CHAPTERS

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THE NUMBER OF PUBLIC COMPANIES HAS DECREASED FROM OVER 7,000 IN 1996 TO LESS THAN 4,000 COMPANIES TODAY. THIS IS CAUSED BY FEWER IPOS, COMPANIES STAYING PRIVATE LONGER, AND MORE COMPANIES BEING ACQUIRED VERSUS LISTING PUBLICLY.

IF YOU LOOK AT THE ASSETS OF COMPANIES INSTEAD OF SIMPLY THE NUMBER OF COMPANIES, THE EFFECT IS MUCH LESS PRONOUNCED ACCOUNTING FOR ONLY A 5% DROP VERSUS THE PEAK.

ALLOCATORS ARE UNDER SIGNIFICANT PRESSURE TO HIT RETURN HURDLES DUE TO LOW RISK-FREE RATES. THEY ARE TURNING TO VENTURE CAPITAL AND BUYOUTS WITH INCREASINGLY LARGE ALLOCATIONS WHICH ALSO PRESENT DECREASED CAREER RISK DUE TO LONGER FEEDBACK LOOPS.

GPs OF BUYOUT FUNDS BELIEVE THE ASSET CLASS WILL EARN A BASE RATE OF BETWEEN 9-11%, BUT THEY GENERALLY BELIEVE THAT THEIR SPECIFIC FUND WILL ACHIEVE CLOSER TO 20%.

THE VAST MAJORITY OF SUCCESSFUL VENTURE CAPITAL EXITS WERE THROUGH IPOS AND THEY WERE DONE QUICKLY AFTER THE COMPANY WAS FOUNDED. NOW MOST VC EXITS ARE THROUGH M&A WHILE THE MINORITY OF COMPANIES WHO DO GO PUBLIC ARE DOING SO MUCH LATER.

IN BUYOUTS, FOR THE FIRST TIME, THE MAJORITY OF COMPANIES ARE BEING SOLD TO OTHER BUYOUT FIRMS AS OPPOSED TO STRATEGIC ACQUIRERS. THIS RAISES THE QUESTION: IF THE PRIMARY PROPOSITION OF BUYOUT FIRMS IS INCREASED GOVERNANCE AND OPERATING EFFICIENCY, DO YOU STILL REALIZE THOSE IMPROVEMENTS WHEN A COMPANY IS PURCHASED FROM ANOTHER BUYOUT SHOP?

THE FUTURE OF BUYOUT WILL LIKELY NECESSITATE FIRMS THAT ARE MORE FOCUSED ON GROWTH AND EXPANSION VERSUS SIMPLY DRIVING INCREASED OPERATING EFFICIENCY. TARGET COMPANIES WILL CONTINUE TO BE MORE LIKELY TO BE HIGHER-GROWTH TECHNOLOGY FIRMS THAN THE TRADITIONAL TARGETS OF COMPANIES WITH TANGIBLE ASSETS AND PREDICTABLE CASH FLOWS.

OVER THE LAST 50 YEARS, COMPANY INVESTMENT HAS COMPLETELY FLIPPED FROM THE MAJORITY BEING MADE UP OF TANGIBLE INVESTMENTS TO THE MAJORITY BEING MADE UP OF INTANGIBLE INVESTMENTS.

IT IS EXTREMELY COMMON TO IMPROPERLY CATEGORIZE INTANGIBLE INVESTMENTS MADE INTO A BUSINESS. IT IS RELATIVELY EASY TO ESTIMATE LEVELS OF INTANGIBLE INVESTMENT ON AN AGGREGATE LEVEL BUT QUITE DIFFICULT TO DO SO ON AN INDIVIDUAL LEVEL. OPPORTUNITY: DEVELOP THE TOOLS AND TECHNIQUES NEEDED TO CAPTURE THESE INVESTMENTS ON A PER COMPANY BASIS.

SOME OF THE COMPANIES WHERE THE VAST MAJORITY OF THEIR ASSETS ARE INTANGIBLE ASSETS, LIKE SOFTWARE COMPANIES, ARE ALSO TAKING ADVANTAGE OF EMPLOYEE FINANCING THROUGH STOCK-BASED COMPENSATION (“SBC”). ANOTHER WAY TO LOOK AT SBC IS THAT, IN EFFECT, COMPANIES ARE ESSENTIALLY Raising EQUITY CAPITAL FROM THEIR EMPLOYEES.
Patrick O'Shaughnessy, (01:44): Our guest this week is Michael Mauboussin, the Head of Consilient Research at Counterpoint Global. Michael is an all-time favorite guest here on the show, and this is his fourth appearance. We discuss one of the biggest topics in the world of investing, the shift from public to private markets that has taken place over the last several decades. We explore the reasons for the shift, the biggest overall changes in capital markets, and what the future may hold. Along the way we explore other fascinating topics, like the rise of intangible asset investment, employee-based compensation as a form of financing, and more. If you enjoy this conversation, I urge you to read Michael's paper on the topic, which will be linked in the show notes. Please enjoy this great conversation with Michael Mauboussin.

THE TRANSITION FROM PUBLIC TO PRIVATE EQUITY

Okay, Michael, for the first in-person podcast that I've done since early March, this is great. Great to see you as always. The topic of our conversation is your latest paper on the transition from public to private equity. Which is effectively a book that you wrote and one thing that we've been talking about for several years, just between you and I, and I know you've been thinking about forever. I think your motivation would be an interesting place to start. Why take so much time and effort to write a mini book on this key transition?

Read Michael's paper, Public to Private Equity in the United States: A Long-Term Look, here.

Michael Mauboussin (02:53): There are a couple of things, Patrick. First of all, it's great to be with you and great to be with you in person. The first was in 2016, we wrote a piece about, we called it "The Incredibly Shrinking Universe of Companies." Which if you look at the size of the U.S. economy, and the population, is that we should have many more listed companies than we actually do. And there was a beautiful symmetry, because the data went from '76 to 2016, so it was 20 years up because of the peak year for number of public companies was 1996. And then from 1996 this slid down to 2016.

Exhibit 17: Additions and Subtractions to U.S. Listed Companies, 1976-2019

So, that alone was a really interesting exercise, and of course the number of companies going up and going down is a function of basically supply and demand, what's coming in, what's going out, and breaking all that down was really interesting. So obviously, the big input of what goes in and what goes out of the public markets, is from the prior market. To state the obvious: IPOs. Venture capital being a big source of those IPOs, to a lesser degree buyouts. And then of course what's removed, mostly mergers and acquisitions, and the buyout entry playing a role in that.
So this in a sense, is a larger spinoff from that. But the second thing Patrick is when, I think we were having a cup of coffee with Brent Beshore, we were just talking about the world and I was saying to you guys, "I'm not sure I have a really good understanding of the lay of the land here. I mean I understand that these are different asset classes and I read all this stuff, but I really didn't have a clear, synoptic view, of both where these industries are, these asset classes are, and how they got to where they are.

So that was also motivating. So it was really just a drive to learn about that. And as you saw throughout the piece, we tried to sprinkle in a fair bit of history, and I actually learned a little bit about the genesis of the buyout industry, and I knew a bunch of that stuff. The genesis of the venture capital industry, so it was just trying to get a broader perspective on where we are. And, I just think if you're in the asset management industry, again, whether you're in buyouts, or venture, or in public markets, this backdrop I think is very helpful for thinking about the world.

Patrick O'Shaughnessy, (04:48): We've talked a bit about, in the past, how companies are staying private for longer. The average market cap at IPO or direct listing has gone up a lot. And that's because of a lot of what we'll talk about, funding sources in the private markets. But before we go there, I'd love to just level set a little bit on the relative size of the major categories here. Maybe you could mention the stat, you just mentioned to me a minute ago about, the market cap added by the biggest public companies, and then work your way down from there.

Michael Mauboussin (05:13): Yeah. I think that this is something that it's not surprising, but the numbers are really big. Public markets as of year-end 2019, so they're probably much larger now, were 38 trillion dollars. The assets under management for the U.S. buyout industry. Again, I want to be clear that we're talking about the U.S., not global, but the U.S., is $1.4 trillion. And the assets under management for the U.S., again not global, U.S. venture capital entry is about $450 billion with a "B." So public is 27 times larger than the AUM for buyouts. And it's about 80 times the size of the venture capital industry. And the statistic that I find interesting is, when you're an investor, especially if you're running a relatively large pool of money, say a large pension fund, you need to make dollars. Rate of return as people say, "You can't eat IRR, you need dollars."

So here's an interesting little statistic is that, if you look at just five stocks: Facebook, Amazon, Apple, Microsoft and Google, through July 30th, so the beginning of last month, their market cap went up roughly by $1.8 trillion. That's bigger than the aggregate buyout industry and that's obviously multiples of the venture capital industry. And even in venture, if you look at so-called “unicorns”, and CB Insights counts about 225 of those in the United States worth about 650 billion, just the market cap change is not quite three times, two and a half, or three times that. So these are really interesting statistics on just the absolute differences in the sizes of these different asset classes. Which I think are really helpful for people to bear in mind and relate it to that in venture.

If you're just thinking about some of the great funds, Benchmark is one good example, we're friends with the Benchmark folks. And their latest fund is the same size as their last few funds, which is between 400 and 500 million dollars. Million, million. Not billion! So if you are lucky enough to get in there, which not that many institutions are, even if the fund does incredibly well, the dollars that it can earn, that's great. They're just not, for many large institutions, they are just not needle movers.

Patrick O'Shaughnessy, (07:20): Let's talk about, again, this transition from public to private. With that caveat, that public markets are still just a massive, massive player in the overall ecosystem. As you said, multiples of the other two major equity players. Say a little bit about the history that you
learned, that you think is relevant, both for venture, maybe we'll start with venture, and then go to buyouts. What are the key important things that have changed in each of those places, that you think are contributors to the way the landscape looks today?

Michael Mauboussin (07:49): The first thing, and you alluded to this a few moments ago, is if you look at IPOs, just literally the number of IPOs, from the mid-1970s through, let's say 2000, so we'll pick the dot-com peak, the average was about 280 per year. Since that time, so 2001 through 2019, the averages dropped to 115. That just tells you there are very much fewer number of IPOs. And one of the most interesting charts I think in the whole piece, is actually the exit strategy from venture capital. So it used to be in venture, and if you look back in the '80s in the chart, you'll see that the vast majority of exits were IPOs. And by the way, many of those were actually done quite quickly after the company was founded. And today the majority of exits, the vast majority are actually sales of the business, to sales of the business.

So that, to me, that's an interesting one. By the way, one of my favorite statistics in the whole piece, which is tucked away in a little corner: the IPO market from the late 1960s. This is pre-Nasdaq, Nasdaq was started in 1970, so this is a lot of stuff that was a little bit off the radar. But in 1969, there were 720 IPOs. Which is 20% of the number of public companies today! So it's this incredible, incredible number. And then the other point that is related, and these are all related concepts, you already also pointed this out, that the age of a company at IPO has also increased very significantly. It was just a little under eight years, in that early period it's called the... again, mid-70s through the late 1990s, and today it's closer to just a shade under 11 years.
So even venture-backed firms that are going public, they're waiting longer for those businesses to go public. Buyouts is an interesting story as well, and the exits, again these we're thinking about what's contributing to the public markets. Again, always the number one way to exit in buyout industry, has been to sell typically to a strategic buyer. IPOs were not insignificant back in the early days, '80s in particular. But what's happened recently is this big surge has been so called “secondary transactions.” Where the buyout firm sells the company to another buyout firm and essentially that capital gets recycled. There are companies who just bounce from one buyout firm, to another buyout firm over time. And that's an interesting concept in and of itself. I think one of the interesting questions is, one of the big premises of buyout, one is a governance thing, if there’s better governance. And I think that is probably really true. Smarter boards, more engaged, better incentives and so forth.

But another big part of it is “We're going to improve the operations.” So you can buy the fact that maybe the first buyout firm says, "We're going to take on this business and improve the operations." But when they hand it over, and they sell it to another buyout firm, the question is, are they going to improve it further? Is this an ongoing thing?

So these are all really interesting on exits. And so you can see how both of those, would have contributed to fewer public companies. The other side of the ledger, to state the obvious is, mergers and acquisitions. Throughout this period, especially in the '90s and 2000s, we've seen a fairly active market for M&A. And that's obviously reduced the number. There's one other thing I want to mention Patrick, and we just referred to this paper and the piece, and we have I think a brief paragraph on it, but it's actually quite interesting. There were a couple of professors that said, "Hey guys, stop thinking about number of companies, that's the wrong way to do it. Just think about following the assets." In other words, big public company A, buys big public company B. Then they merge, and so we go from two to one, so we've shrunk that by half. But they're saying, "By our methodology, we're counting assets and that just stays as the same number of entities."

So likewise, if a big public company buys a private company, that company obviously didn't go public, but in a sense they came into the public domain. They're going to count that as going from private to public. So there's a little bit of an accounting thing, but if you do that analysis, rather than us having half as many public companies in 2020 versus 1996, the assets are only down about 5%. It's still a thing, although it's vastly less dramatic, if you just count the number of companies. So that's an interesting way to think about it too, is a lot of small companies rather than IPOing, are just selling themselves.
VENTURE CAPITAL AND BUYOUT RETURNS

Patrick O'Shaughnessy, (12:00): Another interesting aspect of the paper is, the committed capital to these two major private categories, where I think buyouts are at a record high. Venture, interestingly, still a decent amount below the record high of, and you could argue this was a bit artificial in 1999 because there's this crazy spike up, but still below that 1999 peak. I'd love to hear what you learned about returns. I want to introduce the concept of “Public Market Equivalent Returns”, especially for buyouts, and also what you've learned about venture capital returns, both the average and the dispersion of the returns in those two categories.

Michael Mauboussin (12:30): In measuring returns, they're three big ways to do this. The first is, often this is considered standard, is internal rate of return, IRR. And IRR, people have known for a long time has a number of significant shortcomings. The biggest one is the assumption that capital that gets return during the period, earns the IRR rate of return. So there's a reinvestment assumption, that in many cases is unduly optimistic. And there are ways to deal with that. By the way, there's a literature on this thing called modified IRR. Modified IRR tends to get you closer to the truth and it gets you to more realistic numbers. The other challenge with IRRs is there's no benchmark. So we don't really know what is a good number, or what's not a good number.

The second approach is just return on capital. So, if you give me a dollar, how much money do I give you back? Here again, there's two challenges. It depends a lot on how fast I give you the money back. So if you give me a dollar and I give you $1.50, and I do that in 12 months, that's pretty good. But if I do that over five years, it's obviously not very good, and also the benchmarking issue.

This technique's been around for probably 15 years or so. Academics came up with something called the Public Market Equivalent (“PME”). And the idea was to say, "Hey, let's think about this in terms of opportunity costs." So rather than give you the money, if you give the money to a venture fund or buyout fund, we're going to give an equivalent amount of money to an appropriate benchmark. And there a lot of debate about that, but approach the benchmark in public markets, let's say the S&P 500, and then we're going to watch the flows of each of these things over time, and that measure so-called Public Market Equivalent.

So, it's a very nice measure in the sense that one equals essentially the market. So if your PME is in excess of one, that's good, if your PME is below one, that's not as good. So this is a uniform metric. You can get fancy with this, you can make different adjustments for size, and leverage and different things, but that's the basic concept. If you review that history for buyouts, the PME has been, over time, about 1.2. So that's saying after fees, after risk adjustments and so forth, the buyout industry has historically added about 20% versus public markets. So that's been pretty good. Obviously you have to ask about what the prospective returns are, but historically that's been a pretty good asset class.
Venture is actually quite a bit higher, it’s about 1.4. What’s interesting, however, is that venture has puttered along around one, for most of the 1980s and into the early 1990s, and then it went ballistic in that dot-com period. So call it late ’90s into 2000s. And then it regressed back to one. So it was this one spike in a half-dozen year period, that really drove the asset class returns over the life.

Now that said, for both of these things, this is really important to underscore, is exactly what you just said, there’s enormous dispersion in returns. So if you look at just different asset classes, if you look at mutual funds, or if you look at bond funds or whatever, you can take a look at how the best funds perform, versus the worst funds to get a sense of that. And those dispersions are there, but they tend to be reasonably modest. But in buyouts and in venture, those dispersions are really high. So they’re the highest in venture capital, and they’re the second highest in buyouts.
And that is to say that, as I mentioned, even if the PME for venture in the last say 15, 20 years has been close to one, if you were anywhere near the top quartile, and certainly near the top decile, you did incredibly well. And by contrast, if you were in the bottom decile, in the bottom quartile, it was much more of a struggle, ditto for buyouts. So if you can identify and invest in the most skillful general partner managers, you have done really, really well. So that's an important thing to bear in mind is, when we talk about these asset classes broadly speaking, and we're giving you these medians or averages, they really belie a very rich distribution of returns behind that. And that's a really important thing for people to make sure they consider.

The follow-up thought, I'll just say is that there's a recent Department of Labor letter saying that, there's some thought about making private equity in general, so buyouts and venture, accessible for 401(k) programs. In some ways that's an exciting development, because that means individuals can access these asset classes, where it was much more, either not accessible or indirect through other things. But the question is, what access are they going to have? Which kinds of funds that are going to have access to? If they get access to the average asset class that might be okay, but if they end up getting access to the weaker parts of the industry, that might be not great for individuals.

**Patrick O'Shaughnessy, (16:49):** Say a bit more about, what I would say the “one click deeper”, on the dispersion is, which is the persistence of the returns, on a let's call it firm by firm, or fund by fund basis. Do the best players, tend to continue to be the best players in both buyout and venture?

**Michael Mauboussin (17:03):** The first thing is to say exactly so exactly what you said, persistent just means, past predicts the future. And what the data shows that in buyouts, that was true for venture and buyouts, certainly through 2000. So if you could just latch on one of the stars, these good performing funds, you did really well. Since 2000, persistence remains in the venture capital industry. So once again, best funds tend to be the best funds going forward. It's really interesting, no one knows I think exactly why that is, one of my pet ideas, which I cited a paper that also agreed with it, so I put it in there, is this idea called “preferential access.” The idea is something like this: that a venture firm does well, and it could do well originally by luck it doesn't have to be skill, but it does well so it builds a good reputation.
And then you come along and you know that you're a pretty good company, and you know that your prospects are pretty exciting and people can identify that pretty readily. You will attach yourself to the best firms, in the sense to get the imprimatur from them, and then of course they want attach with you, and so that creates a positive feedback, that all the best companies want to work with the same venture capitalists. And that allows them that positive feedback that allows them to do well.

And I think there's something to that. One of the ways you would test that hypothesis, by the way, is to look at partners who have left these leading venture firms, and to see how they do on their own. To see if the magic is in the seat, or if the magic is in the individual. On the buyouts, it's more equivocal. There's research that demonstrates that persistence has moderated, so there's less persistence. There's also some work that's showing that if you, depending on how you measure these things, that some persistence remains.

But one thing I'll just say, especially for buyouts, which again is a much larger asset class, and this is going to make complete common sense, and it's actually something that's relevant for public markets as well. But if you imagine, let's just make this up, there are a thousand funds. And obviously breaking them into quartiles, 250 each, they're going to raise the next round - the next fund. It turns out that the 250 top quartile, or it may be the top half, or the 500, they're going to be able to go out there and make a case for themselves. But in the bottom quartile, like that 250, they're not going to be able to raise money. So they essentially drop out. That's not literally true, they just participated at a much lower rate. So as a consequence, the successful guys are the main ones that compete in the next round, if you think about it that way.

And so that's a really interesting phenomenon in and of itself. Which is if you're successful in a sense it winnows out the weaker guys, and the stronger guys have to compete with one another. Now, new guys obviously enter. It's not a completely true story. But we're measuring persistence, that's also an aspect. And then we talked about this idea that we call “the paradox of skill.” Which basically says again, that often as skill improves, and more money comes in, more competition comes in, it's harder to grind out excess returns. And I think there's probably some of that which true in buyouts as well, it's clearly true in public markets. So it's just the nature of these things, as things get bigger, more people participate, more smart people get involved, it just becomes intrinsically more difficult to distinguish yourself consistently.

Patrick O'Shaughnessy, (20:01): On the buyout side, can you dive a bit into the role of price and EBITDA adjustments? I found these charts so interesting. About how much price paid drives outcome, and PME, of course. And what the trends have been there. And then there's this really interesting chart that shows, the percentage of companies with EBITDA adjustments coming through the buyout space, I also found fascinating.
Michael Mauboussin (20:23): Yeah, let's start with the latter one first, and these are data I think from S&P. And as you pointed out, in 2019 we had a record year of companies that have EBITDA adjustments, and that was something, I think it was north of 40% or more. And these adjustments are things that are typically like, "We're going to take into consideration future cost savings." They're giving themselves the benefit of the doubt before they get going. And this is actually not insignificant, because these are the kinds of numbers they're using when they're talking to their creditors as well. "So will you lend to us? Our EBITDA is not 100, it's 125 because we're going to do all these really great things." There's also a statistic, we cite that a couple of years later, a lot of these companies miss those EBITDA forecast by a meaningful amount.

Patrick O'Shaughnessy, (21:11): Shocker!

Michael Mauboussin (21:12): Yeah. So they're not, again, caveat emptor. On the EBITDA, that was also, I thought a fascinating chart. So just to be clear, in 2019 the average EBITDA multiple paid was 11.5 times, that was a record high. And there's a great chart from Steve Kaplan, University of Chicago, where they show on the x-axis, if you can envision it, is EV/EBITDA multiple. So that's just from lower to higher, as you go from left to right. And then on the y-axis is PME, as you pointed out, it's a public market equivalent. And again, low to high, so if it's high.

And what you see is almost a perfect looking downward sloping chart. Which is to say, the more you pay, the less the PMEs are in the future. Tt makes some sense. Now, the one caveat I'll just say on the multiples is, there are two things that are a little bit tricky and you have to think about when you think about the multiples. The first is interest rates clearly are lower. And a lot of the buyout industry is about servicing debt, and making sure and so with lower interest rates. There may be some reasonable increase in multiple you'll be willing to pay. Although we see, that again, we see higher multiples across all different industries. And the second is really interesting is, the mix of buyouts in the United States.

In the last five years, we went from something like 6 or 7% of the deals being in software, to now just under 20%. I think it was 17% of the deals were in software. Now when I grew up, I started in this industry in the 1980s, and buyouts were all the thing back then, and the whole story was, "You need to have hard assets, and stable cash flows, and tangible assets to use as collateral." The notion of an intangible base business being something that you could ever put leverage on, and certainly do a leverage buyout with, seemed to be completely out there. But that's happening. And obviously we've seen some buyout firms who only traffic in software businesses do incredibly well. So those are some interesting underlying developments. But Dan Rasmussen, our a mutual friend, Dan has I think talked about this quite clearly. And his analysis has
demonstrated that, typically over 10 times, at least historically, over 10 times there's a warning sign that it's very difficult to generate excess returns.

And so again, if you want to rationalize it, you would say it's interest rates, but by the same token, you see this long term chart. And these are deal level, these are deal level, that chart is deal level stuff, that is more sobering.

**FINANCING PRIVATE COMPANIES**

Patrick O'Shaughnessy, (23:32): I'd love to talk about the “L” in LBO, and use that as an excuse, just to talk about how companies finance themselves and their growth more generally. Which I think is something really fascinating that has changed a lot, not just with interest rates, but with things like stock-based compensation. We'll dive into each of those topics. Talk about how buyout firms are sourcing the debt side of their deals, where it's coming from, what the rates are, what the cost of capital is, how those things have changed in important ways.

Michael Mauboussin (23:59): In the middle part of the paper, and I think it's probably fairly boring for most people was, we talked a lot about how the backdrop changed in the world, and how that contributed to the growth of either buyouts to venture. And one of the things we spent some time on was, I also call it the co-evolution, but first the high yield bond market, and then the leverage loan market. This is now specific to buyouts. And as everybody knows, these things tend to go in waves. The first big wave for LBOs was in the 1980s. The apex of that was the RJR Nabisco acquisition by KKR. That was about 50 billion dollars in current dollars, so in today's dollars, so that was a very large transaction by any measure. A lot of the early buyouts were fueled by junk bonds, high yield bonds. And that was due to the rise of Drexel Burnham Lambert, and Mike Milken in particular.

So those two things co-evolved in an important way. And then the high yield market, again, grew fits-and-starts, but that market peaked for five years ago. And what really started to emerge starting in the late 1990s, but certainly the last 20 years for sure is the leveraged loan market. The leveraged loans are a little bit different than buyouts. They tend to be more senior, they tend to be collateralized, they tend to be floating rate versus fixed rate, and they tend to have less covenants, interestingly. What's happened is through the collateralized debt market, they've been collateralized, in what are called “CLOs”, collateralized loan obligation market. So what you do is you take a package of these loans, and then you break them into tranches, and there's a waterfall for cash streams. So AAA get all the first stream of cash, and then the AA and so on and so forth.

And the CLO market's grown quite rapidly. So it turns out in recent years, the leverage loan market now, is as large as the high-yield market. So that's a really striking finding and the CLO market now is about half the size. So half of those loans go into the CLO market, and again, those are packaged and sold out into the world. So I think there was a really interesting co-evolution, of now the leveraged loan market and the buyout market. Now, in terms of actual multiples paid, we already said that multiples are high, but it turns out you might think, gee, they're using more and more leverage. And the answer is not really. Because they have to measure, they have to monitor for debt to EBITDA ratios. So what's happened is, as the multiples have gone up, there has been some more leverage, but a lot of it is just more equity going in.

So the amount of equity going into these deals is actually reasonably high. Patrick, I've not looked at it really super closely lately, but what's remarkable is what's happening just in markets in general, in the credit markets. And you saw, I think it was last week, within the last couple of weeks, a high-yield issuer, issued debt at below 3%. It's hard to get your head wrapped around that. It's 200 basis points or 225 basis points over the 10-year Treasury note yield. But that just seems like, who'd have thought of that? That's on the buyout thing.

On venture, you raise... I find this interesting, we didn't draw this out, and I think this is a really interesting discussion, that I should have spent more time in it. So one of the points we make, and this also goes to
the what drives this, is that we made the case that gee, these companies are not going public. In the '50s, in the '60s and the '70s, companies had to go public, because they're tangible businesses and they needed their capital to grow.

And you think about Walmart. Walmart went public in the early 1970s, and in their first 15 years, they had negative free cashflow every year, because they were building stores and so forth, the model you have in your mind and they needed capital. So the negative free cash flow, they have to finance themselves externally. And the argument is now these companies are now all of these intangible companies, and it's just a bunch of guys in a garage, and they're using the cloud, and so on and so forth. And there's some truth to that. But one thing that's really missing is the change in compensation and how stock-based compensation, in particular, has essentially become a form of financing for these companies.

Again, if you think about stock-based compensation ("SBC"), to be clear, and it used to be mostly employee stock options, that's much less of an issue today, it's more now restricted stock units or performance stock units. So you just think about, if I grant you an RSU, restricted stock unit, there's two transactions that are happening. One in effect, I'm raising capital from you, it's essentially financing, and then I'm compensating you for remuneration.

So in other words, I could say, "What's the difference between me selling that stock to the public, taking the cash, and then giving it to you?" The difference is you're the owner, but those numbers are very significant. So we just took a peak at the S&P 500, and we looked at SBC as a percentage of cashflow from operations. So this is off the cashflow statement, and this is S&P 500 technology companies. So these are the more mature and established ones, and that number was 18%. So almost $1 in every $5 is coming [from SBC]... By the way that should not be an addback to cashflow from operations. That should be in the financing section of the cashflow from operations. So in a sense you could say, you'd be taking down cashflow from operations by 15% to 20% for these companies. The ratio is vastly higher for smaller companies, younger companies. A lot of this, I'm not going to call it an illusion, but a lot of the sense that these things are super capital light is because in a sense, they're raising capital internally with their own employees.

I think that's a very big change, versus 40 or 50 years ago. We just have to keep our eye out. Now I'm being agnostic. I'm not saying it's good or bad, but I just think that as you're thinking about value, clearly in your mind, you should understand that distinction. And as an analyst, doing financial statement analysis, you need to sort that out when you look at the cashflow statements, and just not, I think there's a very common thing where people say, free cashflow is just cashflow from operations minus capex. And that is extraordinarily misleading. You're missing a lot of stuff if you're doing it that way. So you really have to be much more careful and measure this, thinking about where different accounts go.

THE RISE OF INTANGIBLE ASSETS

Patrick O'Shaughnessy, (29:31): With these same companies, intangibles is just becoming an incredibly important concept, balance sheet item, and so on. I remember getting interested in this issue, five or six years ago, when I read a book called Capitalism Without Capital. Which is just very thought provoking. And we know that a lot, you've mentioned software a number of times, you mentioned that $1.8 trillion dollars of market cap added to those companies, heavily dependent on intangibles to grow and run their businesses. What did you learn about this transition as you studied the history of equities?

Michael Mauboussin (30:00): I like that book by the way, it's got some good stuff. There's a whole literature on this now. A lot of it, you can trace back to the work of Paul Romer who won the Nobel Prize, a few years ago in particular, Romer's 1990 paper. They're really three things that are tricky about this. One is, how do you measure these intangibles? So it's very much to your point, we know that a lot of investments that are made are intangible. The key, from a valuation point of view, is they typically show up on the income statement. One task would be for us to take that off the income statement and put it on the balance sheet.
There's a paper that came out in Management Science by Luminita Enache and Anup Srivastava. And I thought it was just fascinating, and they said, "Hey, maybe we should segregate SG&A into a component that's maintenance, the SG&A we need to run the business, and investment SG&A." And they use that technique, and they go back to 1970 to demonstrate that there's been this huge upswing in intangible investments. By the way, when people lament that companies aren't investing anymore, and they're hollowing out their businesses, and using all this money to buy back stock and so forth, they're missing a huge component of this, which is intangible investments.

![Exhibit 12: The Rise of Intangible Investments in the U.S., 1977-2017](image)

And if you properly reckon for that, not only have investments not gone down, they've actually gone up quite materially. To give you some sense of this, back in the envelope, the intangible investments in 2019 for U.S. companies, was about $1.8 trillion dollars. Capex was probably about $700 billion. This is separate from R&D, R&D was about $400 billion. So we're talking about very large numbers. The first task though is just measuring it, and it's very difficult. We can do it reasonably well on the aggregate level, and by the way, we also know Carol Corrado is one of the leaders on this. And she's written a bunch of papers which she shows, and go back to 1970s, which lines right up with our public company thing. Tangible investment was double that of intangible investment, which made sense. And today intangible investments are 1.5x tangible investments. So there's been a complete flip. And this is just a couple generations, let's call it.

So the first thing is measurement. Now we can do it in the aggregate pretty well. It's really hard to do it for an individual company. So the question is, can we develop sharper tools and techniques to do it for individual companies? So stuff like R&D, or maybe advertising, that would be pretty obvious. But within that, within other components of SG&A, how do I think about what is really an intangible investment, versus what is maintenance investment? That's the first point. The second point is, actually you mentioned, Capitalism Without Capital. In that book, they have a section where they talk about the economic characteristics of intangible assets versus tangible assets. And again, this riffs off a lot of the workout of Romer, and Brian Arthur and others. And there just needs to be a core understanding that, none of the laws of economics have changed by the way. They've not been repealed, but that intangible assets have different characteristics.

And the simplest thing is this idea of rival versus non-rival goods. So we don't want get too technical, but rival goods are goods that one person can use at a time. So your laptop you're on it, I can't use your laptop, if you're reading a book, I can't read that book. By contrast a non-rival good is one that we can all use at the same time. So it'd be a recipe, it would be software, it'd be anything digital. And then the second is, the degree to which you can control it essentially. So if you develop some incredible intellectual properties, some songs, some software, and you want to keep it proprietary, how easy is it for others to take it, or not to take it? So the concept is technically called excludability. What Romer talked about was these non-rival goods that are partially excludable, which allow companies to generate huge excess rents.
So that's a really interesting area, but that whole area: what are the differences? And again, I think that there's a large literature on this, but as an investor, if you're trying to understand how the world works, understanding those distinctions is incredibly valuable. And then the third component is really what we said, why does this matter? And this is the part for you, Patrick, even part of your core business which is, how do we think about measuring value? How do we think about the importance of factors? For example, if you capitalize these investments, it will have a very material impact on earnings, which will go up a lot. And it'll also have a very material impact on invested capital, which will also go up a lot. So things like price to earnings or price to book, you get a very different signal based on this.

I'll just mention, there was one paper that came out in the fall, it was updated earlier this year, but came out in the fall of 2019 by Anup Srivastava and Baruch Lev, they talked about value investing in particular. And they did this really interesting thing where they used Fama and French value versus glamor. Glamor are the most expensive stocks, value are the cheapest stocks. And they said, when we make our adjustments, they find that up to 30% to 40% of the companies in each of those categories leaves the category. And they claim that they find a much stronger signal when they make those adjustments. So these are really interesting areas. The implications are really interesting to think about that as an investor. And again, certainly for systematic investors, and I think systematic people understand everything I'm saying, there's no revelation here. But it's the constant chase to get it more efficient. But even as a fundamental investor, you have to say, "I have to think about these things properly from an accounting point of view, what is an investment? What is maintenance? What is a return on investment?" So all the same basic things.

The last thing I'll just say is that, notwithstanding these adjustments, the thing that doesn't change throughout this is free cashflow. Free cashflow is unperturbed. It doesn't really matter where you account for stuff. It doesn't matter where it accountants put things. What matters is free cashflow, but why I think these adjustments are useful for the investors, is it gives you a clear view of investments. And then if you have a clear view, and you have a sense of return on investment, you have a better understanding of future profitability, future free cashflow. So to me, it's just mostly revelation. So those are three chunks that I think most people don't do much. Can we measure it better? Do we think about the different characteristics of intangible assets? And what are the implications for how I actually do my job? And I think each of those areas broadly speaking, I perceive people could do better.

So those are three chunks that I think most people don't do much. Can we measure it better? Do we think about the different characteristics of intangible assets? And what are the implications for how I actually do my job?

Patrick O'Shaughnessy, (35:53): By the way, when we make small, simple adjustments, capitalizing some of the intangible investment for something simple like book value, it drastically increases the return of a value strategy. And this is a simple, simple version of that adjustment. So you have to imagine that more properly accounting for intangibles, not just for systematic, but for all investors, is really important. If you had to segregate the successful versus non-successful, at least public market investors over the last, certainly the last decade, maybe the last 20 years now, you might point to whether or not they embraced Brian Arthur's idea of increasing returns. You talk in the paper about "superstar firms" and returns on capital earned by those firms versus the rest. Tie those two concepts together for me.

Michael Mauboussin (36:35): Yeah. I think this is really... Again, I had this in the back of my mind, but this brought to the front of my mind, they're two related phenomenon. One is, as you point out this idea of superstar firms. And there's been a fair bit written on this. And the way we could try to think about that, is
looking at the gap between return on invested capital for the biggest and the smallest. And the claim is that that gap was, call it 15 percentage points 20 years ago, and now it's closer to 30, to 35 percentage points.

And Patrick I think you've seen, and we've talked about this before, I think you've seen this too as well, if you look at operating margins for businesses, and you break them into quintiles, you see the bottom three bumping along. They go up and down with the economic cycle and so forth. But there's not been a real market change. Where you see the action is the second quintile, and then the top quintile, in particular pulls everything up. So the average is, again, these averages belie these weird sets of distributions underneath it. The richer are getting richer, that's certainly the phenomenon.

And then another one that is related to that, is just a small company, I don't know if we call it the "small company trap." But this also relates to fewer IPOs. Why are a fewer companies listing? And the academics will say, "Hey, there's a proclivity to list, and it's based on a cost-benefit analysis." And the costs are what you'd expect, is regulatory, and legal costs, and IPO costs, once you're public and all that kinds of stuff. And then the benefits are, you can have access to capital, and you can compensate people more efficiently. But they basically argue that the costs have gone up more than the benefits, which means that you need to be a larger company, to be able to shoulder these burdens to go public.

And the second argument, which is really afforded by Jay Ritter, who's the main academic doing work on IPOs, is this idea of economies of scope. Small companies are having a harder time transitioning to becoming medium and large companies. And as a consequence, they look into the world and they say, "We're better off just selling ourselves to a big company, because there's going to be a lot more opportunity for economies of scope." A lot of the exits now are just selling to large established buyers. So that's that bit called small company trap. Brian Arthur, and by the way, I've been very enamored by this work since the mid-1990s. But Brian was one of the first economists to identify this concept called "increasing returns." What you're taught in microeconomics, and by the way, for the most part is still a valid assumption, is that return on capital tends to migrate toward the cost of capital. Which makes complete common sense, because it's competition.

So in other words, Patrick's lemonade stand does really well, Michael's lemonade stand opens next door and cuts prices. And then we go back and forth till we're basically earning the opportunity cost of capital, and that could take time and so on and so forth. But that's the path that almost every industry follows over time. So Brian heretically came out with this idea of increasing returns, and said that under certain conditions, especially when there are networks involved, one company can run of with the spoils.

So he called his concept increasing returns. By the way, one of the really interesting proxies for this, is just looking at market share distributions. In the traditional businesses, if you think about soft drinks, or sneakers, or whatever, the top companies own like 40-ish, 40, 50, something like that, then the next company is like 20, 30 or something like that, and then it goes from there. Whereas in these certain types of businesses, these network effect businesses, top companies have 90% market share, 80% market share, things that we had never seen. And these we're going to call them natural, because they evolve.
So Brian’s talked about this idea, mostly from network effects. Network effects exist when the value of a good or service increases as more people use that good or service and I think as we move to more intangibles, we see more incidences of network effects. Now, I should mention that network effect has been around for a million years. I actually just was looking at the other day at the 1908 Annual Report for AT&T. They actually laid out network effects beautifully, in this annual report from 110 years ago. So the idea has been around for a long time, but the applicability I think is more material today.

A telephone—without a connection at the other end of the line—is not even a toy or a scientific instrument. It is one of the most useless things in the world. Its value depends on the connection with the other telephone—and increases with the number of connections.

Now here’s what’s really interesting is, when you think about why this has such a powerful influence on value and value creation. Classic economies of scale, which is a form of increase in returns, just says, as your output increases, your cost per unit goes down. Economics 101, you learn that in your third day of microeconomics. What Brian I think introduced in a way that I hadn’t appreciated it before, was demand side economics. Which says, as more users use your good, the willingness to pay goes up, because it becomes more valuable for them. So if you can imagine these two curves, these two charts sitting next to each other. The one on the left has this declining cost per unit, as a consequence of scale, and the picture on the right has this increasing willingness to pay, is a consequence of scale.

If you don't increase the price of your good or service, you give huge amounts of consumer surplus. When you think about a lot of these platform businesses, and I think if you think a lot of venture capitalists, I think they are very overt in trying to engineer that two-sided benefit. That becomes an incredibly powerful mechanism for creating value. And when you think about the leading technology companies, almost all of them are employing some element of that basic picture, which is really cool. How do you get there, is another question. How do you unseat those guys is another question, but that’s the Brian Arthur connection, and why it becomes really difficult for small companies to unseat all this. One other thing I’ll mentioned is, I mentioned a moment ago about M&A being more active, and one of things we've also seen as a fairly liberal antitrust.
We've seen, if you look at the number of public companies I mentioned already, it's this inverted U. So from 1976 and then it peaks in 1996, and then it goes back down to now, 2019.

So think about the inverted U. If you actually do a Herfindahl index, and Herfindahl index is a measure of concentration in industries, that actually is a U. So it's almost a perfect mirror of that. So Herfindahls we're high in the 1970s, they dropped in 1996, and then they're back up. So in the last 20 years, we've seen a meaningful increase in concentration. I think largely as a consequence of mergers and acquisitions, and that's also played into this whole equation of both fewer public companies, and also greater profitability for the leaders.

Patrick O'Shaughnessy, (42:39): What are your thoughts on the role that monopoly starts to play in these big companies? I love the 1908 AT&T report, and our friend Modest Proposal's idea. I asked him if he could pick to invest in any one sector, he just said communications, because you always have some monopoly to pick from. And that communications companies naturally create these network effects, and therefore monopolies. I think what's been unique about this cycle is, people mostly love these companies, and spend a huge amount of their time and dollars on their products and services quite willingly. And it doesn't feel anti-competitive, in the sense that normally would be the case for attacking and breaking up a company, like AT&T was broken up in the early ’80s. So what's your sense of how regulators may play a role, in the future returns of these businesses?

Michael Mauboussin (43:20): I'm very interested in this topic, and I've read a number of books on it, so I don't have a strong view. I have a leaning, but I don't have a really strong view. And so I do think, look, the key was, historically those kinds of monopolies, including AT&T were regulated. There were other monopolies. If you think about your utility or so forth. Those are regulated in the sense that we're going to trade off, allowing you to have a monopoly in this particular market, but we're going to make sure they don't make too much money. And I think what feels unusual to people, is that certain companies get into these so called natural monopolies. And they can do whatever they want with their economics, they're not going
to be regulated in any meaningful way. And I think there’s some sense that those profits could be unjust, or these companies extend their power too much and so forth.

So I don’t know. I would just say though, as an investor, notwithstanding wherever you fall on the continuum, whether there should be action by the regulators or not, it’s something to be incredibly attuned to. Just I would pay attention, especially if we have changes in administration, and just watch those political winds. Those could be some major developments.

Now, all that said, and I think AT&T, is a good example, it’s not super clear that breaking up these companies would be bad for shareholders. In fact, there’ve been cases where these monopolies have broken up, and it’s actually been pretty good for shareholders. So it’s not clear that from a shareholder point of view, it’s completely dire. I don’t really have a strong view on it, I think it’s an incredibly important topic and topical thing. So people should pay attention. And especially as we get through, for example, the election in 2020, and we move into 2021 and so forth, people should continue to monitor this closely to see what developments take place.

THE ALLOCATOR’S PERSPECTIVE ON PRIVATE EQUITY

Patrick O’Shaughnessy, (44:52): The angle that we haven’t talked a lot about is what I’ll call the allocator’s perspective. You mentioned earlier the generic big pension fund that needs to make dollars, and the dollars are coming from public markets at a massive multiple of either buyouts or venture capital. How do you think that will continue to evolve? Do you think that we’ll just see more money put on a relative basis into private markets, just because returns have been good there, and companies have been staying private longer? Do you think that it just trends more towards indexing? If you’re an endowment or a big pension that has spending requirements, but is also probably going to be around in 30, 40, 50 years, what do you think the change in perspective has been and might be in the future?

Michael Mauboussin (45:29): I think it’s really challenging for these pension funds and for endowment. Because their liabilities are growing, they’re probably not going to get more cashflows, and they have their beneficiaries expect these benefits. So I think it’s a really tough one. And by the way, that depends on what estimate you accept, but underfunded pensions, in United States are somewhere between one and a half and six trillion dollars. Trillions. These are big numbers to begin with. One of my favorite charts from the report was that of CalPERS. And the reason I liked it is because these are all just public data, so we can get these things. And we went back to 1960, and CalPERS has posted their assumed plan return.

Exhibit 9: CalPERS’s Assumed Rate of Return and Yields on Treasury Securities, 1961-2020

![Exhibit 9: CalPERS’s Assumed Rate of Return and Yields on Treasury Securities, 1961-2020](image)
And we just compared it to the U.S. 10-Year Treasury Note Yield. When it traded the 30-Year Treasury Bond Yield, so the 30-Year didn't exist that full 60 years. And so back in 1960, the 10-Year was at 4%, and the planned return was 4%, so there's basically no risk premium. In 1981, it's hard to think about this, 1981, so to call it 40 years ago, the 10-Year was yielding about 14%, and the planned returns were 8%. So there was a -6% risk premium. You could have basically locked up a lot of your returns for some period of time.

And then now the 10-Years is 70 basis points, roughly speaking, and the planned returns are 7%. Which doesn't seem crazy, but let's call it roughly almost a 6% point equity risk premium. So we've gone from -6% to 6% risk premium. Now you're the chief investment officer in one of these big pension funds, and you're like, "How am I going to get there?" The first thing it seems pretty clear, it's unlikely to come from credit, certainly not from corporate basic stuff. And then public equities, you tell me what public equity returns will be, but even if you saw-

**Patrick O'Shaughnessy, (47:09):** Low it seems.

Michael Mauboussin (47:10): Yeah, low. I think even if you assume they're at the low end of the historical band, you're going to be hard pressed. And so people say, "I need these alternatives to try to get there." By the way most, a very high percentage of funds, say that they're going to allocate more to alternatives. So that is the most common thing. The interesting thing is when surveyed, institutional investors, this class you're talking about, almost 90% said they have penciled in 8% or higher returns for alternatives. 40% of them, so it's a subset of that group, 40% have penciled in 14% or more returns.

So you're like, "All right." Now part of this is actually interesting, and it's actually to some degree, almost an agency issue, which is to say, "I'm in charge of venture capital for the pension fund," and you're the CIO and you say, "Hey, Michael, we need to get these returns." And I go, "That is great. We're going to invest in this venture fund." We don't really know if it did well or poorly for 5/6/7/8/9/10 years. Maybe I'm not even doing this job anymore, but certainly maybe you forgot. And now it's a very different thing. Whereas if I say, "Hey, we should put more into public equities." And then they go down 15%, you'll be looking at me 6 months later, or 12 months later, giving me a funny look.

So I think that there's a lot of appetite for this, it's just a question of whether those expectations will be met. But again, that's the trade off. We talked about the dollars versus the percentages, and it's hard if you're CalPERS and you're $400 billion dollars, it's hard to see, can you put enough money to work in these kinds of things, or are your investments are big enough to make the dollars make a difference versus the percentages?

And that's a challenge. One last thing, there's a really interesting round table in the new issue of the *Journal of Applied Corporate Finance*. And it was actually a bunch of GPs, general partners, these are investors sitting around and talking to one another, and one guy says, "It's interesting. All these guys come in and they say, "we think the asset class will earn somewhere between 9% and 11% net."" He goes, "But our fund, we think we're closer to 20%." So in other words, they know about the base rates for the industry, or they have a view of the base rates for the industry, but they don't think that those base rates are applied to them. Another interesting phenomenon as these guys go out and market.

**Patrick O'Shaughnessy, (49:16):** What do you think this all means for public market active management? We've talked about this a decent amount before, so we don't have to go too deep into it, but I'm just curious. What, if any, changes this research made to your thinking there, especially around the lack of small to mid-cap companies. Historically a place where there has been some higher dispersion and maybe more opportunity for alpha, if not alpha itself. Any updated views on the role of active management in public markets specifically?

Michael Mauboussin (49:42): No, not really. I think that one of my other favorite statistics in the paper is that in 1976, there were less than 1 CFA charter holder, for every public company in the United States, and today there are 27 CFA charter holders for every public company in the United States. So a lot more
eyeballs on the companies that are out there. And maybe there is clearly more dispersion in smaller mid-cap companies. But look, the world is just a super dynamic place. You see these value changes are quite dramatic. You think about 2020 and hardly anybody had any idea what was going to go on. It was really hard.

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So I think that there will always be a role for public market investors. And a lot of the issues we've talked about is, it is a changing world and it's a global world, and so there will always be opportunities. Things will go up and things will go down, that will always be an opportunity for public market investors. I don't think it goes away anytime soon. Now, one of the things we've talked about quite a bit is, is there a role for indexing? And the answer is, absolutely yes.

And I think for many people, that's a very sensible solution. But that does not mean that the active management industry can go away. It's not going to go away, because there are two things that it does that are still really important. One is price discovery, and again, indexing benefits from that positive externality, I think we can never lose that. Essentially the fees paid to active management subsidize the indexing industry. And the other is liquidity. And even in these environments, we see that index people don't trade that much. And so we need liquidity if you have it. I think those are public goods, those are vital, and those will continue to play a role. So the debate should be, what percent of the assets should be active versus passive? That's a vibrant debate, but it's not going to go away. I still think that there's going to be huge opportunity. I'll just say that my point of emphasis for my students at Columbia Business School this year was, exactly this intangible thing. I just think if you can get in front of that, and think about that intelligently, that can add a lot of value.

I also think, something you and I have talked about is, Dan McCarthy and Pete Fader have done this great work on customer-based corporate valuation. Again, the ideas have been around for a very long time, these guys have extended it, made it more rigorous. Those kinds of tools, I think can provide certain people with insights that can be valuable. There's always a frontier of something interesting to work on.

**RECOMMENDATIONS AND AREAS OF INTEREST**

Patrick O'Shaughnessy, (51:54): You mentioned that focus on intangible investment, and that concept for your young students, many of whom I think will go on to be professional investors. Beyond just that, let's say it was your own kids, some of them that are of that age, that they might start a career, or have started a career maybe in investing, I'm just curious, what other advice you would give. I think a lot of young people out there that want to get into this business, “investing business” I'll say very generally speaking, venture buyouts, public markets, maybe the loan markets, but just more generally. What trends do you think are established and persistent enough, that should merit attention from young people?

Michael Mauboussin (52:29): By the way, I love Jeremy Grantham’s answer to that question. When you posed it to him, I was like...

Patrick O'Shaughnessy, (52:33): Wow.
Listen to the podcast with Jeremy Grantham, co-founder and chief investment strategy at GMO, [here](#).

Michael Mauboussin (52:34): Yeah, exactly. That took me to the back a little bit. I think one of the answers to that is, if you're serious about making a long-term career, is to try to think about, "Can I do something that other people aren't doing?" So to be the nth person doing the same thing as everybody else, is very challenging. And so that might mean, are there parts of the markets that are less trafficked? Are there geographies, where you could be on the smarter side of the people in the room? That would be the advice, is to try to find something that's not what everybody else is doing. The challenge with that is, it's often the case that those are smaller asset classes, and so you have to be modest in terms of what you think you can actually do in terms of size of your business. But that would be my advice, is almost certainly try to find and figure out something that other people aren't, doing that can be beneficial and get really good at it. Versus trying to again be the thousandth, large cap growth manager or something, which is difficult.

Patrick O'Shaughnessy, (53:31): Every time we do this, at the end I ask you, what are the two or three issues on top of your mind, that you're working on and actively researching? And then eight months later, we do this again and you've written a book on the topic, so what will the next book or two be on?

Michael Mauboussin (53:44): Well, a couple of things. One is this intangible thing is something we'll most certainly do more work on, and probably have something on that. We're also doing an interesting bit of research on the concept of team decision-making, and in particular the role of cognitive diversity. What we're trying to do is, go beyond the headline feel-good commentary, and actually analyze as rigorously as we can. And we started with something pretty basic, which is about 50 investment committees of real endowments and pension funds. And we looked at the size of those committees, and actually the composition. And we talked to [Scott Page, University of Michigan](http://scottpage.com), who's a friend. One of the leading guys thinking about diversity, and developed a little scorecard of cognitive diversity, not social category diversity, cognitive diversity. And we're just using some very simple machine learning techniques to do dimension reduction and probably some k-means clustering to understand that.

And the early results are pretty exciting, we'll see more on that. The other thing we're doing in the background quietly, I don't know if it's going to see the light of day, but working on a revised version of *Expectations Investing*. So my mentor [Al Rappaport](http://arappaport.com), he's an amazing, just an amazing guy. He's in his later 80s, but just going strong. And so we've been talking about, what've we learnt the last 20 years, since the first version of that book came out? I'm happy to say that a lot of this stuff stands up pretty well. It stood the test of time. But of course, there are many things we were talking about today that would be novel, and interesting to contribute. So that's another project that's going on. There are other things I'm interested in, we have files on a bunch of these things.

One of them is there's a lot of stuff in computer science on this, but this idea of exploit versus explore. So, as a company, how do you think about allocating your resources... And this actually could be our intangible thing, masked in a different argument. How much allocation of my time, and energy, and capital do I spend on just exploiting what I'm doing well, and how much do I allocate to exploring something new. And how does that change over time for a business and evolve? That's another cool topic. So in general Patrick, there's always a zillion things that are so fascinating to work on.
Patrick O'Shaughnessy, (55:44): Any of these concepts that manifest more directly in your work with the Santa Fe Institute (“SFI”) of late? And I'm always just curious how ideas move from your investing work, to the Santa Fe work, and which direction it tends to go.

Michael Mauboussin (55:56): Yeah, well definitely, intangibles, check. The cognitive diversity work is really collective intelligence. And I think SFI has done some of the most profound work on collective intelligence and understanding that, so that would be certainly a check. Explore versus exploit. Some of those original ideas in some of our SFI scientists, were very early in all that stuff. In my first call, and when I was thinking about that, and building my file on that was, our President David Krakauer, and he gave me a whole bunch of things to pursue. So, I think that SFI clearly had a major imprint on me, and when I started to think about these ideas, it certainly is always in the back of my mind. In all those cases, for sure. And even things like Expectations Investing to some degree. Because it gets into interesting questions about how do we see the world? How do we form expectations? How do we behave as collectives versus individuals? These are all super interesting topics. So at this point it's hard to untangle my thought processes from what I learned from SFI.

Patrick O'Shaughnessy, (56:53): In closing, are there any investors that you think people could go learn from that have been especially good? I mean, practitioners, not just academics, in this era of the rise of intangibles in your initial study?

Michael Mauboussin (57:06): If someone asked me right now, I would have them listen to many of the things you've done, interviews you've done. And discussions about bundling, discussion you've had with John Collison, it was fascinating on many levels and very useful. Well, the John Collison, conversation I thought was really interesting, because he was not only interested in the concept, but interested in measuring the concepts. Which is also I think the next level.

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But I had to say that... I know people report that they have had bad experiences on Twitter and so forth. Twitter has been phenomenal from my point of view. The people I follow, I really like, I learn a lot. Threads I see, I can start to work on. I don't know if I'd point to any specific investors. I would highlight Dennis Lynch who the Head of Counterpoint Global. And Dennis has a tremendous track record as an investor over time. But perhaps the characteristic of him that I admire the most is, he's just one of the most actively open-minded people I've ever met.
Listen to the podcast with John Collison, co-founder of Stripe, here.

So he's just completely open, and thoughtful, and willing to hear different points of view, and rigorous in a sense, but flexible in his thinking about what's going on in the world. The one thing I will say is that, I have a reaction to people lamenting the world saying, "Oh, this is the Fed doing this, or indexing is doing that." You have to play the cards that are there. You have to deal with the world as it is, not as you want it to be, or you wish it to be, or how you think it should be. That's also another thing to bear in mind for people is that, don't complain about the world, figure out a way to thrive in it.

Patrick O'Shaughnessy, (58:21): Well, as I said yesterday, when I was reading this again, I think it is the definitive piece that everyone in the asset management business needs to read. Because it gives you enormous context for what has happened, and what the persistent and important trends have been and where money is managed and how. So I love the piece or the short book, we'll call it maybe. As always, loved this conversation. Thanks so much for your time.

Michael Mauboussin (58:41): Thank you, Patrick.