UNDERSTANDING GAPS

Scott Andrews
"The Gap Guy"

InvestiQuant
Understanding Gaps

A guide for profiting from the opening gap

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Purpose of Book

Whether you are interested in adding the opening gap to your daily trading plan or just improving the timing of your entries in swing trades and long term investments, this guide can help. By the end, you should have a basic understanding of gaps, a structure for creating a profitable strategy, some helpful probabilities and tips, and a little inspiration to help you get started.

Biography

Scott Andrews is a former public company CEO, veteran trader, and Co-Founder and CEO of InvestiQuant – an innovative financial technology company providing a suite of predictive analytics tools and services to traders and active investors around the globe. In 2008, he founded MasterTheGap.com (which was merged with Rob Hanna's OvernightEdges.com to form InvestiQuant.com). Mr. Andrews has been trading the opening gap every day in the equity indices as his 'bread and butter' strategy for more than a decade (2,500+ trading days). During that time, he has generated consistent profits year in and year out regardless of market conditions. Mr. Andrews is the author of Understanding Gaps and many research studies and articles on technical and quantitative trading. Prior to his trading career, he co-founded SciQuest (symbol: SQI) and took the company public as CEO. He earned his MBA from the University of North Carolina and graduated from the United States Military Academy at West Point. Mr. Andrews proudly served his country as an Army Aviator during the first Gulf War.
A Note from the Author

When I first wrote Understanding Gaps in 2008, I had no idea how it would be received. I had built a small, but loyal following of readers at my blog site (www.masterthegap.com), and they encouraged me to share my story and my research via an e-book. Around the same time, I met Ed Dobson, publisher of Traders Press, at the New York Traders Expo and he convinced me to think bigger. A few months later Understanding Gaps was published. To my surprise, the print version was one of Traders Press’ top sellers and sold thousands of copies. It sold out just before Ed retired and the company closed. Since then, my personal and professional journeys have evolved in ways I could have never imagined. They have made me a better trader, and a better person.

At the time of publishing this book, I was dealing with nagging back issues. I thought it was just old age catching up with me. Slowly, my back issues escalated from occasional flare-ups to nearly daily agony. By 2011 I was forced to lie horizontal on a portable massage table to trade. By 2012, I could not even sit at the table with my family to eat dinner. I starting having severe muscle spasms and nausea routinely if I stood or sat upright for more than ten or fifteen minutes at a time. In fact, once, I literally laid on the well-worn floor of the Chicago Mercantile Exchange trading ‘pits’ for over two hours while some of my clients toured the exchange with Chicago trading legends, Ben Lichtenstein and Rick Santelli.

It was a sad and scary time. No neuro or orthopedic surgeon in the Raleigh – Durham area of North Carolina could pinpoint the cause of my extraordinary pain. Finally, we surmised it had to be the tear in L5/S1 disc and I bit the bullet and underwent ALIF surgery (fusion). At first, this helped a lot and I was relieved. But within a year, the nauseating pain had returned. At my one year post-surgery anniversary, a CAT scan revealed two giant kidney stones (one almost 3 cm or over 1 inch in diameter). A month later, I was under the knife again and they removed the behemoth stones. Not one day since, have I had back pain. The good Lord does indeed work in mysterious ways and I’ll never take my health for granted again. I hope you will share my story with everyone you know who is suffering from chronic back pain.

Fortunately, my trading did not suffer during these difficult personal years and, in fact, my blog-turned-business at Master The Gap prospered. In early 2014, some clients suggested that I expand my daily gap trading service at Master The Gap to include more strategies and more markets. Not long after, about twenty clients invested more than a million dollars in the company to fuel the expansion of our research and services. In 2015, InvestiQuant was born.
While much has certainly changed, much has not. The opening gap is still my ‘bread and butter’ trade and it continues to perform well for me and many of our clients. In fact, 2015 was one of the best years ever for my gap trading strategies. However, I have added opening ranges, overnight trading, and swing trading to my daily strategies and have evolved my trading style, research and decision-making processes beyond that discussed in this book. The core elements, however, remain the same. Opening gap size, zone, and seasonality (calendar considerations) continue to be the foundation of my gap trade decisions.

My trade selection process is much easier and more efficient now. Instead of taking about an hour each morning to painstakingly assimilate and analyze all of my relevant research for a given day, it is now organized into eight unique quantitative systems. These systems are published each evening at InvestiQuant and averaged to produce a single historical and visual ‘snapshot’ for quick evaluation prior to the open.

Instead of manually executing trades that meet my minimum criteria, I now primarily auto-trade my rules. Having manually executed thousands of trades over the past decade, I can tell you that auto-trading is without question a superior approach for almost every serious trader. I miss fewer signals, have fewer costly errors, and most importantly: can trade more markets and strategies simultaneously, while risking less on each trade. That’s a beautiful thing.

I certainly welcome you to check out our powerful analytic and automation tools at InvestiQuant. However, I do encourage you to first read and understand this introductory book on trading opening gaps using history as your guide. Trading a strategy that you don’t understand is a recipe for unrealistic expectations, poor discipline, and ultimately: disappointment.

Please note that all of the original research has been updated as of December 31, 2015. The original examples remain, but are dated. Nonetheless, I believe the key concepts are useful and helpful.

Enjoy and Trade Smarter!

Scott Andrews
# Table of Contents

## INTRODUCTION
- Why I Love Trading Gaps 3

## WHAT ARE GAPS?
- The Basics 5
- How To Use & Profit from Gaps 10
- The Promise of Gaps 11
- The Paradox 12

## CREATING A PROFITABLE STRATEGY
- Gap Size 14
- Gap Zone 16
- Seasonality 17
- Stop Size 18
- Target Optimization 21

## REAL WORLD EXAMPLES
- How I Trade Gaps 23
- Gap Fade Examples 25
  - “Follow the Gap” Example 38
  - “Fade the Fill” Example 40

## GAP TRADING TIPS 42

## STOCKS, ETF, OPTIONS, OR FUTURES? 44

## GET STARTED!
- Conclusion 49

## GLOSSARY 50
Introduction

Trading for a living is a lot like flying a helicopter in combat. The stakes are high and the risks are everywhere. The enemy can shoot you down, the aircraft can malfunction, or you can simply make a mistake and crash and burn on your own. I learned how to fly at the U.S. Army Aviation Warfighting Center at Fort Rucker, Alabama. I’ll never forget the words of my first instructor, a crusty ol’ Vietnam veteran with a big southern drawl, “I’ll teach everything you need to know to fly that helicopter, but whether you survive or not, is totally up to you.” Believe me; he was not talking about whether I’d graduate from the program. Up to that point, it had never crossed my mind that the world’s greatest instruction was no guarantee for my survival.

When I committed to becoming a full time trader, the parallels between learning how to fly and learning how to trade were quite obvious. The keys to success were threefold: 1) master the fundamentals, 2) start slow, and 3) above all else, SURVIVE the learning curve. So, I enrolled in a rigorous, monthly training program with a credible trading and options mentor. My goal was to learn everything I needed to know in order to generate enough monthly profits with my cash assets to make a living as a trader.

During my first year, I generated excellent profits – exceeding even my own lofty goals. Like any rational human, I increased my position size (dollars risked per trade) to take advantage of my new found, personal ATM machine. But then the market conditions changed from a raging bull market to a more neutral, sideways market. My instructor said, “Just trust your charts and indicators. They will tell what to do.” And that they did, much to my chagrin. The losses mounted and it wasn’t long before my account equity was in a steep decline.
Knowing that discipline and perseverance were paramount for trading success, I pressed on. I was a West Point graduate and “by God” there was no way that I was going to let those common trader weaknesses befall me!

Because the approach was options-based I found myself spending an inordinate much time analyzing complicated option chains. Worse, the trade selection technique was purely chart and indicator-based and therefore, highly interpretative. As such, it was impossible to analyze and determine the true historical performance of what I was being taught. I never knew if any given loss was due to my execution (i.e. interpretation of the charts) or was simply an unavoidable loser. (Using the flying analogy, it was like having an accident and not knowing whether the cause was pilot error or an engine malfunction.) Further, by the time the charts and my indicators signaled a trade entry or exit, it often was too late as the move had already occurred.

Most frustrating of all, I felt like the entire methodology was akin to a cross-country trip from North Carolina to California without a map or any instruments whatsoever. If I kept flying westward I knew I’d eventually reach California, but how long would it take? How much fuel (trading capital) would I need to endure the many mountain ranges I’d encounter? Was my aircraft (trading strategy) the optimal one to help me reach my destination? Or, would it burn fuel too fast and crash and burn?

Without any idea whatsoever of the historical performance metrics of my indicator-based, option strategy, I did not know how much to risk per trade to achieve my desired annual returns and not exceed my personal risk tolerance. I knew that trading was ultimately a math-game: The profits from my winners needed to exceed the losses from my losers. It did not necessarily matter how often I won versus lost; I just needed gross profits to exceed my gross losses, frequently and consistently.

But without any verifiable benchmark regarding a realistic win rate, I was lost. Like a pilot-in-training, I kept over-controlling and tinkering with my trades (i.e. cutting the winners short) in an attempt to increase my win rate, reduce risk and lock in profits. This, of course, resulted in the classic beginning trader’s diet: “eat like a mouse and defecate like an elephant.” It wasn’t long before I had lost virtually all of my first year’s gains.
My ego was bruised and my confidence shaken, but I had not damaged my account, nor interest in trading. And it was clear: this legitimate methodology (that I had spent tens of thousands of dollars learning) was laden with potentially fatal flaws for my trading success. My instructor had taught me the basics of “flying,” but I would need many more years of experience to learn how to fly in all types of weather conditions (i.e. trade profitably during all types of market environments). I needed to find an all-weather aircraft. Most of all, I needed a strategy that could be analyzed and modified in way that allowed me to create a realistic trading plan for achieving my goals.

I went looking for a style and approach that could be measured and analyzed, turned my capital frequently, and would work for my strengths (structured and mathematically inclined), my weaknesses (impatient and limited trading experience), and desired lifestyle (flexibility during the day without having to watch screens all day – I didn’t want another job.) Ultimately, this led me to the world of short-term, quantitative trading (i.e. trading using historical probabilities), using futures contracts, with a focus on the opening gap of the equity index markets such as the S&P 500®. Goodbye indicators – hello probabilities!

**Why I Love Trading Gaps**

Trading gaps may not be for everyone. But I consider the opening gap, the ideal trade setup. They occur almost daily, offer plenty of profit opportunity, work about the same during a wide range of market conditions and are short term in nature (1-2 hours on average). Gap trading offers many other compelling benefits including:

Gaps have an inherent bias and edge: ~ 70% of all gaps in the S&P 500 have filled the same day over the past ten years.

They occur frequently (three to four tradable gaps per week) so I am not reliant upon catching that "one big winner" to achieve my monthly goals.

It's an easy trade to learn and play. No need to time the entry - just use a market order at the open.

I can prepare in about 15 minutes before the NYSE opens each day. No need to scan hundreds of stocks at night.

I can trade them without charts and from anywhere.
Getting filled with minimal slippage is not an issue – especially in highly liquid markets like the equity index ETFs and futures markets (e.g. S&P 500, NASDAQ 100, Russell 2000, Dow 30.).

The target is pre-defined so I don't have to manage the trade after placing it (though I do sometimes to maximize profits).

My risks are controlled and limited to a small percent of my account. No overnight risk.

Gap trades work in bull and bear markets equally well. I don't need to predict the market’s next move.

They occur in most asset classes (equities, futures, currencies, etc.) and can be traded using stock, options, and futures contracts.

I can grow my account consistently with this single, simple setup using just one market. No need to baby-sit lots of different markets waiting for that perfect, entry-sensitive trade to appear.

Understanding the bias of the market before and after the gap fills, provides a trading edge for the rest of the day while also helping optimize my entries on swing and position trades.

I am not the only one who recognizes these many benefits. James Altucher, in the first chapter of his book, Trade Like a Hedge Fund, states:

“The gap trade is the bread and butter trade for many day traders and hedge funds.”

The opening gap in the S&P 500 is arguably the single most significant daily event in the global equity markets. It is, therefore, in my opinion, the most important trade of the day. Most of my experience is in trading the E-Mini S&P 500® futures, and most of the examples and research shown is based upon this index. However, the fundamentals of gap trading shared within can be applied to gaps in any equity or market.
What Are Gaps?

The Basics

The most common definition of a “gap” is the difference between an asset or instrument’s opening price and its prior day closing price. This difference shows up visually on a technical price chart as an open space or “gap.” Many markets now trade nearly 24 hours a day electronically; however, the bulk of volume is transacted during their “regular” trading hours (i.e. open outcry or pit session hours, e.g. 9:30–16:15 ET for the S&P 500). For this reason, the regular session’s open and closing prices carry great significance for most traders and their systems. (Note: some traders define a gap as the difference between the prior day high or low and the next day’s opening price. However, the research and examples presented in this text are based on the difference between the open and the prior day close.)

Gaps occur for a variety of reasons, including geopolitical activities, earnings announcements, economic reports and related events that transpire during non-regular (Globex) trading hours. These events often trigger significant price movement away from the prior day closing price, resulting in an imbalance of supply and demand the next morning. The regular session opening price represents a critical time for all market participants since they have to decide whether to accept or reject this new price. The majority of the time prices will retrace some or all of the overnight price action during the following day’s trading session. If the price retraces all the way to the prior day closing price, the gap is considered to have “filled” or “closed.”

Many traders seek to profit from the tendency of prices to retrace the overnight movement by trading in opposite direction of the open. This is commonly known as “fading the gap.” Figure I shows an example of an opening gap in the E-Mini S&P 500 futures. The “prior close” is the last trade as of 4:15 p.m. ET of the previous day’s regular trading session. The “opening price” is the first trade at the market open at 9:30 a.m. ET. Note how prices on the five minute chart climb steadily shortly after
the open, retracing back to the prior day’s close, before reversing sharply and trading lower for the remainder of the session.

**Figure 1.** Example of Opening Gap that “Fills” (i.e. retraces overnight move)

Since gaps are the result of human behavior reacting to a variety of market forces, the subsequent price behavior often develops into a pattern that is repeated again and again. The four most common gap patterns are:

**Breakaway Gaps.** These gaps occur after a period of price consolidation. They are caused by a surge of demand to buy or sell the market, typically in response to a
significant event. The gaps are not filled during the same trading day (often not for many days or weeks) and are associated with above average volume. See Figure II.

**Figure II:** Breakaway Gap

**Common Gaps.** These gaps occur throughout a market’s typical ebb and flow in response to a wide variety of events and news. They are often associated with average or below average volume and generally fill the same day. See Figure III.
Continuation / Runaway Gaps. These gaps occur during, and in the direction of, an ongoing trend and are generally viewed as confirmation of a trend’s strength. They are associated with above average volume and often do not fill the same day. See Figure IV.
**Figure IV.** Continuation Gap

**Exhaustion Gaps.** These gaps occur at or very near the end of a trend. They are typically associated with very high volume as the very last buyers (or sellers if the asset is in a downtrend) jump aboard a trend that is ending and are overrun by opposing market forces as prices stall and often reverse sharply that day. See Figure V.
The challenge, of course, is being able to recognize the type of gap early enough in the trading day so that you can trade it appropriately and profitably. Many traders use volume to help identify the type of gap, but this can be tricky since large volume may not appear until late in the session.

**How to Use & Profit from Gaps**

Traders and investors pay attention to gaps for different reasons. Many traders “fade” (i.e. trade in the opposite direction) Common and Exhaustion Gaps by buying “down” gaps or selling (i.e. shorting) “up” gaps and targeting the prior day’s closing price. Their objective is to profit from the historical tendency of gaps to retrace the overnight move and to close out at the end of the day if the gap has not filled. Swing traders look to do the same, but in conjunction with other analysis that lends them to believe that the gap is an Exhaustion Gap and the reversal may be the beginning...
of a multi-day or multi-week move. Swing traders will also use Breakaway and Continuation Gaps as opportunities to enter trends in the direction of the gap.

Generally speaking, day traders will enter a gap fade immediately at the market open or sometime shortly after the open. Swing traders will do the same if they believe the gap could be an Exhaustion Gap and they want to get positioned for a potential move in the opposite direction. They will enter a Common Gap after prices retrace and fill the gap, or after it is clear that it is a Continuation or Breakaway Gap that will not fill that day and a multi-day trend is likely beginning.

While gaps occur in most markets, many traders prefer to play them using a broad index such as the Standard & Poor’s 500® (S&P 500) or Dow Jones Industrial Index® instead of an individual equity or commodity. The reason is simple: a diversified basket of securities may be less likely to “gap and run” since it is less prone, in theory, to a single specific news item causing a sustained move.

Investors can benefit from paying attention to gaps too. Dr. Harry Schiller, a columnist for the TheStreet.com, may have said it best in video-taped interview at the June, 2007 Moneyshow (paraphrased):

‘Gaps define the markets’ action, especially the S&P futures gap, on an intraday, daily, even monthly basis... very, very often. Whatever you are buying, you will do a better job, be more effective and more profitable, if you buy as those gaps are getting filled. People who don't pay attention to gaps, are just missing the boat!’

The Promise of Gaps

Gaps are important to traders of all types and time-frames because of their frequent occurrence and strong, proven tendencies to fill the same day. The S&P 500 index is a good benchmark because it represents a wide range of equities and sectors. The table in Figure VI shows the results of hypothetically trading more than 2,000 tradable opening gaps, targeting the prior session close, using an end of day exit, in the E-Mini S&P 500 futures from January 1, 2006 through Dec 31, 2015. The results do not include opening gaps that were not realistically tradable i.e. < 1 point in size, which equates to < 10 cents in the SPY). Note: “Win %” is defined as the percent that hit the gap fill target (i.e. prior day close) or finished the day profitably.
<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Tradable Gaps</th>
<th>Win %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>237</td>
<td>66.7%</td>
</tr>
<tr>
<td>2014</td>
<td>227</td>
<td>67.4%</td>
</tr>
<tr>
<td>2013</td>
<td>212</td>
<td>64.2%</td>
</tr>
<tr>
<td>2012</td>
<td>227</td>
<td>69.2%</td>
</tr>
<tr>
<td>2011</td>
<td>243</td>
<td>66.7%</td>
</tr>
<tr>
<td>2010</td>
<td>228</td>
<td>71.0%</td>
</tr>
<tr>
<td>2009</td>
<td>236</td>
<td>68.6%</td>
</tr>
<tr>
<td>2008</td>
<td>235</td>
<td>68.1%</td>
</tr>
<tr>
<td>2007</td>
<td>225</td>
<td>64.9%</td>
</tr>
<tr>
<td>2006</td>
<td>200</td>
<td>72.5%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>2,270</strong></td>
<td><strong>68.0%</strong></td>
</tr>
</tbody>
</table>

**Figure VI.** Opening Gap Fade Win Rate, 2006-2015.

**The Paradox**

With such a proven bias to fill the gap, it would seem logical for traders to just fade them all since roughly three out of four should be winners, right? Not quite. Figure VII shows that using no stop, targeting the gap fill and closing out at the end of the day if the gap has not filled, resulted in marginal “profit factors” (i.e. total gross profits/total gross losses).

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit Factor*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>0.89</td>
</tr>
<tr>
<td>2014</td>
<td>0.87</td>
</tr>
<tr>
<td>2013</td>
<td>0.99</td>
</tr>
<tr>
<td>2012</td>
<td>1.10</td>
</tr>
<tr>
<td>2011</td>
<td>1.01</td>
</tr>
<tr>
<td>2010</td>
<td>1.20</td>
</tr>
<tr>
<td>2009</td>
<td>1.21</td>
</tr>
<tr>
<td>2008</td>
<td>0.88</td>
</tr>
<tr>
<td>2007</td>
<td>0.71</td>
</tr>
<tr>
<td>2006</td>
<td>1.01</td>
</tr>
<tr>
<td><strong>Average:</strong></td>
<td><strong>0.99</strong></td>
</tr>
</tbody>
</table>

*Profit Factor = total gross profits / total gross losses

**Figure VII.** Opening Gap Fade Profitability, 2006-2015.
Clearly, trading all opening gaps is not a profitable strategy. The paradox lies in the fact that a stop loss must be used in order to protect profits from the 25-30% of gaps that do not fill, and that often move aggressively in the direction of the gap and opposite of your “fade.” You may trade a series of smaller gaps that fill successfully, only to watch that one large gap continue running away, taking your account and profits right along with it.

Thus, trading gaps poses a difficult dilemma: what size stop loss should be used? If the stop is too tight (i.e. small) then the trader risks being stopped prior to the gap filling. If the stop is too large, then the trader’s losses will erase some or all of the profits from the winners.

There is no simple answer, but a multi-dimensional approach that integrates gap selection, reasonable stops, and optimized targets can create a very profitable gap trading strategy for any market. We’ll start to put these pieces together in the next chapter.
Creating a Profitable Strategy

Whether you are day trader seeking to profit from fading an opening gap or a swing trader looking to optimize your position entry, the first key for success is being able to identify those gaps that are most likely to fill (i.e. common or exhaustion gap vs. continuation or breakaway gap). Gap size, gap zone, and seasonality are three elements of gaps that provide helpful clues for choosing winning setups and building a successful trading strategy.

The examples that follow are all based on the S&P 500 Index futures market. However, traders may apply this framework and analysis to any market to develop a gap trading strategy.

Gap Size

Perhaps the most common method for analyzing gaps and their probability of filling the same day is to use the size of the gap. Figure VIII shows the win rate of fading various size opening gaps in the E-Mini S&P 500 futures index from 2006 - 2015. As you might expect, the smaller the gap, the more likely it was to fill or finish the day profitably. The tradeoff, of course, is that smaller gaps have less profit potential and one large gap loser can wipe out a whole string of small winners.
My preferred way of analyzing gap size is to use the 5 Day Average True Range (ATR). Figure IX shows the historical win rate and profit factor based on various percentages of the 5 day ATR. As you can see, win rate drops off significantly when the opening gap size is beyond 40%. I interpret this to imply that anything smaller is more likely to be a common gap and more likely to fill; whereas a larger gap is more likely to continue in the direction of the opening move. Tip: even the larger gaps have a roughly 50/50 probability of filling on a given day so, depending on the gap size, the risk may be worth the potential return.

**Figure VIII.** Gap Fade Win % by Size of Gap, 2006-2015.

<table>
<thead>
<tr>
<th>Gap Size As Percent of Index Value</th>
<th># Trades</th>
<th>Win %</th>
<th>Profit Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;.2%</td>
<td>616</td>
<td>83.5</td>
<td>0.97</td>
</tr>
<tr>
<td>.2 - .4%</td>
<td>708</td>
<td>70.7</td>
<td>1.07</td>
</tr>
<tr>
<td>.4 - .6%</td>
<td>370</td>
<td>62.4</td>
<td>.94</td>
</tr>
<tr>
<td>.6 - .8%</td>
<td>202</td>
<td>60.9</td>
<td>.99</td>
</tr>
<tr>
<td>.8 - 1%</td>
<td>126</td>
<td>57.1</td>
<td>1.28</td>
</tr>
<tr>
<td>1 - 1.5%</td>
<td>199</td>
<td>52.1</td>
<td>.91</td>
</tr>
<tr>
<td>&gt; 1.5%</td>
<td>149</td>
<td>46.3</td>
<td>.78</td>
</tr>
</tbody>
</table>

**Figure IX.** Gap Fade Win % by Percent of 5 Day ATR, 2006-2015.

<table>
<thead>
<tr>
<th>Gap Size As Percent of 5 Day ATR</th>
<th># Trades</th>
<th>Win %</th>
<th>Profit Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20%</td>
<td>811</td>
<td>82%</td>
<td>1.01</td>
</tr>
<tr>
<td>20 - 40%</td>
<td>730</td>
<td>68%</td>
<td>1.23</td>
</tr>
<tr>
<td>40 - 60%</td>
<td>423</td>
<td>54%</td>
<td>0.80</td>
</tr>
<tr>
<td>60 - 80%</td>
<td>170</td>
<td>52%</td>
<td>0.78</td>
</tr>
<tr>
<td>80 - 100%</td>
<td>83</td>
<td>41%</td>
<td>0.59</td>
</tr>
<tr>
<td>&gt; 100%</td>
<td>45</td>
<td>58%</td>
<td>1.11</td>
</tr>
</tbody>
</table>
Gap Zone

Location. Location. Location. In doing research on gaps to develop my strategy, I identified a series of “gap zones” that have a clear impact on the probability that a given gap will fill. These zones refer to the location of the gap relative to the prior day’s direction and key price levels: Open, High, Low, and Close. Figure X shows the average win rates by zone, for fading opening gaps in the E-Mini S&P 500, using no stop, and closing at the end of the day if the gap did not fill.

<table>
<thead>
<tr>
<th>Win %</th>
<th>Zone</th>
<th>If Prior Day Was Down</th>
<th>If Prior Day Was Up</th>
<th>Zone</th>
<th>Win %</th>
</tr>
</thead>
<tbody>
<tr>
<td>49%</td>
<td>D-H</td>
<td></td>
<td></td>
<td>U-H</td>
<td>61%</td>
</tr>
<tr>
<td>65%</td>
<td>D-HO</td>
<td></td>
<td></td>
<td>U-HC</td>
<td>80%</td>
</tr>
<tr>
<td>71%</td>
<td>D-OC</td>
<td></td>
<td></td>
<td>U-CO</td>
<td>76%</td>
</tr>
<tr>
<td>78%</td>
<td>D-CL</td>
<td></td>
<td></td>
<td>U-OL</td>
<td>69%</td>
</tr>
<tr>
<td>65%</td>
<td>D-L</td>
<td></td>
<td></td>
<td>U-L</td>
<td>58%</td>
</tr>
</tbody>
</table>

The gap zone dimension is very powerful since it inherently incorporates gap size, prior day trend, and trader psychology. Although it may seem a little counter-intuitive on the surface, it is actually quite logical. For example, a gap up above the high of a prior “up” day (i.e. prior day’s close was greater than its open) may be more likely to attract profit taking at the first sign of resistance, than a gap up above the high of a prior “down” day (i.e. prior day’s close was less than its open) which would be counter to the prior day trend and may be more likely to attract new buyers and short covering. The probabilities in Figure X demonstrate this by showing that fading gaps above the high of prior “up” day have a much higher win rate historically (61%) than fading gaps above the high of a prior “down” day (49%).
Tip: You can expand the concept of “gap zones” to include the preceding several days (or more) of price action to identify patterns with even higher probability and/or profit expectancy.

Seasonality

“Seasonality” (i.e. historical tendencies based upon various calendar criteria) is another helpful tool to filter gap setups. Some days and months clearly offer better odds of success than others. Figures XI and XII show the win rate of fading gaps in the E-Mini S&P 500 by day of the week, and by month. Notice how overall win rates tend to be higher in the latter part of the week and how success rates vary by direction of the gap as well. Mondays are the riskiest day historically due to the more volatile and unpredictable nature of price action after the U.S. equity markets have been closed for the weekend. Note: buying a down gap would be considered a “Long” trade and selling an up gap would be considered a “Short” trade. The last two months of the year can be a little more challenging for gap traders as investors try to time to anticipate the common end-of-year “Santa Claus” rally while also adjusting their portfolios for the coming year.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Long</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Gaps</td>
<td>Win %</td>
<td>Win %</td>
</tr>
<tr>
<td>Monday</td>
<td>452</td>
<td>65%</td>
<td>67%</td>
</tr>
<tr>
<td>Tuesday</td>
<td>455</td>
<td>66%</td>
<td>71%</td>
</tr>
<tr>
<td>Wednesday</td>
<td>452</td>
<td>70%</td>
<td>74%</td>
</tr>
<tr>
<td>Thursday</td>
<td>449</td>
<td>67%</td>
<td>72%</td>
</tr>
<tr>
<td>Friday</td>
<td>464</td>
<td>71%</td>
<td>69%</td>
</tr>
</tbody>
</table>

Figure XI. Win Rate by Day of Week, 2006-2015.
<table>
<thead>
<tr>
<th>Month</th>
<th># Gaps</th>
<th>Total Win %</th>
<th>Long Win %</th>
<th>Short Win %</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>183</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>February</td>
<td>173</td>
<td>67%</td>
<td>78%</td>
<td>55%</td>
</tr>
<tr>
<td>March</td>
<td>189</td>
<td>67%</td>
<td>73%</td>
<td>62%</td>
</tr>
<tr>
<td>April</td>
<td>182</td>
<td>70%</td>
<td>72%</td>
<td>68%</td>
</tr>
<tr>
<td>May</td>
<td>191</td>
<td>67%</td>
<td>66%</td>
<td>68%</td>
</tr>
<tr>
<td>June</td>
<td>191</td>
<td>66%</td>
<td>64%</td>
<td>69%</td>
</tr>
<tr>
<td>July</td>
<td>195</td>
<td>67%</td>
<td>70%</td>
<td>65%</td>
</tr>
<tr>
<td>August</td>
<td>204</td>
<td>68%</td>
<td>68%</td>
<td>69%</td>
</tr>
<tr>
<td>September</td>
<td>200</td>
<td>68%</td>
<td>72%</td>
<td>64%</td>
</tr>
<tr>
<td>October</td>
<td>196</td>
<td>69%</td>
<td>73%</td>
<td>66%</td>
</tr>
<tr>
<td>November</td>
<td>180</td>
<td>65%</td>
<td>68%</td>
<td>62%</td>
</tr>
<tr>
<td>December</td>
<td>188</td>
<td>65%</td>
<td>67%</td>
<td>64%</td>
</tr>
</tbody>
</table>

**Figure XII.** Win Rate by Month, 2006-2015.

*Tip: Seasonality studies can also be expanded to day of the month (1-31) and even zone-specific seasonality. A word of caution: be sure that the number of gaps in your evaluation is statistically significant (e.g. > 30) and be careful not to over-optimize.*

By combining gap size, direction, zone, and seasonality, gap traders can dramatically increase their success in selecting winning gap fades. Though certainly not foolproof, a significant edge can be gained versus other market participants who are less well informed.

**Stop Size**

Gap selection is only half the battle in creating a profitable gap strategy. The other half is choosing the optimal size stop and target price. This is where it can get a little tricky and counter-intuitive for strategy development. The smaller your stop loss (i.e. risk), the lower the win rate and vice versa: the bigger the stop loss, the higher the win rate. The key is to balance the two at a point that provides optimal profit expectancy within your individual risk tolerance. Figure XIII shows the historical win rates and profitability for fading gaps > 1 point in the E-Mini S&P 500, using stop losses based upon a percentage of the size of the gap.
<table>
<thead>
<tr>
<th>Stop As % of Gap Size</th>
<th>% Win</th>
<th>Average Win/Loss Ratio</th>
<th>Profit Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>27%</td>
<td>2.95</td>
<td>1.07</td>
</tr>
<tr>
<td>50%</td>
<td>37%</td>
<td>1.78</td>
<td>1.05</td>
</tr>
<tr>
<td>75%</td>
<td>45%</td>
<td>1.23</td>
<td>1.01</td>
</tr>
<tr>
<td>100%</td>
<td>50%</td>
<td>0.99</td>
<td>1.00</td>
</tr>
<tr>
<td>125%</td>
<td>55%</td>
<td>0.81</td>
<td>1.01</td>
</tr>
<tr>
<td>150%</td>
<td>58%</td>
<td>0.71</td>
<td>1.00</td>
</tr>
<tr>
<td>175%</td>
<td>61%</td>
<td>0.64</td>
<td>1.00</td>
</tr>
<tr>
<td>200%</td>
<td>62%</td>
<td>0.61</td>
<td>0.99</td>
</tr>
</tbody>
</table>


**Figure XIII.** Win Rate and Profit Factor by Size of Stop (Percentage of Gap Size).

For example, per Figure XIII, fading a 4 point gap in the E-Mini S&P futures using a 2 point stop, would have only been profitable approximately 37% of the time historically, with an average profit almost twice that of the average size loss. Losing 2 points twice for every time you would make 4 points would result in a breakeven strategy and hence the profit factor of approximately 1.05 as shown in the table.

I trade the opening gap in the E-Mini S&P 500 and one way that is easier and more effective for stop placement is to simply use a fixed number of points. Normally, I do not vary the size of the stop based upon the size of the gap since Figure 13 shows this is generally not effective or profitable. (Note: profitability can be enhanced by using stops tailored for each zone since some require bigger/smaller stops than others.) Each point for a futures contract equates to a specific dollar amount. For the E-Mini S&P one point is equal to $50.00 per contract. Figure XIV shows win rate and profitability when using stops based on a number of price points in the E-Mini S&P 500.
My preferred way to place stops is to use a fixed percentage of the 5 day Average True Range (ATR). This approach automatically adjusts my stops based on recent volatility: the more volatile the market the bigger my stops and vice versa. While this may seem counter-intuitive, I have found that opening gaps during times of expanded volatility tend to fill at comparable rates as the low volatility regimes, but the payoff is greater due to the larger gap size. So, the last thing I want to do is be stopped out of a winning gap fade setup right before it rolls over (or up) and fills the gap. Figure XV shows the historical win rates and profitability for fading gaps using stops based on a fixed percentage of the 5 day ATR.

**Figure XIV.** Win Rate and Profit Factor by Size of Stop (Points)

<table>
<thead>
<tr>
<th>Stop Size (pts)</th>
<th>% Win</th>
<th>Profit Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>34%</td>
<td>1.07</td>
</tr>
<tr>
<td>4</td>
<td>50%</td>
<td>1.17</td>
</tr>
<tr>
<td>6</td>
<td>57%</td>
<td>1.10</td>
</tr>
<tr>
<td>8</td>
<td>62%</td>
<td>1.12</td>
</tr>
<tr>
<td>10</td>
<td>65%</td>
<td>1.09</td>
</tr>
<tr>
<td>12</td>
<td>66%</td>
<td>1.07</td>
</tr>
<tr>
<td>14</td>
<td>67%</td>
<td>1.06</td>
</tr>
</tbody>
</table>


**Figure XV.** Win Rate, Average Win/Loss Ratio, and Profit Factor by Stop As Percent of 5 day ATR.

<table>
<thead>
<tr>
<th>Stop As % of 5 Day ATR</th>
<th>% Win</th>
<th>Average Win/Loss Ratio</th>
<th>Profit Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>48%</td>
<td>1.22</td>
<td>1.11</td>
</tr>
<tr>
<td>30%</td>
<td>55%</td>
<td>.85</td>
<td>1.06</td>
</tr>
<tr>
<td>40%</td>
<td>61%</td>
<td>.67</td>
<td>1.05</td>
</tr>
<tr>
<td>50%</td>
<td>64%</td>
<td>.60</td>
<td>1.07</td>
</tr>
<tr>
<td>60%</td>
<td>66%</td>
<td>.54</td>
<td>1.07</td>
</tr>
<tr>
<td>70%</td>
<td>67%</td>
<td>.51</td>
<td>1.03</td>
</tr>
<tr>
<td>80%</td>
<td>67%</td>
<td>.49</td>
<td>1.02</td>
</tr>
<tr>
<td>90%</td>
<td>68%</td>
<td>.48</td>
<td>1.00</td>
</tr>
<tr>
<td>100%</td>
<td>68%</td>
<td>.47</td>
<td>0.99</td>
</tr>
</tbody>
</table>

**Target Optimization**

Many traders only focus on gap selection and stop size when developing their strategies; however, target optimization can make a significant difference in the profitability of your gap trading strategy. In fact, I consider target optimization to be a critical component of my success. If I am in a winning trade and gaps into that zone have a proven historical tendency of continuing through the gap fill, why would I want to cut my profits short? I would not and that is why I utilize “extended targets” (beyond the prior day close) for many of my gap setups. The table in Figure XVI shows the win rate when targeting $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and full gap fills, as well as points beyond or through the gap fill, over the past ten years.

<table>
<thead>
<tr>
<th>Target as % of Gap Size</th>
<th>Win %</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>87%</td>
</tr>
<tr>
<td>50%</td>
<td>78%</td>
</tr>
<tr>
<td>75%</td>
<td>72%</td>
</tr>
<tr>
<td>100%</td>
<td>68%</td>
</tr>
<tr>
<td>125%</td>
<td>64%</td>
</tr>
<tr>
<td>150%</td>
<td>61%</td>
</tr>
<tr>
<td>175%</td>
<td>59%</td>
</tr>
<tr>
<td>200%</td>
<td>57%</td>
</tr>
</tbody>
</table>


**Figure XVI.** Win Rate Using Targets Based Upon Percentage of Gap Size.

*Tip: Some “gap zones” are especially prone to trading through the gap fill price, so be sure to look for these extended target opportunities when developing your strategy. The trade-off in win rate versus profit expectancy can be quite good.*

Perhaps you are thinking you could simply choose the optimal gap profile (by size, zone, and seasonality), target $\frac{1}{4}$ gap fill, and use a reasonable stop, and you will be swimming in profits right? If only it were that easy. This approach will indeed result in a gap strategy that will have a very high win rate. But, it will likely make little, if any, actual profits since the average size loss will greatly exceed the average size winner.
The name of the game is to be selective in choosing gaps to fade and to utilize stops and targets that generate maximum profits long term with an acceptable win/loss ratio and “draw down” ratio for your trading style and account equity. If you are new to gap trading, creating a profitable strategy may seem a bit overwhelming, but hang in there. The next chapter will demonstrate a variety of real world examples.
Real World Examples

So now that your head is swimming in a puddle of probabilities, let’s try to bring it all together. In this chapter we’ll examine specific examples of how I use gap zones, gap size, and seasonality on a daily basis to make a living as a gap trader. Included are a variety of different opening gap fades, many that were profitable and some that weren’t, as well as examples of “follow the gap” and “fade the fill” trades, and even one gap setup that I rarely fade.

How I Trade Gaps

My gap strategy was initially developed using a simple Excel® spreadsheet. After many long hours of sifting through spreadsheet data, I identified the “gap zone” edge and converted it into a TradeStation® application that I fondly refer to as "Otis." In a nutshell, Otis is a pattern recognition program that identifies an average of eight to ten “high profit expectancy” gap trade setups per month in the E-Mini S&P 500.

This system, like all others, is not the “Holy Grail.” Otis will miss winning trades; however, by design, misses even more losing trades. By avoiding overly large losing trades while taking both long and short trades in all market conditions, the system rarely suffers large or lengthy draw downs. It has worked well consistently through a variety of market conditions volatile and in-volatile, bear, bull and non-trending markets.

Before digging into some real world examples, it might be helpful to review the key elements of my approach to trading gaps:

**Zone-Based:** All gaps are grouped by recent price action (up or down) and various support and resistance areas (e.g. Open, High, Low and Close of the two prior days). I call these areas “gap zones” and have many of them, each with a sub-zone and optimized targets and stops.

**Direction:** The vast majority of my gap trades are "fades" (opposite the direction of the opening gap). I have a couple of zones in which I will not fade
the gap, but rather "follow the gap" and trade in the direction of the opening gap.

**Pre-market Filters:** My pre-market filters are based primarily on where the gap opens (i.e. gap zone).

**Big Gaps:** I do not unilaterally eliminate large gaps (i.e. over 5 - 6 points), but focus instead on the zone. The larger gaps have lower fill probabilities, but many will finish profitably even if the gap does not fill. Plus, the big gaps provide very nice profits when they work and are a necessary part of my gap system.

**Small Gaps:** My research also shows that gaps less than 3 points in select zones should be avoided, because their “profit expectancy” is negative or too low. This is counter to what many gap traders believe.

**Decision Time:** I make my decision on whether to trade an opening gap or not, based upon where prices are trading at 9:25 ET (five minutes before the open of the regular session). Most of the time, I know well before this time, but sometimes I have to wait.

**Position Size:** I trade one contract for every $10,000 of equity in my futures account. This ensures that I never suffer a full size loser that exceeds my max allowable money management loss on a single trade, while keeping drawdowns in a range that is psychologically tolerable.

**Risk Management:** If I get a signal from Otis, but have identified one or more risk factors such as seasonality, proximity to a “go/no go” line, or a zone-specific risk (e.g. weaker performance during bull or bear market conditions), then I will reduce my position size in half.

**Stops:** Stops are optimized for each zone, based upon points or a percentage of the gap amount, whichever is less. For some zones, I use a time-stop and will exit if the gap trade is still open when the stop time is reached.

**Targets:** Some zones have a high probability of not only filling, but also continuing through the prior day close. Optimizing my target for each zone
allows me to maximize profits and take full advantage of each gap trade. They key is to know which ones to hold for gap fill, beyond the gap fill, or to close in front of the gap fill.

**Entry Technique:** I enter all gap trades at the open of the regular trading session (9:30 ET) using a market order that I place using TradeStation. When I get a signal from Otis, I manually set up a time-activated (9:30:00 ET) market OCO (“One Cancels Other”) bracket order. Then, I generally leave it alone, letting it fill me at the open and exit at my target or stop. Note: if my trade has not hit its target or been stopped by end of the day (or earlier if my research suggests a time stop), then I will close the position. Intraday gap trades are not swing trading setups and I never hold them overnight.

**Gap Fade Examples**

The following trades are examples of real gap fades that I personally executed. You’ll note that I use quite a few zones, each with their own parameters in these examples. I suggest you focus on the concepts that I utilize to trade gaps, rather than the specifics of the various examples. By focusing on the big picture, you should be able to grasp the basics of how to evaluate gaps beyond simply looking at the size of a gap.

Figure XVII is an example of a gap fade that occurred following a “down” day (prior day’s closing price was lower than its opening price). This particular gap opened above the prior day’s open, but lower than its high price and in a zone that is sometimes unpredictable, hence my nickname for it: “Sybil” (after the star of the classic 70’s movie who had multiple personalities).

The S&P futures rallied in the morning almost 20 points from the overnight low and were nicely positive by the open (thanks to better than expected jobless claims data). Since I have not identified an edge for incorporating economic news into my decision-making, I simply ignored this positive report and the market’s reaction that followed. The 4.25 point gap up met all of my criteria for this tricky zone (i.e. pattern, seasonality, and size) and showed solid profit expectancy historically, so I faded it at the open with an extended target (i.e. below the prior day closing price). After taking a couple points of heat (i.e. prices moved opposite the direction of my trade), the markets stalled and traded down to and though the gap fill. I scaled out for an average
of +5.5 points ($275 per contract), closing the last part out for +8.5 points after hitting my target and just before the markets made an extraordinary reversal and moved up almost 30 points.

**Figure XVII.** Gap Fade

The next gap fade example (Figure XVIII) illustrates a gap down following an “up” day. This setup met my criteria for this zone and was also supported by excellent seasonality for Tuesdays and this period of the month, both which favored the long side. After a worse than expected inflation report, the markets sold off and held near the lows of the morning, prior to the open. As I have learned over the years, economic reports are often traded primarily by the "dumb money" and those seeking to take advantage of the dumb money. Sure enough, after opening down almost 6 points, the S&P futures did a 180 degree turn immediately after the regular session open and traded straight up, filling the gap around 9:45 ET.
I scaled out and locked in +5.0 points on 70% of my position just in front of the gap fill and tightened my stop just a little on the last 30%. Knowing that seasonality was in my favor and that this particular setup works about 80% of the time when targeting prices ABOVE the prior day close, I was not anxious to tighten my stop too much since I wanted to give this signal room to work. By being willing to accept a loss on the last part, I was able to remain in the trade even though it went negative on me after hitting my first target. After taking a little heat, it reversed rapidly and I sold 20% at +8.5 points and then held the last 10% for the open gap from early February at 1379 for +13.0 points. By sticking with my plan I was able to capture 6.5 points of profit ($325 per contract) on a 5.5 point gap.

**Figure XVIII.** Gap Fade

This next gap fade example in Figure XIX also followed an “up” day and shows a 5.25 point gap up (above the prior day close). Seasonality favored a short play and
coupled with a somewhat rare, two unfilled "up" gaps in a row this particular week, I was more than ready to fade this gap which opened just below its prior day high price. My nickname for this zone is the “Gotcha” and the post open price action shows why.

My research on “Gotchas” shows that they have a high probability of selling through the prior day close, so I scaled out half at gap fill, and after a couple bounces, my second target was finally hit for +7 points.

After one more small rally by the bulls, the S&P futures tanked. Knowing that a break of the lows would likely run a few stops and fall through my final target, I moved my extended target down to capture more profits. This was a good call (I closed out at 1359.25 for +10 points), though a little conservative in retrospect as the selling held steady into the close, filling the prior day’s unfilled gap at 1349.75. Total profit for the trade was an average 6.6 points ($330) per contract in little over an hour and half.
Figure XX is an example of fading a gap down that followed a “down” day (the close was lower than the open). On the surface, this gap looks even more bearish than one which follows an "up" day. Counter-intuitive as it may seem, that is exactly why Otis' long signal for this zone works so well and why it is one of my most profitable. I decided to trade this setup with a half size position due to the fact that this signal doesn’t work as well in bear market conditions (though still nicely profitable) and historical seasonality shows this part of the month is prone to selling pressure (or perhaps void of normal buying pressure).

Since the bears had controlled the prior day, this down gap looked as if the down trend would continue and attracted some sellers after the open. As they shorted and drove prices down to the prior low, I started getting a little concerned. Otis, my system, had suggested using a slightly bigger than normal stop to accommodate any
potential continuation of the prior day’s selling, so I had a little breathing room, though not much. Ironically, this move down also gave me more confidence in holding out for an extended (above gap fill) target, assuming that I was not stopped out first. But why?

The normal human trader reaction after enduring a near stop is to over-react and close out if prices return to one's entry or to at least move the target closer. Sometimes that is the right action, but often as I have learned, that is exactly the wrong thing to do. If anything, you should consider moving your target further away. The reason is simple: the same momentum that almost stops you out will serve as the fuel for the reversal. This is a nice example. Sellers after the open were forced to cover after buyers (and perhaps sellers who had shorted the prior day decided to lock in profits) stepped in at yesterday's low. When prices reached the opening price and no new sellers showed up, those that had shorted after the open became nervous. Once prices traded up near the prior close (gap fill) and buyers, not sellers appeared, they panicked and helped drive prices upward and well above the gap fill price as they bought back contracts to cover their short positions. I closed 80% for 6 points and then held the last part for +8 for an average win of about 6.5 points ($325) per contract on a 3.5 point gap. That works.
Here’s a gap fade (Figure XXI) that didn’t work out as planned. In some regards it is similar to the prior example, other than the final results.

After better than expected retail numbers, the S&P futures opened with a small 2 point gap down below the prior close, but above the low of this prior “down” day. After what seemed like an eternity, buyers finally succeeded in filling the gap, but sellers then drove prices back down. Lunch time buying then reversed the futures once again, driving prices all the way to and through the prior close, falling short of my extended target (above gap fill) by a couple of points. This was not close enough for me to take any profits, though I was concerned prices might tank if they broke the prior day’s lows one more time. Prices did sell off some more, but stabilized late afternoon and I closed this trade for a small loss.
Figure XXI. Gap Fade

In the example shown in Figure XXII, the S&P futures opened up about 7 points due to a couple of reports (PPI and Empire Manufacturing) that were better than expected or perhaps more accurately stated, "not as bad as feared." Regardless, as mentioned before, I pay little attention to these reports other than to get a feel for the opening gap and potential trader psychology for the morning session.

At my 9:25 ET decision time, prices were trading above the high of a prior “down” day and this particular setup met my criteria for fading at the open. There have been less than 100 gaps in this zone over the past 10 years. About 2/3 were tradable per my parameters and 80% of these hypothetically would have been winners with a historical profit factor that is among my highest.

The only concern I had was the fact that we had been selling off quite steadily the prior six days and coming into the middle of the month, we might pick up some new
money inflows. But, Otis said "sell" and I knew that history was on his side, so I went short at the open with my target just above gap fill. It was a good call as prices sold off immediately and hit the target in about 40 minutes. I closed 80% at +4 and 20% for +5.5 (just above gap fill) for an average of +4.3 points (+$215) per contract.

**Figure XXII.** Gap Fade

Figure XXIII shows a small gap up above the close of a prior down day that triggered my "Cowboy" signal. Shorting up gaps on Wednesdays has a much higher than normal success rate historically, so this was an easy trade for me (despite the two losses that preceded this trade). My plan was to evaluate the market price action and internals after the open to decide whether to scale out at gap fill or hold the entire position for the extended target (below the gap fill) - which is what Otis, my gap system, was recommending.
I opted to take half off at gap fill for +2.75 points and hold on to the other half until my extended target was reached. It was a bad decision to scale out in retrospect as the market barely burped upon filling the gap, but it was a solid, easy win nonetheless. I closed the second half for +7.25 points. Though it was not easy to trade a full size position on the heels of two back-to-back losers, this 3 point opening gap delivered 5 points ($250) of profit per contract in just 14 minutes.

I have learned over time how important it is to: a) trade position size that does not overly stress you (financially or emotionally) - even if you have three or four losers in a row; and b) stick with a system and not try to guess which trade will work or not. Sometimes this results in a few weeks or more of treading water, or even suffering a painful drawdown, but over the long haul this discipline has paid me many times over. By following my system closely, I eliminate the “me” variable and can better determine if a signal needs to be tweaked. Plus, I rarely go to bed mad or disappointed in myself, only my system. And, from a trading psychology perspective, that is a good thing.
Figure XXIII. Gap Fade

Figure XXIV demonstrates a losing gap fade. Though I lost money on this specific trade, there were some positive elements worth noting. This gap was the second one above the high of a prior “down” day in as many days, and again, Otis gave a short signal. Considering this is my rarest of signals, I checked the past 10 years of history, and this has only happened one other time and that resulted in a losing trade. My seasonality research showed that the 16th of the month is one of the worst performing day historically for fading gaps in the S&P futures (~60% win rate using no stop. The reason is likely due to the fact that the middle of the month is when new money often comes into the market from pensions and other institutions).

To make matters worse, the E-Mini S&P 500 price at my decision time was barely inside my signal area. Darn it. There was no way around it. This setup had some serious risk factors, yet Otis was giving a valid signal that has a 79% historical win
rate and better yet, today's specific pattern has been profitable 86% of the time. I could not pass on this signal, even though my gut was screaming “no!”

So, I followed my rules and took the signal, but only used a half-size position due to the day of the month seasonality risk and proximity to my “go/no-go” line. After the open, it was pretty clear that market internals were overwhelmingly bullish and shortly thereafter the markets rocked upwards about 10 points, stopping me out of my trade for a 6 point ($300 per contract) loss. Now it was clear: this might be a continuation gap. This high probability gap setup had been stopped out and internals and price action were very bullish. It was time to take off my contrarian cap and become a trend trader. Over the course of the rest of the day, I went long five times, netting four winners and some nice day trading profits.

Including seasonality in my decision-making process helped me avoid a full size loser. And, by recognizing early in the session that this was likely a continuation gap I was able to focus on trades to the long side in the direction of the gap. Though at times it was hard fighting my counter-trend instincts, it paid off nicely and helped offset a disappointing morning.
Figure XXIV. Fade of a Continuation Gap for a Loss

The following gap setup (Figure XXV) was one in which I did not fade since it was what I call a “BLUD” gap: Below the Low of an Up Day. To be clear, this is a gap that opens below the low of a prior “up” day (i.e. prior day close was higher than its open). I rarely fade “da’ BLUDs” at the open since they are generally bearish and has one of the lowest historical fill rates (about 58% - even when using no stop) of all zones that I have tested.
Figure XXV. Example of BLUD Gap that I Did Not Fade

“Follow the Gap” Example

Though the natural and historically proven bias of most gaps is to retrace some or all of the overnight session price move, some gap zones have an equally strong tendency to continue in the direction of the gap after the open.

In this example (Figure XXVI), the prior day was an "up" day, meaning the closing price was greater than the opening price. However, the close was below the close of two days ago, so the S&P actually exhibited a little weakness relative to its prior day. When prices opened with a gap down the following morning, the market was again exhibiting weakness. On this day, Otis generated a "Follow the Gap" (i.e. sell signal). Think about it. In spite of buying pressure the prior day, it was not enough to make up for a sizeable gap down and then this morning it gapped down again. This kind of action was likely to attract some short sellers and profit takers.
So, when Otis said to consider a short at the open, it was based upon a pattern that has happened many times over the past 10 years and therefore provided a statistically significant edge for shorting at the open; in fact, it works about 80% of the time. This is not a big profit making signal because it sometimes requires that the stop be placed in the path of the gap fill (today’s small size stop was just above the gap fill), so I consider it as a discretionary play.

This is hard signal to take for most “gappers,” yours truly included, since it goes against my contrarian nature. This specific trade was a little easier though since, historical seasonality showed that shorting "up" gaps has a very high win rate on this day and time of the month (> 80%). I’ve noticed that when seasonality is lopsided like this it often indicates the general bias of the monthly cash flows. After a couple points of heat, sellers stepped up in front of the gap fill and drove the markets down. I scaled out and took my last profit around the overnight low area for a 3 point average (+$150) winner, scaling out at +2, +3 and +5 points, in just 30 minutes total for the trade.
“Fade the Fill” Example

Fading the open and going with it, are not the only trades presented by gaps. Depending on the zone and market conditions, it is often quite profitable to fade the closing of the gap. That is, after prices retrace the overnight move back to the prior close, enter a trade in the direction of the opening gap.

For the second day in a row, the S&P had gapped down in historic proportions (>2.5%), and for the second day in a row it started filling immediately after the open and actually filled without taking virtually any heat. Today’s gap fill was the 4th largest in the past ten years for the S&P 500 (see Figure XXVII). Since it was so unusually large, I did not get a signal to fade the open.

Knowing that the gap fill also coincided with the prior day high price and knowing that this zone will often sell off aggressively after a quick gap fill (hence my nickname
for this particular gap fade setup: "Wham, Bam!”) and often finish the day below the open, I decided to fade the gap fill. I went short at 1309.0 around 10:15 ET as the gap filled and used a 4 pt stop. I sold half at +4.0 points and then sat on my itchy fingers as the markets proceeded to sell off. Around 12:45 ET the massive dump appeared to be over, so I closed out at 1273.0 for a sweet 36 point gain (+$1,800) per car, my largest intraday trade profit ever. Unfortunately, I was so busy bragging to my wife that I missed the ensuing 74.5 point rally! Note to self…

Figure XXVII. “Fade the Fill”
Gap Trading Tips

1) **Know the size and know the zone!** The size of the opening gap and where it opens relative to prior day support and resistance (e.g. Open, High, Low, Close) will greatly influence its probabilities of filling, as well as the optimal placement of your stop and target.

2) **It’s a three legged stool.** To maximize profits focus on gap selection, stop placement, and target optimization. It takes all three.

3) **Don’t try to kiss all the pretty girls (or guys)!** With gap trading, it pays to be selective. So, when in doubt, sit it out.

4) **The return may not be worth the risk.** Just because a gap is small and has a high probability of filling does not mean that it is worth trading. Profit expectancy, not probability of winning, is the key.

5) **‘Tis the season!** Understanding the historical calendar tendencies of your market can help affirm a winning setup, as well as help you avoid losers.

6) **The worse it looks, the better it works.** And vice versa (most of the time). Don’t let pre-market action influence your decision to fade a gap or not.

7) **The news is noise.** Don’t worry about the financial or economic news that caused the gap. It will only add unnecessary confusion and second-guessing.

8) **Low hanging fruit is the sweetest.** Entering at the market open catches all the easy winners. Waiting to enter after the open misses the easiest winners and catches all of the losers.

9) **Like money sitting on a table.** Many gap setups are prone to continuing through the prior close after filling. Know the personality of your gap setup and when to hold through the gap fill for an extended target, or when to close before the gap fills.
10) **Size matters.** Trade the position size that does not overly stress you, financially or emotionally, even if you have three or four, or even five losers in a row.

11) **Watch out for the Tips.** Fading gaps above the high of a (prior) down day (D-H zone) or below the low of a (prior) up day (U-L zone) is only profitable about 50% of the time historically.

12) **The three amigos.** Don’t forget about the other two gap plays: “Follow the Gap” and “Fade the Fill.” They can add winning setups to your trading tool box.

13) **Focus on the horizon.** Let the long term probabilities work to your advantage and don’t try to guess which trade will work or not. Have a plan, follow your rules, and accept that losers are the cost of doing business. Trading is a marathon, not a sprint.
Stocks, ETF, Options or Futures?

After deciding that fading the opening gap was the optimal trading technique for me, I assessed the various instruments that I could use for both buying and shorting the open: options, stocks, ETFs, and futures. Options offer lots of techniques for getting long or short, but the bid-ask spread is sometimes an issue and opening option prices are often disproportionately volatile compared to the underlying instrument. Worse, the very best gap trades often start filling immediately after the open, and the profit opportunity disappears before one can enter. In a nutshell, I’ve found options to work fine for large opening gaps, but to be too inefficient for fading the more frequent small gaps.

Trading the actual stock or ETF can work well, but shorting is a bit involved as using margin to borrow the shares is required. Plus, it adds costs to the process. Leveraged ETFs such as Direxion® and ProShares® offer another approach and many traders find them useful with many of the advantage of Futures contracts.

After experimenting with a variety of stocks, ETFs and option approaches, I finally broke down and opened a Futures account. It was one of the best decisions of my trading career. I have found Futures to be the optimal short-term trading instrument and not nearly as scary as they may sound. In fact, they are exponentially easier to learn and trade than options or shorting stocks with margin. Typically, futures contracts are associated with the hedging and trading of physical commodities such as gold, oil, and corn, but are also utilized by financial institutions and traders around the world to trade financial markets like the S&P, NASDAQ, and Russell equity indices. Since equity indices are not physical commodities, there is no risk or worry of having to take delivery – one simply has to close (or roll) a futures trade prior to expiration (quarterly for equity indices). In addition, to being the simplest technique to buy or sell a market, they offer significant tax advantages.

So why doesn’t everyone trade Futures contracts? The short answer is leverage – a double-edge sword. The same flexible and nearly unlimited leverage that can be used
to efficiently and exponentially grow one’s capital can also result in unlimited risk and account losses if not traded with a strict, disciplined stop loss strategy. While I and many full time traders and institutions around the world could not imagine trading without using Futures, they can be disastrous for the inexperienced and undisciplined trader. As such, it is imperative that every investor carefully and fully understand all of the risks of trading Futures before utilizing them.
Get Started!

If you have made it this far, then you realize that trading gaps offers compelling profit opportunities and many other advantages for traders and active investors. However, just like all trading strategies, the road to consistent profits is full of potholes and can be challenging and frustrating at times.

Although I have attempted to cover the key elements for understanding gaps and creating a profitable opening gap strategy, I expect there are plenty of unanswered questions in your mind. That is normal and to be expected at this point. The journey to becoming a successful trader requires a map and some signposts, but you’ll have to blaze the trail that works best for your individual style and goals.

The next step is to dip your toe in the water and start learning hands-on. Here’s what I recommend for becoming a “gapper”:

1) Select a market. I prefer the e-mini index futures for the S&P 500, Dow, NASDAQ 100, and Russell 2000 - all work well for gap trading. One is all you need, though I like the flexibility of trading whichever one sets up best on a given day.

2) Research! It might be a scary word to you, but it is a critical element of developing a winning gap plan. Plus, there are many ways to study gaps for a given market:

   a. Download the historical data for your market into a spreadsheet application like Microsoft Excel®. Include at a minimum, the daily (regular session) Open, High, Low, and Close prices. Then, analyze fill rates using zones and other criteria. You can
use the price zones that I identified in Chapter Two, modify them, or make up your own. The key is to use a structured approach for organizing and studying the various types and sizes of gaps.

b. Use an advanced application such as TradeStation (www.tradestation.com) or Ninja Trader (www.ninjatrader.com) to back-test the historical performance of different gap strategies using a variety of filters, stops, and targets.

c. Or, get started trading gaps today by letting InvestiQuant (www.investiquant.com) do the hard part for you and be your trusted research partner. I started the company in 2015 (seven years after first publishing this book) at the request of clients who wanted more trade opportunities and better tools for selecting and executing trades based on robust historical analysis.

3) **Create a draft business plan for trading gaps.** Specifics should include your market, historical probabilities, goals, designated brokerage, detailed trading plan, timeline (for testing, adjusting, and live trading), and results tracking and analysis. Your trading plan should include gap selection criteria, order entry method, stop size, targets, scale-out plan (if applicable), position sizing, money-management rules, and contingency planning (e.g. how many losses in a row will you endure before stopping and reevaluating your plan?) If applicable, be sure to break out your specific criteria, stops and targets for each zone or class of gaps that you plan to trade.

4) **“Forward test” your plan.** It is important to test your gap trading plan in real time (not necessarily with real capital) for a month or two or more, to confirm that the number of trades, win rate and profitability are within your expectations and worthy of trading with real capital. Plus, if you plan on closely monitoring your trades after entering, the forward testing period will help you learn to manage your emotions and trust your plan. You might want to also consider using a trading simulator from your broker to practice
order execution. If you decide to test using real capital, use the smallest position required to simulate your strategy. From my own experience, it is not hard to goof up the placement of a multi-exit bracket order, especially when trying to enter at or near the market open.

5) **Trade your plan.** When you are satisfied with your gap strategy and risk management plan, it is time to “go live.” I strongly suggest that you start with a very modest position size for the first month to ensure that you have the trade mechanics mastered (especially if you are new to trading) and to reduce your risk as you will invariably stumble upon a scenario or two that has not been addressed fully in your plan. Trust me, there will be some.

Before I wrap up, let me share a few more important considerations:

- **Position Size.** When you decide to increase your position size, do so only if you are fully committed to sticking with that size trade no matter what. I once increased my size after five successive winners in a row, only to suffer through four consecutive, agonizing losers. My longest losing streak coupled with my largest position size, resulted in an extremely taxing situation for me psychologically. Thankfully, my plan allows up to five losses in a row and I was still within my max allowable dollar drawdown, so I stuck with it. Over the following three months, I had seventeen winners out of twenty-one gap trades, making up for my losses and growing my account by 30%. Had I reverted to my prior position size, it would have taken much longer to recover.

- **Optimization and Sample Size.** If you use a back-testing application, be very careful not to over-optimize your criteria. At a minimum, be highly cognizant of the risk. Many a strategy has failed miserably when applied in real time due to it being overly “fitted” to past data. There are entire chapters and books on this complex subject, so read up and be careful. A related risk with creating strategies is placing too much confidence in a small sample of data. For example, it is entirely possible for a gap setup that has worked four times out of five to be less than a 50% winner over the long term. Generally, I prefer to have at least 30 (preferably many more) data points before I consider the worthiness of a gap setup or
strategy.

- **Realistic Expectations.** One of the greatest downfalls of many gap traders is having unrealistic expectations regarding an acceptable winning percentage. Some traders, for reasons unknown to me, believe that they should be able to trade the vast majority of gaps, win 80% or more of the time, AND have an average size profit that is greater than the average size loss. It just doesn’t work that way. Generally speaking, you can only find gap strategies that meet two of these criteria; and only at the expense of the third. The reason is simple. No one in the world knows what is going to happen tomorrow after the markets open. Will the buyers or the sellers be more motivated? Who knows. As gap traders, all we can do is identify those historical patterns that provide a clue as to the probability of a gap filling or not, and then trade it with a target and stop that are mathematically oriented in our favor over the long term.

**Conclusion**

If there is such a thing as a perfect trading setup, it might be the opening gap. It not only offers the potential for an extremely high return on investment, but also an equally high “return on effort” and “return on time.” In my opinion, these three factors warrant the investigation and consideration of the opening gap trade for any active investor or serious trader (part-time or full time) and especially the “newbie” trader looking for a simple setup. Furthermore, understanding the opening gap provides the added benefit of better anticipating the daily price action and improving your entry timing on longer term swing and position trades.

There are many ways to play gaps. In this book I have shared some gap trading basics that are applicable to most techniques, as well as details regarding my own approach. I hope that you have learned a little and have found some ideas and information that will help you augment your existing gap strategy or add it to your strategy tool box. As my flight instructors used to say, “You have the controls!”

If you have any questions or comments, feel free to contact me or join our community of gappers and other traders at www.investiquant.com. Trade smarter!
Glossary

**BLUD Gap:** An opening gap that is in the zone that is "Below the Low of an Up Day." Gaps in this area are generally difficult to trade and bearish by nature. Fading these gaps is very risky as this zone has one of the lowest of all historical fill rates for most markets.

**Breakaway Gaps:** These gaps occur after a period of price consolidation. They are caused by a surge of demand to buy or sell the market, typically in response to a significant event. The gaps are not filled during the same trading day (often not for many days or weeks) and are associated with above average volume. See Figure II.

**Common Gaps:** These gaps occur throughout a market’s typical ebb and flow in response to a wide variety of events and news. They are often associated with average or below average volume and generally fill the same day. See Figure III.

**Continuation (or Runaway) Gaps:** These gaps occur during, and in the direction of, an ongoing trend and are generally viewed as confirmation of a trend’s strength. They are associated with above average volume and often do not fill the same day. See Figure IV.

**Exhaustion Gaps:** These gaps occur at or very near the end of a trend. They are typically associated with very high volume as the very last buyers (or sellers if the asset is in a downtrend) jump aboard a trend that is ending and are overrun by opposing market forces as prices stall and often reverse sharply that day. See Figure V.

**Extended Target:** This term refers to the placement of an exit price for a gap trade that is beyond or through the gap fill area (prior close). It is often quite profitable to trade gaps using an extended target if your research supports the probability of price continuation.
**Fade:** This term simply means to enter a trade in the opposite direction of the opening gap. For example, to fade an "up" gap, you would "sell" a.k.a "go short." To fade a "down" gap, you would "buy" a.k.a. "go long."

**Follow the Gap:** This is a trade where you trade in the direction of the opening gap (as opposed to fading it). Gaps into some zones increase the likelihood of a continuation or breakaway gap and therefore are less likely to fill and may be candidates for “going with” the gap.

**Futures Contract:** A standardized financial obligation for a buyer to purchase an asset (or the seller to sell an asset), such as a financial instrument or physical commodity at a pre-set future date and price. Futures are used to hedge or speculate on the price movement of an asset. While a futures contract does obligate the trader; in real life, this obligation is avoided by simply exiting the position, much like selling a stock in the equity markets would close a trade.

**Gap:** The most common definition of a “gap” is the difference between an asset or instrument’s opening price and its prior day closing price. This difference shows up visually on a technical price chart as an open space or “gap.” (Note: some traders define a gap as the difference between the prior day high or low and the next day’s opening price. However, this text references the difference between the open and prior day close.)

**Gap Down:** An opening price that is below the prior day closing price.

**Gap Up:** An opening price that is above the prior day closing price.

**Gap Fill / Close:** When prices pull back from the open of a session and retrace all the way back to the prior session’s closing price, the opening gap is considered to have “filled” or “closed.”

**Gapper:** Someone who trades the opening gap in a market.

**Go Long:** This is when you buy a security in anticipation of being able to sell it later at a higher price for a profit.

**Leveraged ETFs:** Trading products that magnify the returns of an underlying index by a factor of 2x or 3x on a daily basis by utilizing various derivatives strategies such
as swaps, futures contracts and other instruments. Can be useful for short-term trading.

**Profit Expectancy / Expected Value (EV):** How much profit per trade one would expect to average over time (based upon historical averages) for a given setup. The formula: \((\text{average profit per winner} \times \text{probability of winning}) - (\text{average loss per loser} \times \text{probability of losing})\). This is also known as EV or "expected value." Note: this number is far more important than just the probability of profits. It may *feel* good to have a high winning percentage, but it may not be profitable over the long term.

**Profit Factor (PF):** This is another way to measure the attractiveness of a trade setup. It is the historical net profits of a strategy (generated by the winning trades) divided by the historical net losses of the losers. A profit factor greater than 1.0 would be a money making strategy and less than 1.0 would be a losing strategy. The bigger the profit factor, the greater its long term profitability and attractiveness.

**Regular Session:** This term is synonymous with the “open outcry” or pit session hours for a given market, e.g. 9:30 – 16:15 EST for the S&P 500. Many markets trade nearly 24 hours a day electronically; however, the bulk of volume is transacted during their “regular” trading hours. For this reason, the regular session’s open, high, low, and closing prices carry great significance for most traders and their systems.

**E-Mini:** An electronically traded futures contract on the Chicago Mercantile Exchange that is equal to only a small portion of a normal futures contract. E-mini contracts are available on many indices such as the S&P 500, Dow, NASDAQ 100, and Russell 2000. Trading E-mini contracts has many advantages for individuals, including high liquidity, low cost, and nearly 24 hour trading.

**Short:** This is when you sell a security with the anticipation of being able to buy it back at a lower price for a profit.

**Win Rate:** This term describes the percentage of trades for a given setup that hit their target or could have been exited at the end of the day for a profit.

**Zone:** An area of prices between support and resistance levels.
Disclaimer

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