

## Groundhog Day and Overnight Returns

Over the past few years, some of the finance literature has started addressing the phenomenon, if not the apparent puzzle, of overnight returns (close-to-open) vs. intraday returns (open-to-close). The issue is getting more attention, and while different datasets have different results, the general picture that has emerged is that 100% (or more) of all equity returns appear to occur *overnight*, or at least have done so over the past twenty-five years, and that those excess returns will at least partially reverse during the actual market hours.

Figure 1: Cliff, Cooper and Gullen (2008), Return Differences Between Trading and Non-Trading Hours: Like Night and Day

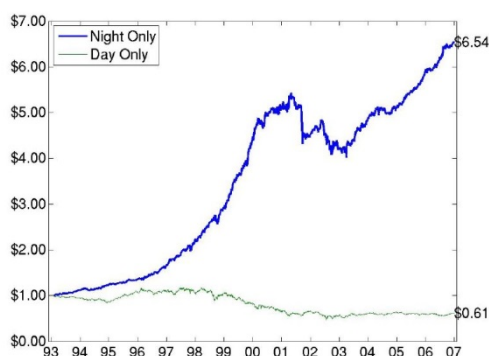


Figure 1  
Growth of a \$1 investment in night returns (close to open, heavy blue line) and day returns (open to close, thin green line) from 1993 to 2006 in the S&P 500 Spider (SPY) exchange traded fund.

Firstly, let's go ahead and assume that the data is good, not spoiled by measurement error (e.g. small volume prints, wild opening prints, or crazy closes), and that the phenomenon is real. In my mind, equity markets do a generally good job incorporating much (if not most) information into the price of a security. Due to "news windows" – where the vast majority of price-moving information is released outside of trading hours – **most news that impacts individual securities (and therefore, impacts the market in aggregate) happens when markets are closed.** Consequently, if – after the close – a company puts out an earnings report, or issues guidance, or perhaps even a profit warning; there is no free lunch. The next morning after the fundamentally-impactful news is released, the stock opens at a price reflecting that new information. *Again?*



The same goes when one company is purchased by the other.<sup>1</sup> If stock ABC closes at \$100 and company XYZ announces after the close that it has agreed with ABC to buy 100% of ABC for \$135 in cash, then it's a pretty good guess that ABC stock will open the next morning at something closer to \$135, less any adjustment for risk to the deal, and plus any adjustment for the likelihood of a competitive bid. In other words, **overnight returns of any market index are going to capture close to 100% of the takeout premium, while the intraday returns will capture close to 0%.**

Moreover, as this fundamental information is shared and digested over many different securities as they report good or bad news, then of course the indices which comprise these securities will be affected too. Additionally, as this information is shared and digested over several quarters and years and decades, it also makes sense that these indices will very naturally drift higher over time. This simply is **a reflection of the overall nominal improvements of the (surviving) individual company fundamentals for the securities that comprise these indices**, which results in the indices earning their commensurate equity risk premium (or thereabouts) over time. Very simply, this explains why overnight returns are so much greater than intraday returns.

It isn't really a puzzle at all.

<sup>1</sup> Quarterly reports and earnings guidance don't just happen overnight, so do dividends. As those dividends are declared, the stock price should fall (everything else being equal) approximately by the amount of the dividend the day it goes ex. Assuming this happens, and total returns are calculated accurately, there should be no impact of dividend declarations on overnight returns. Dividends are not takeouts.

Interestingly, most of the academic literature out there seems to eschew these facts. To a practitioner, this seems at first ludicrous – however, the ignorance (or purposeful discarding) of the “news window” story may simply be due to the fact that those studying the phenomenon may still believe in a world where idiosyncratic risk is automatically diversified away across portfolios. In other words, to those starting with this premise, there is no stock-specific risk, only a covariance to market risk. Consequently, the behaviour of indices is more a reflection of investor appetites for owning the overall market, rather than the aggregation of individual securities. **This is why they think there is an “overnight return puzzle”, and in my mind, they are missing the trees for the forest.**

And even for those that *have* acknowledged that most fundamental company information is released outside of market hours, they still consider this fact irrelevant, and suggest there is no difference in informational flow between intraday and overnight returns. Here are Cliff, Cooper, and Gullen (2008):

*“Sorting day and night returns by degree of earnings announcement surprises and where the earnings information is released during the day or the night, we show that the day and night effect is not determined by earnings announcement information.”*

And the following is an excerpt from a working paper “A Tug of War: Overnight Versus Intraday Expected Returns” by Lou, Polk and Skouras.

*“Since the momentum phenomenon is often viewed as underreaction to news, and since a significant amount of news is released when the exchanges are closed, another possibility is that news drives the differences we find. However, we find no statistical difference in our decomposition across news and no-news months.”*

Alternative explanations, most of the work (some by very smart guys, mind you) sets its sights on the behaviour of market specialists or market-makers, short-sale constraints, algorithmic trading, or notions of risk and reward and time-varying betas to various risk factors. Moreover, instead of discussing the big question (Why are overnight returns so strong?) they all seem to be studying the second-order question (Why is there some degree of negative autocorrelation between overnight and intraday returns?).

The aforementioned Lou, Polk and Skouras, for example, associates the phenomenon with something they call “investor heterogeneity”. They suggest that the most likely explanation is that negative autocorrelation is related to the momentum factor, and that institutional investors tend to trade against this momentum at the end of a trading session, while individual investors tend to buy momentum the next morning once the markets open up again. This, in their minds, is what creates the strong overnight returns to equity markets (and weak intraday returns).

To me, even if this happens (and I am not sure I accept their premise), this would only help to partially explain a portion of the weak (or flat, depending on the dataset) open-to-close returns, which then would simply be mirrored by equally offsetting overnight returns. But they aren’t equal, they don’t even come close (the negative autocorrelation seems to only represent a surrender of 20-35% of overnight returns in either direction. In other words, while “investor heterogeneity” might potentially explain some of the negative autocorrelation between overnight and intraday returns, it doesn’t explain the phenomenon where overnight returns are three to four times greater than intraday losses, and represent approximately 100% of equity market returns over time. Moreover, the notion that a preponderance (or absence) of a certain type of trader or investor (when exchanges are closed and after-hour trading is “thinner”) belies the fact that for an individual stock to move, or in fact a market to move, doesn’t require a single share to be traded. “Equilibrium happens” without a share changing hands, and so can price discovery.

So, my (admittedly basic) view is that the release of overnight news (such as take-outs, mergers, and earnings reports) is the primary driver of the “overnight return puzzle” and that the fact that there is negative autocorrelation to intraday returns (which effectively “gives back” a third of the overnight return) is probably driven by a mix of investor overreaction, market structure, and perhaps a little investor heterogeneity.

## End Notes

*Berkman, Koch, Tuttle and Yang (Working, 2009)*

### **Dispersion of Opinions, Short Sale Constraints, and Overnight Returns**

*Focus is on short sale constraints, declines in overnight liquidity (liquidity premia), declines in overnight price discovery, dispersion of opinions, and an overpriced “opening price”. Moreover, they (interestingly) see the intraday negative return exceeding the overnight positive return for certain types of stocks (high short interest, low institutional ownership, high dispersion of opinions). Zero mention of news windows.*

*Branch and Ma (2006)*

### **The Overnight Return, One More Anomaly**

*Argument about negative autocorrelation, no mention of news windows.*

*Branch and Ma (2012)*

### **Overnight Returns, the Invisible Hand Behind Intraday Returns**

*Nothing new here. Mostly focused on negative autocorrelation.*

*Cliff, Cooper, and Gulen (2008)*

### **Return Differences Between Trading and Non-Trading Hours: Like Night and Day.**

*Kelly and Clark (2011)*

### **Returns in Trading Versus Non-Trading Hours: The Difference is Day and Night**

*Not a single mention of news windows.*

*Lou, Polk and Skouras (working, last version January 2015)*

### **A Tug of War: Overnight Versus Intraday Expected Returns**

*Momentum affect is an overnight phenomenon, and only an overnight phenomenon.*

*Miller (1989)*

### **Explaining Intra-day and Overnight Price Behavior**

*All about specialists and market makers*

*Qiu and Tao (Working 2008)*

### **The International Evidence of the Overnight Return Anomaly**

*Similar conclusions to BKTY above*

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