



Spread Trading Eurex Equity Index Futures: A Guide for Traders.

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1. Abstract

Markets are in a continuous state of change. If traders rest on their laurels, strategies that work for them today may no longer deliver profits tomorrow. In order to stay one step ahead of market developments, successful traders are always looking to improve to remain profitable. Developing new trading strategies, refining ideas and enhancing methods of execution are all tools in the successful trader's toolbox. This paper will show you how to apply this dynamic approach to a popular type of strategy: spread trading equity index futures.

This paper will outline the necessary steps in developing an effective spread trading strategy. Issues such as identifying which markets best suit a spread trading strategy, knowing the constituents of those markets and the impact they have on a spread, as well as how to calculate relationships between spreads will be discussed. Important considerations such as historical volatility, appropriate contract size, possible currency risk, and historical correlation are explained in easily-understood terms. You'll also hear about the benefits and risks involved in spread trading in general.

Benchmark Eurex equity index futures, the Dow Jones EURO STOXX 50[®] Index Futures and DAX[®] Futures, as well as other popular global index products will be used to illustrate examples.

2. What is Spread Trading?

Conceptually, spread trading involves taking opposite positions (one long, one short) in related markets¹ with the goal of benefiting from the relationship between two (or more) positions. The opposite positions are commonly referred to as legs. While spreads often contain just two legs, spreads can have multiple legs.

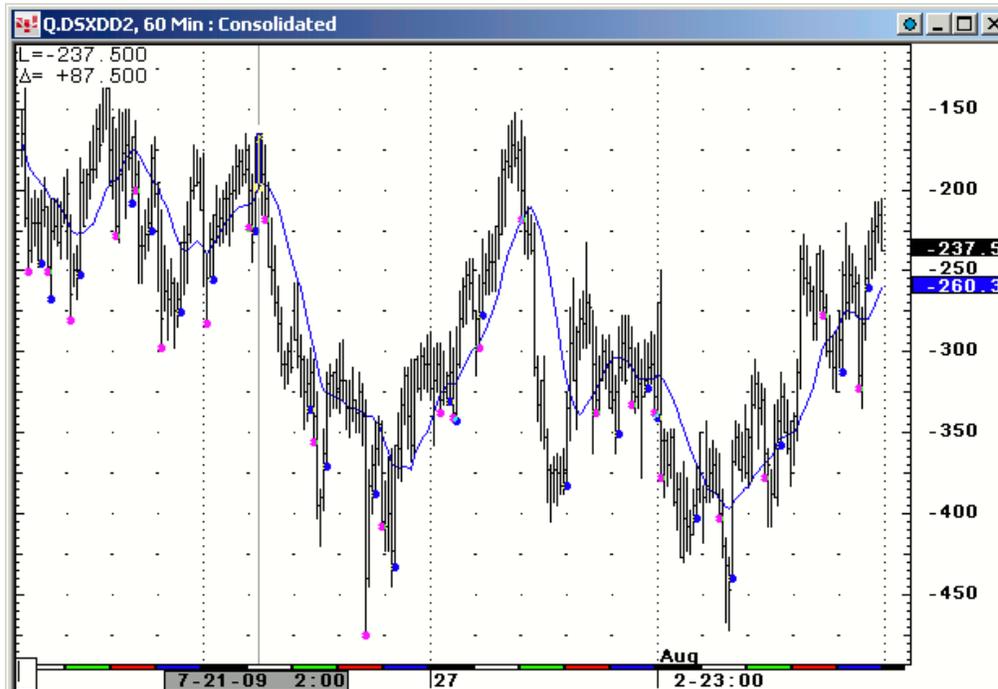
Generally, markets that are closely related, or correlated, form the two sides of a spread trade. The correlation between the two sides of a spread trade is not a perfect hedge, and this imperfection represents opportunity for traders, as they speculate on whether this relationship converges or diverges over a period of time. I typically spread products with a historical correlation of 0.90 or better. While I have put on less historically correlated spreads like gold and crude oil, the dynamics of spreading across different investment complexes can carry with it lower correlation, thereby increasing volatility of a trading portfolio. Trading spread strategies with lower correlations can detract from one of the main features of spreading products in the first place, which is reduced risk.

In this paper, I discuss spread trading between two popular and liquid Eurex benchmark products, the Eurex Dow Jones EURO STOXX[®] 50 Index Futures (FESX) and the DAX[®] Futures (FDAX). As a brief introduction, the FESX is an equity index futures contract that is based on an index that tracks the 50 largest companies in the Eurozone, or countries that have adopted the euro. This index excludes companies from Switzerland, the United Kingdom and several others. DAX[®] Futures are based on Deutsche Börse's blue chip index that tracks the 30 largest German companies by market capitalization and order book volume. So, as you can see, while each index covers large cap equities, there are significant differences between them that can be impacted by sector, political or other issues. Speculating on how the prices of both index futures converge or diverge is the rationale behind the spread trade.

¹ Taking opposite positions in different calendar months of the same contract is called calendar spreading, which is not the main focus of this paper.

The chart below (Chart 1) illustrates the relationship between FESX and FDAX contracts. For the period of time that is reflected in this chart, the higher the overall spread price moves, the more the FESX outperforms the FDAX. As the spread price falls, the more the FESX underperforms the FDAX.

Chart 1: Relationship Between Dow Jones EURO STOXX 50® Index and DAX® Futures



Source: CQG, Inc. © 2009 All rights reserved worldwide. www.cqg.com Thu Oct 08 2009 20:52:44

If the trader is long the spread (long the FESX, short the FDAX), there are two ways in this scenario that a trader can profit:

- The FESX rallies more relative to the FDAX.
- The FESX drops less relative to the FDAX.

Remember, the spread relationship is what determines profit and loss in a spread trade. The absolute price of the index futures is irrelevant.

3. Benefits & Risks of Spread Trading

3.1 Risks of Spread Trading

Aside from the obvious risk of incorrectly speculating on the direction of the spread, there are other risks. One of the most common risks is “legging risk”. Legging risk means that while putting on one side (leg) of the spread, the price of the other leg moves away before you can execute it. The result is an undesired outright position. Traders often refer to this as being “hung” on a leg, or refer to it as “hang risk”.

However, thanks to advances in trading technology and development of spread functionality in front-end execution systems, traders seldom manually put on or take off spread trades one leg at a time. The spread trading functionality allows traders to mitigate legging risk.

To help avoid the problem of delayed entry into a second leg – or missing the leg altogether in extreme cases – many traders spend a great deal of time developing “pay-up tick logic” to help them work both orders in a market. A “pay up tick” means that a trader (or a trading system) agrees to pay up to a certain price for the second leg of a spread. The idea is the trader would rather have the complete spread at a slightly worse price than chase the second leg up to a higher price level – or miss the second leg, as is the case during economic releases or other volatile situations. Every spread carries with it different dynamics that affect the way a spread will act during major economic releases. These different dynamics can increase the chance of legging risk. So some traders will back away from these volatile events, while others view them as a chance for price discovery.

Most auto spreading programs (see Appendix C – Guide to Selecting Spread Trading Software) allow user defined and custom strategies to work both sides of the market. Traders should work the more illiquid side of the spread first, since this leg presents the greatest legging risk. In the case of an FESX/FDAX spread, the FDAX leg is typically the more illiquid leg and as a result, should be executed first. The FESX is a more liquid contract, and the likelihood that the leg will be filled is higher because of the greater market depth. Once the less liquid leg of the spread is executed, auto spreading programs will cover the other side of the spread based on the user defined instructions discussed earlier.

Later in the trading strategies section of the paper we will return to the discussion of risks of automated systems.

3.2 Benefits of Spread Trading

As we saw in the first example (Chart 1), the relationship between two legs of a spread and not the absolute price of the index futures determines whether a trade is profitable. So, you can see that spreading provides a means for traders to potentially make money whether the overall market is rising or falling, as long as the spread relationship moves in the “right” direction. If a trader feels, for example, the German economy will underperform the European economy, overall market direction becomes irrelevant. Spreading removes one element of a complex trading equation – overall market direction.

There are many potential rewards of spread trading. For example, traders have the ability to dampen volatility, track money flows, and identify relative strength relationships between two or more investment vehicles. Moreover, having to just focus on which components of the market are over/underperforming better fits some traders styles than having to speculate on the outright direction of the market. When traders create synthetic relationships to trade, it can give them a sharpened perspective to analyze market behavior. While past performance is never a guarantee of futures results, some spreads show a greater respect for technical or algorithmic criteria than the underlying market. As a result, the ability to find trading opportunities may increase.

An additional benefit of spread trading is reduced margin requirements, also known as Spread Margin, since positions are viewed by exchange clearing houses as partially hedged (the long position partially offsets the short position).

4. Step One: Identifying a Spread to Trade

Now that we have discussed the risks and rewards of spread trading, the first step is to identify a spread that suits your trading needs. There are a number of factors traders should consider when determining which spreads to trade. These important factors, described below, are liquidity, key trading hours, knowing the components of the underlying index, and the correlation between the products in the spread. Please note this paper limits itself to the discussion of equity index futures spreading. However, the basic concepts of spread trading described apply to all investment complexes.

4.1 Liquidity

Liquidity is a major factor in determining the effectiveness of a strategy and increases as multiple legs are added to build a position. The ability to get into and out of positions at a desired price is why finding markets like the FESX, in which daily volume averages between one and two million contracts, helps assure issues of slippage² are largely avoided.

4.2 Trading Hours/Liquidity Overlap

As with any trading strategy, being familiar with trading hours is very important – since spreading two markets may depend on overlapping trading hours or hours when greater or less liquidity is present. Depending on your strategy, illiquid hours may represent greater opportunity. One example of the importance of the trading hours is trading a European/U.S. spread.

For the FESX/FDAX spread, the futures open at 0:50 a.m. CDT³ (7:50 CET) and sync up with the European cash market at 2:00 a.m. CDT (9:00 CET). These first two hours generally are the focus of global trading activity taking place in European equity indexes like the DAX[®] and the Dow Jones EURO STOXX 50[®].

As equities approach the U.S. open, the focus and liquidity shifts to the U.S. time zone. From 8:30-10:30 CDT, there is still plenty of movement in the European markets, but leadership comes from U.S. equities. It is interesting to note that despite the leadership shift taking place, the trading volumes in the FDAX and FESX increase materially when compared to the European open.

Taking a six-week set of data from June 23 to July 30, 2009 of the Dow Jones EURO STOXX 50[®] Index, the first two hours of the cash European index open (2:00 a.m. CDT – 4:00 a.m. CDT) the FESX saw average hourly contract volumes of 81,222. Whereas the e-Mini S&P 500 Futures averaged 17,659 during that same two-hour time period. So, the majority of equity participation at this time took place in the FESX. However, at the beginning of the U.S. equity session, from 8:30 a.m. CDT to 10:30 a.m. CDT, despite the global focus shifting towards the U.S. equity markets, the FESX averaged 157,151 contracts traded per hour. This compares to 316,284 per hour for the e-Mini S&P 500 Futures.

Trading hours and liquidity is significant for multiple reasons. While traders may be focused on European/Eurozone spreads during European trading hours, opportunities for U.S./Europe spreads (and Europe/Asia and U.S./Asia) develop as the trading day shifts focus because of time zones. For those with a viewpoint on one market, whether it be U.S.-based or otherwise, these extra international spread opportunities are worth investigating.

4.3 Country/Sector Focus – Knowing the Components

When trading spreads, understanding the underlying components of the product is very important. In the case of the FESX/FDAX spread, we are dealing exclusively with European equity index markets. As previously mentioned, the DAX[®] is comprised solely of German equities, whereas the Dow Jones EURO STOXX 50[®] Index is made up of equities of the Eurozone countries⁴. This subtle, yet material, difference in the components means you should stay apprised of potential news, as well as what components are influencing the underlying performance of one index over the other.

An example of this took place in October 2008 with a takeover of Volkswagen (VOW) by Porsche. VOW makes up about five percent of the DAX[®] and 1.53 percent of the Dow Jones EURO STOXX 50[®]

² Slippage is the difference between estimated and actual transaction costs.

³ This is not the case for approximately three weeks in March when the start of Daylight Savings Time between Europe and the U.S. is not synchronized.

⁴ Please see appendix A for a detailed list of the components of each the Dow Jones EURO STOXX 50[®] Index and the DAX[®].

Index. This caused wild swings in the spread and illustrates the importance of being aware of the sectors and components involved.

4.4 Correlations

Spread trading takes on a certain arbitrage feel in most spread trading companies. The idea is that a correlation between two products that diverged will ultimately revert back to their historical mean. We know that history has proven to us this is not always the case. However, through the use of historical correlation it is possible to create a framework to assess future correlations of a spread.

The goal is to use the deviation in historical correlation as a tool to play a possible reversion to the historical mean of the spread. As we referenced earlier, higher historical correlations can mean less risky spread trading strategies.

5. Step Two: Determining Contract Size & Currency Conversions

Once a spread has been identified, the next step is to determine contract size. When determining contract size, the time frame used to evaluate a position can play a significant role. A common analysis tool is Average True Range". It is a popular and often standard indicator found in many charting packages that you can use it to get a sense of the natural range of the contract.

When looking to trade the FESX/FDAX spread, the average true range of the FDAX market from June 23 to July 30 was approximately 117 points, while the average true range of the FESX was approximately 58 points. This can give you a good indication of average moves during a given trading day, which can be helpful in determining profit targets and stop loss levels.

Another important consideration is determining a "spread ratio", or the number of contracts of each that you should trade as part of each leg. Multiply the daily range of your chosen products by their value in euros (contract multiplier), (the FDAX is 117 points x EUR 25 = EUR 2,925 versus 58 points times EUR 10 = EUR 580) we can see the proper contract ratio to trade would be approximately 5 FESX contracts for every 1 FDAX contract.

Determining the Spread Ratio:

| Contract | Daily Range x Value per Point = | Daily Range in EUR |
|-----------------|--|---------------------------|
| FDAX | 117 Pts EUR 25 | 2,925 |
| FESX | 58 Pts EUR 10 | 580 |

$2,925/580 = 5.04$ FESX contracts to 1 FDAX contract which will be rounded to 5 to 1. Please note that I round the spread ratio when trading small sizes. However, beware that if your trading sizes increase rounding may cause inaccuracies.

6. Step Three – Creating the Spread

6.1 Dual Factor and Multi-Factor Spreads

When creating your spread strategy, you need to determine how many legs will be involved in the spread. Dual factor spreads refer to spreads with two investment products. The FESX/FDAX spread is a dual factor spread. Spreads are generally characterized by an independent leg and a dependent leg. This means that the independent leg serves as the base for the price. In the case of the FESX/FDAX spread, our independent leg is the FESX leg and the dependent leg is the FDAX. So as this dual factor spread rises, the FESX is outperforming the FDAX on relative basis.

On the other hand multi-factor spreads involve more than two legs and consist of what is known as the body of the spread and its wings, also known as a butterfly. For example, if you thought the FESX were going to outperform a combination of markets such as the FTSE and S&P 500, the multi-factor spread strategy would be long the FESX, or the body of the spread, and short the S&P 500 and FTSE, which would comprise the two wings. Note that the normalization ratio for multi-factor spreads, understandably, becomes more complex as you add legs. In addition, integrating multiple international markets to your strategy adds currency risk.

6.2 Normalizing the Ratio between Two Markets

Normalization is the process of equalizing value between two investment products so that one can accurately ascertain the relative performance of those two components against each other. You will create a ratio of contracts, for example 1 x 3.2, which is also known as one spread unit.

When attempting to depict a relationship between two products for a spread trade and establishing a ratio, I must consider two dynamics. The first is the relationship between the two vehicles can be conveyed in terms of the net change, i.e. the difference in price between the products. For example, if you were short September Euro-Bund Futures and long December Euro-Bund Futures, you would have initiated a calendar spread. These products are the same except for their expiries, so no normalization needs to be done. In non-calendar spreads this is different.

An example of normalization arises when looking at the relationship between the FESX and the FDAX. The two products fit a number of criteria outlined earlier in the paper for determining what markets to spread trade such as high volatility, excellent liquidity, and a high correlation. However, the FESX/FDAX spread does require the creation of a synthetic or implied value to understand which market is outperforming the other.

Since the FDAX is trading at approximately twice the value of the FESX at the time this paper is being written (FDAX at 5,000 and FESX at 2,500), if we simply applied the net change method of computing the spread in the same manner as the first example, we would have a spread that would better depict the underlying performance of the FDAX and not portray the relative performance between these two products. An example of this is if the FDAX is down 100 points on the day from 5,000 to 4,900, or approximately two percent of 5,000, and the FESX is down 50 points from 2,500 to 2,450, which is also two percent of 2,500. The FESX/FDAX spread would increase by 50 points from $-2,500$ to $-2,450$ because the FESX lost 50 fewer points. This would misrepresent the relative strength relationship since both of the indexes lost two percent on the same day.

Under this scenario the spread should remain relatively unchanged.

Since the goal in creating a normalization ratio is to find an absolute value close to zero, any subsequent movement will give the trader the tools to properly assess the true relative strength. As with the case above, if you simply subtracted 2,500 (the value of the FESX) from 5,000 (the value of the FDAX), the result would be a $-2,500$. The price movements around this level would not accurately

convey the relative strength of these markets. Therefore, normalizing, or finding a computation to portray this relationship is critical in order to be able to clearly evaluate over or underperformance.

Normalizing the Spread:

| Symbol | Closing Price | Net Change | Percent Change: |
|--------|---------------|-------------|-----------------|
| FDAX: | 5,000 | -100 Points | -2.00 |
| FESX: | 2,500 | -50 Points | -2.00 |

The value of the spread in this scenario would go from 2,500 (value of FDAX minus the value of the FESX) to 2450 (the new values of FDAX minus FESX) if we only used a net change scenario. From this equation you can see the performance of the FDAX would be a dominant influence on the value of the spread.

7. Trading Strategies

7.1 Combining Structure and Strategy

As with every investment product, pricing anomalies and market dynamics exist that give astute traders opportunities to profit. Spread trading is no different, as a large number of techniques used in single leg trading can also be applied to the spread itself. Strategies such as mean reversion, trend following, and support and resistance can all be applied to a wide range of the Eurex-based spreads. Along with those strategies, spread-specific strategies exist as well, such as arbitrage, calendar spreads, inter-exchange, and future-spot (i.e. foreign exchange, stock, physical, gold).

There are also some structural notes to keep in mind when trading spreads, which may limit some of the strategies in spreads that you might find effective when trading a single product. These are related to the concerns discussed in the dealing with the risks of spread trading section. This structural component can also have a substantial impact in understanding the theoretical P and L of a strategy versus what is achievable in the real world. For example, issues such as sending off a high number of cancel/replace orders may be a vital part of some spread trading strategies. However, such actions can cause excessive message warnings, thereby resulting in large “technology surcharges” from exchanges and rendering the strategy not viable due to the structure of the marketplace.

Another issue is the theoretical price traded of a spread compared with the actual price traded of a spread. As most spread trading charting packages have to factor in both prices of the underlying products, there exists a chance that fills may not have happened at certain levels portrayed on the charts. Unlike trading of the underlying product, where an exact report of time and sales can give a systems tester a better idea of the liquidity at a price on the chart, synthetically created spread trade charts have limitations in this regard.

As electronic spread trading relies on the use of advanced trading platforms, the first strategy worth examining is scalping, which requires speed. The metrics behind scalping a synthetic spread like that of the FESX/FDAX are challenging. The necessity to execute two or more legs in a spread makes it difficult to get simultaneously filled on the bid for the long leg and the offer for the short leg. This puts tremendous importance on proximity solutions and trading in a low-latency structure, which are an active part of most proprietary or quantitative trading firms. The legs needed to create a spread introduce extra transactional risk that one may not normally find when just scalping the outright product.

While all traders can empathize with partial fills, there is an extra level of risk for the spreader who trades higher units of spreads as the sizing to achieve one unit of exposure is higher than if they were

simply trading the underlying market. For example, looking to go long one unit of the FESX/FDAX spread would entail working a buy order of 5 contracts for the FESX while simultaneously working a sell order for 1 FDAX contract. If you are working an order to buy five units of the spread, you are working a 25 lot buy of the FESX and a 5 lot sell of the FDAX. Depending what pay-up tick logic is in place on your front end, the hang risk from such a position may leave you exposed to a long or short market view which is substantially higher than your trading account is structured to handle.

On a personal note, the basis of my strategy is to put on trades that offer the best “risk-adjusted return” across a number of different products/markets. This typically entails identifying bullish or bearish sentiment in the market and providing liquidity on the side of the prevailing sentiment.

I couple this with cross-market correlation analysis, i.e. the relationship between equities, currencies, fixed income, energies, metals etc., which plays out nicely as a natural byproduct of executing spread trading strategies. As an example, a spread position of equity small caps versus large caps may give a better risk-adjusted return than just long the FESX as this trade may better reflect the risk appetite metric in play.

7.2 Fibonacci Levels & Spread Trading

As described above, I take an anticipatory approach to trading the markets and the use of Fibonacci levels helps me execute my strategy. I focus on key Fibonacci retracements, expansions, projections and symmetrical moves. I combine these to put together a price grid and decide where to provide liquidity on the side of the trend. The example below will provide a basic outline on how these tactics can help put you in a position to effectively spread trade the markets by tactically entering at key inflection points.

Chart 2: Daily FESX/FDAX Spread #1

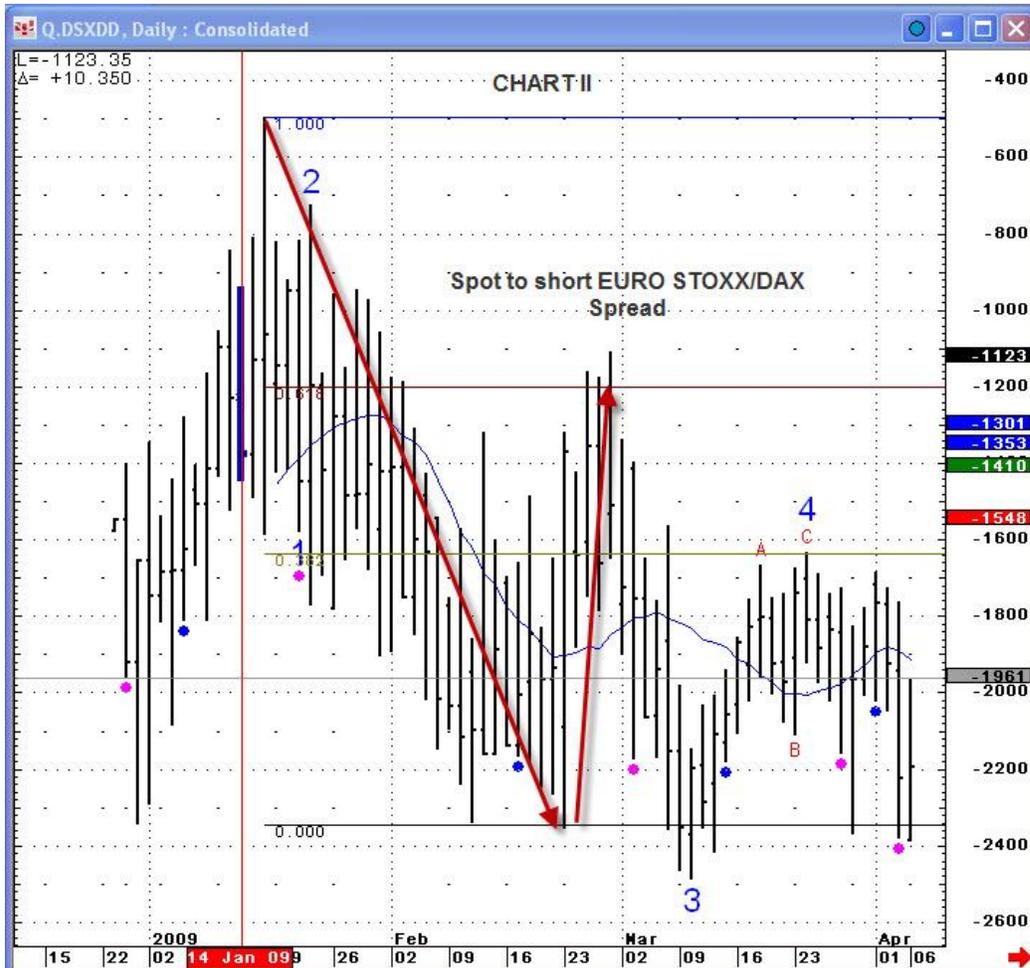
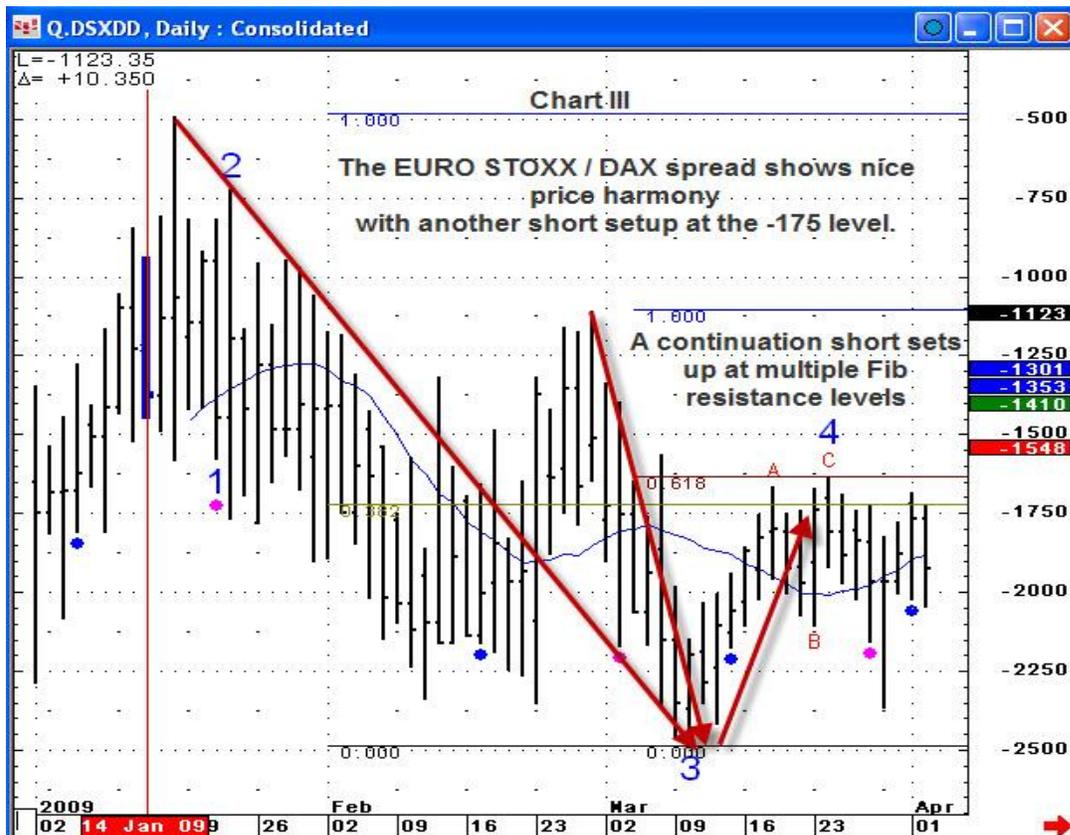


Chart 2 above shows an example of a daily chart between the FESX and the FDAX. It illustrates that in the early part of January, the spread was trading with a value of approximately -50.0 points, or 500 as it is depicted on the chart. The FESX then underperformed relative to the FDAX and sold down to approximately -237.0 in February. As my strategy for trading spreads has me sell bounces in a falling market, I will wait for key spots to enter shorts. After the spread sold down to -237.0 on both February 11 and 23, the FESX/FDAX bounced back to the Fibonacci 0.618 retracement of the entire move lower at -120.0 on February 25. It rallied as high as 112.0 or eight spread points past the key Fibonacci level before reversing back down to make new lows below the -240.0 mark on March 9. Chart 3 shows another example of a Fibonacci retracement.

These spots like the aforementioned 0.618 retracement provide a framework for where I like to enter and exit trades. This anticipatory approach defines my basis of my trading strategy as I like to provide liquidity on the side of the longer term trend, which in the case of this chart was down. With these levels, the stops placed by can be tight and have the potential to lead to bigger moves based on a longer term picture. I look to capitalize on these inflection levels as they can help dampen volatility and improve a trader's risk-to-reward ratio.

These strategies can be applied across multiple time frames. However, I take a top-down approach for my spread trading and first identify the sentiment in the underlying constituent markets and compare this to the trend in the spread itself.

Chart 3: Daily FESX/FDAX Spread #2



The first part of this section illustrated strategies on how to initiate a trade based on stacking Fibonacci ratios, as well as how to enter a position when a market is operating in a certain harmony and rhythm. The forthcoming example will show how using the relationship between the FESX and other global markets, such as the S & P 500 (“ES”), can provide some insight as to how a trader might take on a bullish or bearish viewpoint of the market in a more dynamic manner.

When coming into the trading day, I put my order book for the FESX and ES contract side-by-side and look at a longer-term spread chart simultaneously. Looking at the below normalized Chart 4 which shows the ES/FESX spread, a trader can see the ES is relatively stronger the FESX over this time period. This has material significance because if a trader wants to be short equities at this time, based on the underlying trend in place between the ES/FESX spread, it may make more sense for a trader to short the FESX and then cover the short position by buying the properly proportioned ES side.

Conversely, if the trader wants to be long the market, going long the ES and exiting the position by shorting the FESX may also provide a trader with the chance to generate extra alpha.

Chart 4: 30 Minute E-mini S&P 500/FDAX Spread



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8. Conclusion

This paper has covered many important issues in equity index spread trading. The aim of the paper has been to help you as a trader adjust the way you look to take on exposure by reducing factors like market risk and volatility while increasing profits. Spreads are a valuable strategy in helping to achieve these goals.

As with all trading strategies, learning by doing will help further engrain these concepts. I hope that this introduction and discussion of the key issues of spreading helps spur new strategies and ideas in our collective quest to continually improve as traders.

9. Appendix A – Components of the DAX[®] and the Dow Jones EURO STOXX 50[®] Index

9.1 Dow Jones EURO STOXX 50[®] Index⁵

| Components | Weighting | Bloomberg Code |
|------------------------|-----------|-----------------|
| AEGON | 0.5407 % | AGN NA Equity |
| AIR LIQUIDE | 1.3187 % | AI FP Equity |
| ALLIANZ | 2.3913 % | ALV GY Equity |
| ALSTOM | 0.6254 % | ALO FP Equity |
| ANHEUSER-BUSCH INBEV | 1.4209 % | MT NA Equity |
| ARCELORMITTAL | 1.4706 % | G IM Equity |
| ASSICURAZIONI GENERALI | 1.5499 % | CS FP Equity |
| AXA | 1.9302 % | BBVA SQ Equity |
| BASF | 2.3083 % | SAN SQ Equity |
| BAYER | 2.6557 % | BAS GY Equity |
| BCO BILBAO VIZCAYA | 3.0599 % | |
| ARGENTARIA | | BAY GY Equity |
| BCO SANTANDER | 5.9922 % | BNP FP Equity |
| BNP PARIBAS | 3.6432 % | CA FP Equity |
| CARREFOUR SUPERMARCHE | 1.2204 % | SGO FP Equity |
| CREDIT AGRICOLE | 1.0319 % | ACA FP Equity |
| CRH | 0.7811 % | DAI GY Equity |
| DAIMLER | 1.9578 % | DBK GY Equity |
| DANONE | 1.6447 % | DB1 GY Equity |
| DEUTSCHE BANK | 2.0065 % | DTE GY Equity |
| DEUTSCHE BOERSE | 0.7198 % | EOAN GY Equity |
| DEUTSCHE TELEKOM | 1.8240 % | ENEL IM Equity |
| E.ON | 3.4792 % | ENI IM Equity |
| ENEL | 1.7363 % | FORB BB Equity |
| ENI | 2.7055 % | FTE FP Equity |
| FRANCE TELECOM | 2.2423 % | GSZ FP Equity |
| GDF SUEZ | 2.5208 % | BN FP Equity |
| GRP SOCIETE GENERALE | 2.3791 % | IBE SQ Equity |
| IBERDROLA | 1.5975 % | INGA NA Equity |
| ING GRP | 1.3507 % | ISP IM Equity |
| INTESA SANPAOLO | 1.8124 % | PHIA NA Equity |
| L'OREAL | 1.1001 % | OR FP Equity |
| LVMH MOET HENNESSY | 1.2364 % | MC FP Equity |
| MUENCHENER RUECK | 1.3547 % | MUV2 GY Equity |
| NOKIA | 2.1912 % | NOK1V FH Equity |
| PHILIPS ELECTRONICS | 1.1454 % | RNO FP Equity |

⁵ Source: www.stoxx.com, November 2009

| | | |
|--------------------|----------|---------------|
| REPSOL YPF | 0.9500 % | REP SQ Equity |
| RWE | 1.6200 % | RWE GY Equity |
| SAINT GOBAIN | 1.0073 % | SAN FP Equity |
| SANOFI-AVENTIS | 3.4332 % | SAP GY Equity |
| SAP | 1.8173 % | SU FP Equity |
| SCHNEIDER ELECTRIC | 1.2412 % | SIE GY Equity |
| SIEMENS | 3.3198 % | GLE FP Equity |
| TELECOM ITALIA | 0.7364 % | TIT IM Equity |
| TELFONICA | 4.9713 % | TEF SQ Equity |
| TOTAL | 6.1202 % | FP Equity |
| UNICREDIT | 2.5514 % | UCG IM Equity |
| UNILEVER NV | 2.0877 % | UNA NA Equity |
| VINCI | 1.2669 % | DG FP Equity |
| VIVENDI | 1.5426 % | VIV FP Equity |
| VOLKSWAGEN | 0.3899 % | VOW GY Equity |

9.2 DAX^{®6}

| Companies | Weightings | Bloomberg Code |
|---------------------------|------------|----------------|
| ADIDAS AG O.N. | 1.41% | ADS GY Equity |
| ALLIANZ SE VNA O.N. | 7.55% | ALV GY Equity |
| BASF SE O.N. | 7.33% | BAS GY Equity |
| BAY.MOTOREN WERKE AG ST | 2.15% | BAY GY Equity |
| BAYER AG NA | 8.44% | BMW GY Equity |
| BEIERSDORF AG O.N. | 0.85% | BEI GY Equity |
| COMMERZBANK AG O.N. | 1.07% | CBK GY Equity |
| DAIMLER AG NA O.N. | 5.96% | DAI GY Equity |
| DEUTSCHE BANK AG NA O.N. | 6.35% | DBK GY Equity |
| DEUTSCHE BOERSE NA O.N. | 2.18% | DB1 GY Equity |
| DEUTSCHE POST AG NA O.N. | 2.13% | LHA GY Equity |
| DT.TELEKOM AG NA | 5.80% | DPW GY Equity |
| E.ON AG NA | 9.52% | DTE GY Equity |
| FRESEN.MED.CARE KGAA ST | 1.35% | EOAN GY Equity |
| FRESENIUS SE VZ O.ST O.N. | 0.73% | FME GY Equity |
| HENKEL AG+CO.KGAA VZO | 1.17% | FRE3 GY Equity |
| INFINEON TECH.AG NA O.N. | 0.75% | HNR1 GY Equity |
| K+S AG O.N. | 0.95% | HEN3 GY Equity |
| LINDE AG O.N. | 2.66% | SDF GY Equity |
| LUFTHANSA AG VNA O.N. | 1.02% | LIN GY Equity |
| MAN SE ST O.N. | 1.19% | MAN GY Equity |

⁶ Source: Deutsche Börse, Daily Weighting File DAX®, November 11, 2009

| | | |
|---------------------------|-------|----------------|
| MERCK KGAA O.N. | 0.87% | MRK GY Equity |
| METRO AG ST O.N. | 0.96% | MEO GY Equity |
| MUENCH.RUECKVERS.VNA O.N. | 4.26% | MUV2 GY Equity |
| RWE AG ST O.N. | 5.18% | RWE GY Equity |
| SALZGITTER AG O.N. | 0.49% | SZG GY Equity |
| SAP AG O.N. | 5.53% | SAP GY Equity |
| SIEMENS AG NA | 9.65% | SIE GY Equity |
| THYSSENKRUPP AG O.N. | 1.60% | TKA GY Equity |
| VOLKSWAGEN AG ST O.N. | 0.90% | VOW GY Equity |

10. Appendix C – Guide to Selecting Spread Trading Software –

10.1 Charting Spreads

When looking at spread trading software and how it charts spreads, the charting functionality can be of particular importance for discretionary point-and-click traders, black box traders who use pattern recognition software in finding trade setups, as well as traders who want a graphic depiction of how two or more markets are performing against each other. So, when looking at a charting package, test out how well it displays the spreads you want to trade, how far back the historical data goes, as well as what pricing algorithm it uses to create the real time data. Does it use the last price of both legs, the best bids or the best offers? It's also important to understand how the charts are depicted. Some packages may only show the spreads via a line chart while others may give you options of candlesticks, bar charts, and line charts.

10.2 Order Creation Capability

As important as charting a synthetic spread is, setting up the proper parameters to trade it is equally as important. As discussed earlier, whether it is a dual factor or multi-factor spread, ensure the software you are using allows you to create multiple leg spreads, customize which legs you want to actively work, and how those orders can be worked.

When creating the order parameters for equity index spreads, research factors such as contract amounts, pay-up tick logic to alleviate legging risk, and order preferences in terms of messaging. Most auto spreading programs have a demo version that allows end-users to familiarize themselves with the functionality of working orders on spreads. It is advised that traders go through this before trading with real money. This allows you to learn the nuances behind synthetic spreads on the front-end.

10.3 Position Management

Position management functionality should be able to price the spread in the fill section based on your spread price and show the price of each leg. Being that a spread has at least two legs, the process of determining the price of entry or exit can be a best guess process if this functionality isn't in the software. It is important to have this degree of detail as it can help tremendously in not only the accounting process, but real time management of the trade.

10.4 Platform Stability

It is always worth reminding ourselves how important platform stability is to an electronic trader. As the race for better technology reaches new heights, having a system that can hold up in the most extreme market conditions can have a huge impact on one's profit and loss. Many times during volatile market conditions a platform suffers from latency in orders, delayed data on charts, or the inability to effectively do either. Depending on the strategy and situation, traders may want to consider using two platforms. The first platform would serve as a primary trading setup, while the other can act as a reliable backup. This natural redundant system adds another layer of risk management and opportunity for price discovery in the event the primary system goes down.

10.5 Functionality and Ease of Order Interface

The ability to place entries and exits on the front-end is clearly an important attribute. In fast markets, the ability to effortlessly place, manage, and account for spreads is key. Test the functionality of the order interface and ensure it allows you to work multiple spreads and efficiently uses the space on your screen to manage those spreads. For example, you may wish to work an FESX/FDAX spread while working five other spreads involving those same components. Having software that allows you to manage these spreads and easily adjust them based on fluid market conditions is critical.

10.6 Price

As of this writing, a cost of between USD 1800 and USD2500 a month is what one can look at spending for a one-user license to a number of spreading software applications. This is usually inclusive of variable costs like co-location fees, server maintenance, and additional features added to the platform. These software packages are priced for the high-end professional trader and every person needs to consider the value each platform provides.

Other spread trading software packages can run considerably higher but also carry with them different functionality and service so it's important each trader weigh the benefits of each program and make the decision which best suits their needs.

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