

How Persistent are the Effects of Negative Reputation Events?

“Character is like a tree and reputation like its shadow. The shadow is what we think of it; the tree is the real thing.” --- Abraham Lincoln

This Research paper is an abstract of the academic research analysis performed as part of NYU Master of Science in Risk Management for Executives capstone work, presented by Nagaraja Kumar Deevi (Managing Partner – DEEVI | Advisory Services | Risk Consulting | Research Studies, US), Kevin Taylor (Group Treasurer and Head of Investments at Abu Dhabi Commercial Bank), Mahadevan Radhakanthan (MD – Whole Sale Credit, RakBank, Dubai), Abhinav Mishra (Executive – Risk management, Singapore), Aaron Stelzer (MD-The Corporation for Interest Rate Management, US), & Tim Williams (General Manager, Group Strategic Business Services at National Australia Bank Limited)

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1 ABSTRACT

Academics and consultants alike endorse the importance of a corporation's reputation and the need to maintain and protect it. This paper considers Reputation from the market's perspective by asking, "How persistent are the negative effects for a company that has suffered negative reputation event? And by extension, do negative reputational events have a permanent or prolonged financial market impact on a Company?" What does the market really value more?

This question is born in the very bright light of major reputational events that have beset global corporation behemoths. Libor rigging, human and environmental disasters, data systems hacking and privacy abuses, automobile defects and fraud have been monumental reputational scandals and crisis with lasting economic damage and social and community outrage and fall out. It could be expected that the impact on the organizations involved would have been financially catastrophic and in some instances terminal. This however, has not been the case. Reputation from a financial markets perspective seems to have unfolded in a very different way to that which could have been expected. In fact, some large organizations have quickly shrugged off what appear to have been irreparable reputational damage and gone from strength to strength in terms of financial market performance. If reputation really did matter to financial markets, then the corporate graveyard surely must be full of fallen icons!

This paper analyses and considers several examples of high profile U.S., Japanese and European corporations that have been subject to significant negative reputational events, - JP Morgan, British Petroleum, Target Corporation, Sony Corporation, Johnson & Johnson and Volkswagen. In each case the negative effects of these events are visible and well depicted through a two factor event study methodology over a narrow 21 Day time horizon. However, in most cases longer-term analysis based on share price data or other market based attributes has demonstrated that these same negative effects do not persist or at least materially lessen, through time. These results support the authors' contention that for larger corporations, the overhang of the resulting negative effects does not persist and a reversion in market price returns to the previous norms can be observed. The large cap corporations within the same sector also tend to exhibit contagion effect. It was also noted that this reversion can occur relatively quickly despite the ongoing fallout and outrage that plays out across legal, political, social and community circles.

2 EXECUTIVE SUMMARY

2.1 Introduction

Does a company's reputation matter to financial markets as much as its ability to maintain and grow its financial performance? This question is important in light of the number of proponents for corporation's investing vast resources to both develop and protect their reputation. Our hypothesis is that "Large corporations stock prices are not materially or permanently subject to the negative impacts of reputation risk event."¹ This would seem to "Fly in the Face" of popular perception. The immense amount of academic

¹ 'Materially' meaning not beyond the direct financial costs

and professional literature on this subject appears to be predicated on both fragility of reputation or the dire need to maintain it and the positive and negative financial impacts that flow from reputation.

This paper will adopt a statistical approach to share price and share indices comparisons to question the popular and professional perception. Where applicable, other financial market parameters such as price/earnings ratios, industry peer group comparisons, and credit default swap rates may be drawn on in support of answering this question.

2.2 Corporate Reputation & Risk

What is “Corporate Reputation?” Why is it so important? Reputation can be seen as a set of beliefs or opinions about a person or entity by both stakeholders and outsiders. Organizations work hard and expend significant resources to build, shape and enhance their reputation in order to create brand recognition, customer loyalty and employee loyalty. These attributes are seen as hallmarks of profitable and resilient companies. Reputation is the discerning trait that can distinguish a corporation from its competitors and lead to a clear market advantage resulting in above normal returns and profits. A study by Simon Cole² attributed more than 26% of a company’s value directly to its reputation. Little wonder then at the concerns of shareholder, management and regulators alike for this intangible, and their fervor to protect and maintain such value. This is punctuated in Deloitte’s ‘2014 Global Survey of Reputational Risk’ where it is noted that more than half the companies surveyed plan to focus more attention on reputational risk issues going forward.

Corporate reputation is often linked to brand; an intangible asset that can be impaired or damaged by a variety of risk events, mistakes and behavioral short comings.³ An alternate view is that corporate reputation is, like capital, a cushion against losses.⁴ As reputational events unfold, this “risk capital” is absorbed to buffer the organization against losses.

What is Reputational Risk? A much referred to definition is “Reputational risk is the potential that negative publicity regarding an institution’s business practices, whether true or not, will cause a decline in the customer base, costly litigation or revenue reductions.”⁵

As Fontnouvelle (2005) explains, there are several paths by which reputational risk can induce losses for a firm:

- Loss of current or future customers;
- Loss of employees or managers within the organization, an increase in hiring costs, or staff downtime;
- Reduction in current or future business partners;
- Increased costs of financial funding via credit or equity markets; and
- Increased costs due to government regulations, fines, or other penalties.

²Simon Cole, “*The Impact of Reputation on Market Value*” World Economics, Vol. 13 • No. 3 • July–September 2012, 59.

http://www.reputationdividend.com/files/4713/4822/1479/Reputation_Dividend_WEC_133_Cole.pdf

³S. Scandizzo, “*An Asset-Liability View of Banks’ Reputation*” Reputational Risk Management in Financial Institutions, Risk Books 2014, 23.

⁴Ibid., 24.

⁵<http://www.federalreserve.gov/boarddocs/supmanual/cbem/cbem.pdf>

Thus, reputational risk erodes firms' expected future cash flows."⁶

The point that reputation has value across several fronts and that in losing or damaging one's reputation, real costs will be incurred. Further reputation cannot be readily restored; it must be earned back over a sustained period of time. Reputation is real and has a value. A company susceptible to reputational mishaps will have a tarnished reputation. It may not survive subsequent shocks thus putting the company into "reputational bankruptcy."⁷ It is clear that managing an organization's reputation is important.

2.3 Academic Overview

The authors contend post a negative reputation event, declines in large corporation's share prices may not be sustained (in the absence of the company declaring bankruptcy - Barings). Performance 'normalizes' relatively quickly once the economic impact of the event has been assessed by the market. This occurs even though the social, regulatory and political 'knock on' impacts have yet to fully unfold.

Reputational losses will represent the decline in value "of the firm's business franchise that extends beyond the event related accounting losses and is reflected in a decline in its share performance."⁸ Similarly, as noted by Fontnouvelle (2005), "Thus, reputation risk either erodes firms' expected future cash flows or increases the markets required rate of return. Hence, an indirect way of measuring reputation risk is to estimate the impact of the operational loss announcement on a firm's equity value."⁹

A great deal of the academic research relating to the impact of reputational events has been in the form of Event Studies. Event Studies typically review the share price history shortly before and shortly after events such as earnings announcements, earnings restatements, or disclosures of operational or fraudulent losses. These typically do not contemplate the longer-term impact of such disclosures on the performance of the subject corporation's share price. "We find that the announcement of an operational loss has an immediate and significant impact upon a firm's market value. We also find that market's values fall one-to-one with losses caused by external events, but fall by over twice the loss percentage in cases involving internal fraud."¹⁰ Micocci et al observed this in 2007.

These Event Studies have been quite consistent in their approach to analysis and their results have also been similarly consistent. There is agreement that reputational risk impact should logically be found in the share price of impacted corporations, "Shareholders are likely to sell stocks if they suspect that future losses are about to happen. We can thus assume that a reputational effect can be indirectly measured through the impact of a loss announcement on a firm's equity."¹¹

⁶ P. Patrick De Fontnouvelle and Jason Perry, "Measuring reputational risk: the market reaction to operational loss announcements." Federal Reserve Bank of Boston, October 2005, 5.

<https://www.bostonfed.org/bankinfo/qau/research/papers/jppd1005.pdf>

⁷ Ibid., 25.

⁸ Ingo Walter, "Reputational Risk and Conflicts of Interest in Banking and Finance: The Evidence so far." INSEAD Working Paper 3 Jan 2007, 4.

<https://www.insead.edu/facultyresearch/research/doc.cfm?did=2629>

⁹ Patrick De Fontnouvelle and Jason Perry, "Measuring reputational risk: the market reaction to operational loss announcements." Federal Reserve Bank of Boston, October 2005, 5.

<https://www.bostonfed.org/bankinfo/qau/research/papers/jppd1005.pdf>

¹⁰ Ibid., 2.

¹¹ Marco Micocci, Giovanni Masala, Guiseppina Cannas and Giovanna Flora, "Reputational Effects of Operational Risk Events for Financial Institutions." International Actuaries Association, 2.

Reputational losses can be seen as declines in a firm's market capitalization that are greater than the magnitude of the actual loss. "Most authors thereby find significant negative stock market reactions to operational losses that exceed the announced operational loss size, thus indicating substantial reputational losses, and most find that these losses are especially pronounced for (internal) fraud events."¹² This latter point is supported by Karpoff (2008) who found that fraudulent losses could impact the corporation to the extent of many multiples of the actual operational loss.

As previously stated, such studies do not look at the longer term impact on share price, content that the immediate impact is representative of the actual loss or the market assessment of the reputational impact on future earnings.

The authors contend that for certain larger corporations this overhang may not persist and that a reversion in market prices to the previous norms can be observed. Importantly, this reversion can occur relatively quickly despite the ongoing fallout and outrage that plays out across legal, political, social and community circles. The stigma and antipathy of the event that caused the reputational damage may continue to linger on, yet this displeasure and unrest is no longer reflected in the institution's share price.

There is academic evidence in support of this notion. Fountnouvelle (2005) comments that for allegations of misconduct, the magnitude of losses suffered by a firm negatively related to the size of the firm (market cap). This is consistent with our premise. Additional support for further enquiry is noted from those that would provide insurance of reputational risk, "Moreover, it is not clear in which timeframe market value losses would be considered. Market losses could be temporary and market values could recover, caused by an initial overestimation of the operational loss size by investors or because corporate reputation improves again."¹³

Hence the questions: How persistent are the negative effects for a company that has suffered a negative reputation event? And by extension, do negative reputational events have a permanent or prolonged financial market impact on a company? What does the market really value more?

2.4 Mean Reversion & Event Studies

2.4.1 Overview

Mean reversion in equities has been consistently documented as a source of positive alternative investment returns over the last nine decades. Mean reversion investing attempts to capitalize on the tendency for an asset's price to move from extreme levels towards long term averages and it can be conducted on an 'absolute' or 'relative' basis.

In an absolute mean reversion model a stock's attractiveness is determined solely by the relationship of its current price to its long term average. The downside to this is that the

http://www.actuaries.org/AFIR/Colloquia/Rome2/Micocci_Masala_Cannas_Flore.pdf

¹²Christian Eckert, and Nadine Gatzert. "Modeling Operational Risk Incorporating Reputation Risk: An Integrated Analysis for Financial Firms" Working Paper Version: August 2015, 31.

<http://actuaries.asn.au/Library/Events/ASTINAFIRERMColloquium/2015/EckertGatzertReputationRiskPaper.pdf>

¹³ Colloquia, "Innovation and Invention." Actuaries Institute, 23-27^h,^{4h} August 2015, Sydney

<http://www.actuaries.asn.au/Library/Events/ASTINAFIRERMColloquium/2014/ASTINAFIRERMCallforPapers.pdf>

model will persistently flag stocks as undervalued in a declining market and overvalued in a rising market.

Alternatively, in a relative mean reversion model a stock's attractiveness is judged relative to the movements of other stocks. The benefit of using a relative measure of mean reversion is that the underlying drift of the equity market is removed allowing each stock's attractiveness to be determined from the merits of its idiosyncratic movements relative to the group. In a rising market, a relative mean reversion portfolio will concentrate its long positions in stocks that have appreciated in price the least, while focusing its short positions in stocks that have appreciated in price the most. Conversely, in a falling market the portfolio will concentrate its long positions in stocks that have depreciated in value the most, while focusing its short positions in stocks that have depreciated the least. In this way, the model is indifferent to the absolute return of any of its holdings because it derives return from the relative movement of its long and short positions.

2.4.2 Possible Explanations

Substantial research has revealed that investors do not act rationally when making decisions. This irrational behavior leads to several exploitable market phenomena, one of which is mean reversion. Specifically, mean reversion is the byproduct of the availability bias, the aversion to losses, and the affinity for lower prices.

Kahneman and Tversky (1977) illustrate that humans bias their choices towards information that is easily recallable from memory. The consequence of this availability bias is that new information is given too much weight when making decisions because of the cognitive ease with which it can be recalled. Kahneman and Tversky's finding explain why stock prices are predisposed to overreaction; investor's overweight new data, such as news events, while ignoring other pertinent information that is less cognitively available. After the initial overreaction to a negative news event occurs investors who still hold the stock become loss averse, unwilling to sell their position. Conversely, other investors become enticed by the lower price. As all investors finish digesting the new information, prices revert from the extremes causing a previously underperforming stock to outperform. Overreaction to new information is accentuated when the decision making environment is complex and many variables have to be analyzed. Therefore, investors are given many opportunities to overweight new information because of the multitude of complex factors that drive stock prices.

Another factor that contributes to mean reversion in stocks is the attractiveness of lower prices. Psychologically, it is satisfying to purchase an item at a discount and it is painful to purchase an item at a premium.

2.4.3 Reputational Event & Mean Reversion

This research report draws a statistical relation between abnormal stock returns and reputation loss events with the help of market and financial indicators. We define loss due to reputation risk simply as the cumulative abnormal return (CAR) derived by computing the difference between actual stock returns and the most recent projected expected returns during a reputation event period. We also measure the relationship of these negative CARs for a corporation with the industry peer group returns and the broader market indices.

2.4.4 Event Study Literature

Event studies are based on the assumptions of market efficiency hypothesis. If the financial markets are efficient, there should be an immediate reaction to an event on the announcement date and no further reaction on subsequent trading days.

MacKinlay (1997) shows that the power of event studies to detect abnormal performance is much greater when daily data are employed rather than monthly, quarterly or annual data. Intra-daily data are likely to be full of microstructure noise.

There are numerous ways that the expected returns can be calculated, but usually this is achieved using data before the event window so that the event is not allowed to ‘contaminate’ estimation of the expected returns. Armitage (1995) suggests that estimation periods can comprise anything from 100 to 300 days for daily observations and 24 to 60 months when the analysis is conducted on a monthly basis.

In most applications, a broad stock index such as the FTSE All-Share or the S&P500 would be employed to proxy for the market portfolio. This equation can be made as complicated as desired – for example, by allowing for firm size or other characteristics – these would be included as additional factors in the regression with the expected return during the event window being calculated in a similar fashion.

A further approach would be to set up a ‘control portfolio’ of firms that have characteristics as close as possible to those of the event firm – for example, matching on firm size, beta, industry, market-to-book ratio, etc. – and then using the returns on this portfolio as the expected returns.

If we wish to examine the impact of an event over a long period, we need to be more careful about the design of the model for expected returns. Over the longer run, small errors in setting up the asset pricing model can lead to large errors in the calculation of abnormal returns and therefore the impact of the event.

A key question is whether to use cumulative abnormal returns (CARs) or buy-and-hold abnormal returns (BHARs). There are important differences between the two:

1. BHARs employ geometric returns rather than arithmetic returns in calculating the overall return over the event period of interest; and
2. Thus the BHAR can allow for compounding whereas the CAR does not.

BHARs have been advocated, amongst others, by Barber and Lyon (1997) and Lyon et al. (1999) because they better match the ‘investor experience’. CARs represent biased estimates of the actual returns received by investors. However, by contrast, Fama (1998) in particular argues in favor of the use of CARs rather than BHARs.

BHARs seem to be more adversely affected by skewness in the sample of abnormal returns than CARs because of the impact of compounding in BHARs. In addition, Fama indicates that the average CAR increases at a rate of $(T_2 - T_1)$ with the number of months included in the sum, whereas its standard error increases only at a rate $\sqrt{(T_2 - T_1)}$. This is not true for BHARs where the standard errors grow at the faster rate $(T_2 - T_1)$ rather than its square root. Hence any inaccuracies in measuring expected returns will be more serious for BHARs as another consequence of compounding.

3 METHODOLOGY APPLIED

The methodology deployed here in undertaking the event studies is summarized as follows:

The Event

1. Event Date = T
2. Pre Event Estimation Window of 180 days: $(T - 10 - 180)$ to $(T - 10 - 1)$
3. Event Start: $(T - 10)$
4. Event End: $(T + 10)$

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5. Post Event Observation Window: ($T + 10 + 1$) onwards
 6. Perform Linear Multivariate regression to compute Expected Returns using a 2-Factor Model with S&P500 and Industry Peer Group Average
 7. Compute Abnormal Returns = Expected Returns – Actual Returns
 8. Compute Cumulative Abnormal Return = Sum of Abnormal Returns over the Event Window

Post the Event

9. Observe and analyze stock returns for relative mean reversion properties
10. Observe and analyze impact of CDS spreads, Volatility, S&P500, Peer group analysis, and other financial data

Hypothesis

Abnormal returns due to negative reputation events mean revert relative to the S&P500 or Industry Peer Group Average for large cap stocks.

4 CASE STUDIES

Analysis of reputation risk has been undertaken across the following industries:

Banking & Financial Services & Insurance (BFSI):

Case Study: JPMorgan's 2012 London Whale Event
Peer Group: Bank of America, Citibank, Wells Fargo

Oil & Gas:

Case Study: British Petroleum's 2005 Texas City Refinery Explosion
Peer Group: Shell, Chevron, Exxon
Case Study: British Petroleum's 2010 Deepwater Horizon Oil Spill in the Gulf of Mexico and 2005 Texas City Refinery Explosion
Peer Group: Shell, Chevron, Exxon

Pharmaceuticals:

Case Study: Johnson & Johnson's 1982 Tylenol recall
Peer Group: Pfizer, Merck, Teva

Media and Entertainment:

Case Study: Sony Corp's PlayStation 3 Cyber-Security Hacking Events of 2011
Peer Group: Disney, Time Warner, Comcast

Retail:

Case Study: Target Corporation's Data Breach 2014
Peer Group: Wal-Mart, Costco, Dollar General

Automobile:

Case Study: Volkswagen's 2015 emissions scandal
Peer Group: General Motors, Toyota, and Ford

5 CONCLUSION

This paper has analyzed and considered several high profile multi-national corporations that have been subject to significant negative reputational events. Our event study analysis and relative mean reversion results suggest that for certain large corporation's adverse reputational event overhang may not persist from a financial markets perspective. Reversion in market prices to the previous norms can be observed. Notably, this reversion can occur relatively quickly and well ahead of the ongoing fallout and outrage across social, community, political and regulatory arenas. Displeasure and unrest is no longer reflected in the institution's share price or CDS.

Evidence in support of our Hypothesis:

- “Large corporations stock prices are not materially or permanently subject to the negative impacts of reputation risk event.”
- We observed strong evidence in support of our hypothesis that – For Large Cap Stocks, the abnormal returns and CDS rates due to negative reputation events often mean revert relative to the S&P500 or Industry Peer Group Average.
- Amongst the seven case studies conducted across various industry sectors - Four exhibit stock returns relative mean reversion; three out of four cases where CDS was available, it relative mean reverts except for retail sector; and five out of seven cases exhibit contagion effect amongst large corporations except for external reputation events and retail sector.

Key Findings:

We further summarize our key findings as follows:

- Large Corporation stock returns exhibit relative mean reversion properties to the broader market S&P index and Industry Peer Group Average
- Despite the long running ongoing fallout and outrage that plays out across legal, political, social and community circles; the large corporation stocks may revert to normalcy relatively quickly
- Large Corporations within the same sector broadly exhibit a contagion effect during a negative reputation event that occurred due to internal fraud or negligence; except for Media & Entertainment sector
- The contagion effect may not necessarily surface when the negative reputation event is an external event
- Company CDS acts as a leading indicator of the stock returns and in case of relative mean reversion to the benchmark, CDS reverts prior to the stock returns

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