Financial vs Non-financial Firms Event Study: A Quantitative Analysis

DATA 400

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Content

Research Question

How did the 2008 financial crisis and 2020 COVID-19 crisis impact asset management vs. consumer staples firms, and how are revenue changes correlated with stock price reactions during these events?

Big: (> 10B Market Cap)
Small: (< 10B Market Cap)

Asset Management Firms

Big:
- BlackRock (BLK)
- JPMorgan Chase & Co (JPM)

Small:

- Westwood Holdings Group (WHG)
- Federated Hermes (FHI)
- Affiliated Managers Group Inc (AMG)
- Diamond Hill Investment Group Inc (DHIL)
- AllianceBernstein Holding (AB)

Consumer Staples

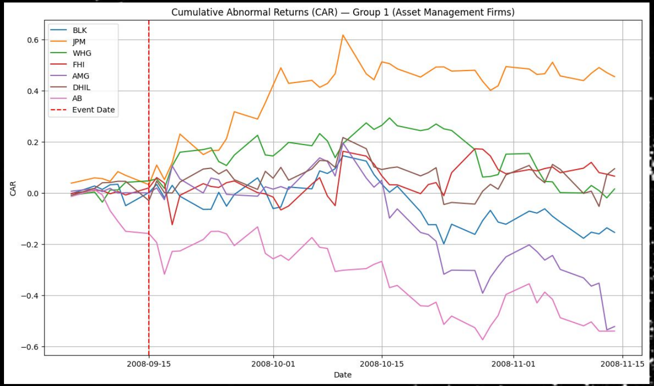
Big:
- Coca-Cola (KO)
- Nestle (NSRGY)

Small:

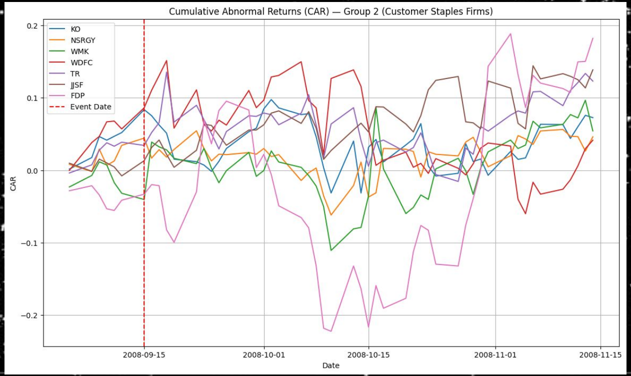
- J&J Snack Foods Corp. (JJSF)
- Weis Markets, Inc. (WMK)
- WD-40 Co (WDFC)
- Tootsie Roll Industries, Inc. (TR)
- Fresh Del Monte Produce Inc (FDP)

Cumulative Abnormal Returns Analysis (2008 Financial Crisis)

Asset Management Firms (Financial)



Consumer Staples (Non-Financial)



Observations

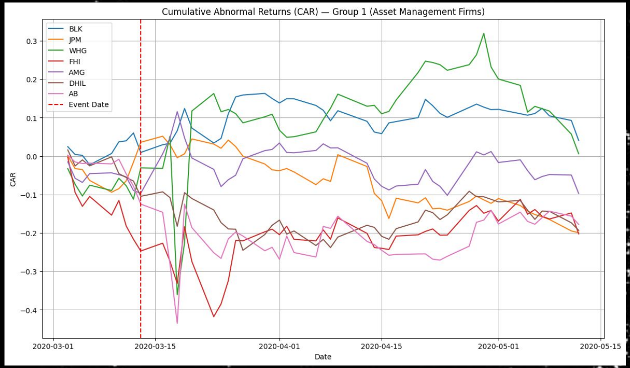
1. Asset Management firms experience larger growth/decline in CAR
2. Consumer staples firms experience moderate growth/decline in CAR

Insights

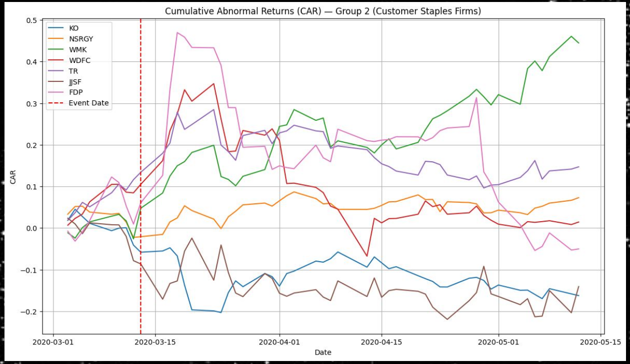
1. Asset Management firms are highly sensitive to 2008 financial crisis
2. Consumer staples firm are more stable and have defensive behavior

Cumulative Abnormal Returns Analysis (COVID-19 Pandemic)

Asset Management Firms (Financial)



Consumer Staples (Non-Finan cial)



Observations

1. Consumer staples has relatively higher rise but lower decline during COVID
2. Asset Management firms got hit initially, then recovered
3. Both sectors have divergent market reactions

Insights

1. Consumer staples have more resilient operations, while remaining to be defensive and low-volatility in stocks
2. AM's CAR recovered quickly as markets rebounded and liquidity returned, thanks to governments and central bank's stimulus
3. Both sectors are extremely heterogeneous during 2020 => company-specific factors drive different responses

CAPM Model

Tickers	Alpha	Beta	R-squared
BLK	0,000349	1,310199	0,5647509
JPM	0,000179	1,381853	0,53298754
WHG	7,3E-05	1,037656	0,23283811
FHI	2,48E-05	1,172304	0,43052438
AMG	-2,4E-05	1,525941	0,54141308
DHIL	0,000711	0,956078	0,23287157
AB	7,69E-05	1,269866	0,42312998
KO	0,000132	0,578232	0,3637279
NSRGY	0,000214	0,477077	0,22430305
WMK	0,000148	0,633465	0,18543872
WDFC	0,000323	0,77285	0,23892966
TR	-7E-06	0,623488	0,23024664
JJSF	0,000301	0,80054	0,27081781
FDP	8,25E-05	0,754298	0,16246468

Observations

1. Asset management firms usually have higher beta than consumer staples firms

2. AM firms have moderate R-squared, while the rest have relatively low R-squared

Insights

1. Asset management firms are high-risk, high-reward. Consumer staples are more defensive

2. AM firms have moderate market correlation, the rest are independent with the market movements

FAMA-FRENCH 5 Factor Model

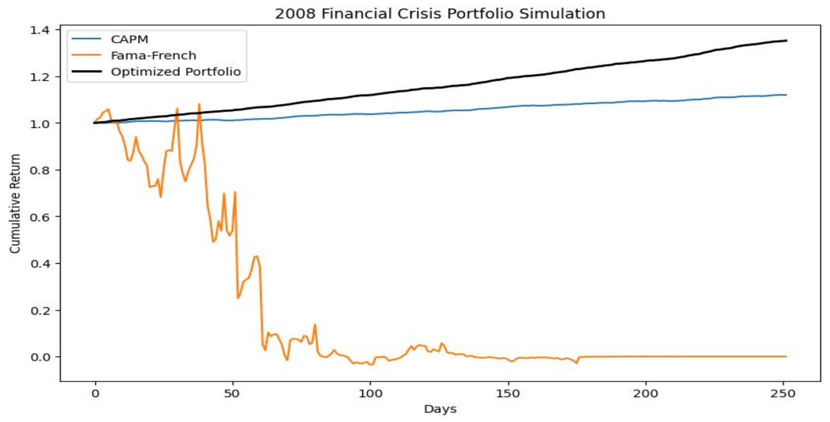
Ticke	alpha	beta_MK	beta_SM	beta_HM	beta_RMV	beta_CM	rsquare
BLK	0,0003	1,2256	0,0037	0,3758	-0,1931	-0,1822	0,5853
JPM	0,0003	1,112	-0,3012	1,5477	-0,5951	-0,8459	0,7517
WHG	0	0,8897	0,8365	0,464	0,1756	-0,3113	0,3071
FHI	0	1,0605	0,1974	0,6669	0,0315	-0,0868	0,4962
AMG	0	1,3402	0,3677	0,8123	-0,2415	-0,4023	0,6269
DHIL	0,0007	0,8372	0,627	0,4239	0,1128	-0,104	0,2909
AB	0,0001	1,1315	0,2216	0,6238	-0,2202	-0,2843	0,4781
KO	0	0,6584	-0,1932	-0,0466	0,4031	0,5311	0,4113
NSRGY	0,0001	0,5164	-0,1878	-0,0729	0,0553	0,2486	0,2323
WMK	0	0,6338	0,6751	-0,0452	0,4854	0,5256	0,2627
WDFC	0,0002	0,7691	0,6094	-0,1994	0,3026	0,3481	0,2859
TR	-0,0001	0,6578	0,4369	-0,1474	0,3302	0,7724	0,292
JJSF	0,0002	0,7868	0,595	0,0329	0,4568	0,3838	0,3286
FDP	-0,0001	0,7587	0,4247	0,1472	0,4467	0,5962	0,2035

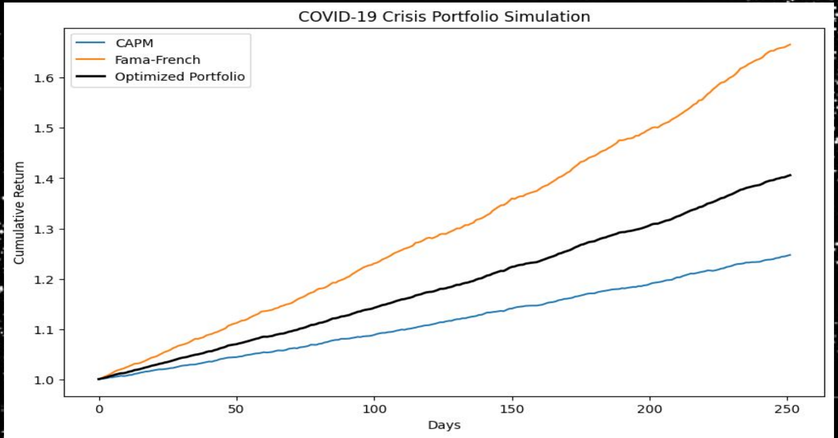
Ticker	alpha	beta_MKT	beta_SMB	beta_HML	beta_RMW	beta_CMA	rsquared
BLK	0,001	1,1697	-0,1585	0,2348	-0,6706	0,0939	0,7269
JPM	0,0009	1,029	-0,4442	1,4204	-0,6158	-0,506	0,8999
WHG	-0,0019	1,0711	1,5305	0,7792	-0,1384	-1,4537	0,488
FHI	0,0005	1,3078	0,1468	0,9283	-0,9411	0,4351	0,6726
AMG	0,0016	1,1673	-0,157	0,7693	-0,1437	1,0138	0,7367
DHIL	0,0003	0,7175	0,7489	0,3453	-0,2533	-0,0099	0,5858
AB	0,0003	1,1918	0,9036	0,4193	-0,3939	-0,7974	0,6063
KO	0,0002	0,7571	-0,1944	0,276	-0,0034	0,69	0,6919
NSRGY	-0,0001	0,5594	-0,148	-0,1144	-0,3753	0,2603	0,5553
WMK	0,0004	0,4855	0,2794	-0,2939	-0,0643	0,9108	0,1973
WDFC	0,0006	0,6133	0,5111	-0,5076	0,3542	0,8141	0,239
TR	-0,0005	0,3672	-0,1089	-0,0694	-0,1523	0,8534	0,1885
JJSF	-0,0004	0,9273	0,4041	0,6146	-0,2417	-0,2425	0,5934
FDP	-0,0007	0,7634	0,3404	0,0388	-0,1059	2,0988	0,2729

Insights

1. Asset Management firms have high beta (>1), meaning they're highly sensitive to market crash in 2008
2. Consumer Staples firms have much lower beta (<1), meaning they're defensive during 2008
3. Beta_MKT in 2020 < 2008, suggesting 2020 is more firm-specific. Sector was NOT predictive by market change in 2020. Firm strength mattered more.
4. R-squared in FF Model is much higher than CAPM, suggesting FF Model is more accurate and explanatory
5. Beta-MKT in FF Model shows similar patterns to CAPM beta, showing robustness and consistency

Simulation and optimized portfolio





Insights

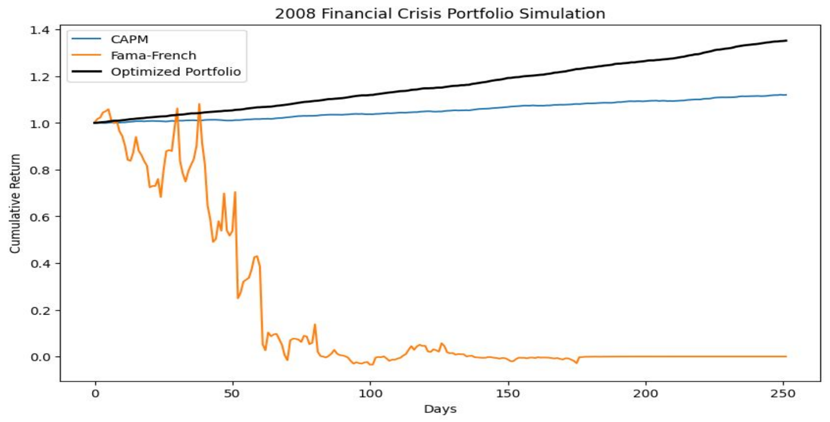
1. Optimized portfolio is the portfolio whose asset weights are chosen to maximize the Sharpe ratio (returns/risk ratio) using crisis-period return data

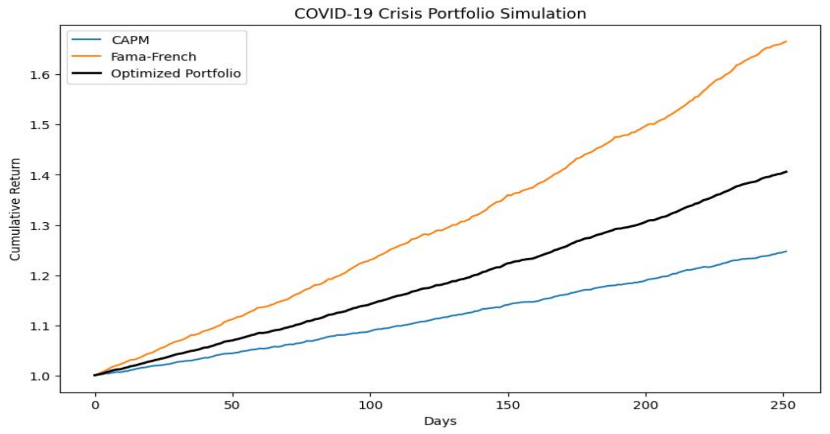
2. In 2008, Fama-French portfolio collapsed early and moved far from optimized portfolio, while CAPM has stable returns and moved closer to the optimized one

3. This result proves that in 2008, factor premia (size, value, etc.) break down due to systemic financial stress, resulting in an optimized portfolio that behaves defensively, similar to CAPM

4. During COVID, Fama-French outperformed CAPM, and got slightly closer to the optimized portfolio, suggesting steadily higher Sharpe ratio than CAPM. Factor premia in 2020 matters a lot more than in 2008

Simulation

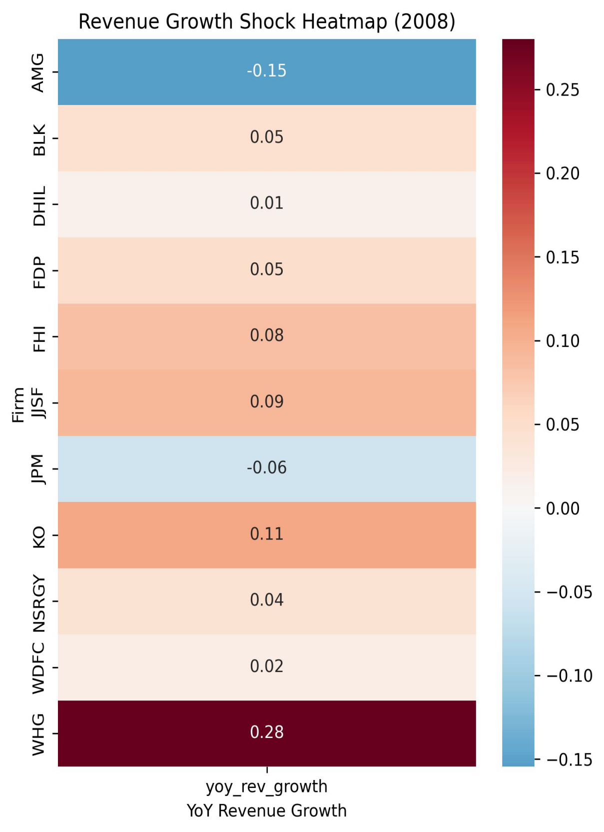




Suggestions for investors

1. Investors should not rely on a single model across all market conditions. Portfolio strategy should adapt to the crisis regime.
2. Risk-adjusted performance should guide portfolio choice, not raw returns.
3. Investors should adapt portfolio strategies to the type of crisis
4. Factor-based strategies perform well in rapid recovery environments like COVID-19, while simpler market-based portfolios are more resilient during systemic crises such as 2008

Financial Crisis (2008)



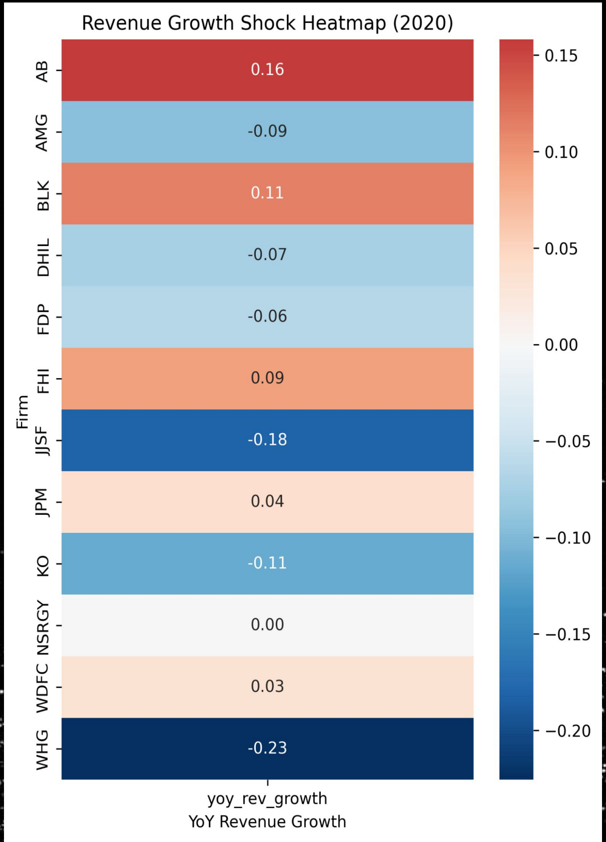
Expectation

1. Expected asset managers to show large revenue declines
2. Expected consumer staples to be stable or slightly positive due to defensive, non-cyclical demand
3. Expected clear sector differences (Financial firms worse, non-financial firms better)
4. Expected small firms to be more vulnerable than large firms

Result

1. Consumer staples behaved as expected -> all stable or positive
2. Asset managers were not uniformly negative
   a. BLK (+5%), FHI(+8%), DHIL(+1%) had revenue growth
   b. Only AMG (-15%) and JPM (-6%) declined significantly
   c. WHG was a major positive outlier (+28%), contradicting expectations
3. 2008 was not purely sector driven, firm specific factors mattered more than expected

COVID-19 Pandemic (2020)



Expectation

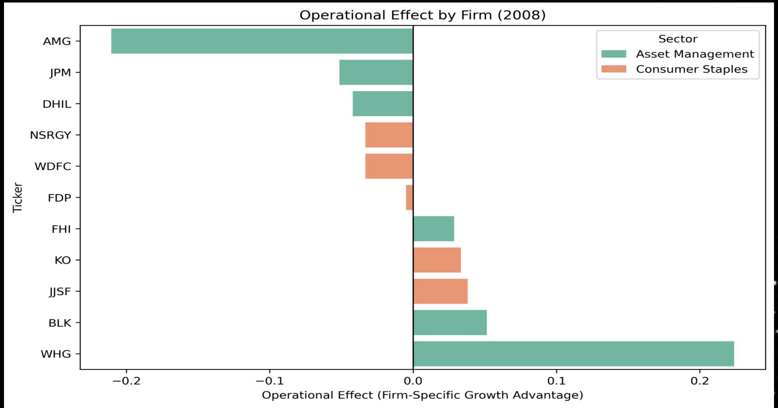
1. Expected consumer staples to increase revenue due to at-home consumption and essential goods demand
2. Expected asset managers to be hurt by market volatility
3. Expected clear sector differences, similar to 2008
4. Expected large-cap firms to be more resilient

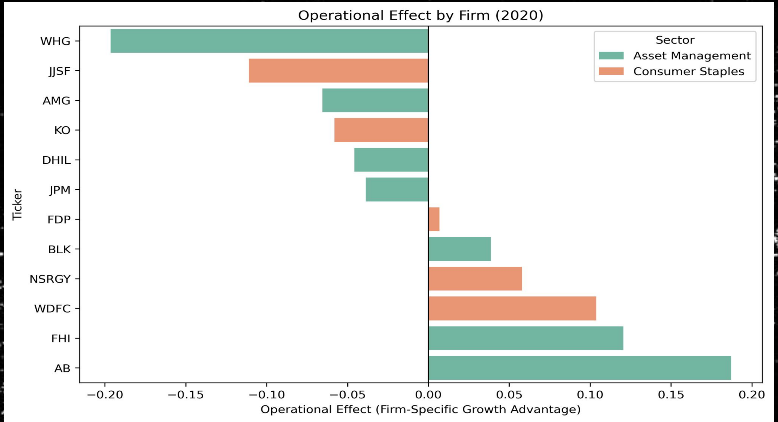
Result

1. Consumer staples were not stable:
   a. KO (-11%)
   b. JJSF (-18%)
   c. FDP (-6%)
2. Asset managers grew strongly
   a. AB (+16%)
   b. BLK (+11%)
   c. FHI (+9%)
3. Some firms in every sector declined -> sector was not predictive
4. WHG (-23%) and JJSF (-18%) show big drops despite different sectors.

2020 was firm driven, not sector drive, operational strength mattered most.

Operational Effect by Firm (2008 & 2020)





Consistent with Heatmap?

1. **BLK (2008 & 2020)** & **AB(2020)** show **strong positive operational effect**
2. **AMG (2008 & 2020) & WHG (2020)** show **large negative operational effect**
3. **Consumer staples** have **mild or mixed** operational effects
4. **COVID (2020)** shows more **firm-to-firm variation**

Which company was Actually Resilient?

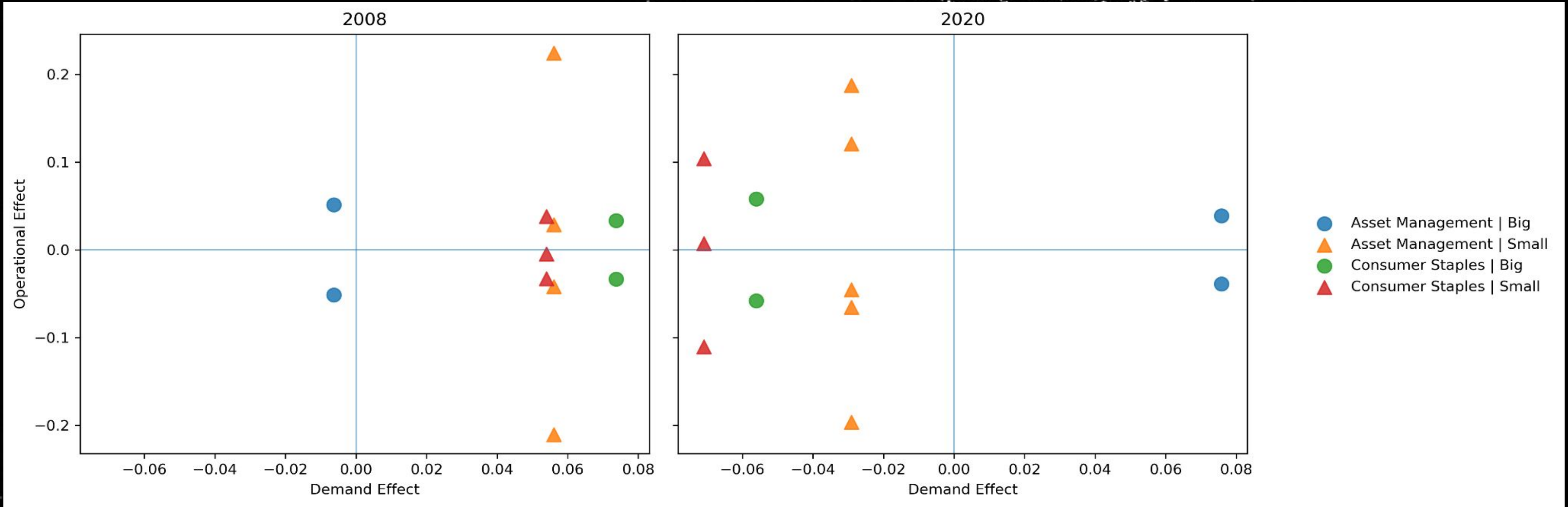
Most Resilient Firms:

1. BLK
2. AB
3. FHI
4. WDFC & NSRGY

Least Resilient Firms:

1. AMG
2. WHG
3. JJSF
4. FDP

Crisis Impact 2008 & 2009



2008 Summary

In 2008, firms exhibit tighter clustering, narrower demand effects, and relatively limited variation in operational effects, with sector groups appearing more internally consistent.

2020 Summary

In 2020, firms display wide dispersion in both demand operational effects, with substantial variation within sectors and no clear clustering by industry or size.

Implications to Stakeholders

Investors & Markets

- Future shocks are likely operational and asymmetric, not purely financial
- Sector diversification worked in 2008, but firm-level fundamentals dominated in 2020
- Risk management should shift toward operational resilience screening

Firms & Corporate Strategy

- "Defensive" industries do not guarantee protection in non-financial crises
- Operational flexibility (cost structure, adaptability) is a core asset
- Crisis preparedness should be embedded in operations, not industry labels

Policymakers & Society

- Crisis responses must match shock structure, not just severity
- Sector-wide tools suit financial crises; targeted firm-level support suits operational shocks
- Repeated firm-level shock may accelerate market concentration and inequality

Ethical Implications

Ethical Implications

- Using historical crisis data may bias conclusions if future crises differ structurally from past ones.
- The limited and selectively chosen sample of 14 firms restricts the explanatory power and generalizability of the analysis.
- Survivorship and selection bias may be present, as the firms analyzed are established companies that remained publicly traded through both crises.

Summary

1. Asset management firms are more volatile, especially during 2008. Consumer staples are more defensive in both periods

2. 2020 is more firm-specific, 2008 is more market-driven
   a. 2008: Sector identity matter more, but firm-level differences still existed
   b. 2020: Outcomes were clearly firm-specific, even within defensive industries

3. CAPM portfolio has better performance in 2008 compared to Fama-French

4. Fama-French portfolio has better performance during COVID-19

Thank you