EQUITY INDEX

# Sink your FANGs into E-mini NASDAQ-100 Futures

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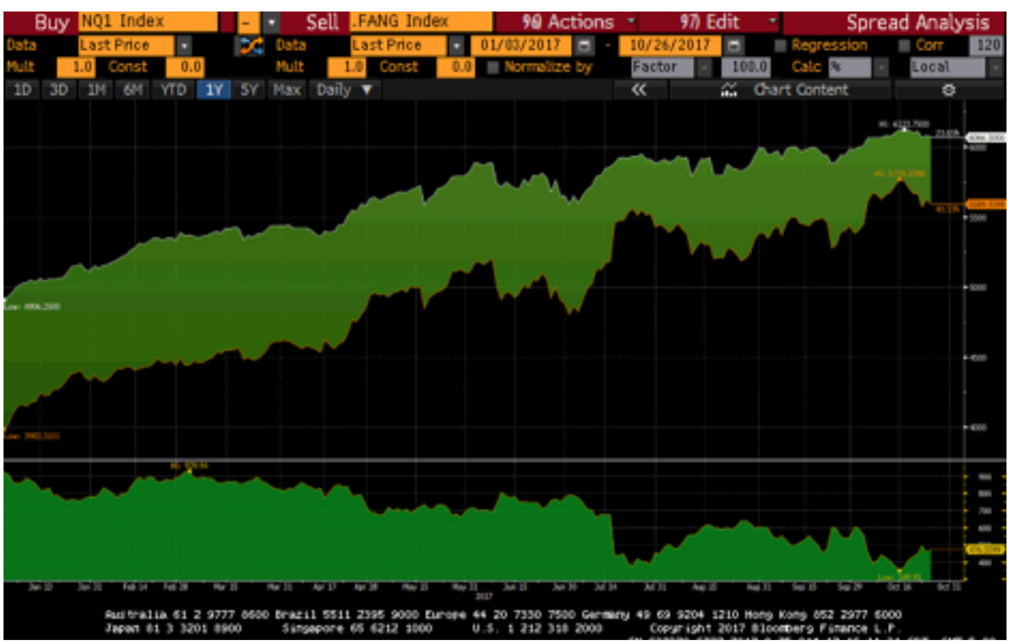
Facebook, Amazon, Netflix and Alphabet (Google), collectively the "FANG" stocks, have become the face of the technology rally that has propelled the Nasdaq index to record highs, as evidenced by the amount of coverage given to them in the major financial press outlets. In this paper, we examine the cost differences, for an individual trader trading through a large brokerage firm, of using CME Group E-mini NASDAQ-100 futures as a proxy to trading these individual names.

## Assumptions

- Individual traders "cross the market" or buy the offer and sell the bid
- Commission and margin rates are an average of those published on the websites of three large brokerage firms, as measured by volume of CME Group business, that offer both equities and futures
- Share quantities used are intended to provide similar P&L moves given a 1% price move
- Bid/Offers were randomly selected during normal market conditions
- A basket of the FANG stock, comprising of roughly equal value in each, is the target portfolio. In the ensuing example, 150 shares each of FB and NFLX, and 30 shares each of AMZN and GOOG are assumed. The total value of the portfolio is set to approximate that of a single E-mini NASDAQ-100 futures (~$100k)
- Broker capital requirement equals the minimum allowed per "Reg T" of 50%

## Correlation?

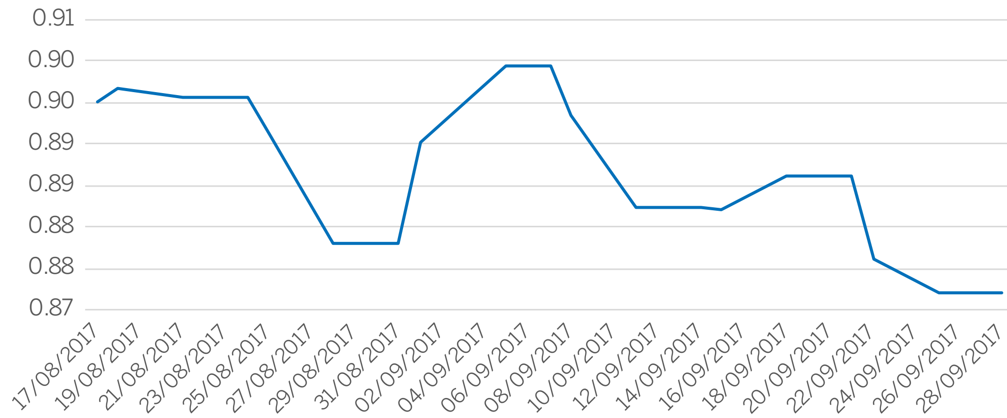
First, to demonstrate that the exposure each position provides is similar, we ran a correlation study comparing the FANG basket to the futures position using the Bloomberg comparison function. As you can see from the graph below, the Nasdaq futures position provides an extremely effective proxy to the basket of stocks:




Source: Bloomberg

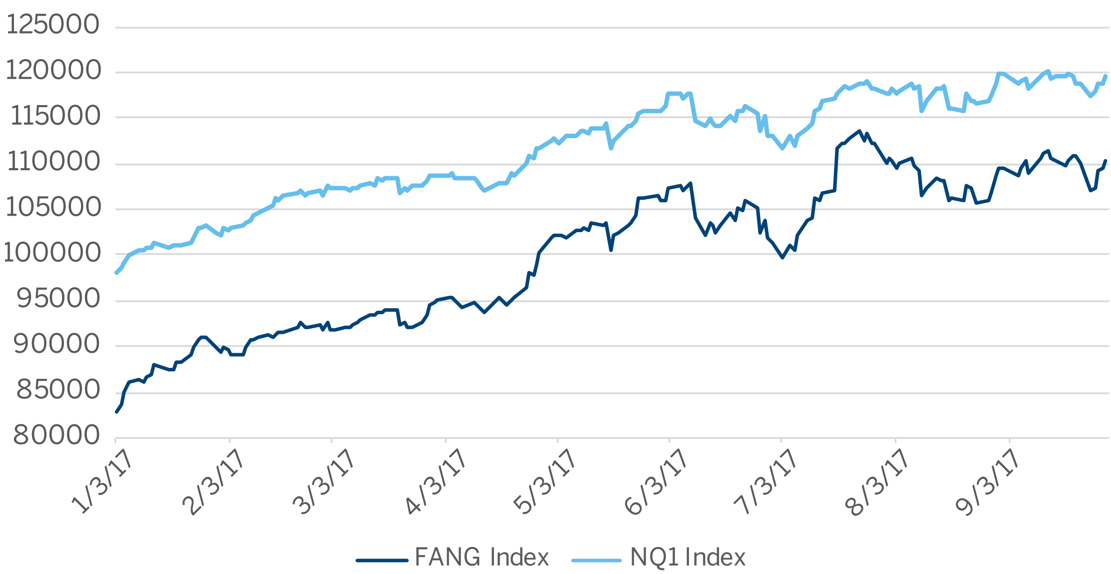
Based on the customized Fang index portfolio with 150 shares of FB, 150 NFLX, 30 AMZN and 30 GOOG, we ran its correlation with E-mini Nasdaq future (NQ1) from 17th Aug to 28th Sep 2017. The average correlation is around 0.89.

**100-day realized Correlation between FANG Basket and Nasdaq Futures**




Also from the market value comparison of FANG basket and Nasdaq futures, we can see they are closely correlated and follow the same trend.

**Comparison of YTD Market Value for FANG Basket & Nasdaq futures**




Now that we've established the correlation and demonstrated that the E-mini NASDAQ-100 futures can be an effective proxy for the basket of stocks, in the next section we will examine the cost comparison of initiating both positions.

## Execution Costs

### Liquidity

The first cost we'll examine is directly related to liquidity. The tighter the bid/offer spread is, or closer that the offer is to the bid, determines how efficient the execution of the trade is.

| QTY | Product | Current Bid* | Current Offer* | Spread Cost | Total Cost |
|---|---|---|---|---|---|
| 150 | FB | $ 170.86 | $ 170.93 | $ 10.50 | $ 63.30 |
| 150 | NFLX | $ 195.12 | $ 195.21 | $ 13.50 | |
| 30 | AMZN | $ 975.68 | $ 976.33 | $ 19.50 | |
| 30 | GOOG | $ 969.63 | $ 970.29 | $ 19.80 | |
| 1 | NQ | 6,061.00 | 6,061.25 | $ 5.00 | $ 5.00 |

* Bids and Offers for equities from Real-time quotes using E*Trade Trading Platform 10:45 Eastern Time, 10/25; Bids and Offers for NQ from CME Direct platform at the same time.

As you can see, given the quantities and number of trades required to initiate this position, the execution costs are far greater using the individual stocks than they are for the futures position.

### Commissions

Next, we'll look at the commission costs incurred to execute both trades including both exchange and brokerage costs.

| QTY | Product | Commission | Total |
|---|---|---|---|
| 150 | FB | $ 4.32 | $ 17.28 |
| 150 | NFLX | $ 4.32 | |
| 30 | AMZN | $ 4.32 | |
| 30 | GOOG | $ 4.32 | |
| 1 | NQ | $ 2.72 | $ 2.72 |

Again, you can see the execution costs attributed to commissions can be substantially higher on the stock trade.

### Capital Costs

In analyzing capital costs, we'll first look at the total capital required to hold both the equity and futures positons:

| FANG | QTY | Product | Capital Requirement | Total Capital | Reg T Requirement |
|---|---|---|---|---|---|
| Buy (FANG) | 150 | FB | $ 25,639.50 | $ 113,319.60 | $ 56,659.80 |
| | 150 | NFLX | $ 29,281.50 | | |
| | 30 | AMZN | $ 29,289.90 | | |
| | 30 | GOOG | $ 29,108.70 | | |
| Buy | 1 | NQ | $ 4,200.00 | $ 4,200.00 | N/A |

To hold the position as defined above, the total capital required exceeds $100,000. Reg T requirements, which define the amount of margin required in a standard margin account, is 50% of the total capital, so a margin enabled account must have at least $56,659.80 in cash to even hold this position. The capital required[1] to hold the futures position is approximately $4,200. Clearly, it is an order of magnitude smaller than the requirement for a stock portfolio.

### Interest Costs

A discussion of interest cost necessarily means that the position will be housed in a taxable account [2], in which leverage is permitted.

In this section, we'll analyze the potential interest costs associated with holding the position. Obviously, a fully funded equity account (an account that has cash balances that cover the entire capital requirement and, thus, do not require margin borrowing) will not incur interest costs. Additionally, the amount of interest paid in an account that does borrow on margin will incur costs based on the amount borrowed and the number of days the position is held. Below, we look at a few different scenarios.

| Acct Value | Days Held | Interest Cost |
|---|---|---|
| $60,000 | 1 | $3.94 |
| $60,000 | 5 | $19.70 |
| $75,000 | 1 | $2.39 |
| $75,000 | 5 | $11.95 |
| $100,000 | 1 | $0.54 |
| $100,000 | 5 | $2.72 |
| $125,000 | n/a | $0.00 |

* interest rate applied 2.66%

1 This is the minimum requirement imposed by CME Clearing and is subject to change from time to time. A broker can require a larger amount.

2 In the U.S., leverage is generally not allowed in non-taxable account, such as IRAs. Margin loans and/or futures trading are not applicable. As such, the comparison assumes a taxable account in the U.S. Investors should seek their own advice in relation to tax.

Unlike deploying leverage with a stock portfolio, the financing cost for using a futures contract is embedded in the price of the futures itself. Typically, E-mini NASDAQ-100 futures trade at an implied financing rate around 3-month LIBOR, applied to the entire value of the position. Note that this cost manifests itself as a premium of futures price vs spot index value. As time elapses, the premium shrinks to zero. Thus, it is not an out-of-pocket cost but it is embedded in the P/L and no separate accounting is required.

As of October 25, 2017, the implied financing rate is approximately 1.51%. Thus, the financing cost is around $5.08 per day for a single E-mini NASDAQ-100 future. However, cash on deposit also earns interest. We assume interest can be earned at 3-month LIBOR rate of 1.33%. As such, the net financing cost is lower. For the scenario above, the net financing cost are detailed in the table.

| Acct Value | Days Held | Interest Cost |
|---|---|---|
| $60,000 | 1 | $2.87 |
| $60,000 | 5 | $14.34 |
| $75,000 | 1 | $2.31 |
| $75,000 | 5 | $11.57 |
| $100,000 | 1 | $1.39 |
| $100,000 | 5 | $6.95 |
| $125,000 | 1 | $0.47 |

**Cost Summary**

| | | | Interest Cost | | Total Cost | |
|---|---|---|---|---|---|---|
| Position | Execution Cost | Commission Cost | Low | High* | Low | High* |
| FANG | $ 63.30 | $ 17.28 | $ - | $ 19.70 | $ 80.58 | $ 100.28 |
| E-mini Nasdaq-100 | $ 5.00 | $ 2.72 | $ 0.47 | $ 14.34 | $ 8.19 | $ 22.06 |

*High assumes a $55,000 account value and held for 5 days

## Conclusion

### Cost Efficiencies

As can be seen in the cost summary, it is possible for the E-mini NASDAQ-100 futures position to provide significant capital efficiencies. In light of our assumptions, it is significantly more cost efficient to execute the single futures trade relative to the four executions inherent in establishing the FANG position.

### Tax/Record Keeping Advantage for US traders:

In some instances, and in some jurisdictions, futures positions may have certain tax efficiencies relative to cash equities positions.

### Using E-mini NASDAQ-100 futures and FANG portfolio together:

Given the high degree of correlation we established earlier in the paper, the Nasdaq future can also serve as an effective hedge for an established position in the FANG stocks that could mitigate event or earnings risk if one wanted to continue holding the equity position through inherently more volatile periods.

Finally, E-mini NASDAQ-100 futures has a complete "ecosystem" of ancillary tools. There is a dense expiration set of options on E-mini NASDAQ-100 – one expiration every Friday, with ample of liquidity for creating any kind of options strategy overlay for the FANG position.

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