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November 5, 2017

Dear Partners and Friends,

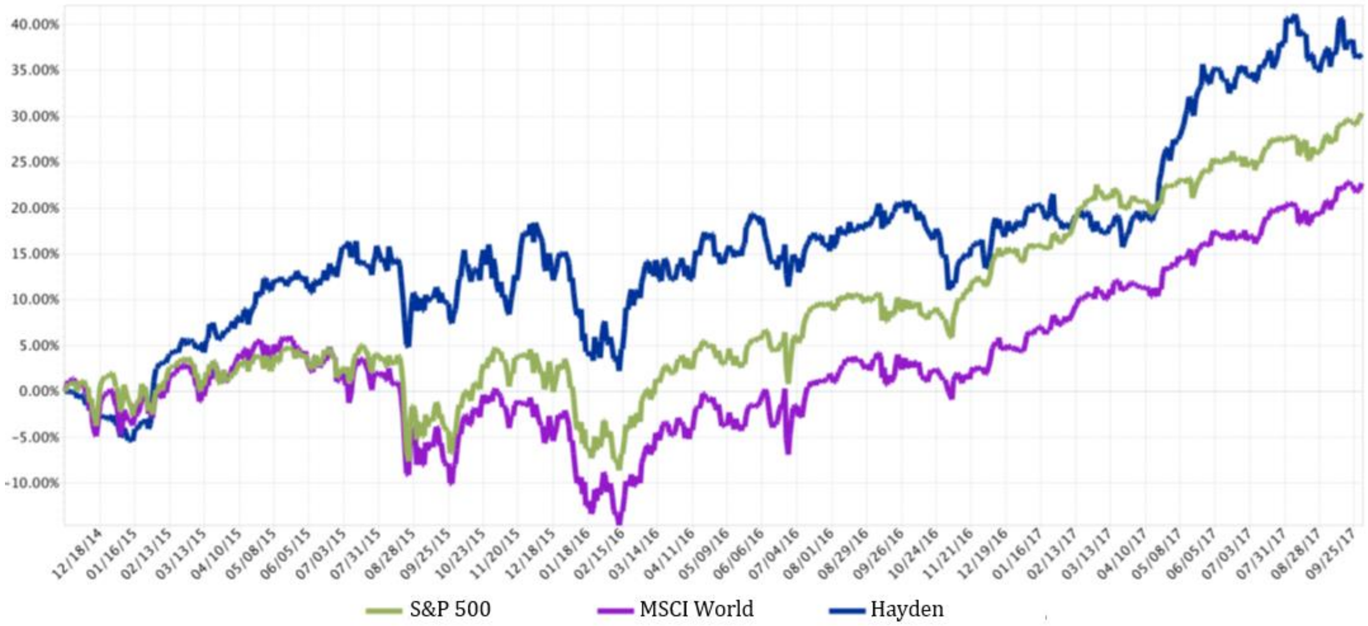
Hayden Capital's portfolio gained +1.0% (net of fees) during the third quarter of 2017. As of September 30, we have achieved a +14.9% gain year-to-date. This compares to the S&P 500 and MSCI World Indices at +14.2% and +17.6%, respectively.

Since inception, we have compounded our partners' capital at +10.4% annually (net of fees), versus +9.9% for the S&P 500 and +7.6% for the MSCI World Indexes. Our cash balance has averaged ~24% since inception, most recently decreasing to ~13% as we deployed capital into new investments.

Time Period	Hayden (Net)[1]	S&P 500	MSCI World (ACWI)	Avg. Cash Exposure[2]
4th Quarter[3]	(4.92%)	1.29%	(0.91%)	55.22%
2014	**(4.92%)**	**1.29%**	**(0.91%)**	**55.22%**
1st Quarter	11.16%	0.95%	2.60%	37.79%
2nd Quarter	6.70%	0.28%	0.22%	23.32%
3rd Quarter	(6.00%)	(6.44%)	(9.27%)	23.92%
4th Quarter	5.14%	7.03%	4.82%	20.34%
2015	**17.23%**	**1.37%**	**(2.22%)**	**26.31%**
1st Quarter	(0.23%)	1.35%	0.43%	22.53%
2nd Quarter	1.23%	2.46%	1.63%	27.64%
3rd Quarter	5.04%	3.85%	5.10%	32.60%
4th Quarter	(2.06%)	3.82%	1.05%	21.07%
2016	**3.90%**	**11.95%**	**8.40%**	**26.03%**
1st Quarter	0.96%	6.07%	6.91%	18.75%
2nd Quarter	12.62%	3.09%	4.68%	13.16%
3rd Quarter	1.01%	4.48%	5.08%	13.66%
2017	**14.85%**	**14.24%**	**17.61%**	**15.19%**
Annualized	**10.41%**	**9.92%**	**7.61%**	**-**
Total Return				
1 Year	**12.49%**	**18.60%**	**18.85%**	**-**
Since Inception	**33.01%**	**31.32%**	**23.52%**	**23.64%**

[1] Hayden Capital returns are net of actual fees. Individual client performance may differ based on fee schedule and date of funding.
[2] Includes Cash and previously an Inverse S&P 500 ETF, which allowed us to decrease our long exposure without paying taxes on profitable positions.
[3] Hayden Capital launched on November 13, 2014. Performance for both Hayden Capital and the indexes reflects performance beginning on this date.

Performance Since Inception



Let's Talk About Tech, Baby[4]

Over the last few years, investors will notice that our portfolio has started to develop a tilt towards "technology" companies. Amazon, JD.com, Zooplus, Baidu, Cimpress, and even Interactive Brokers can all be classified into this bucket. Traditional value investing teachings have long encouraged investors to shun this category, putting it in the "too hard" pile due to the nature of rapid change[5]. Warren Buffett is the most famous example of this – avoiding the first tech bubble of the late 90's by following this advice.

However, I think it's time the narrative is re-examined, or at the very least not taken at face value without further thought. In today's world, change is a given, not an outlier. So the question is how can we spot these inflection points in change, and ensure our investments themselves won't be disrupted?

One approach is to take an idea from Amazon. Jeff Bezos has famously said to focus on the very few things that *won't* change – customers' preference for low prices for instance – and assume everything else will. This also applicable to investing.

To understand why the traditional value investing has shunned tech companies, we need to understand history. When the value investing school of thought was being born in the 1950's and 60's, the business environment was much different. Companies derived their competitive advantages from their vertical integration, which led to scale benefits, which almost always required large amounts of capital investment.

This vertical integration / conglomerate culture gave them cost savings and manufacturing capabilities that smaller companies couldn't achieve. A physical moat, based on size, prevented them from being pushed around. Only hard assets could achieve this type of scale – additional factories, stores, warehouses, etc. Products were still being sold the old-fashioned way – with salespeople knocking on doors, or building relationships with a fragmented base of retailers nationwide.

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[4] Perhaps Salt-N-Pepa should consider renaming their song… I bet it would get a lot of play in the Bay Area clubs (LINK).

[5] I'll be the first to admit that I fell into this camp for years. I took this idea at face value, refusing to even look at tech business models, thinking it was a waste of time. It wasn't until after college that I realized the error of my ways.

Just look at the Fortune 500 list from 1960. Companies like GM, Exxon Mobil, Ford, GE, and US Steel, which owned virtually their entire supply chain led the way. Vertical integration was the name of the game.

Fortune 500 List (1960)

Top 10 US-based companies by revenue

FORTUNE 500 1955-2005

A database of 50 years of FORTUNE's list of America's largest corporations

View by year: 1960 **View by company:** A

Full List Companies Profits Assets Current FORTUNE 500

1960 Full list — Current View: 1-100

Rank	Company	Revenues ($ millions)	Profits ($ millions)
1	General Motors	11,233.1	873.1
2	Exxon Mobil	7,910.7	629.8
3	Ford Motor	5,356.9	451.4
4	General Electric	4,349.5	280.2
5	U.S. Steel	3,643.0	254.6
6	Mobil	3,092.9	164.0
7	Gulf Oil	2,713.0	290.5
8	Texaco	2,678.0	354.3
9	Chrysler	2,643.0	-5.4
10	Esmark	2,475.5	19.1

Source: Fortune.com

These types of growth activities take time. A single factory could take years to get up and running, and were expensive. You simply couldn't *afford* to grow your sales 10x in a year like many of the explosive technology start-ups today. Growing revenues also meant increasing your salesforce – and hiring 10x as many people, while ensuring uniform culture and productivity was almost impossible.

As such, many of the best-in-class companies of this era tended to grow at steady and predictable rates over long periods of time. Change was slow, and competition was even slower to react[6].

Today, change happens very fast and innovative business models can gain traction seemingly overnight. As investors, there are two paths to take:

1) Concede that predicting change it too hard, happens too rapidly, and only look for industries that are change resistant and hard to disrupt, or
2) Recognize this shift in business environment, and find out how to take advantage.

Given that it's harder and harder to find industries in the first category, I think there's almost no choice but to choose the latter.

Surely, even products as simple and "low tech" as shaving razors are being disrupted. P&G's North American razor business declined from 71% to 59% market share in just 5 years, with almost all of the gains going to a faster-moving startup (LINK).

[6] A big influence on the faster reaction time of competitors is the rise of the internet. Increased connectivity and globalization means competition can come from anywhere. At the same time, instantaneous information allows firms keep an eye on competitor's new initiatives effortlessly, even if it's from half a world away. Imagine trying to do that with regular mail.

So if industries and business models are changing so rapidly, how can we possibly attempt to catch these inflections? If a $220BN company, with all the resources in the world, missed the trend, how can we? Am I just overconfident or egotistical? I don't believe so… (but hey, I'm biased).

First, it's important to understand that there are two types of innovation:

1) Innovation of new products themselves, which people may or may not want (say, a Self-Twirling Spaghetti Fork)[7], or
2) Innovation of business models for existing products / services, which already have a proven market need (i.e. selling a TV online vs. selling the exact same model in brick & mortar retail, or renting a car vs. owning a car).

The key difference is that I'm not betting on what the customer wants. Demand is already proven for the *end product*. Rather, I'm betting on customers wanting the same products or service, but getting it in a better way, and are willing to change their habits to do so – i.e. new *business models* of getting it into their hands cheaper or faster[8].

For example, Dollar Shave club didn't become a billion dollar company by reinventing the razor blade. Instead, they simply reinvented the *business model*, to sell razors for a fraction of the price. Customers thought razors were too expensive, after P&G abused their pricing power for decades. As soon as consumers had a viable alternative, they left.

Remember Jeff Bezos' earlier idea of focusing on what *won't* change. Customers will always want the lowest price.

If we refer back to the list of companies I mentioned before – Amazon, JD.com, Zooplus, Baidu, Cimpress, Interactive Brokers – you can see this thesis reflected in the portfolio. The end product that these companies deliver to their customer are the same – TVs, iPhones, clothes, information, physical marketing materials, brokerage services. However, they've all found to so cheaper, and are rapidly gaining market share because of it.

At the same time, I would argue these aren't "tech" companies (no matter how the indexes may classify it). The fundamentals of all of these companies are based on old school industries – retail, logistics, information, printing services, or finance. You wouldn't consider Wal-Mart, FedEx, Yellow pages / the Encyclopedia, your local print shop, or Fidelity as "tech" companies right?[9] But they all fill the same customer need, just in different ways.

I want to caveat though, that this is not a "set it and forget it" approach to investing. It's not easy (but it's not like investing ever was…). To do it successfully, you need to consume a vast amount of information, and always be on the lookout for a new business model that threatens your thesis.

I believe the best way to prevent being "disrupted" is voracious studying of competitors – not just in your backyard, but across different industries and geographies (for example, it's why I read industry publications

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[7] Yes, this really exists. Who knows, some people may have a real problem with twirling (LINK).

[8] GEICO may be a the best example of this, and likely familiar to most traditional value investors. People always wanted / needed car insurance, but the GEICO simply found an innovative business model to provide it cheaper vs. competitors, by selling directly to consumers and cutting out the middlemen.

In 1948, Graham-Newman was able to buy 50% of the business for $712K, implying a valuation of $1.4M (LINK). In 1995, Buffett's Berkshire Hathaway bought the remaining 49% of the business for $2.3BN, taking it private at a $4.7BN valuation (LINK). This implies an exceptional annual return of ~19% for over 47 years… there's a reason Buffett cites it as his favorite investment, and one that changed his life (LINK).

[9] Although Wal-Mart with its recent Jet.com acquisition and aggressive e-commerce push may be considered pretty "techy" these days.

on start-ups / venture capital every morning). You have to be paranoid. It takes a lot of work – but if done right, you'll be rewarded well for it.

Portfolio Updates

Interactive Brokers (IBKR): Interactive Brokers is a leading provider of brokerage services to professional investment advisors, hedge funds, traders, and individual investors. Brokerage services are largely a commoditized product, where the primary concerns are price (commissions & fees) and service (speed of execution and customer support). The company's pricing is unparalleled, although there is room for many improvements on the service side. By replacing a traditionally labor-intensive business with software, the company has maintained the ability to charge far lower commissions vs. competitors.

For example, Barron's rated its commissions the lowest in the market for 15 years in a row, at an average of $2.26 per trade vs. $7 – 10 for competitors (Schwab, Fidelity, TD Ameritrade, etc.). Additionally, the company provides many mission critical services for free (such as custody, performance reporting, managed accounts platform, etc.) for smaller professional advisors, that would normally cost $10 - 100K or more at other prime brokers. Many emerging advisory firms and hedge funds would not be in business without IBKR's services.

Interactive Brokers has achieved new account growth at an outstanding ~17% y/y over the last eight years. Nevertheless, despite being a good business and exhibiting strong growth, IBKR has historically been a smaller position for us. The company has a notoriously steep learning curve and room for improvement, and we disagree with management on issues such as customer service and marketing strategies. There's a lot of potential for the company if some of these issues can be fixed, and recently there have been some developments which indicate management's viewpoint is changing. We think it's the earlier innings of an inflection here, and therefore increased the position slightly (+10% of original size).

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A few months ago, Interactive Brokers finally wound down the bulk of the market maker business. This division was the original foundation, which Interactive Brokers was built upon. However, in the last decade, with electronic trading and increased competition, market makers everywhere have had a tougher time, Interactive Brokers included[10].

Many investors viewed the division as a distraction for management, comprising only ~6% of operating income. Worse yet, returns on capital for the division have been declining for years.

This compares drastically to the core electronic brokerage division, which has been growing new accounts steadily at ~17% y/y. More impressive is that this has been *accelerating* in recent months, to 24% y/y in October – the highest growth rate in a decade. These new accounts are also earning higher incremental returns on capital, with each new customer increasing IBKR's competitive "moat".

In terms of unit economics, I estimate ~46% of IBKR's costs are fixed (largely technology & development costs). Each new customer allows these expenses to be spread across a wider base, and shared among more clients. Additionally, more accounts means more trading volume, which leads to better execution costs with the exchanges.

Interactive Brokers has historically passed on these savings to its customers, which further attracts new customers. It seems the message is finally getting out, as in the third quarter, hedge funds clients were

[10] For example, Goldman Sachs just announced they would wind down their US options market maker division too (LINK).

growing 3x faster than other client types. These are typically the most sophisticated and demanding clients, who on average have larger accounts and trade more frequently. I speak with other investment managers regularly, and anecdotally have noticed this trend accelerating also. It's a very good sign.

On the retail investor (individuals) side, Interactive Brokers launched a debit / credit card hybrid (LINK). Similar to a debit card, it allows account holders to use the cash in their brokerage accounts directly when making purchases. Cardholders can also borrow money, like a credit card, but at much lower rates. Credit cards typically charge up to ~20% interest rates, while IBKR's allows you to finance purchases at only 1.41% - 2.66%. Your spending is collateralized by your investments – it's similar to a home equity line of credit, but with securities instead of your house.

We will see if this offering attracts new retail clients to switch over from other brokers, like TD Ameritrade or Fidelity. Nevertheless, it's at least a positive signal that management is trying innovative new approaches to help their customers[11].

Our strategy has always been to have a framework / thesis for our investments, and to increase our position size as the company makes progress on its strategy and there's evidence the thesis is playing out. It's very similar to in poker, where you may *think* you have the best hand on the flop and great odds, but there's still a chance you are ultimately wrong. As each subsequent card comes out & works in your favor, the odds of you being wrong decrease. By the time the last card comes out, you can have almost 100% certainly that you have the best possible hand. That's when you go all-in.

In investing, you never know 100% (and hence why we'll never get close to going all-in). However, as each "card" (i.e. "signposts" in investor speak) lines up, we are inclined to "flex up" the position given the improved odds.

We "flexed up" our position in Interactive Brokers after seeing these new developments ("cards"), and will continue to reevaluate, as the company continues to execute.

Zooplus (ZO1): In the past few months, Zooplus' stock has traded down ~30% from its peak. Several factors are at play here, which I believe have affected the market's perception on the shares.

We've heard that since the Chewy deal this spring (LINK), many of the private companies / start-ups in the European pets space have received more funding from private investors (Hundeland, a €20M Germany competitor is one example) . No doubt, this was influenced by the large headline valuation the Chewy deal garnered, which has gotten investors excited (not just in the private markets – look at ZO1's stock performance after the deal). This influx of cash provided these competitors additional runway for heavy discounting and new customer promotions. In a commoditized business with easy online price comparisons, price-conscious shoppers are always going to go to where they can get the best deal. During this time, Zooplus refused to chase these low-value customers, and maintained their pricing. This decision caused their new customer growth numbers to dip temporarily, and contributed to the market's worries.

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[11] On a side note, the marketing seems to be getting better as well. Thomas Peterffy (the founder and CEO), has notoriously stated that he doesn't understand the point of marketing, complained it's hard to calculate a precise ROI on marketing spend so that he'd rather not do it at all, and that superior products will naturally attract customers on their own. Coming from a technical background, he has invested those marketing dollars in creating a better product instead (as evidenced by the majority of employees who are software developers).

However, there is still a benefit to effective marketing, especially if the company's main issue is not enough customers knowing about its superior product. In my opinion, just because you can't calculate the ROI with precision, doesn't mean it's a low ROI.

This is why I was encouraged when I started to see more professionally crafted ads this year. Hopefully we see more of these ads (LINK) versus this (LINK). The rumor is Peterffy was too cheap to use a marketing agency, so he did it internally instead. I'm not sure if it's true, but judging by the quality of the script I wouldn't be surprised.

However, over the medium-term, this dynamic isn't going to last. I've heard from several industry sources (in different positions along the pet food value chain), that state Zooplus is the only company in the pet food e-commerce space currently turning a profit. No doubt, these smaller start-ups will cause some pain in the short-term, as they continue to burn cash to acquire new customers (Prof. Greenwald's book Competition Demystified has an excellent section on this dynamic). However, I believe this model is unsustainable over the long run – it's simply a matter of how much cash they can raise and how quickly they go through it. The quicker private investors realize the path to "scale" is longer than they initially thought, the sooner the cash spigot is shut off on these sub-scale players.

In the meantime, Zooplus isn't sitting still. Recently, the company announced they would be lowering the full year profit guidance by ~€10M – €20M, in order to reinvest these profits back into the business. At Hayden, we typically applaud these types of initiatives – as long as we can gain confidence that the new projects are value creating. The market's reaction was the direct opposite – the stock sold off over 15% in the days following the announcement.

Our conversations indicate that a chunk of the reinvested proceeds will go towards improving the technology aspect of the business, one focus being on revamping the mobile application – initiatives I believe are indeed value creating.

Zooplus' customer demographic significantly skew towards 1) women 2) shopping from their desktop 3) while at work. Any improvement towards a "mobile-first" experience will certainly expand the customer diversity, and improve customer retention. Just a simple look at the app's reviews will show that there is still a lot of room for improvement & optimizing it for a mobile experience (Apple | Android). Especially when one compares it with the Chewy app's reviews (Apple | Android).

> *"When we talk about the working days, you might be surprised to see that, although you're completely right, people could buy at any time during the day or during the week,* ***they have clearly a preference to buying within working hours from their office desks.*** *That is one of the reasons why we keep our shop as functional as possible, because we don't want to destroy the productivity of all the people working in the different countries of Europe.*
>
> *So, Saturday is a very slow day, although people don't sit in the office because they use it is a traditional day for shopping off-line. Sundays are a bit of a mix, but* ***the really strong days of the week are Monday till Thursday,*** *Friday again, being a little bit slower than usual. And what we also see is that, especially long weekends, because of holidays within the week are slower exactly for the same reason. Less people in the office, less purchase. It's as simple as that."*
> *– Zooplus Q2 2017 Earnings Call*

It seems that some of these initiatives are starting to work, along with a softening of this summer's competitive environment. Just a few weeks ago, the company announced new customers grew +34% y/y in Q3 2017 vs. just +9% y/y in Q2 2017. We track Zooplus' price advantage via a diversified basket of goods versus competitors. Since this summer's low, we've seen the price advantage recover and expand several percentage points as well.

On the Amazon front, One Click Retail recently released their Q3 2017 report, showing their estimates for Amazon's pet supplies category. Notably, they estimate Amazon generated ~€90M in sales in the third quarter, compared to €277M for Zooplus. This is 32% of Zooplus' size. In 2014, Zooplus estimated Amazon's sales to be ~€250M, or 46% of Zooplus' sales (€543M)[12]. It's unclear if these findings can be

[12] See Zooplus' 2015 semi-annual presentation (LINK).

compared like-for-like[13]. Either way, it would indicate Zooplus has been at the very least keeping up with Amazon the last few years.

Amazon's Pet Supplies Category
From One Click Retail's Q3 2017 Report (LINK)

Lastly, it's interesting to note that, according to the report, Amazon's fastest growing pet categories were medicine and accessories in UK and Germany (its top two European markets). It's not a coincidence that these are also both small, easy-to-ship categories (which are outside of Zooplus' competitive advantage). Moreover, these are ancillary businesses for Zooplus, where it has never competed aggressively.

Conclusion

Every month, I co-host a NYC Corner of Berkshire & Fairfax group, which gets together for a few hours to discuss facets of the investing business, recent events, and interesting companies (LINK). In the two and a half years since its formation, the group has grown to over 300 individuals (who knew there would be this many nerds?). It is a great venue for both amateur and professional investors alike to meet and share ideas.

Most importantly though, the goal is to learn from one another. Even if someone has never invested, they may have their own unique expertise to share. It may be in tech, real estate, health care, or emerging countries – there's always something to learn to add to your mosaic (and isn't continuous learning about different fields the reason why investing's fun?).

Occasionally, we bring in guest speakers as well. If you're an investing nerd, would like to give a presentation, or are simply in town for a few days, please stop by.

[13] Amazon also has dedicated websites covering Italy & Spain, which are not included in One Click Retail's figures. Additionally, customers from European countries outside of these markets can still order from Amazon using a different country's site (although this isn't as prevalent).

Several weeks ago, I gave a talk on "Calculating Incremental ROIC's" to this group. Yes, I admit the title is a bit dry (okay, it's *really* dry). However, the topic itself is something that I believe the investment community will benefit from spending more time on.

This is especially true if you fashion yourself as a long-term investor – planning to own these businesses for *years* rather than a few months (as some self-described "investors" are apt to). In last quarter's letter, I went through some examples of how I approach this type of work to get an analytical edge on the market (LINK). This recent presentation is simply a continuation of the subject, and more high-level look at how to conceptualize this type of analysis. If you are interested, you can find a copy here (LINK).

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We are still looking for an intern for the winter & spring semesters. If you know anyone interested in learning our style of investing, please send them my way. I promise our interns will get a comprehensive training on the investing discipline, while learning how businesses / industries work on a granular level.

For example, questions may be "Why are restaurants typically such a bad businesses? If not the restaurants, who in the industry value chain do you would you want to own & who takes the largest cut of the industry profit pool (is it the food distributor, online delivery platform, the landlord, etc.)? What do central kitchen services (such as Munchery's) cost structure look like vs traditional delivery restaurants?"

The goal is to teach why these types of questions are important, and how to go about doing the work necessary to answer them. On top of this, they will be exposed to our ever-growing "Investor Reading Curriculum" – learning from some of today's best investors & thinkers through their letters and books.

Most importantly, we are looking for intellectually curious applicants, who see the world as a giant puzzle, and want to understand how it works.

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Lastly, several new partners joined us in the last quarter. It's truly a pleasure to have the opportunity to grow your assets alongside ours, and I will never take for granted the trust you have placed in us. We welcome you to the Hayden Capital "family".

This month, I will be in Los Angeles from November 14 – 20th. If you are in Southern California during this time, please let me know. I am always interested in meeting smart, hard-working individuals with expertise in their fields. There may even be a free cup of coffee involved.

Additionally, if any potential investors are interested in learning more about our strategy or investment philosophy, please feel free to reach out. As I've mentioned before, the quality of our investor base has always mattered more to me than their check sizes. Hayden's strategy certainly won't appeal to everyone. Our goal is simply putting together a high quality roster of like-minded clients, who believe in our method of investing as the best way of achieving superior returns.

As always, I am reachable via email, phone, or coffee (Tarallucci E Vino near the office knows me well). For those who aren't tired of my musings yet, I also regularly post on Twitter intra-quarter, about the interesting things I'm seeing and any insights derived from it.

Until next quarter…

Sincerely,

Fred Liu, CFA
Managing Partner
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