Quality in Times of Insanity: a Study of Quality Factor Investment Strategies in Stressed Markets

Thesis Defence

17.08.2023

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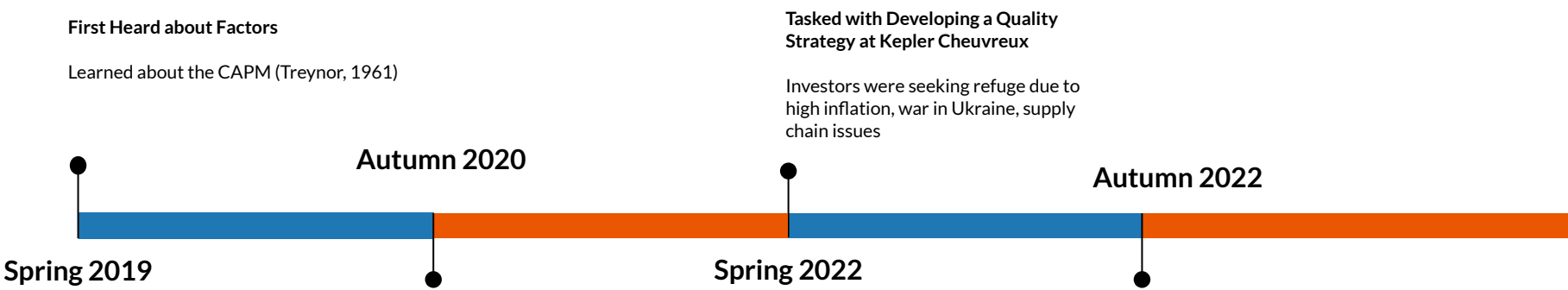
Motivation


Spring 2019
First Heard about Factors
Learned about the CAPM (Treynor, 1961)
Autumn 2020
Learned More about Anomalies
Studied Fama and French (1992), Carhart (1997) and other market anomalies
Spring 2022
Tasked with Developing a Quality Strategy at Kepler Cheuvreux
Investors were seeking refuge due to high inflation, war in Ukraine, supply chain issues
Autumn 2022
Discovered More Approaches to Quality Investing at Pictet
Saw the Commercial Value and ability to integrate in fundamental and systematic strategies. Amazed at lack of consensus on ubiquitous term and found the subject relevant given recent events

Defining Quality

Methodology

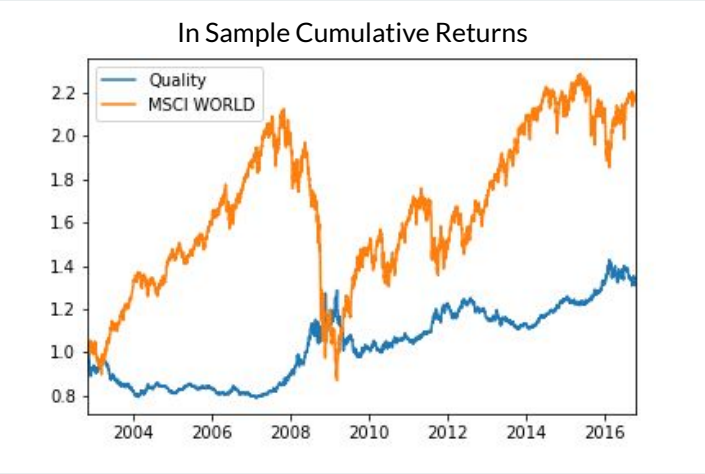
Factor investing approach with the construction methodology of Asness et al. (2019) and the metric selection conclusions from Hsu et al. (2019)

1. Select metrics describing profitability, payout, accounting quality, investment conservativeness
2. Standardise data for aggregation
3. Long top 30%, short bottom 30%
4. Apply market cap. weighting

Defining Quality

Results

Disappointing performance…



… but there is still hope

	Market	Quality
Annualized total return	6%	2%
Volatility	16%	8%
Downside Volatility	10%	5%
Sharpe Ratio	33%	10%
Information Ratio	NaN	-21%
Sortino Ratio	50%	15%
Beta	100%	-23%
Max Drawdown	59%	24%
Downside Capture Ratio	100%	-25%

Detecting Financial Stress

Methodology

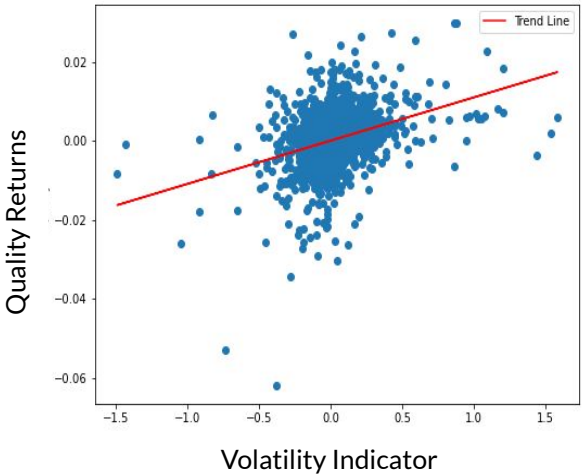
Financial stress is linked to a desire for safer assets (Hakkio et al. 2009)

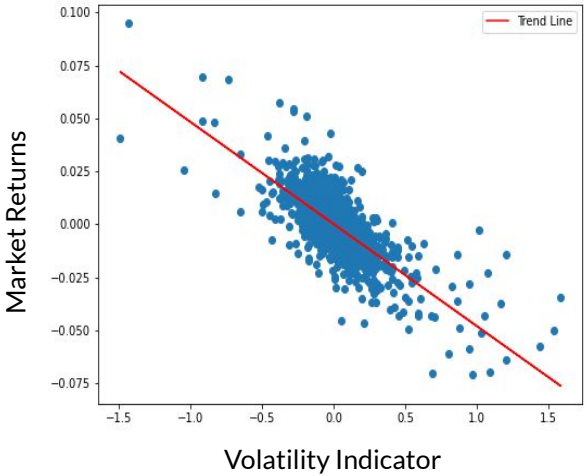
1. Select common indicators and composite ones
2. Make stationary
3. Select relevant indicators
4. Remove redundant indicators

Detecting Financial Stress

Results

Indicators with a positive relation with quality returns and negative relation with the market returns





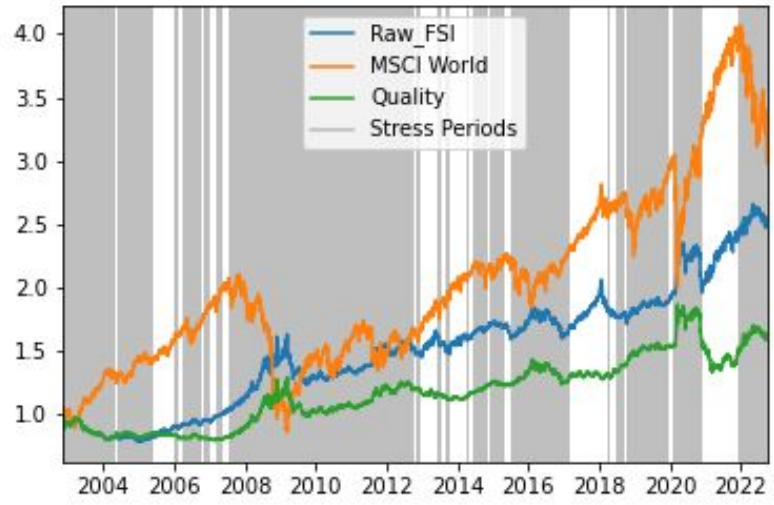
Investment Strategies

Rule-Based

Using raw composite indicators with a defined switching threshold results in:

- Many stress periods
- Only a small Sharpe ratio increase
- A lack of robustness in results

Total Sample Cumulative Returns



	Calm		Stressed		All		
	Quality	Market	Quality	Market	Quality	Market	Strategy
Annualized Return	1%	10%	3%	4%	2%	5%	5%
Volatility	6%	9%	9%	18%	8%	16%	9%
Downside Volatility	4%	6%	6%	12%	5%	11%	6%
Sharpe Ratio	1%	99%	21%	23%	17%	33%	40%

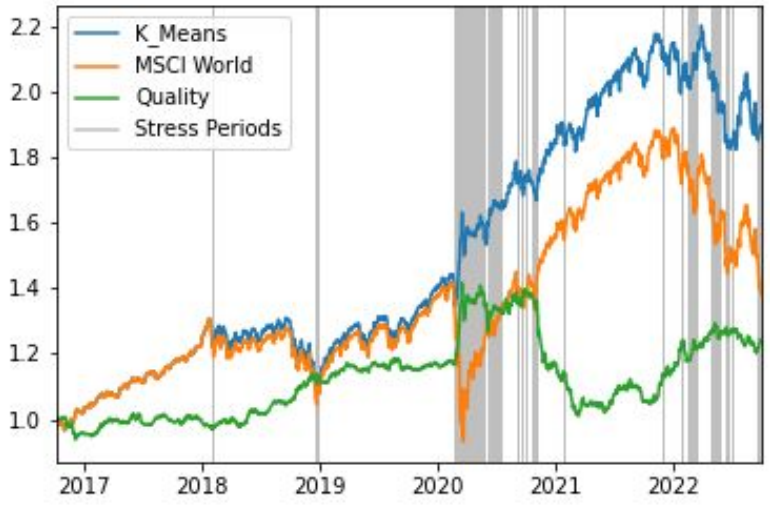
Investment Strategies

k-Means Clustering

Clustering similar periods to identify regimes leads to:

- Satisfactory performance
- Robust out of sample results
- Not using information contained in time sequence

Out Sample Cumulative Returns



	Calm		Stressed		All		
	Quality	Market	Quality	Market	Quality	Market	Strategy
Annualized Return	-2%	6%	41%	0%	4%	5%	11%
Volatility	8%	11%	12%	33%	9%	16%	11%
Downside Volatility	5%	7%	6%	22%	5%	11%	7%
Sharpe Ratio	-34%	51%	278%	13%	32%	34%	87%

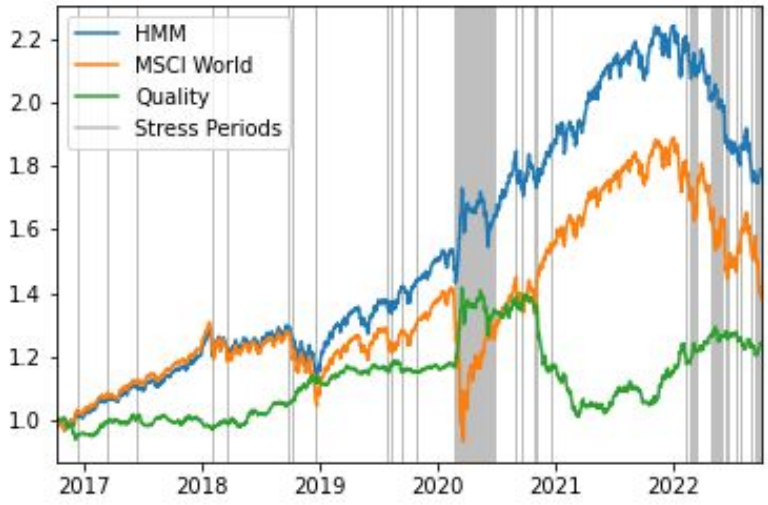
Investment Strategies

Hidden Markov Model

Using Raw composite Indicators with a defined switching threshold results in:

- Similar performance
- Robust out of sample results
- Added complexity with nothing to show

Out Sample Cumulative Returns



	Calm		Stressed		All		
	Quality	Market	Quality	Market	Quality	Market	Strategy
Annualized Return	0%	8%	23%	-8%	4%	5%	10%
Volatility	8%	11%	13%	32%	9%	16%	11%
Downside Volatility	5%	7%	7%	21%	5%	11%	7%
Sharpe Ratio	-6%	67%	158%	-12%	32%	34%	83%

Conclusions

1. Economically intuitive quality characteristics are linked to stability in downward and volatile periods
2. There exist financial stress indicators which are linked to quality and market performance
3. Simple models can be used to find when to switch between portfolios

References

Asness, C. S., Frazzini, A., & Pedersen, L. H. (2019). *Quality minus junk. Review of Accounting Studies*, 24 (1), 34–112.

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