GREENHAVEN ROAD CAPITAL

July 21, 2015

Dear Limited Partners,

We were fortunate to have another strong quarter of performance on both a relative and absolute basis. The fund is up 13.7% YTD vs. overall markets that have effectively languished year to date. As always, please view these results through the lens that short-term outperformance and underperformance is effectively random. If I told you we outperformed on any given day, you would shrug and say "so what?" That should be the reaction to any given quarter and even year. There is no attempt being made to beat a specific index or eliminate volatility. I am just trying to find the best investments I can and hold on as long as possible. My goal is to outperform your non Greenhaven Road investment alternatives such as cash and ETFs – not every single day, week, month, quarter, or year – but over a multiyear time period. As the investor John Paulson once said, "Our goal is not to outperform all of the time – that is not possible –we want to outperform over time." For the investing legends who have actually accomplished this feat, the path was rarely smooth. For example, Charlie Munger underperformed the market by 37% between 1972 and 1974. If one were to view his performance only through that two-year period, you would question his competence and decision to leave his law practice. However, the same partnership that underperformed the market from 1972-1974 outperformed the market by almost 18% a year over the full 14 years of the partnership, an astounding accomplishment.

I continue to believe that our small size, long-term orientation, and stable capital provide advantages that will play out over time. In fact, when you compare the cumulative results of Greenhaven Road to the S&P 500 over the four-and-a-half-years of the fund, the results are quite favorable. After all fees and expenses, Greenhaven Road has compounded capital at just under 19% per year vs. just over 14% for the S&P 500, and just over 4% for the Barclays Hedge Fund Index. This is meaningful because of the power of compounding. The small differences year after year add up. The exact magnitude of 5%, 10%, or 15% of outperformance per year depends on the number that is being outperformed, but a reasonable rule of thumb is that an incremental 5% a year over a 30-year period will lead to four times as much money. Simply put, instead of having say $5M at the end of 30 years, if you got an extra 5% per year, you would end with $20M. In the event of 10% outperformance, the results are even more stark, leading to in excess of 15 times as much money at the end of 30 years. That base case $5M would be $75M in a scenario of 10% outperformance.

One of the drivers of outperformance in the quarter was Rally Software, which I profiled in some detail in the second quarter 2014 letter. The initial investment effectively doubled over the course of a year. A phenomenal investment. However, to me, the performance is less interesting than the reception the investment thesis received. As an opportunistic investor, I look high and low for ideas to invest in. One of the places that has been a fruitful source of leads over the years has been online investment forums such as Value Investors Club and Sum Zero. These are curated communities of "professional" investors where fellow members are allowed to ask questions and rate each other's ideas. To have access to the flow of ideas, members must contribute ideas annually. Since Rally Software had not appeared in any value forum that I was aware of, I wrote up the investment thesis for the Sum Zero community to maintain my access. Let's just say the Sum Zero community was not overwhelmed by the brilliance of my Rally Software analysis. In fact, my write up was ranked in the bottom 20% for expected performance among all ideas submitted. To be fair, my write-up was shorter than many because I am trying to find great investments, not write the longest and most detailed write-ups. However the community is also not limited to Warren Buffett, Charlie Munger, Bruce Berkowitz, and Monish Pabrai: a community where I would clearly be in the bottom 20%. The low rating serves as a reminder that my investing style is often not well received by the larger investment community. I am not going to win a lot of beauty or popularity contests. In a world filled with social media, blogs, and talking heads, there is a short term tyranny of the articulate. Those who can speak the most clearly and string together the most advanced arguments in the simplest terms are deemed the "winners." The articulate get the most "likes," "re-tweets," "favorites," and are voted the highest expected returns. Is there a connection between short-term popularity and long-term performance? I am skeptical. The data suggests that I am clearly going to lose the short-term battle of the articulate, but if investment performance holds up, the long-term war for performance appears winnable, and that is all I really care about.

LET THEM USE INDEX FUNDS - THE CASE FOR SELECTIVE MANAGEMENT

Can we continue to outperform? Can we continue to beat index funds? I keep coming back to this issue, so clearly it haunts me on some level. Have we just been lucky? We will certainly have our down periods (quarters and years) at some point. The conventional wisdom is that index funds and ETFs are unbeatable. Active management is dead. The low fee structure of an index fund is insurmountable. But what is an index? Murray Stahl continues to put out really interesting research addressing these questions and others that I wrestle with, but with far more depth. This month, Murray delved into the existential question of what is in an index fund? (http://www.horizonkinetics.com/docs/InternationalDiversification_June2015.pdf) He points out that financial planners who want their clients to diversify in a low-cost way will often recommend that their clients own primarily U.S. domestic equities through something like the S&P 500 with a sprinkling of international through MSCI EAFE Index. This seems like a reasonable and prudent plan. It can even sound scientific if you recommend a portfolio with precise allocations such as 70% equities - with 73% domestic equities (S&P 500) and 27% international (MSCI EAFE). It can be back tested and can lead to fancy charts and a sense of certainty for the investor/client. Unfortunately, businesses and groupings are not as clear as they may appear. When you dig into the S&P500 as Murray has done, of the top 50 companies in the S&P 500, a full 44% of revenue is in fact from overseas and not from the US. When you dig into the "International" companies in the MSCI EAFE index, it turns out that 30% of their revenue is from the U.S. In addition to the buckets not being as neat as one would hope for, it turns out it is really hard to know what you own or why you own it when you own 500 of anything.

I cannot run a four-minute mile (or a five-minute mile), I am terrible at the piano, and all indications are that I would be terrible at organic chemistry. However, finding 15 companies that can outperform a blob that comprises an index fund? I have hope. Particularly when the index is constructed in a very crude manner that ignores even the most basic indicators of quality.

The S&P and Russell are both "float weighted" which, I would argue is a very poor selection criteria for finding the best investments. I understand why they do it, but "float weighted" means 2 things, both of which are clear negatives for investors. First, float is not based on the total amount of shares in a company, but rather the amount of shares that are available for public trading. Essentially if a large portion of a company is tightly controlled by the founder or management team, that company will be a smaller part of the index. Second, all things equal, if a company is more expensive, it will be a larger part of the index because float is the number of shares available for trading multiplied by their price. Other indices are capitalization weighted, where bigger is better which has its own short comings. Fortunately, in the Greenhaven Road partnership, we are not constrained by size and we can choose to only invest in higher quality companies with a set of particular attributes. We can be "active managers" and seek out the very companies that the indexes deliberately exclude: those with strongly incentivized management teams trading at cheap prices. However, I think the term "active managers" inaccurately describes our aspirations. We want to be low turnover, holding for years, or essentially inactive once we have identified securities that maximize our chances of success. What we really want to be is selective. Not a term thrown around often – but selective management is our aspiration. We want to know what we own and why we own it. We want to select companies for specific attributes that are most likely to lead to value creation and share price appreciation. While few companies will have all of the following attributes, I believe over time companies with a combination of the following attributes will outperform the average company and index.

Insider Ownership: Why is insider ownership at the top of the list? Because insider ownership can bring along so many potential benefits. At a minimum there is typically an alignment of incentives. The same way I expect you to sleep better knowing that I have essentially all of my investable resources invested in Greenhaven Road, I sleep better knowing there is high insider ownership in many of the companies that we own. High insider ownership also often comes with excellent capital allocation skills – the insiders have managed to build a valuable company without giving away the equity. Think about the incentives if you own $200M in stock and are the CEO. Are you focusing on your performance bonus that can be gamed quarter to quarter? Or are you focusing on growing the business in the right way for long-term value? I would argue the latter. High insider ownership aligns with our long investing time horizon.

Reasonable Valuation/Asymmetric Risk Reward: While not religious about what constitutes value (ie. a low P/E, a high free cash flow yield, a discount to book value etc.), like the US Supreme Court's definition of pornography, I would like to think I know it when I see it. In terms of asymmetric risk/reward, we are looking for situations with downside protection (lose a little) and substantial upside (double our money in a couple of years).

Variant Perception: Many of the most rewarding investments emerge from situations where most market participants are focused on "noise" that is not really critical to the business. This can manifest itself in several ways, such as growth investors panicking when revenue slows while they fail to appreciate underlying cash flows. It can also happen when complicated GAAP accounting obfuscates the true health of a business. A variant perception can take many forms, but is very hard to form for an individual company, and I would argue virtually impossible to form for an index.

Scalable Business Model: Companies such as asset managers and software firms can generally add customers with very low incremental costs. When coupled with large un-penetrated markets and strong growth prospects, this can create a very attractive investment with asymmetric economics. The potential to scale is more important than having achieved scale, which is what size weighted indexes are capturing.

Growing Market: An expanding marketplace can compensate for management and product weakness.

Recurring Revenue: A long tail business where existing customers provide a steady source of future revenue is just an easier business to manage and grow. These businesses are more forgiving as the existing base is a source of stability and predictable revenue that can fund future growth.

Customer Value Proposition: There are a lot of ways to make money in the short term that are at the expense of the customer. A simple example would be websites that are built to monetize traffic when a real website name is misspelled. There are businesses such as casinos where there can be a debate about the value proposition to their customers – but they are certainly not no-brainers. A strong value proposition for customers tends to lead to recurring revenue and many ancillary benefits that compound over time. Product matters.

None of these attributes listed above determine if a stock is in the typical index which are myopically focused on float, size and/or industry. This lack of selectivity by the indexes just has to create opportunities. Fortunately to date the variance has been so large that for Greenhaven Road, "selective management" has significantly overcome a non-trivial incentive fee. For your friends, you may want to clue them into the opportunities afforded by selective management using intelligent criteria. For your acquaintances and enemies, let them keep buying the market blindly as it will only create opportunities for us.

TOP 5 HOLDINGS

One theme that has driven several investments over the last couple of years is **Software is Eating the World**. In the technology investing world, this idea was popularized by Marc Andreessen, the founder of Netscape and the venture capital firm Andreessen Horowitz. The core of the Software is Eating the World thesis is that software is permeating our world and creating opportunities for the disruptors. A very obvious example would be of stock trading, where 40 years ago a transaction that took several people passing orders to the floor of an exchange can now be handled from beginning to end through software. Software is throughout the automobile – used not only extensively in the design and testing, but also in the mechanics of the automobile down to anti-lock brakes. Software is Eating the world was one of the factors in both of our investments this past quarter (Interactive Brokers and Halogen Software, discussed later in detail), as well as Rally Software, which is software for creating software (software squared) and Radisys, which is part of software replacing hardware in the telecom ecosystem. I mention this concept as I find it a helpful lens to view the world and investment opportunities through. We are not becoming a software fund, there will still be opportunities in real estate like Howard Hughes, and spinoffs, and mispriced high quality companies. Quite frankly, given the age and orientation of most of our limited partners, I suspect this is a theme many of you have not thought about, and I wanted to just highlight it briefly.

Careful readers will notice that ChipMos holdings is not in the top five holdings at the end of the quarter. The fund currently still owns ChipMos and has not made any additions or subtractions to the position; it found itself out of the top five as a function of poor relative performance with the chip complex selling off and a relatively weak short term revenue outlook. The company is selling at a roughly 25% discount to its cash and Taiwan 8150 holdings, with a newly announced buyback and pursuit of a long-term corporate structure simplification (buyout of our shares by Taiwan 8150 holders) underway. Furthermore, there are modest tailwinds for the company with increased component usage in TVs and smartphones. We will continue to hold our position at least for the intermediate term.

Company	Ticker	Description/Thesis
Fiat Chrysler	FCA (BIT)	An auto manufacturer undergoing a turnaround and an expansion led by a world class CEO with strong capital allocation skills. The company has a robust product lineup including model refreshes and line extensions. There is an upcoming spinoff of Ferrari and a longer term opportunity to reduce borrowing costs as Chrysler debt is repaid which "ring fences" Chrysler cash.
Fortress Investment Group	FIG	The share price is more volatile than the underlying business. There is downside protection with more than $3 per share in cash and investments and a strong alignment of management interests with common shareholders because management owns more than 50% of the common shares. There is also significant upside from performance fees on the $70B+ in assets under management. The company's move towards raising "permanent" capital through publicly listed vehilces is a very positive development as it elimanates the need to return fee generating capital at the end of a funds life. Fortress listed an infrastructure fund in the quarter raising over $350M.
Interactive Brokers	IBRK	The letter contains a detailed writeup on this low cost provider with industry leading margins, room for price increases, growing customer base, and attractive industry dynamics
American International Group Equity and TARP Warrants	AIG	A leading insurance firm trading at 70% of a growing book value. If the company is able to continue to grow book value and the discount to book value diminishes with the passage of time this has the potential for a multi-bagger return without heroic execution required. The company sold its remaining stake in the Asian life insurer AIA and is in the majority of its airline leasing business. The net result is an overcapitalized company with the ability to further reduce debt, pay dividends, and repurchase shares significantly below book value. The warrants are long dated expiring in 2021 and "in the money" representing an attractive risk/reward as the company grows book value and recieves improved valuation metrics creeping back to book value.
RIB Software	RSTA (DE)	An underfollowed German software firm focused on commercial real estate construction. The firm has a very high value proposition for clients reducing both construction time as well as costs. The company has a strong base of recurring revenues and a history of profitable growth. While growth and returns will likely be very lumpy, this company has the potential to be a "multi bagger".

We did exit a position in the quarter: Vectrus. This was a defense contractor spinoff. The core reason we bought the stock was a variant perception around management incentives. During the spinoff process, management's stock options had not been priced. There was thus an incentive to downplay the revenue pipeline and keep the stock price low until the options were priced. This played out, and with their options priced nice and low management ceased talking down their own pipeline and the stock rallied. We earned a nice return in a short period of time, however, we were then stuck with an ok business in an ok industry with ok management. While I hate paying short-term capital gains taxes, our thesis had largely played out, and any "edge" that we had was long gone.

THE SHORT SIDE

The short side remained an area with limited activity focused primarily on indices. We closed a small short position in a consumer packaged goods company with a small profit. We also closed a small position in an "organic" super market chain for a small profit. We initiated a small short position in an oil and gas "fracker" that has proven modestly profitable to date. We also initiated a short position in a telecom services company that I first looked at shorting in 2008. The company recently lost a contract representing the majority of revenue, and the risk reward finally became attractive enough. The individual company short positions remain very small, with no single short position being larger than 2% of the overall portfolio.

AUGUST 1st SUBSCRIPTIONS CLOSED – SEPTEMBER 1st OPEN

Fortunately Greenhaven Road's investment approach, process, and results have continued to attract new investors to the partnership this year from as far away as South Africa and Uruguay to as close as Scarsdale, NY (five miles from my house). Given the fee structure where I assume operating expenses, the only way I make any money is when your returns are greater than 6% a year there are no benefits to stockpiling cash. As I indicated in the last letter, I want to limit new subscriptions in the fund to 10% or less in any given month unless there is a major dislocation in the capital markets. Given the commitments to date for August 1st and our current cash levels, the next available opening for capital will be for September 1st. Please let me know if you have a desire to add any funds to the partnership.

INVESTING THROUGH FIDELITY

Several LPs have come through Interactive Brokers and Millennium Trust for retirement accounts, these are niche platforms. While not finalized, it looks like investments of IRA funds and possibly taxable accounts will be available through Fidelity in the near future. If this is of interest to you, please reach out directly.

OUTLOOK

As I write this letter, the news cycle is filled with Greece and the country's future within the Euro. When attention on Greece dies down, the talking heads focus on a Chinese market that has largely retraced its hyperbolic year to date appreciation and label it a "crash." With my long bias I would love for the markets I invest in to "crash" and still be up 90% in the past 12 months, like the China market commentators are worrying about. I understand that newspapers have to be filled with content because blank pages don't sell papers or ads, and TV anchors have to talk about something, but I struggle to see the connection between Greece and China and the fundamentals of the 15 companies that we own. The angst in the world creates volatility, multiple compression, and buying opportunities for investors that are focused on companies that are not impacted in any direct way by the crisis of the month. I remain optimistic. The fund remains by far my largest personal holding, so I am eating my own cooking every single day. Thank you for the opportunity to manage your assets alongside mine and my family's.

Sincerely,

Scott Miller

NEW POSITIONS

We initiated two new positions over the course of the second quarter that are outlined in detail below. We also initiated two very small (sub 2%) positions in a very small liquid set of assets. I believe that they have asymmetric risk/return profiles and I hope that we can create a “basket” of these small positions that may eventually be a 6% to10% overall position.

HALOGEN SOFTWARE (TSE:HGN $10)

Halogen Software is an orphaned Canadian Technology stock. Before getting into any of the details of Halogen, it is worth pointing out that because of its small market capitalization (sub $200M USD), limited float (46% insider ownership), and limited trading volume, we are able to invest while others cannot because we are a small fund. I also think that my decade-plus of operating experience at the company I co-founded gave me a greater appreciation for the solution Halogen provides to their customers than most “financial” investors who have not been involved with the challenges of a 1,100-plus employee workforce. Halogen is a software as a service or “SAAS” company that provides software to midsized businesses (100-10,000 employees) for talent management, including the recruitment of employees, on-boarding of employees, training of employees, and the evaluation of employees. Based on my operating experiences in a midsize company, I can firmly say that there is a very strong alignment between the Halogen product suite of integrated offerings and the needs of their target customers. Halogen has taken several different HR functions currently handled in different applications that do not speak to each other and combined them into an organically built suite of offerings. The company has been able to grow 15-20% a year for several years and currently has more than 2,100 customers, in a market that is very underpenetrated (10%), providing a long runway for growth.

Evidence that Halogen’s offering has resonated with their user base can be seen in the purchasing patterns of their existing base. Each year, the existing user base has grown its spending with the company. The “dollar retention” of all existing clients has been greater than 100%. In other words, even though there is churn of existing customers (8% annually), as a whole the existing customers have either bought more seats or modules every year, which more than offset the members of the existing base that were lost through competitive replacement, bankruptcy, or merger. Halogen is a company where the volatility in the stock price is greater than the underlying business. No customer is more than 2% of revenue and customers typically sign two-year contracts. The fact that the company does not “screen” well and is optically losing money on an operating basis is a function of GAAP accounting where sales and marketing expenses are expensed to the income statement rather than capitalized to the balance sheet and then depreciated ratably over time. Given that sales and marketing is more than 50% of revenue and driving the almost 20% growth, I believe a more accurate way to think about those expenses is as an investment, not an operating expense. Of course this is not allowed under GAAP accounting rules, but just because companies have to report in GAAP does not mean we have to think in

GAAP. If the sales and marketing expenses were capitalized, the company would be immediately profitable and be trading on the order of 6X EBITDA: a cheap price for a fast growing SAAS business.

I believe that management is financially managing the business to optimize long-term returns. They are operating in an underpenetrated market with a long runway for growth with a product that has 75% plus gross margins. Overtime I think it is highly likely that the market will focus on the economics of the business rather than the nuances of the accounting, and the share price will react in kind.

There is a detailed presentation on Halogen on our website www.greenhavenroad.com if you would like to learn more about the company. In my quest for good ideas, I will not only look in Canada for software companies, I will travel to Vail, Colorado. This June, I attended ValueX Vail, a small gathering of likeminded value investors. Half of the participants in the gathering are given 15 minutes to pitch a company/stock to the group. I presented Halogen Software, thus the presentation on the website. As a reminder, fund operating expenses are waived for limited partners, so my trip to Vail did not cost you a dime, and it may very well yield an investment idea or two.

INTERACTIVE BROKERS (IBKR $35)

> *"If you look at the brokerage business, there are hundreds of brokers and they are all doing the same thing – back office, stock lending, executions – it all requires the same technology. And, of course, we have to add that there is an ever-increasing regulatory burden. Exchanges are continually adding products and changing systems. So, it is very unlikely that these hundreds of brokers – especially if you look at it all around the globe – will keep on building these systems. It doesn't make sense.* ***So, eventually the best platform would have to end up with the majority, if not all, of the business, and I think we're the platform. So that's it. The game is over.****"*

-- *Thomas Peterffy Founder of Interactive Brokers at Sandler O'Neil Global Exchange and Brokerage Conference June 2015*

I have been intrigued by Interactive Brokers for several years. It used to be a holding of Monish Pabrai, which is always a good place to start looking for ideas. The company is the largest U.S. electronic broker as measured by trades. Additionally, they have been ranked the number one electronic broker for four years in a row by Barron's. I am intimately familiar with their services and offerings as they are the custodian and prime broker for Greenhaven Road. Effectively they hold my life savings, and my wifes retirement, and my children's college money etc. It was not always this way - when the fund began, we were at Schwab. I had been managing personal money at Schwab, and then family money at Schwab, but I found myself running into three issues. The biggest was that the execution on international orders was expensive and terrible. It was as if they did not want the business. They charged half a percent on the buy and the sell and executed the next day if you were lucky. Orders had to be called in to the International desk. This may have since improved at Schwab, but at the time it was inconvenient and expensive. The second issue was that finding compelling short ideas is difficult. Finding compelling companies to short that Schwab actually had shares available to "borrow" was darn near impossible.

Interactive Brokers has more shares available to borrow at lower borrow rates. Finally, as a low turnover (few trades per year), low margin investor, the substantial price differences on trades and margin add up to real money.

Despite my own experience, being a satisfied customer is not sufficient reason to become an owner of a stock. The core thesis for Interactive Brokers which we will look at in more detail is as follows: they are the low cost provider, with the highest margins, low variable costs, and are growing at 20% per year. They can both take share from other brokerages as well as become a vendor to them. The market is ripe for consolidation – and Interactive Brokers is a well-positioned software/services provider.

Let's look at a couple of exhibits from the Interactive Brokers investor presentation. The metrics that most brokerage customers care about are margin rates and commissions. As the chart shows, Interactive Brokers competes quite well.

	US Margin Loan Rates Comparison*				US Commission Rates Comparison*		
	$25K	$200K	$1.5M	$3.5M	100 Shares	1 Stock Option	1 E-mini S&P 500 Future
Interactive Brokers	**1.61%**	**1.36%**	**0.98%**	**0.75%**	**$1.00**	**$1.00**	**$0.85**
E-Trade	7.94%	6.14%	3.89%	3.89%	$7.99	$8.74	$2.99
Fidelity	7.58%	6.58%	3.75%	3.75%	$7.95	$8.70	N/A
optionsXpress	8.25%	7.00%	6.00%	6.00%	$8.95	$12.95	$3.50
Schwab	8.00%	6.88%	6.25%	6.00%	$8.95	$9.70	N/A
TD Ameritrade	8.50%	7.25%	6.25%	6.25%	$9.99	$10.74	$2.25
thinkorswim	8.50%	7.25%	6.25%	6.25%	$9.99	$10.74	$2.25

The substantial cost difference from primary brokerage competitors has several implications. The first is that there is an opportunity down the line to substantially increase pricing (profitability) – they could double prices and still be less expensive than the competitors shown above in the categories shown. When I see such a substantial price differential, the first assumption is that margins must be terrible for the low cost provider vs. peers. Are prices low because they are using loss leaders to attract new customers? This is simply not the case for Interactive Brokers. In fact, Interactive Brokers' pre-tax margins in the brokerage business are above 60% while competitors are substantially lower. For example, Schwab's pretax margin was 34% in 2014 while Ameritrade was 41%. Surprisingly, Interactive Brokers is both the low cost provider and the highest margin operator. Is this sustainable? Are their customers happy? Has service been sacrificed for margin? The short answer is Interactive Brokers is growing in all of the right ways. Unlike Ameritrade, Interactive Brokers does not have 1,000 branches, so there is a different cost structure. Additionally, Interactive Brokers spends a fraction of what others do on marketing to attract better customers. Interactive Brokers gets one-quarter of their customers through referrals, and the quality of the customers is better from an equity and trading volume perspective. According to Interactive Brokers, the typical electronic brokerage customer trades 11 times per year. The average Interactive Brokers customer trades 470 times per year. Interactive Brokers, despite spending a fraction of their peers on marketing, is growing substantially faster.

	Client Accounts		Total DARTs		Client Equity*		Equity per Account*	
	1Q13 vs 1Q14	1Q14 vs 1Q15	1Q13 vs 1Q14	1Q14 vs 1Q15	1Q13 vs 1Q14	1Q14 vs 1Q15	1Q13 vs 1Q14	1Q14 vs 1Q15
IBKR	**16%**	**18%**	**25%**	**11%**	**38%**	**25%**	**19% $195K**	**6% $206K**
ETFC	4%	3%	34%	-14%	23%	11%	22% $57K	8% $62K
SCHW	1%	4%	13%	-7%	11%	9%	10% $202K	5% $211K
AMTD	5%	5%	30%	-3%	19%	13%	14% $99K	7% $106K

Most importantly to me, Interactive Brokers has the highest margins while treating their customers the most fairly. They do not sell information on customer orders to high frequency traders or route orders where a customer may not get the lowest price. Michael Lewis addressed this in detail in his book *Flash Boys*. A look at the annual report for Ameritrade shows that they earned an astonishing $304 million in 2014 in "Order Routing Revenue." Essentially 10% of the overall firm revenue was from undermining their customers. Either this data is being sold to allow their customers to be front run by high frequency traders or to get inferior execution. Is there really a chance that market participants paid $304 million to somehow benefit Ameritrade customers? E-trade earned only 5% of revenue from selling order flow ($92M) and Schwab was smart enough to bury it in their financial statements with a series of other streams of revenue – so the magnitude of the customer screw cannot be broken out separately – but suffice it to say it is likely on the order of $100M +. Again, Interactive Brokers had no such revenue at the expense of their customer's well-being.

Interactive Brokers is able to provide substantially better pricing and have higher margins and not continually hurt their customers by selling their data because, at their core, they are becoming a software business. The evolution of Interactive Brokers fits very nicely into the "Software is Eating the World" paradigm. In the 1970s the company was formed to be a "market maker" in the options business. To be competitive on price, the founder tried to automate as much of the system as possible. It was not until 1993 that the company even got into the brokerage business, but now brokerage is clearly the focus and accounts for more than 86% of pretax income. The software is extensive and scalable. For example, it allows clients to trade more than 100 market centers in 24 countries and 21 currencies. Traders can enter more than 60 order types, reporting is customizable and possible in many languages including

Chinese. While somewhat technical, importantly they also have API solutions which allow other software applications to interface with Interactive Brokers. There are millions of lines of software code enabling this. As an aside, I personally think there is a huge opportunity to improve the user interface – as I typically use the iPhone application, which provides everything I need vs. the desktop application that is far more powerful than I need and quite frankly confusing. In terms of problems to address, simplifying the interface and paring back functionality for different user types is a high quality and solvable problem.

There are several implications for Interactive Brokers from having a very robust software platform that automates as much as possible. The first is that incremental trading volume is very profitable. This is reflected in the margin structure – but also provides enormous opportunities moving forward. Clearly customers are attracted by the cost advantage and are switching accounts – but perhaps less intuitive – competitors can be attracted as well. This quarter, Interactive Brokers announced a win/win deal with Scott Trade, a company that is traditionally a competitor. For Scott Trade's heavy options traders, the Scott Trade platform was inadequate. Scott Trade could have invested in building out functionality and still not had the volume or scale of Interactive Brokers and remained at a cost disadvantage to Interactive Brokers despite the investment. Instead, the two companies struck a deal where Scott Trade customers would use the Interactive Brokers' technology. The individual customers will be charged trade rates as if they were Interactive Brokers customers for the volumes that they are individually trading at. Scott Trade pays the cost to Interactive Brokers at the rates of all of the Scott Trade customers grouped together, getting the lowest tiered/high volume pricing. Scott Trade's profit is the difference between the tiers that their customers are paying vs. the lowest tier pricing they receive as a company. Scott Trade no longer has to build out their infrastructure, retains their customers, and can serve them profitably. Interactive Brokers gets profitable incremental volume. Scott Trade customers get Interactive Brokers pricing as if they were Interactive Brokers customers and their functionality and execution. A rare win/win/win.

Another hole in the marketplace that Interactive Brokers is filling is caused by bank regulations and capital requirements. Effectively many of the large banks such as JP Morgan are shunning their smaller clients because they are not profitable enough, and the banks want to free up regulatory capital. JP Morgan is pushing out their sub-$50M hedge fund accounts. While perhaps not paying their cost of capital within the JP Morgan cost structure, there is little doubt that given the margins Interactive Brokers generates with an average account size of $200K, they can service a $20M hedge fund profitably.

As an exercise, let's put Interactive Brokers through the "selective managers" criteria that I outlined in the beginning of the letter. The company scores off the charts for **insider ownership**. Thomas Peterffy owns more than 75% of the company. He came to the United States virtually penniless and is now one of the 20 richest people in America. He has been incredibly successful from a capital allocation, strategy, and execution perspective. From a **variant perception** perspective, this is a widely discussed stock in the Value Investors Club and owned by some really talented investors such as Arlington Value Fund. However, the company has a relatively small float and is rarely thought of as a software/services company. I would score this relatively low as our views are on the fringe of a small consensus. For a **scalable business model**, I think we are back in off-the-charts territory. Interactive Brokers has sub-1% market share. One indication of scalability of the model is that revenue per employee is $1.4M. The incremental cost of an additional trade is close to zero. In terms of **growing market**, there are several opportunities being presented to Interactive Brokers from the Scott Trade arrangement, to serving international customers, to serving hedge fund refugees. With customer account growth of 15-20% per year, they are both taking share and serving growing portions of the market. For recurring revenue, unlike many Software as a Service businesses, Interactive Brokers does not have a credit card from their customers that they can charge every month, but they do have several hundred thousand trades a day occurring on the platform. The volume rises and falls with many factors including volatility. With more than 300,000 customer accounts, there is a very wide and broad base of recurring revenue. **Reasonable valuation/asymmetric risk reward:** Interactive Brokers is by no means table-pounding cheap. With approximately 400 million shares outstanding at the $35 we purchased our shares for, the implied market capitalization is $14B with a couple of billion in excess capital. We paid a high teens multiple on forward earnings, or roughly 1X PEG (Price to Earnings/Growth). However, given the price difference on margin and commissions, the company is clearly an under-earning, overcapitalized, growing compounder. Given the CEO's age (73) and lack of children working in the business, there are dozens of private equity, technology, and financial service firms that would be logical acquirers. This is a great business at a fair price with strong management – not a cigar butt. For **customer value propositions**, given Interactive Brokers' pricing advantage and the fact that they are not selling their customer order flow – for millions of investors, Interactive Brokers has a very strong value proposition. In summary, the company measures quite well on the selective investor criteria I outlined earlier in the letter.

Disclaimer

This document, which is being provided on a confidential basis, shall not constitute an offer to sell or the solicitation of any offer to buy which may only be made at the time a qualified offeree receives a confidential private offering memorandum (“CPOM”) / confidential explanatory memorandum (“CEM”), which contains important information (including investment objective, policies, risk factors, fees, tax implications and relevant qualifications), and only in those jurisdictions where permitted by law. In the case of any inconsistency between the descriptions or terms in this document and the CPOM/CEM, the CPOM/CEM shall control. These securities shall not be offered or sold in any jurisdiction in which such offer, solicitation or sale would be unlawful until the requirements of the laws of such jurisdiction have been satisfied. This document is not intended for public use or distribution. While all the information prepared in this document is believed to be accurate, Greenhaven Road Capital Fund 1 LP and MVM Funds makes no express warranty as to the completeness or accuracy, nor can it accept responsibility for errors, appearing in the document.

An investment in the fund/partnership is speculative and involves a high degree of risk. Opportunities for withdrawal/redemption and transferability of interests are restricted, so investors may not have access to capital when it is needed. There is no secondary market for the interests and none is expected to develop. The portfolio is under the sole trading authority of the general partner/investment manager. A portion of the trades executed may take place on non-U.S. exchanges. Leverage may be employed in the portfolio, which can make investment performance volatile. An investor should not make an investment, unless it is prepared to lose all or a substantial portion of its investment. The fees and expenses charged in connection with this investment may be higher than the fees and expenses of other investment alternatives and may offset profits.

There is no guarantee that the investment objective will be achieved. Moreover, the past performance of the investment team should not be construed as an indicator of future performance. Any projections, market outlooks or estimates in this document are forward-looking statements and are based upon certain assumptions. Other events which were not taken into account may occur and may significantly affect the returns or performance of the fund/partnership. Any projections, outlooks or assumptions should not be construed to be indicative of the actual events which will occur.

The enclosed material is confidential and not to be reproduced or redistributed in whole or in part without the prior written consent of Greenhaven Road Capital Fund 1 LP and MVM Funds. The information in this material is only current as of the date indicated, and may be superseded by subsequent market events or for other reasons. Statements concerning financial market trends are based on current market conditions, which will fluctuate. Any statements of opinion constitute only current opinions of Greenhaven Road Capital Fund 1 LP and MVM Funds, which are subject to change and which Greenhaven Road Capital Fund 1 LP and MVM Funds do not undertake to update. Due to, among other things, the volatile nature of the markets, an investment in the fund/partnership may only be suitable for certain investors. Parties should independently investigate any investment strategy or manager, and should consult with qualified investment, legal and tax professionals before making any investment.

The fund/partnership is not registered under the investment company act of 1940, as amended, in reliance on an exemption thereunder. Interests in the fund/partnership have not been registered under the securities act of 1933, as amended, or the securities laws of any state and are being offered and sold in reliance on exemptions from the registration requirements of said act and laws.

The S&P 500 and Russell 2000 are indices of US equities. They are included for informational purposes only and may not be representative of the type of investments made by the fund.