TRADE LIKE A HEDGE FUND

Layman's Guide to Pair Trading

Pairtrade Finder

Professional Trading Software

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www.pairtradefinder.com

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INTRODUCTION TO PAIR TRADING

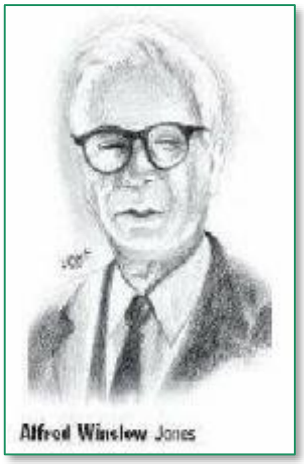
Pair Trading, also referred to as “Pairs Trading” or Statistical Arbitrage, Relative Value Arbitrage, and Long/Short Equity Trading has been used successfully among market professionals for over 60 years now. It is widely used among hedge funds, institutions and other market participants. The main attractions of pair trading are its controlled risk, low correlation to the market averages and ability to generate significant and consistent returns.

Have you ever bought a stock and it has gone down straight away? Chances are the whole market has gone down as well. That’s because all stocks have a correlation to the general market to a certain degree. Wouldn’t it be great if you could profit from stocks regardless of what direction the market goes, up, down, sideways, high volatility, low volatility, choppiness, spikes etc.....?

A pair trader will monitor two similar stocks and aim to buy the oversold issue and simultaneously sell the overbought issue, and exiting once the relationship between the two issues returns to its norm. The professional pair trader will match stocks based on their statistical correlation, cointegration, market capitalization, valuation, price similarity and underlying business similarity among other characteristics.

KO/PEP Relative Price Performance Graph

HISTORY, GROWTH AND PROFITABILITY OF PAIR TRADING



The Australian Alfred Winslow Jones is generally credited with creating the first hedge fund in 1949. This fund also happened to be the first known user of Pair Trading. AW Jones & Co. used leverage to go both long and short stocks in equal amounts to significantly reduce market and sector risk while delivering consistent profits. This style proved highly successful and Jones significantly outperformed the market averages and other mutual funds, with a gross return of over 800% over 10 years.

Modern pair trading is generally credited to Morgan Stanley & Co. in the early 1980s. Computer scientists Gerry Bamberger and David Shaw, together with quant trader Nunzio Tartaglia all worked as part of an ultra-secretive group that was in search of the Holy Grail of trading. The group studied arbitrage opportunities in equities, employing advanced statistical modelling and developing an automated trading program to exploit market imbalances. In 1987, when Morgan Stanley broke out the results of this group in their annual report, they had made $50 million for the firm in that year alone.

Many large hedge funds from around the world today continue to use Pair Trading as a means to deliver low risk, high reward returns to their investors and partners, including David Shaw's own firm, DE Shaw, and Jim Simons' Renaissance Technologies.

Jim Simons of Renaissance Technologies testified to the US Congress in Nov 2008 that his fund pair trades stocks. Jim achieved a 2,738% return for his investors on billions of dollars over 10 years and was ranked as the 55th richest person in the world by Forbes.

Do we have your attention yet?

Recent studies have shown this style to deliver superior returns with lower risk than any other style of trading, especially in volatile, bear markets.


Empirical Investigation of an Equity Pairs Trading Strategy

Huafeng (Jason) Chen*

Shaojun (Jenny) Chen**

Feng Li***

Abstract

September 2012

"We show that an equity pairs trading strategy generates large and significant abnormal returns...alphas of up to...36% [annually] for an equal-weighted portfolio."

- Empirical Investigation of an Equity Pairs Trading Strategy, Huafeng (Jason) Chen Shaojun (Jenny) Chen** Feng Li, September 2012*

"Pairs trading has grown into one of the most popular statistical arbitrage strategies...research on pairs trading was conducted by Gatev et al. (1999,2006), who examined the return and risk characteristics of a simple pairs trading strategy ...they documented economically and statistically significant profits of around 1% per month [unlevered]."

- Mean Reversion II: Pairs Trading Strategies, Deutsche Bank, Shuo Qu et. al.,16 February 2016


Deutsche Bank

Thematic Report - Europe

Mean Reversion II: Pairs Trading Strategies

This strategy, once reserved to the rich and privileged, has in recent years become available to the everyday online trader through significant developments in technology and markets. Online traders can today also enjoy the significant benefits that come from Pair Trading.

THE BASICS OF PAIR TRADING

Contrary to popular belief, a form of logic does run through the world's stock markets. Most of the time, stocks are priced efficiently; that is, all information is discounted in a logical, relative manner.

However, every now and then the market do something unexpected and creates inefficiency. Stocks don't buy and sell themselves, those orders are entered by people, people are driven by emotions, emotions cause irrational decisions and this emotional decision making characteristic is multiplied several times when it comes to a crowd of people.

Stocks trade like several schools of fish, in which all schools roughly go in the same direction. Imagine each school of fish represents a certain sector within the stock market. For example, Bank shares, all other things being equal (news not affecting particular stocks), trade in a similar manner as the macro-economic factors affecting those companies are almost exactly the same.

If, for no good or explainable reason, two of those Bank's shares diverge away from each other then there is an inefficiency created and an opportunity to profit. The main benefit of pair trading is that your exposure to market and sector risk is significantly reduced by holding both long and short positions in equal amounts. The relationship between two correlated stocks is much more predictable and reliable than the outright prediction of the direction of a particular stock.

Can you see the opportunities to trade the relative performance?

APPLICATION OF PAIR TRADING

Professional Pair Traders know the key to successful trading is having the right platform and a high-quality data source for analyzing and monitoring for potential trades.

Many novice traders will attempt to use free websites, Excel spreadsheets and other amateurish methods in attempting to Pair Trade. We believe this approach is a serious mistake for a data-driven, calculatorily-complex, real-time strategy. A serious trader is not afraid to Invest in a top-quality analytical trading platform that will put him or her in the winning trades and ahead of the game – this attitude is what separates the boys from the men in the highly competitive trading world.

Large investment banks, institutions and hedge funds spend millions of dollars each year on developing Pair Trading programs and on the application and execution of these platforms. They know it is crucial to not only have the right information, but also be able to backtest, view and analyze this information in a timely manner, and generate accurate and timely trade entries and exits therefrom. With the significant advances and development in technology in recent years, it has become possible for the average online trader to view and analyze the same information.

When choosing a Pair Trading platform look for one that allows you to quickly undertake customizable, accurate back-testing for correlated and co-integrated pairs of securities across a wide variety of markets and instruments, can then scan the real-time price movements and relationships of these securities, can generate real-time buy and sell signals and get these to you where you can action them immediately, and, of course, the platform provides a quantum leap forward if it has the ability to greybox or blackbox trade the trade signals with a reputable broker. Finally, you need a platform that quickly, simply and easily shows graphical data visualizations of the relevant statistical and price relationships between securities and technical indicators in order to filter your trade signals to take only the highest probability trades.

11 DIFFERENT HINTS, TIPS & TRICKS TO ENHANCE YOUR PAIR TRADING

There are many different ways to enhance your Pair Trading. While there is no definitive method on Pair Trading, it is up to the trader to customize his or her own style. The signals generated in PairTrade Finder (www.pairtradefinder.com) are a start and should not be taken into consideration on their own, but rather in combination with other analysis to generate the best potential trade candidates.

First and foremost, PairTrade Finder is a trading system, just like any other trading system you need discipline & patience to become successful, it's a game of numbers, not trade by trade results but rather your performance after 20, 50 or 100 trades that counts and as you will find out through back testing, PairTrade Finder can be a highly profitable trading system when trading a portfolio of pairs that provides consistent results regardless of the market environment or conditions. Treat your trading like a business where your wins are your revenue and your losses are your costs, just like the cash flow of any other business. You can also view trading like a game, where practice, practice and more practice makes perfect, stick at it, learn as much as possible, keep good records of your trades, review your best & worst trades periodically and you will eventually find your niche and get better and become a successful trader. Listed below are a few ideas to enhance your pair trading. You don't need to follow all these rules to be successful but they will help as you progress.

Tip #1: Choose your pairs carefully .

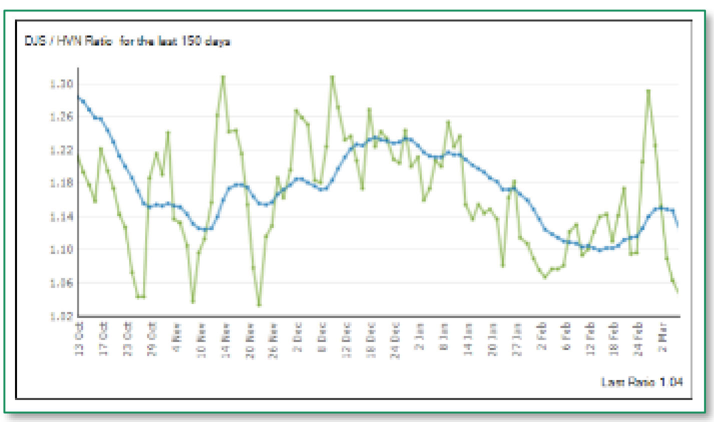
Your results are largely dependent on the pairs you trade. The best qualified stocks for pairs are large caps that have high daily trade volumes. Smaller cap stocks can generate significant profits but they imply a much higher stock-specific risk. For example, negative news affecting one of the small cap stocks that you have a position in could move that stock by 20%, 30% or more daily. Pairs that have performed well in the past are the most reliable indicator one has for future performance; however, be careful not to treat this as the Holy Grail indicator. Do not be afraid to add, delete or change pairs in your watch list as time goes by as all stocks and markets are subject to change. The ideal pair is one where the two stocks do business in the same industry and markets, have roughly the same market capitalization, the same approximate valuation metrics (P/E), roughly the same stock price level and the same average daily volume. The more similar the stocks are in a pair, the more reliable the signals become. Of course there are very few pairs where both stocks are exactly the same with regard to these characteristics, so you have to compromise and test and assume that the closer you get on the characteristics the better.

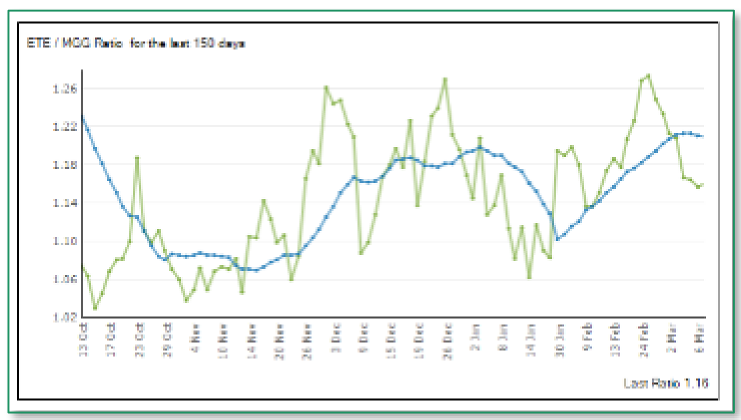
How we setup stock groups: we load the stocks from each industry provided in the stock code spreadsheets on the Pair Trade Finder PRO Download page. We only ever create stock groups with stocks from the same industry, we never pair a stock from one industry with another, there may be plenty of good pairs this way, however we already have plenty of same-industry pairs so there isn't a need for this approach.

We then run a back test on that stock group and using the filters we only display results of pairs which broadly meet the criteria outlined in our Example Pairs section (www.pairtradefinder.com/autoload.html)

Tip #2: Analyze your price ratio chart. (Price ratio = Price of Instrument A / Price of Instrument B). Is the ratio bouncing off recent lows or touching recent highs?
Ideally you want the ratio chart to look oversold or overbought. A ratio chart that shows the ratio trading in a range (i.e. as opposed to trending) is a good pair to trade.

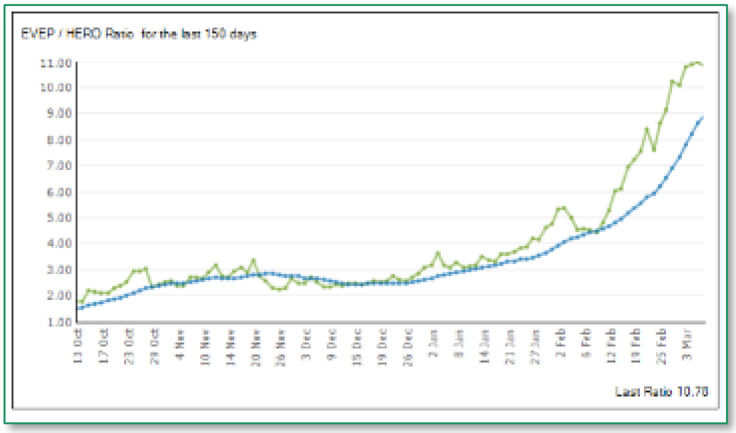
Once the back test is finished I then go through the results and look for pairs which have non-trending ratio charts. The reason we look for non-trending ratio charts is because that represents a tradeable pair, because with a trending ratio chart that means one stock is clearly stronger than the other which means the two stocks aren't that similar. That's what we are looking for in pairs trading, two very similar stocks, the more similar they are, the more reliable the trade signals become. We like pairs with ratio charts showing regular and consistent oscillations around the mean. Please find below 2 examples of ratio charts that we like:

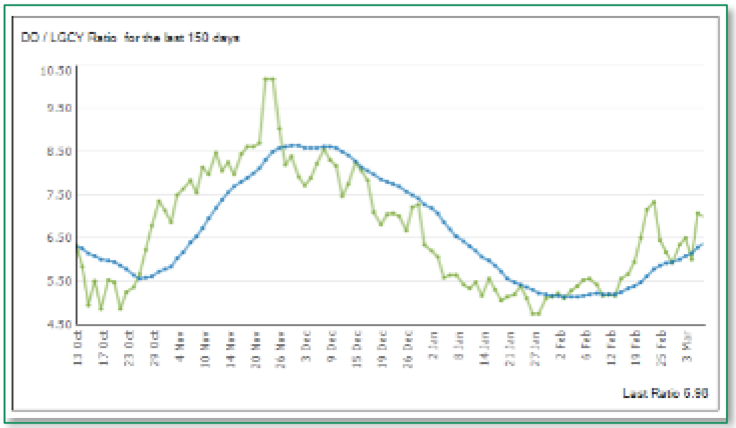




In the above charts you can see how the ratio is oscillating in wide trading range hitting similar resistance and support zones with about the same distance from the mean (the blue line). These are the type of ratio charts we look for, not only when choosing pairs to add to My Watchlist but also when filtering through multiple trade signals.

Here are two examples of ratio charts we don't like:





As you can see in the first chart above, there is a strong uptrend in the ratio, that means the first stock of the pair EVEP is much more technically strong than the second stock of the pair HERO, as you would expect there would be a few trade signals to short the ratio (short first stock, long second stock), however this would be fading a strong uptrend which isn't a wise thing to do. If you could get on the right side of this trend, that is buy the first stock short the second stock you would have a nice trade, you could use the mean(blue line) as a moving average for an exit, should you trade in the direction of the ratio, that is bet on more divergence not an convergence. In the second chart you can see the ratio not oscillating regularly and the distance of the divergences are not consistent either, this wouldn't be a reliable pair to trade.

Tip #3: Analyze your RSI chart. Is the RSI at overbought levels (above 70) or is it at oversold levels (below 30)? Is the RSI near recent highs or lows?

A RSI divergence is a powerful signal that the trend of the ratio is about to change. A RSI divergence occurs when the ratio makes a 'W' formation on the chart, but the RSI doesn't make a matching 'W' formation, rather the right hand low is substantially higher than the left hand low.

See the charts below for a visual example of a RSI divergence. Here we would have been bullish on the ratio, thus wanting to go long ANZ while simultaneously shorting WBC. This trade would have worked well as you see the ratio shooting towards the sky after confirmation of a RSI divergence around the 7th of May.

Tip #4: Analyse your correlation chart .

Ideally you want a high correlation (above 70%) and for the correlation reading to have never gone below 60% in the last 100 days, the higher the better. See the chart below for a good correlation of a pair example;

Tip #5: Consult the volatility chart and POSITION SIZE ACCORDINGLY!.

You have to master the trick of matching your position size (i.e. $ invested per leg of the pair trade) to be relative to the inherent volatility of a particular pair; the higher the volatility the smllera MUST be your position size and vice versa. We trade to try and ensure that the total risk to our account capital from any given pair trade is roughly equal. So a pair with a volatility of 1.5% might get a position size of $10,000 per leg, then for a pair with a 3.0% volatility we might use a position size of $5,000 per leg, etc. The average volatility for well correlated pair is around 1.5%, with readings below 1% indicating low volatility and readings above 2%-3% indicating high volatility.

Ratio	RSI	Volatility	Last Checked
0.69	52.22	3.34%	1/15/2018 12:56 PM
0.80	31.14	3.11%	1/15/2018 12:56 PM
0.40	64.16	2.74%	1/15/2018 12:56 PM
0.63	76.13	3.02%	1/15/2018 12:56 PM
0.09	55.22	0.55%	1/15/2018 12:56 PM
0.47	72.22	1.71%	1/15/2018 12:56 PM

Tip #6: Determine why the signals for a pair trade were generated.

For example, was there a news release for one of the stocks in the pair related to earnings, dividends or some other announcement that you would expect to have an impact on the stock prices? Ideally, no news at all has been released recently or expected to be released soon when a signal has been generated. In other words, you want to confirm that there has been and is no logical reason why the two correlated stocks have diverged from each other. Ensure no imminent news is coming before entering a pair trade e.g. earnings announcements, dividend payments, other corporate actions.

Tip #7: Choose your online broker carefully .

The platform you trade from has a massive impact on your trading, not only the commissions and fees you pay, but the actual platform for executing trades. You want a platform that has dynamic, streaming, real-time prices that you can easily enter trades on. You should have price in mind when selecting a broker, as your biggest cost of trading can be commissions, in addition to the interest costs you incur for the leverage you deploy in your trading and your stock borrow fees. You want to ensure your commissions, stock borrow costs and interest costs are highly competitive.

Tip #8: Keep a diversified portfolio of pair trades .

You should limit your exposure to any given stock and sector within your portfolio, for example, never have more than 10% of your account exposed to any one stock, and ideally less than 5%. Trade pairs from a variety of sectors and markets if possible.

Successful pair trading is all about making many small trades; the smaller your trades are the less risk you are exposed to and the more likely you will profit over the short term and the more consistent your results will be. This means you can build your risk capital more rapidly, and the more risk capital you have to trade with, the more robust your trading will become. The more diversified you can be the better.

Tip #9: Get to know your stocks intimately.

For example, if you just focused on two stocks every day, following their prices, news released and analyst expectations then after some time you would become an expert on them and would be able to apply a more enhanced judgment to determine when one was underpriced relative to another and vice versa. Obviously following one pair won't generate enough signals to trade effectively, so you have to expand your reach. If you believe that knowledge of the stocks you trade is important then we would suggest starting with focusing on one or two sectors and a handful of stocks, mastering them and then moving on and adding new sectors and stocks to your radar.

Tip #10: Analyze the fundamentals of the stocks.

Ideally one wants to be long undervalued shares and short overvalued shares. A good tool for determining value is PEG, which is P/E divided by expected EPS growth. In general, based on fundamentals only and all else being equal, you would want to be long the stock with the lower PEG and short the stock with the higher PEG. EV/EBITDA and P/B are other tools used to measure valuation; enterprise value divided by EBITDA and price divided by book value. Don't view these ratios holistically; rather view them relative to other stocks as a high level way to measure value.

Tip #11: Good trading discipline.

We hear it often as traders and it sounds so simple, yet it's the number one reason why traders fail. Your emotions can't mimic your profit and loss; otherwise you will make emotionally based decisions which are rarely profitable. Become like a robot and consistently apply the same method (ideally a system) and you will significantly increase your chances of success. Keep good records of all your trades, date entered, price, time of day, whether there was news on the stock or not, how stdevs from the mean you entered at, exit price, date, etc.....the more detailed records you keep the more in-depth and accurate post trade analysis you can perform. Go back and study your best and most importantly your worst trades and try and look for a recurring pattern or logical explanation. Don't get to fussy over losing trades, every trading system in the world has losing trades, it's part of the game, you job is to control the size of these losses, not try and find something magical so that you never make losing trades, so don't take it personally when you do have a losing trade, try and think of as the running cost of your trading business.

As one can see from the above tips there are many ways to enhance your Pair Trading. One can treat Pair Trading like a game, where you learn the ropes first, start small, learn as much as possible, practice, practice and practice and you will master your game. If you are new to pair trading we strongly recommend that you paper trade with a demo account as much as needed until you feel 100% comfortable with this style. Success doesn't come overnight. However it does comes to those who plan, persist and are patient. Like anything else you get back what you put in.

THE FUTURE OF PAIR TRADING

Pair Trading is a relatively young style of trading only becoming popular among institutions in the late 1980s and available to online traders at the turn of this century. With the ubiquity of the Internet and foreign governments opening up and cross-border hurdles breaking down, the future ground for Pair Trading looks very fertile as one can cheaply and easily trade thousands of correlated stocks from around the globe that trade in high volumes. Given these rapid developments in markets, technologies and globalization, one can argue that Pair Trading has quite a way to go yet.

You, the online trader, have one massive advantage over the big institutions, investment banks and hedge funds – your size. Because you are smaller, you are more nimble and can achieve a higher growth rate more easily. You don't have to buy and sell millions of shares, eroding your entry and exit prices, or limit yourself to only the highest-volume traded securities on the largest exchanges.

Take advantage of your only true differentiation as an online trader – your small size!

USEFUL LINKS

PairTrading Articles, Tips, Examples and Resources:
www.blog.pairtradefinder.com

USA Stocks
https://www.finviz.com/screener.ashx (great for creating groups of stocks screened by industry, market capitalization, daily volume etc.)
www.yahoo.com/finance (great for company news, fundamentals, charts and price history)
http://moneycentral.msn.com/investor/research/welcome.asp (great for analysing fundamentals)
https://www.thestreet.com/dividends/index.html (Dividend Calendar by date)

Australian Stocks
www.asx.com.au/asx/statistics/announcementSearch.do (great for company news)
www.news.com.au/business/markets/ (great for analysing fundamentals).