

Application of the Risk Systems That Read[®]: the Wynn Resorts Story

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Overview

- Quick Review of relevant concepts
 - Current risk modeling framework based on history.
 - Near horizon risk model providers use higher frequency data.
 - Draw backs to using daily data.
- What makes **Risk Systems That Read®** different
 - Information outside of the time series.
 - Positive definition of stock specific risk – not just the error term.
- Application of the theory
 - WYNN Resorts provides a recent real world example of how **Risk Systems That Read®** is applied.

Quick Review

- Summarize a few relevant presentations to set the ground work for the discussion:
 - “Short Term Risk from Long Term Models” by Anish Shah at <http://www.northinfo.com/documents/286.pdf>
 - “Risk Systems That Read[®] Redux” by Dan DiBartolomeo at <http://www.northinfo.com/documents/782.pdf>.
- Model handbook for ADAPTIVE NEAR HORIZON RISK MODELS Risk Systems That Read[®]
 - <http://www.northinfo.com/documents/356.pdf>.

Current Near Horizon Model Development

- Current risk models are “unconditional”, meaning they predict the future using historic data
 - e.g. 5 years of monthly returns or 60 daily returns
- Weakness with unconditional models is it takes time for new information to be expressed in the time series causing the model to be out of synch with the market
- Traditional solution in the vendor space is to use more high frequency data (i.e. daily), shortening the half life, or assuming a simple trend in volatility (e.g. GARCH)

Statistical Complexities of High Frequency Data

- Well known issues with high frequency data
 - Negative serial correlation due to short term reversal effects
 - Daily overreactions & reversals, which cancel out over time
 - GARCH type volatility adjustments capture behavior after it matters, e.g. predict a storm when the sky is clear, after the storm has passed
 - Positive serial correlation in illiquid asset
 - Supply/demand imbalance
 - Pre-float adjusted index
 - Less Gaussian return distributions as time intervals shrink
 - 3 std deviations more probable – Fatter tails
 - Unobservable correlation when trading hours don't overlap
 - Difficult to model the impact of trading on one exchange to the next one

Best Information Is Outside The Time Series

- Unconditional models ignore everything known in the market not visible in the time series.
- **Risk Systems That Read®:**
 - Blends news flows, implied volatility, cross-sectional dispersion, with a historical pervasive relationships.
 - Applies different decay rates for companies based on liquidity, size, popularity, etc.
 - Stock specific is based on identifiable information, not just what is left after factors. (“On a Positive Definition of Asset Specific Risk” -<http://www.northinfo.com/documents/620.pdf>)

Define News

- Directly from “Risk Systems That Read® Redux”
 - For our purposes, “News” is the set of information coming to investors that tell us how the present is different from the past.
 - This definition implies that routine information affirming the “status quo” is not news irrespective of how it is delivered. Investors respond differently to “announcements” (time of information release anticipated) than to “news” where both the content and timing are a surprise
 - Only a minority of large asset price moves are a direct response to investors responding to news. There are a lot of “information-less” trades (see Livnat, et. al. 2013). We need to be selective.

WYNN Resorts: the Story

- Second part of the presentation applies **Risk Systems That Read®** to a very well known recent example:
 - Based on a Northfield essay “Why the Risk Systems That Read technology is so valuable – A Tale of Two WYNNers” available at: <http://www.northinfo.com/documents/797.pdf>
- Risk forecast presented are based on Northfield’s US fundamental Risk model:
 - Long-term model is 1 year horizon
 - Risk Systems That Read® is 2 week horizon (aka RSTR, adaptive)

Timeline of Events – Base Case

- On December 31, 2017 long term US Fundamental Model risk for WYNN was **38.44%** per annum and priced at \$164.
 - 81.2% is stock specific
- January 2, 2018 the **Risk Systems That Read®** forecast for WYNN was **27.8%**.
 - Lower risk number reflects recent generally low volatility of the market early 2018.

Timeline of Events – Earnings accountment

- January 18th WYNN moves up to \$180
 - The Risk Systems That Read® risk estimate 28% to over 49% in a single day.
 - Typical behavior going into an earnings announcement as pre-announcement as press coverage becomes material
- January 22, Wynn announced better than expected fourth quarter earnings.

Earnings Announcement Continues Impact

- Between the 18th and the 25th:
 - A number of additional articles on Wynn, and the casino industry in general.
 - WYNN's stock price rises from \$180 to \$200 over five trading days
 - Adaptive model risk climbs from **27%** to **47%**
 - The random likelihood of a move this big is about 1 in 60,000

January 26th Everything Changes

BUSINESS DAY

Stephen Wynn, Casino Mogul, Accused of Decades of Sexual Misconduct

By MATTHEW GOLDSTEIN, TIFFANY HSU and KENNETH P. VOGEL JAN. 26, 2018



Stephen Wynn, chairman and chief executive of Wynn Resorts, with his wife, Andrea Hissom. Fallout from the disclosure of allegations of sexual misconduct against Mr. Wynn mounted on Friday.

Tom Williams/CQ Roll Call, via Getty Images

Timeline of Events - Scandal

- Wynn's stock price falls from about \$200 on January 25th to about \$163 on January 29th
 - An 18% downward move in two trading days!!
- January 29th, adaptive model risk of Wynn is **70.5%**
 - Due to the intense news coverage of the misconduct allegations
 - Nearly double the prior long-term estimate of **38.44%**.
- Note: January 25th through January 30th, the S&P 500 market index is almost flat.

Intense News Coverage

The screenshot shows the top portion of the Wall Street Journal website. On the left is a hamburger menu icon. In the center is the site's name, "THE WALL STREET JOURNAL.", in a serif font. On the right is a magnifying glass search icon. Below the site name is a light gray bar containing the text "Subscribe | Sign In". Underneath this is a horizontal carousel of news items. The first item features a left-pointing chevron, a thumbnail image of a Wynn Resorts building, the category "BUSINESS", and the headline "Wynn Resorts Creates 'Culture and Community Department' in Wake ...". The second item features a thumbnail image of a house under construction, the category "U.S. NEWS", and the headline "Just How Widespread Is the Housing Shortage?". To the right of the second item is a right-pointing chevron.

MONEYBEAT

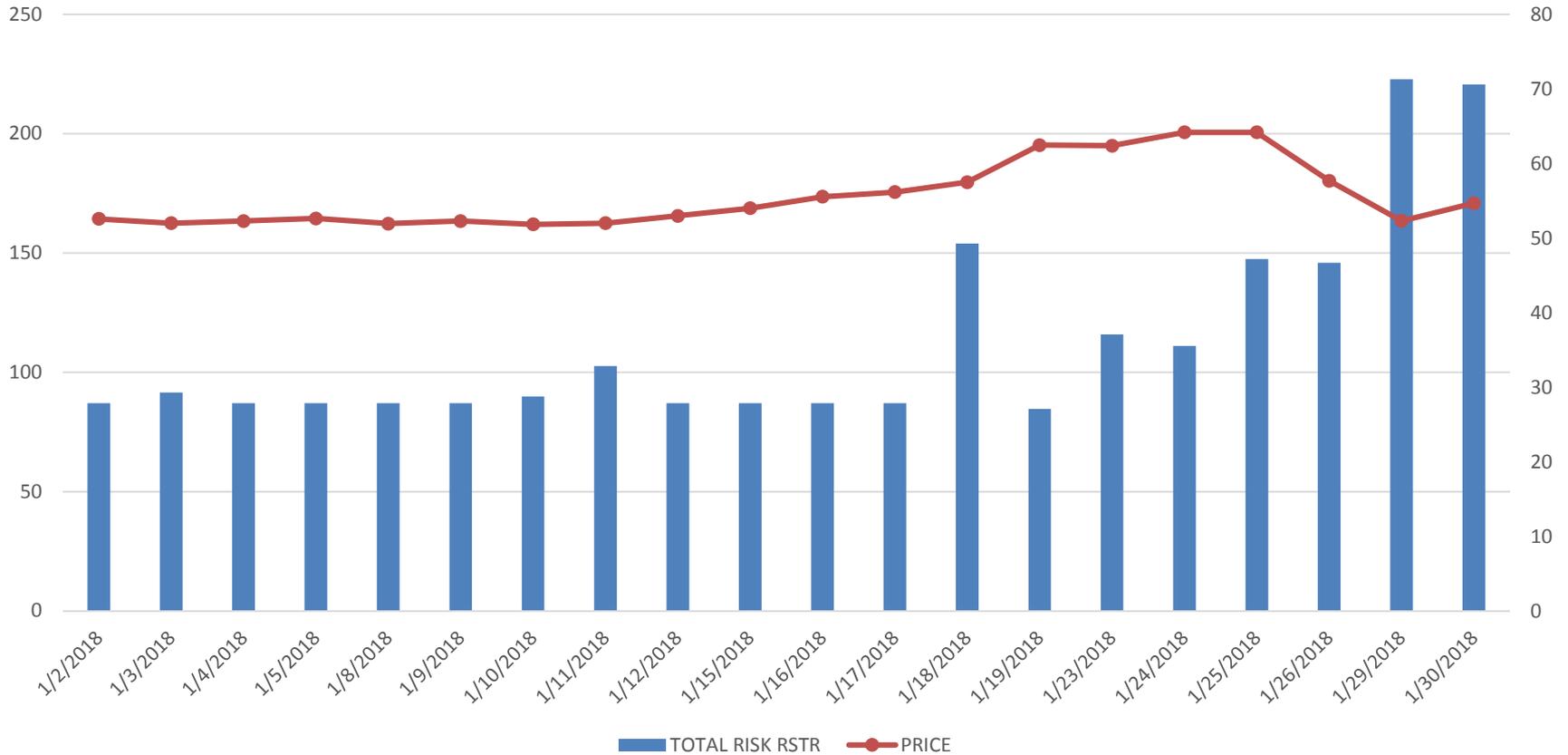
Analysts Sour on Wynn Resorts After Misconduct Allegations

By *Ben Eisen*

Jan 29, 2018 1:16 pm ET

Visualization of Event Timeline

WYNN January 2018



Simple Analysis of Key Dates

- Created a daily risk model using a rolling 90 equal weighted variance of returns.
- Two important dates:
 - January 22nd Earnings announcement
 - January 26th Sexual misconduct allegation
- One slightly interesting date:
 - January 25th Could there have been a momentum bet based on news of WYNN hitting \$200?

Key Dates

Date	Price	Daily Risk	RiskSystemThatRead	Event
31-Jan-18	165.09	36.03	Long term =38.46%,	
30-Jan-18	170.87	35.16	71.27	
29-Jan-18	163.48	31.20	70.58	Analyst reassess ratings
26-Jan-18	180.29	25.72	46.67	Sexual misconduct
25-Jan-18	200.6	25.90	47.17	Momentum?
24-Jan-18	200.58	25.55	35.53	
23-Jan-18	194.95	25.58	37.08	
22-Jan-18	195.23	21.35	27.86	Earnings announcement
19-Jan-18	179.09	21.06	27.08	
18-Jan-18	174.95	21.01	49.29	
17-Jan-18	173.06	20.56	27.86	
16-Jan-18	168.22	20.43	27.86	
12-Jan-18	165.04	20.37	Long term =38.44%	

Decomposition of Risk

- Obviously the majority of risk is specific to WYNN so not surprisingly the majority of the increased risk is stock specific.

	18-Jan	30-Jan	% Change
Stock Specific Tracking Variance	379.67	4628.27	1119%

- Leisure industry experienced a slight increase during this period, over-all market risk declined slightly.

	18-Jan	30-Jan
FactorVar: Beta	162.92	142.10
FactorVar: Leisure	43.43	44.71

No Surprise

- diBartolomeo and Warrick (2005)
 - If there is a big jump in the implied volatility of one stock it is assumed to security specific but if most stocks in an industry see a jump in implied volatility most of the change applied to the related industry factor.
- diBartolomeo, G. Mitra, L. Mitra (2009)
 - Findings were that *news driven metrics were more efficient predictors of changes in volatility than metrics based on changes in option implied volatility*

Incorporating News Into Long Term Model

- So far we discussed short horizons, but long term investors can still benefit from **Risk Systems That Read®** using the Northfield Blending functionality.
 - Customize countless forecast horizons between 2 weeks and 52 weeks
- Documentation describing blending functionality:
 - “Technical Support Tip: Horizon Blending”
<http://www.northinfo.com/documents/546.pdf>.
 - “Technical Support Tip: Horizon Blending – Using the Horizon Blending Feature” <http://www.northinfo.com/documents/557.pdf>.

Conclusions

- **Risk Systems That Read®** is a revolutionary step in risk modeling
 - WYNN Resorts provides a real world application on how Risk Systems That Read® responds to new information
 - Using contemporaneous market information outside the time-series provides a material improvement in near horizon risk estimation
 - News matters to investors, incorporating an effective measure of news improves the accuracy of the risk estimate and explanation to stock specific risk