	6.4	3.03	3.5	4.33
Momentum	1989	7.9	14.5	4.09	8.8	4.58
Low beta	1966	0.6	15.3	0.29	5.0	3.54

Note: All factors are long–short strategies similar to the HML factor of Fama and French (1993).

- Asness, Moskowitz, and Pedersen (2013)
 - Value effect is pervasive across geographies and asset classes.
- Beck, Hsu, Kalesnik, and Kostka (2016)
 - Value effect is robust to perturbation across definitions.

Worst drawdown

In terms of its depth, the most recent drawdown of value counts as the deepest since July 1963.

Rank	Event	Dates			Length in Years	Drawdown
		Start Date	Bottom	End Date		
<i>Panel A. Deepest Drawdowns</i>						
1	Current	2006/12	2020/03		13.3	-50.0%
2	Tech Bubble	1998/08	2000/02	2001/02	2.8	-40.7%
3	Iran Oil Crisis	1979/07	1980/11	1982/02	2.5	-27.8%

- But value is prone to drawdowns and prolonged periods of underperformance — How unusual was this?

Estimated Probability of a Drawdown

Use the “Alice in Factorland” bootstrapping methodology to assess the likelihood of the drawdown that started in 2007.

- Take the long/short return sample period up to December 2006.
- Draw returns from this sample in six-month blocks.
- Create a sample that matches the length of the actual total sample from July 1963 through March 2020.
- For each simulated sample, record the size of the second-largest drawdown.
- Draw 200,000 simulated samples.

We take the largest drawdown to be consistent with the actual data.

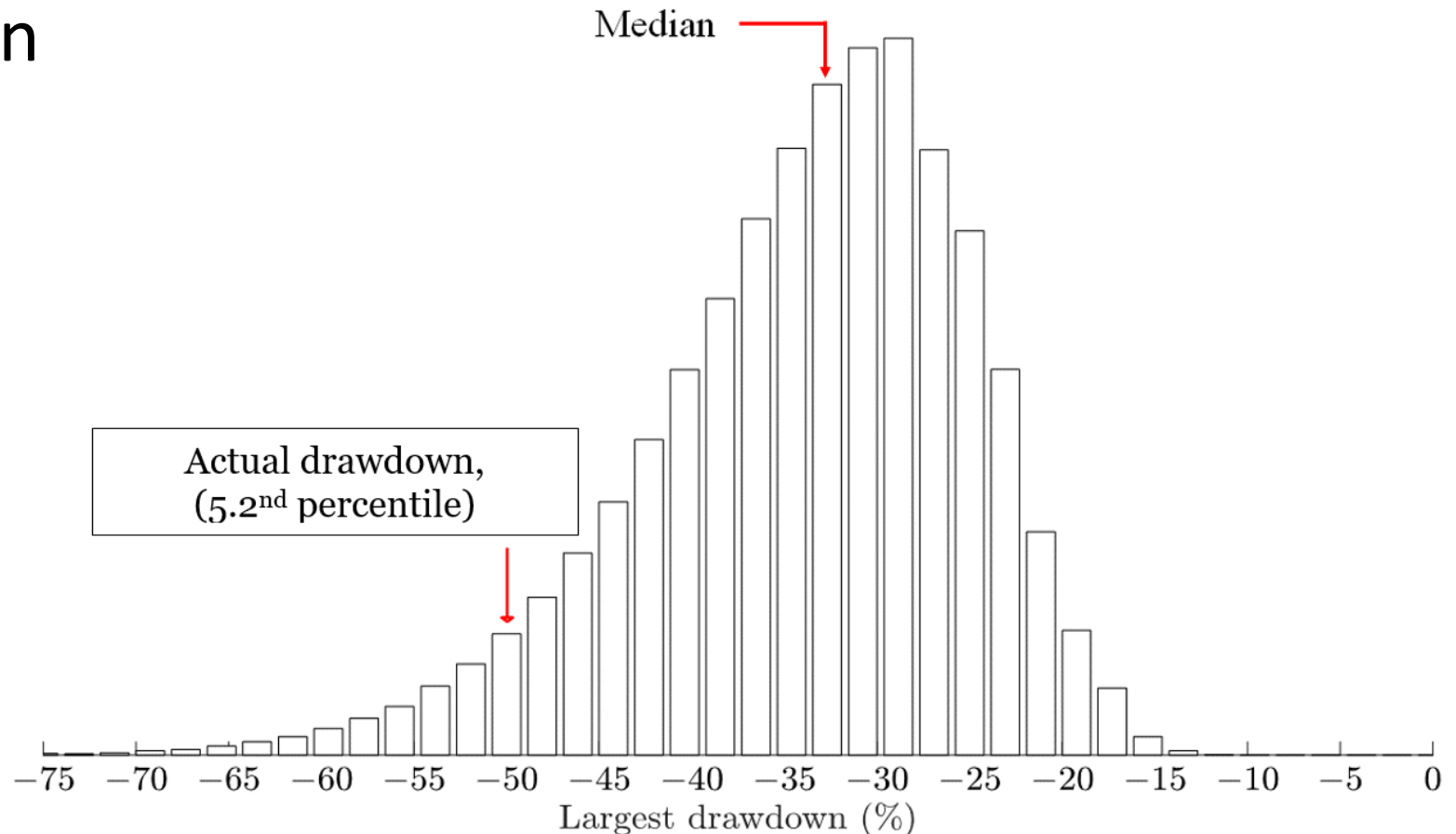
- Drawdowns ranked by magnitude are order statistics.

Likelihood of recent drawdown magnitude

(Six-Month Bootstraps)

Bootstrap Simulations, drawn from US HML Returns, Jul 1963–Dec 2006

- The largest drawdown in 5.2% of the simulated samples exceeds the actual drawdown of 50%.
- 5.2% is unusual but inconsistent with “broken”



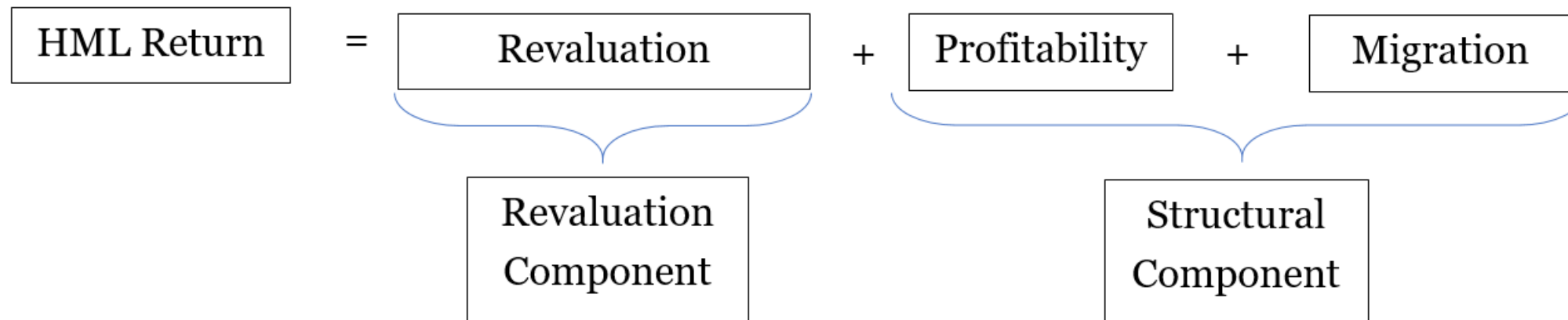
Source: Research Affiliates, LLC, using CRSP/Compustat data.

Is the Value Engine Broken?

Value engine components

Three components

- Migration reliably favors value
 - Profitability reliably favors growth
 - Revaluation (value spread between value and growth stocks)
- } *Structural alpha*



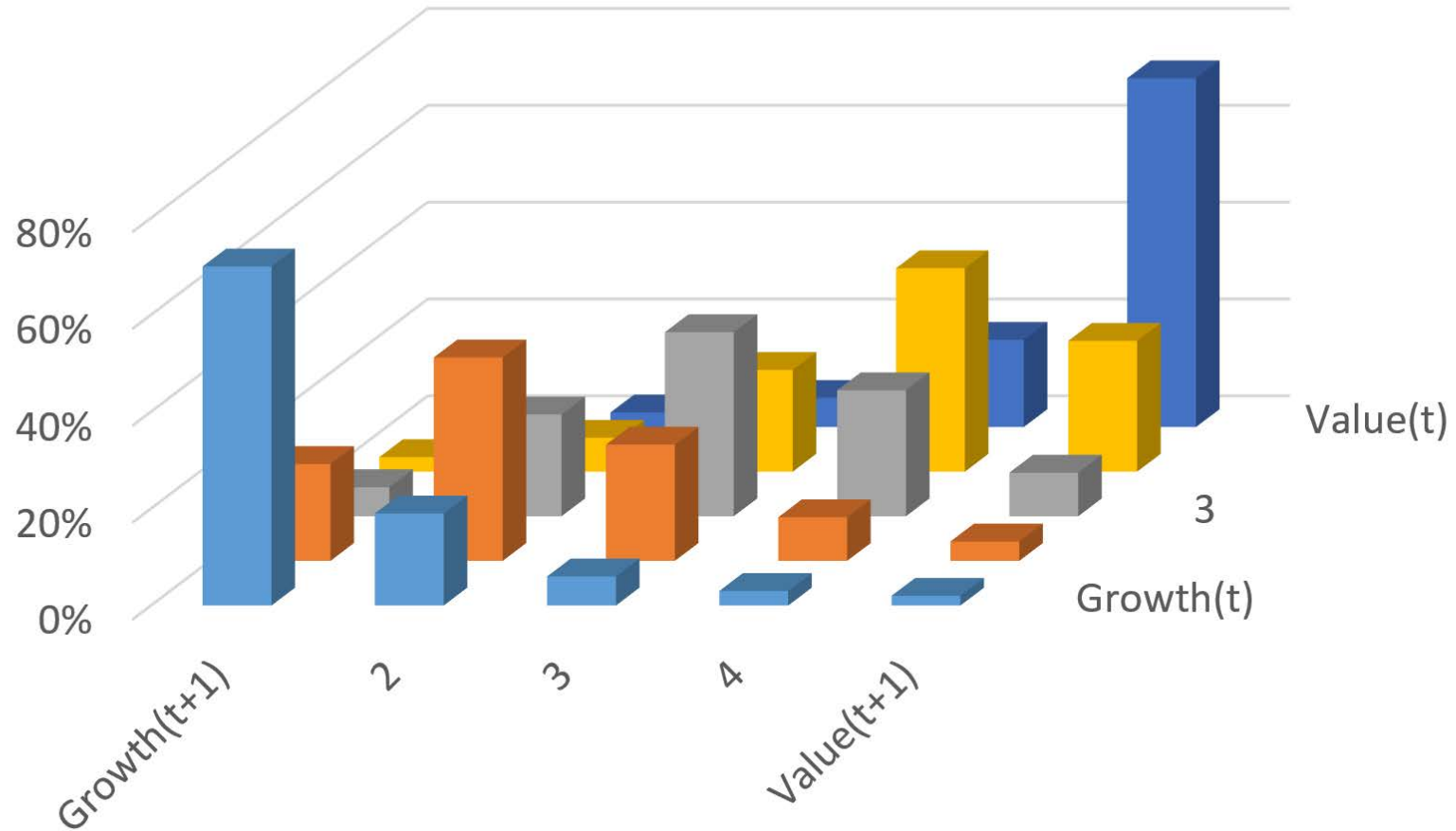
Migration rates

Current Quintile	Pre-2007					Post-2007				
	Quintile Next Year					Quintile Next Year				
	Growth	2	3	4	Value	Growth	2	3	4	Value
Growth	70%	19%	6%	3%	2%	71%	18%	6%	3%	2%
2	20%	42%	24%	9%	4%	21%	45%	22%	8%	4%
3	6%	21%	38%	26%	9%	5%	20%	41%	25%	9%
4	3%	7%	21%	42%	27%	2%	6%	21%	46%	25%
Value	2%	3%	6%	18%	72%	2%	2%	5%	19%	72%

- Migration rates are virtually indistinguishable
- This time is not different

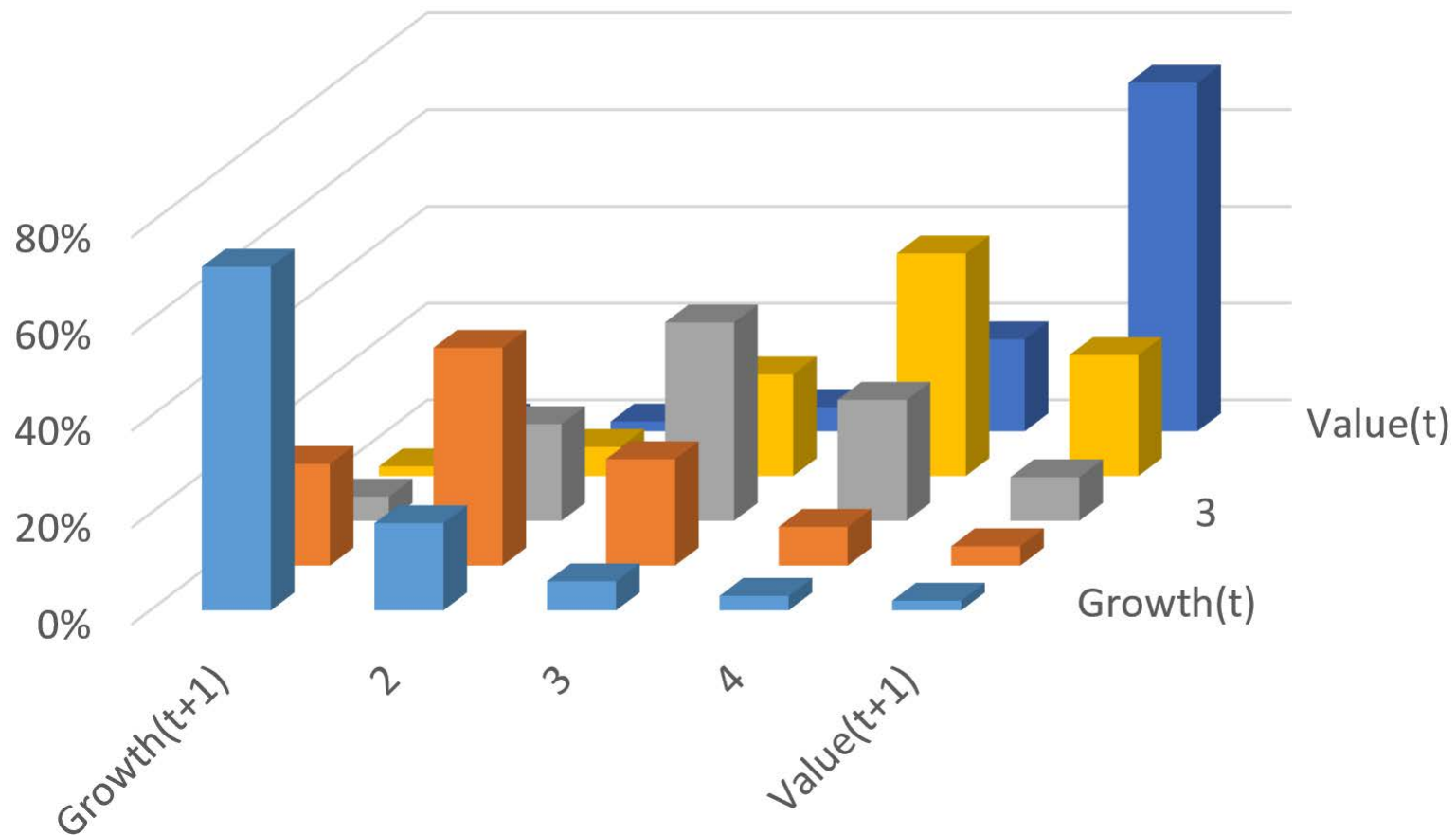
Migration rates

Migration Pre-2007



Migration rates

Migration Post-2007



Historical profitability differences

Pre vs. Post 2007

Growth, on average, is more profitable than value, which contributes negatively to value's return.

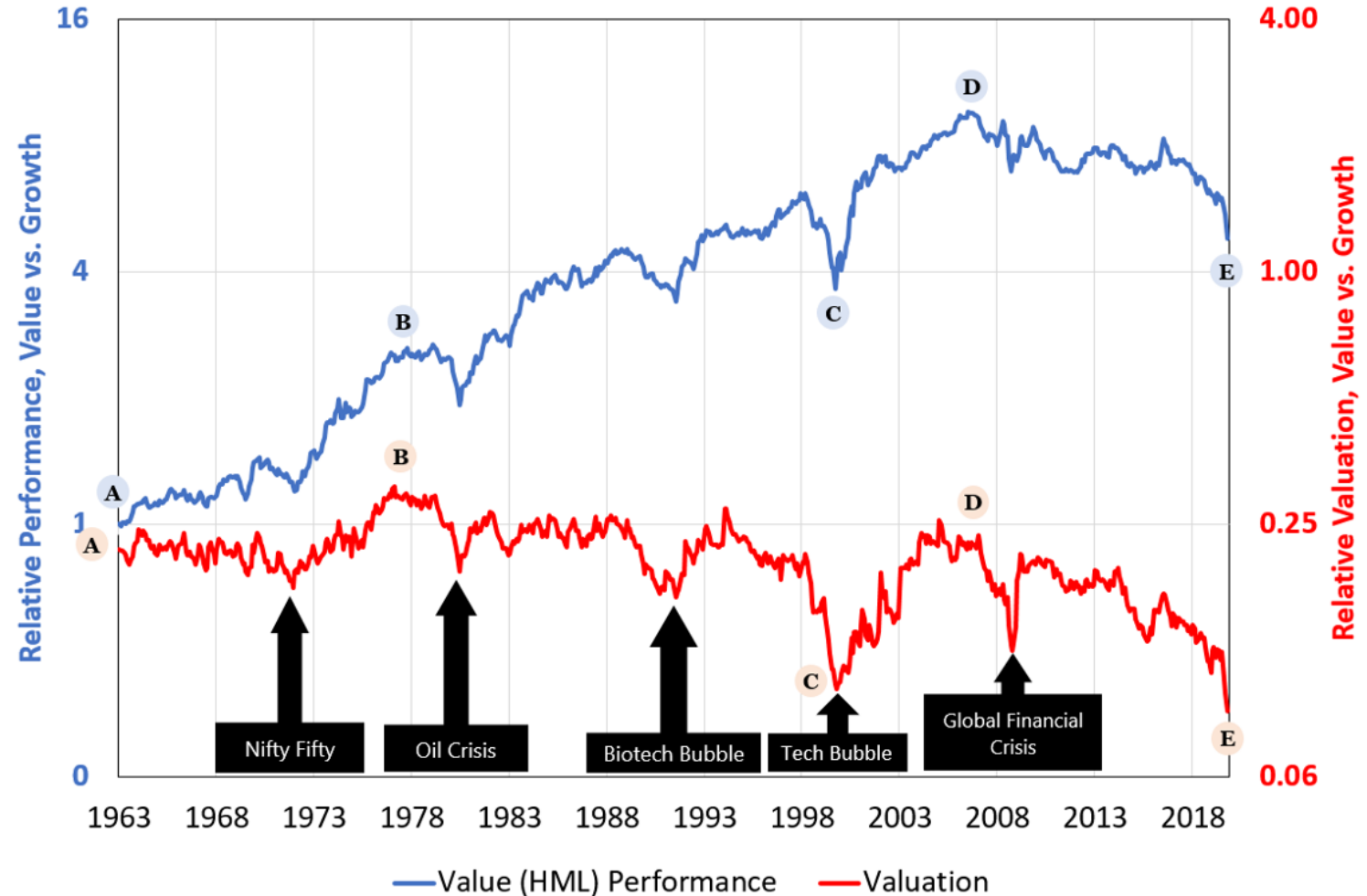
- Investors, on average, overpay for earnings
- This time is not different

	Return on Equity		Sales Growth	
	Pre-2007	Post-2007	Pre-2007	Post-2007
Growth	17%	16%	14%	8%
Neutral	11%	9%	9%	5%
Value	6%	4%	6%	2%
Value–Growth	–11%	–12%	–8%	–6%

Source: Research Affiliates, LLC, using data from CRSP/Compustat.

How Big Was Revaluation Alpha
Post-2007?

Valuation cycle for the market



Fama and French (2002) and
Arnott and Bernstein (2002)

$$\begin{aligned}
 \text{HML Portfolio Return} &\approx \underbrace{\text{Return Due to Change in Valuation}}_{\text{"Revaluation Return"}} + \underbrace{\text{Valuation-Adjusted Return}}_{\text{"Structural Return"}}
 \end{aligned}$$

The path of valuations

Value Return Decomposition, United States, Jul 1963–Dec 2006

Size	Valuation	Total Return	Revaluation Alpha	Structural Alpha	= Profitability	+ Migration
Average	HML	6.1%	0.2%	6.0%	-13.2%	19.2%

Value Return Decomposition, United States, Dec 2006–Mar 2020

Average	HML	-5.4%	-6.6%	1.1%	-15.9%	17.0%
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- Revaluation is the driver of value's poor performance relative to growth.

The path of valuations

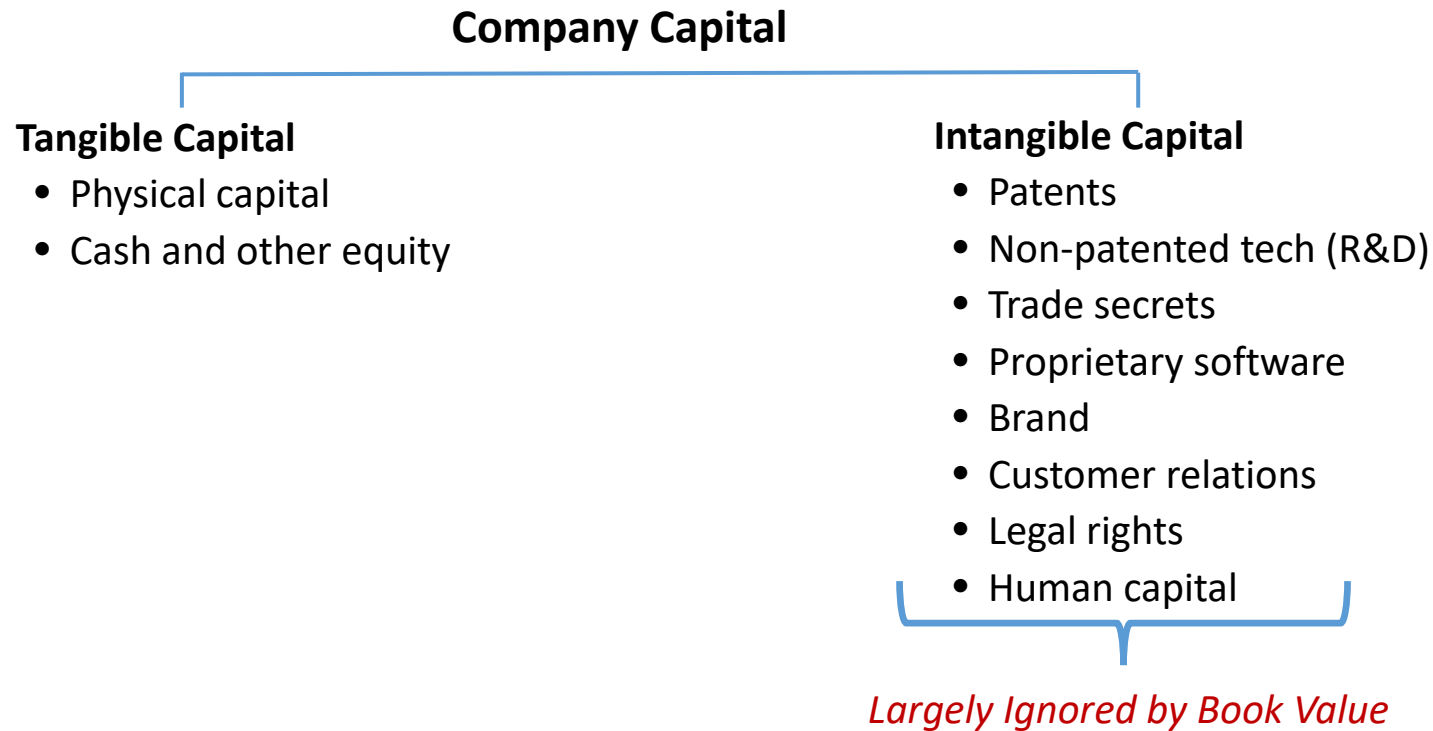
Variable	Jul 1963–Jun 2007	Jul 2007–Mar 2020	Jul 1963–Mar 2020
Revaluation	0.76 (10.03)	0.66 (3.21)	0.78 (10.21)
Alpha	6.0% (5.41)	-1.1% (-0.47)	4.6% (4.12)
N	44	13	57
Adj. R^2	65.8%	54.7%	65.0%

- Alternative regression analysis shows that about 60% of the variation in HML is driven by revaluation

Is Value Mismeasured?

The world has changed

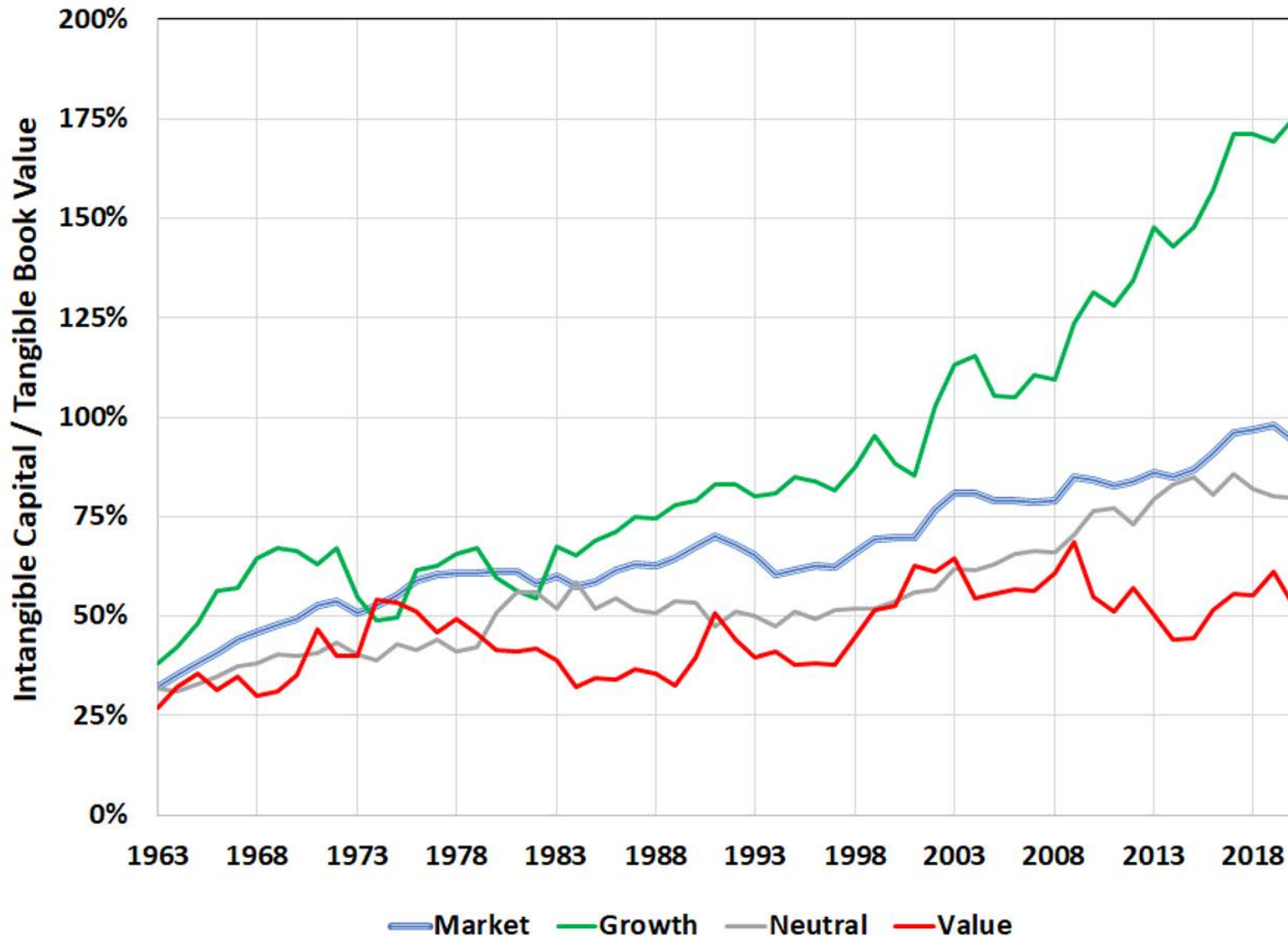
We have moved away from a manufacturing economy to a service-based economy.



Following Peters and Taylor (2017), we construct a measure of intangible capital:

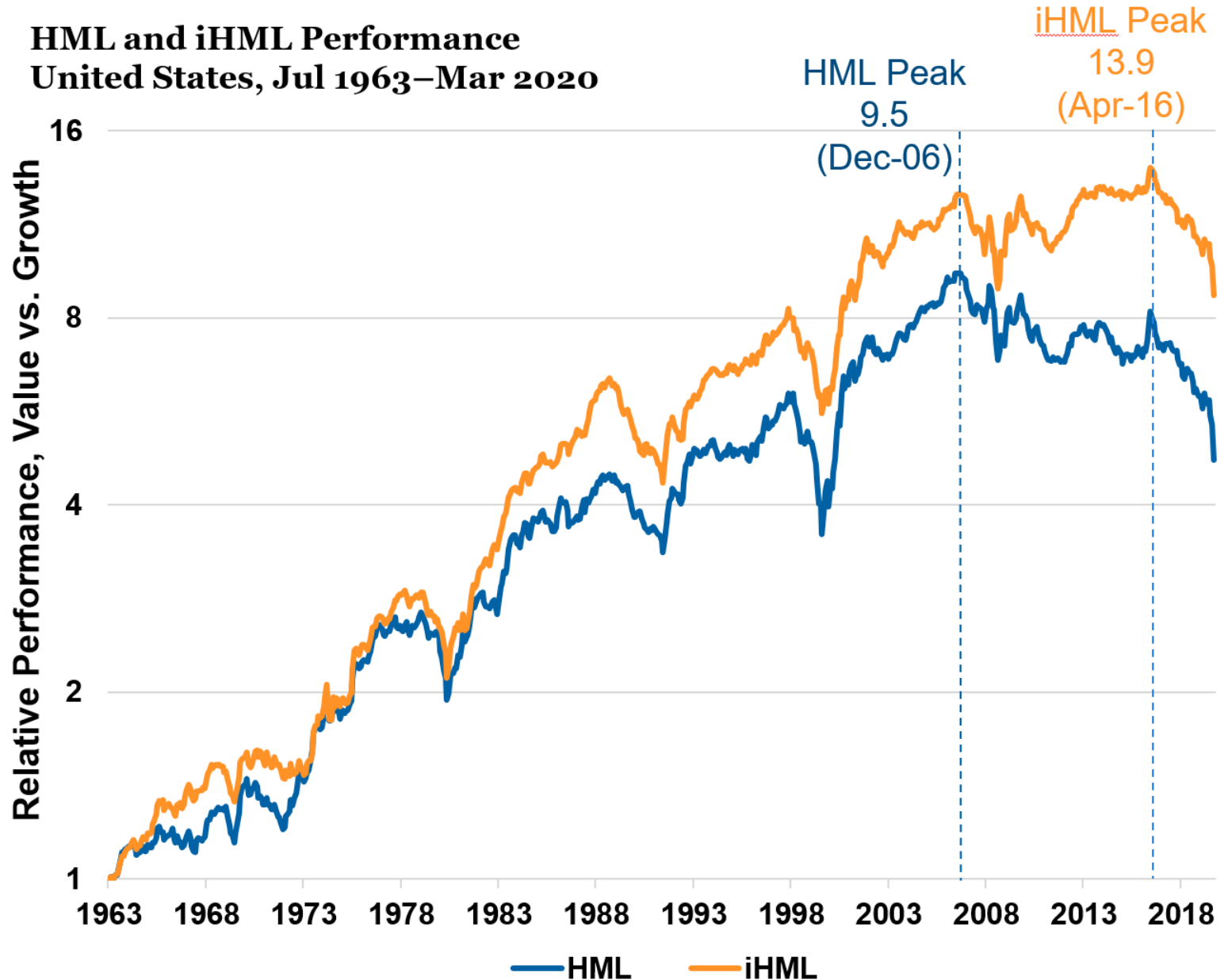
- Instead of P/B, use the total q — the firm's total market value (book value of debt plus market value of equity) divided by the sums of intangible (previously defined) and physical capital (book value of assets).

Book value misses half of average company's capital



- For the average growth company, book value misses nearly 2/3 of the company's total capital which is represented by intangibles.

We construct iHML to include intangibles



- Value is currently more expensive than it looks.
- Excludes some value stocks with minimal intangibles.
- Growth is currently cheaper than it looks.
- Excludes some growth stocks with large intangibles.

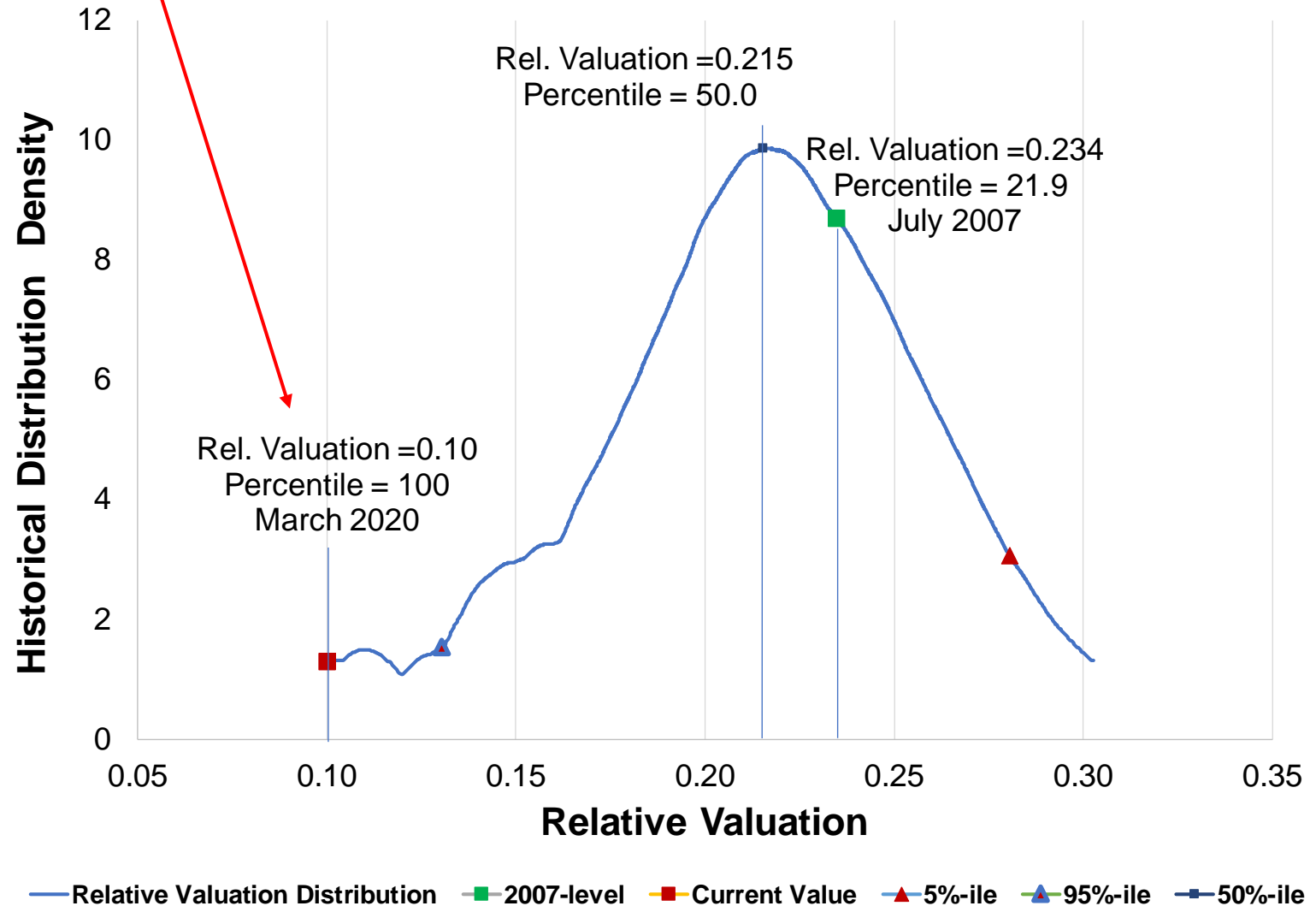
High relative valuation holds in alternative measures

	Historical Percentile Rank	
	June 2007	Mar 2020
HML, Book-to-Price	22%	100%
HML, Small-Cap	52%	99%
HML, Large-Cap	13%	98%
Value-to-Neutral	48%	96%
Neutral-to-Growth	13%	99%
<u>iHML</u> , iBook-to-Price	41%	97%
Earnings-to-Price	40%	90%
Sales-to-Price	22%	98%
Dividends-to-Price	80%	55%
Composite	40%	95%

The Outlook for Value

We are in 100th percentile

- Using our regression approach, we can examine some what-if scenarios.



Mean reversion?

Forward-Looking Expected Returns Conditional: Scenario Analysis

Directional Change	Scenario End Point	Relative Valuation	Log-Relative Valuation Z-score	Historical Percentile Rank	Return
Expanding Relative Valuations	Zero Premium	0.094	-3.94	Beyond 100%	0.0%
<i>No Change</i>	<i>Stay at 100%-ile</i>	<i>0.100</i>	<i>-3.63</i>	<i>100.0%</i>	<i>4.9%</i>
Contracting Relative Valuations	Move to 95%-ile	0.135	-2.16	95.0%	28.7%
	Move to 90%-ile	0.154	-1.55	90.0%	38.6%
	Move to 50%-ile	0.215	-0.10	50.0%	65.2%

Note: Returns are log-returns.

- Even if we stay in the 100th percentile, value has a 4.9% return in excess of growth.

Conclusions

Value engine is appears healthy

- Rates of migration on par with history.
- Differences in profitability on par with history.
- BUT, the correct definition of value is in flux

Post-2007 return are attributable to revaluation

- Starting valuation — richest quartile pricing for HML value relative to growth.
- Ending valuation — cheapest percentile ever for HML value relative to growth.
- Other definitions of “value” show a similar pattern.

Conclusions

Three caveats:

1. Percentile analysis is based on historical distribution (things could get worse).
2. Returns are noisy. We argue that much of the recent performance of value can be attributed to bad luck—there could be additional bad luck.
3. “It’s different this time.” With the global economy in recession, will dividends, earnings, even sales, return to past norms anytime soon?

Nevertheless, anytime you are in the extreme tail of the distribution, expected returns are high.

Reference

<https://ssrn.com/abstract=3488748>

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[Robert D. Arnott](#)

Research Affiliates, LLC

[Campbell R. Harvey](#)

Duke University - Fuqua School of Business; National Bureau of Economic Research (NBER)

[Vitali Kalesnik](#)

Research Affiliates LLC

[Juhani T. Linnainmaa](#)

Dartmouth College - Tuck School of Business; National Bureau of Economic Research (NBER)

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