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Columbia Business School

Bloomberg Intelligence Roundtable on The Theory and Practice of Capital Structure Management

Bloomberg Headquarters | New York City | October 25, 2017

Don Chew: Good morning, I'm Don Chew, Editor of the *Journal of Applied Corporate Finance*. And I want to join Joel Levington, our host and Head of Fixed Income Research here at Bloomberg Intelligence, in welcoming you all to this discussion of the theory and practice of capital structure management. The main question we want to address is this: How can corporate executives manage their capital structure and payout policies to increase the value of their companies? And we want to address these questions from both a theoretical and a practitioner perspective.

There are really two or three main theories coming out of the academy that have tried to address this question. But before we get to them, let me start by mentioning the famous Miller-Modigliani "irrelevance" propositions, which at least seem to say that neither capital structure nor dividends matter. The M&M propositions show that if we make some very restrictive assumptions—like no corporate income taxes or bankruptcy costs, and no effects of leverage or dividend policies on corporate investment decisions—then neither a company's capital structure or its payouts would affect its value.

But for those who think that capital structure does—or at least can—have significant effects on corporate values, there are two, or maybe three, other main theories that get serious attention from academics. One is typically referred to as the "trade-off" theory, and it says that companies weigh the tax and control benefits of more debt against the increase in the expected costs of financial distress. And then there is the so-called "pecking order" theory, which says that companies tend to take the path of least resistance by using internal funds when available; and if they need outside financing, they use debt. Equity is viewed only as a very expensive last resort, something to be avoided unless and until their debt capacity has been completely exhausted. And third and last, there's a variant of the pecking order called "the market timing hypothesis," which says in effect that if market conditions favor the use of debt, then issue debt, and as much as you can—but if equity markets are strong and stock prices are high, then go with equity.

Cliff Smith, who is the representative academic on this panel, has done some interesting research on seasoned equity offerings by U.S. public companies that attempts to make sense of all of these theories, to show how each contributes to our understanding of at least some aspects of corporate behavior. And I'm going to ask Cliff to start us off this morning by providing a brief review of the theory and then tell us about this relatively new piece of research that tries to bring all these theories together.

But before I do that, let me just go around the table very quickly and introduce everyone.

And let's start with **Joel Levington**, who as I mentioned is head of Fixed Income Research here at Bloomberg Intelligence, and who is both the host and principal organizer of this discussion. Before joining Bloomberg five years ago, Joel was a managing director at Brookfield Asset Management and, prior to that, a Director at S&P Global.

Cliff Smith is the Henry and Louise Epstein Professor of Business Administration, Finance, and Economics at the University of Rochester's Simon School of Business. Since joining the Simon School in 1974, Cliff has done research in the fields of corporate finance, financial institutions, and risk management that has led to 15 books and some 100 articles in leading finance and economics journals. And to go along with his research, Cliff has received 30 Superior Teaching Awards while at the Simon School. Cliff also has considerable experience working with companies and serving on boards. In fact, he recently finished a 21-year stint as a member of the Board of a NYSE-listed REIT that was recently taken private for some $8 billion through an LBO.

Greg Milano is the founder and managing partner of a strategy and corporate finance consulting firm called Fortuna Advisors. Before that, Greg ran a corporate finance advisory group with Credit Suisse, where his focus was integrating strategic issues into corporate financial policy. And before that, he was my co-partner at Stern Stewart & Company, the corporate finance consulting firm best known for popularizing a measure of performance known as "EVA." I should also mention that Greg has written a really nice piece on financing and the drivers of value in the pharma industry that appeared in the most recent issue of the *JACF*—and I've asked him to talk about capital structure from that perspective.

Rounding out our group are four analysts from Bloomberg Intelligence. These analysts cover a diversity of investment and capital structure types—and, as Joel tells me, they bring to the table over 100 years of collective, practical experience in the capital markets analyzing capital structures and financing instruments.

Asthika Goonewardene is Bloomberg Intelligence's bio-tech equity analyst. The companies he covers range from the big-cap biotechs such as Amgen, Gilead, and

Celgene down to smaller, development-stage or early commercial biotechs like Juno, Clovis, and Bluebird. Before joining Bloomberg, Asthika was a management consultant at Datamonitor Heathcare Consulting and, before that, an equity research analyst at Piper Jaffray.

Gina Martin is the Chief U.S. Equity Strategist for Bloomberg Intelligence, a research platform that provides context on markets, industries, companies, and government policy. Prior to joining Bloomberg, she was the head of U.S. Equity Strategy for Wells Fargo Securities.

Mike Holland covers high-yield debt in the healthcare industry, and spends a good deal of his time working with Bloomberg's distressed debt teams. Before joining Bloomberg, Mike worked at UBS and Credit Suisse, following several years on the buyside and a brief stint in financial consulting.

For the past three years, **Jonathan Palmer** has worked at Bloomberg Intelligence, covering the medical equipment and supply chain sectors. Prior to that, Jon was an equity analyst at various firms for more than seven years, and has also worked at biopharamceutical giant Pfizer.

A Brief Overview of the Theory—and Some New Evidence

Chew: So, now that I've told you a little about our panelists, let me begin by asking Cliff Smith to give us a very quick overview of the theory of capital structure. Cliff, what is the current thinking in the academic finance profession about optimal capital structure? Can a company's debt-equity ratio play an important role in management's efforts to increase shareholder value? And what about its dividend or payout policies? Or are such financing policies, as Modigliani and Miller suggested back in 1958, pretty much "irrelevant"?

Cliff Smith: I agree that Modigliani and Miller is the logical place to begin this discussion. Their 1958 paper basically said that if you give me three assumptions—no taxes paid by the corporation or its investors, no bankruptcy or other "contracting" costs, and no effect of financing choices on managers' investment and operating decisions—the current market value of the firm should not be affected by how you structure the liability side of the firm's balance sheet, by whether companies choose to finance their activities mainly with equity, or with large amounts of debt. Given these assumptions, M&M showed that these financing decisions can't have a material effect on the *real* source of corporate value—which is the operating cash flows that are expected to be generated by the business over time.

M&M's basic insight was that differences in leverage and the kinds of securities a company issues are just different ways of dividing up and repackaging those cash flows for investors. As long as these financial decisions don't affect the "real" decisions in any predictable way—for example, as long as corporate managers make the same investment and operating decisions whether the leverage ratio is 10% or 90%—financial decisions are not going to affect the total value of the firm. And by that I mean the value of the debt plus the equity, or what people sometimes call "the enterprise value" of the firm.

M&M made a similar argument about corporate dividend policy. Using the same assumptions—no taxes or transactions cost and a fixed investment policy—they showed that a dollar of dividends paid is a dollar of capital gains lost, and overall value again is unchanged.

Now, these are explanations for why capital structure and dividends *don't* matter. But what they say to me is that if you want to understand how and why financial decisions *might* matter, then you should start by taking these M&M statements and turning them on their heads. That is, if changes in capital structure and dividends *are* going to affect corporate market values, they're going to do so mainly for one of the reasons M&M assumed away. This means that, to understand why capital structure and dividends might matter, we want to explore the possibility that the firm's choice of financing and dividend policies can affect the taxes of the firm or its investors. We also want to think about how corporate financing and payout policies can affect companies' or their investors' information or contracting costs, including the costs associated with working through financial distress or bankruptcy. And third and last—and this is where I end up focusing the most attention—we want to understand how the firm's capital structure, and whether it chooses to retain or pay out corporate cash, can affect managers' investment and operating decisions.

The first rule people walk out of a corporate finance class with is to take all positive net present value projects and walk away from negative NPV projects. In thinking about the right capital structure and dividend policy, you want to end up with policies that encourage—or at least don't get in the way of—corporate managers following this NPV rule.

How can a company's capital structure end up affecting its investment decisions?

In 1977 Stew Myers wrote a classic paper called "Determinants of Corporate Borrowing" that started out by viewing the values of all companies as having two basic components: "assets in place," which are the more or less tangible assets that generate the firm's current cash flows; and "growth options," which can be thought of as opportunities produced by the firm's current operations and capabilities to make future investments. Stew then went on to explain why companies whose value mainly reflects its assets in place—people here at Bloomberg would probably call them "value" companies—tend to use much more debt than firms whose value is a reflection primarily of its growth options. The danger with using debt to finance growth companies is something Stew called the "underinvestment problem." The basic idea is that companies carrying large amounts of debt, when faced with a drop in their operating cash flows—and probably their stock prices too—are more likely to pass up positive-NPV projects than firms financed mainly with equity. I find that a pretty convincing explanation for why growth companies in general carry little debt, and why so many of them have *negative* leverage—that is, more cash than debt on their balance sheets.

But now let's turn to the case of so-called "value" companies, firms in mature industries with few major investment opportunities whose value comes mainly from their current earnings. These kinds of companies face what my former Rochester colleague Mike Jensen has called "the free cash flow problem." By that he means the tendency of managers in mature, cash-generating industries to use their excess cash to pursue low-return investments—to destroy value by chasing growth or market share at the expense of profitability. And as Mike went on to argue, both debt and dividends can play an important role in solving this problem; both can be used by management to make credible commitments to investors that the firm's excess cash is going to wind up in their pockets instead of being wasted on value-reducing investments.

Now, besides thinking about the kinds of companies that are likely to be hurt, or helped, by carrying lots of debt, you also have to recognize that there are a lot of things that can push companies away from their leverage targets. If it were costless for companies to access capital markets, then once you'd figured out your optimal leverage ratio—and let's say your policy was to have debt make up 30% of the firm's total market cap—then every day after the market closes at 4 p.m., you'd either issue or buy back some stock or debt so that when you went home that night your firm would be leveraged right at 30%. But since making these adjustments on a regular basis would be pretty expensive, the CFOs of companies with leverage targets are going to think mainly in terms of staying within a targeted *range* of leverage ratios.

The fact that these ranges can get to be pretty wide brings me to the pecking order theory that Don mentioned earlier—a theory that Stew Myers also had a lot to do with. When Stew was elected President of the American Finance Association in 1984, he made this theory the cornerstone of his presidential address. He said, in effect, that because corporate managers know a lot more than outside investors about the prospects and value of their companies, it can be very expensive for companies to raise capital in external equity markets. So if I can finance whatever I want to do out of internally-generated funds, that's generally going to be my first choice. If I exhaust internally generated funds, and still have more positive NPV projects, my next choice is to access debt markets. My third choice, selling equity in public markets, is viewed as a very expensive proposition, not just in terms of out-of-pocket costs, but because of this "informational asymmetry" problem that ends up imposing large costs on issuers. And thus, for public companies, an equity offering tends to be the financing alternative of last resort; only companies that have exhausted their debt capacity would consider issuing equity.

And that brings me to the subject of our recent research on seasoned equity offerings by U.S. public companies that Don mentioned earlier. Our initial insight came from working with a Ph.D. student at Rochester named Fangjian Fu—who now teaches at the Singapore Management University. Mike Barclay and I were his thesis advisors and, in a study of some 8,500 corporate SEOs over the period 1970-2015, we came up with a set of findings that suggest that neither the tradeoff theory—at least as it's usually understood—nor the pecking order describes these decisions made by CFOs in very convincing ways. What we found is that the typical company announcing an SEO is nowhere near having exhausted its debt capacity. This finding is, of course, completely inconsistent with the pecking order story, which makes CFOs out to be incredibly shortsighted, always looking for the cheapest funding with little thought about the effect of that decision on the company's ability to fund future projects.

So, the findings of our study suggest a thought process that is quite different from both the pecking order and standard trade-off theories. As I said earlier, these SEO issuers tend to raise fairly large amounts of equity even when they have what looks like substantial unused debt capacity. And during the next few years after raising that capital, the companies use most of the proceeds from those issues to make large investments, exercising their growth options if you will.

Of course, that approach makes perfect sense. Let's suppose that Walmart decides that it's going to enter China. Well, it's not going to open just one store in Beijing, they're going to do it on an appropriately large scale. The CFO will say, "Okay, over the next two or three years, we're going to have to come up with a lot of cash to make that happen. To do this, I'm not going to wait until my debt capacity is used up; I will line the ducks up early. If I wait until the last minute to raise equity, then any adjustments I end up having to make are likely to be much more expensive." In other words, if the company doesn't raise enough equity today, and the profits from the new investments don't materialize as quickly as expected, it could find itself in a financing bind, faced with the underinvestment problem that Stew Myers warned about.

Now, given that the company has decided to raise a significant amount of equity to fund what management expects will be a profitable investment strategy, the CFO should make the expansion strategy and associated capital expenditure requirements known to the investing public early on. By persuading investors that you have a productive use for more capital, and by having the equity offering roughly coincide with the launch of this investment spending, you go a long way toward resolving investor concerns that your company might waste much of that capital—and at the same time you head off the possibility of an underinvestment problem.

Chew: Cliff, as you said, your study provides evidence of that kind of thinking by showing that these companies invest a lot of the capital raised in the year or so after they float the equity issue. But if I remember correctly, aren't a lot of these equity offerings followed by large issues of debt a couple years later?

Smith: That's right. What you see is a material step-up in investment spending that begins in the same quarter as the SEO; and after the SEO, the external capital required to complete the projects is raised in debt markets.

Chew: There's a fairly recent study of very large debt offerings—by Dave Denis of the University of Pittsburgh—that might help in interpreting your findings on SEOs. Many of the companies making these large debt issues appear to be making deliberate decisions to go beyond their optimal leverage ratios, and then perhaps to work their way back toward it over time. And one thing that seems to distinguish these large debt issuers from your sample of equity issuers is their market-to-book ratios. These debt-issuing companies have average market-to-book ratios of not much above 1.0, whereas the sample average of your SEOs is almost 4.0. This seems important because academics often use market to book as a proxy for a company's investment opportunity set. And to the extent that is correct, there seems to be a pretty dramatic difference in the *value*—at least as perceived by investors—of the investment opportunities facing these two sets of companies. And as you pointed out earlier, if you have a pretty limited number of positive NPV projects on the horizon, then more debt tends to be the right choice.

Smith: That's right. In our study, we found that 60% of our 8,500 SEOs were by companies that ranked in the top third of U.S. companies in terms of market-to-book ratios, while only 10% were in the bottom third.

Chew: Thanks, Cliff, for that overview of the theory. For a practitioner view of things, let's now turn to Greg Milano.

The Case of Healthcare

Chew: Greg, you recently completed a study of the healthcare industry, which is generally viewed as a growth industry. Can you tell us about your findings; and while you're at it, can you comment on the extent to which they are consistent with Cliff's findings about SEOs?

Greg Milano: Yes, but let me start by mentioning that we founded our firm, Fortuna Advisors, on March 2, 2009, about a week before the market bottomed. And we determined at that point that there weren't a real lot of people looking to hire consultants. So we started a pretty aggressive research project to figure out what really drives valuation and total shareholder return in the capital markets. Margaret Mead once said, "What people say, what people do, and what they say they do are entirely different things." We take a different angle on this and say to our clients,

"Go by what investors do, not what they say," because what investors say is often very different from what really happens in the market.

When designing our 2017 Shareholder Value Project, we were trying to address what we saw as two problems with the way researchers typically study the markets. Most academic researchers try to understand what determines high valuations. But high valuation isn't what investors are after. What they want are high total share returns in the form of dividends and share price appreciation. And so we try to evaluate what moves share prices rather than what makes them high, or keeps them high.

Second, the academic studies that do look at share price changes are so-called "event studies" that look at prices changes over very short time periods. For example, when trying to evaluate the effect of stock repurchases on corporate values, such studies will focus on, say, the seven days before and seven days after a repurchase announcement. These studies implicitly assume that the market reaches the right price almost immediately after announcements happen. And I have never been able to get comfortable with that assumption.

So, in trying to understand the effects of corporate financing, investment, and distribution decisions on companies' longer-run shareholder returns, we developed an approach where we examine the relationship between such decisions and the companies' total shareholder returns over a fairly long series of *rolling three-year periods*. In our study of the health care study, we looked at about 100 public healthcare companies in the Russell 1000 over a 16-year period. Starting at the end of that 16-year period—and for each of the companies and variables that we tested—we began by calculating the company's TSR and our measure of the relevant variable over the most recent three-year (or twelve-quarter) period. And then using that as our base period, for each of the 77 investment, financing, and operating variables that we examined, we rolled the data back one quarter at a time over 16 years. This gave us 52 rolling three-year periods—and, with 100 companies, that gave us some 5,200 data points for each variable.

So let's say that we want to know how a company's TSR is related to a variable that we call the "reinvestment rate"—that is, the percentage of the cash that a company generates that gets plowed back into the business. We measured that reinvestment as the sum of cash acquisitions, Capex, R&D, and increases in working capital as a percentage of the company's after-tax EBIDTA. And for each of the 52 three-year periods, we sorted all of the companies in our sample by that reinvestment rate metric into three equal groups—which we called "high," "medium," and "low." We next combined all the high groups, the medium groups and the low groups. And then we compared the median TSR of the aggregated high reinvestment group to the median for the low reinvestment group. And if we found a significant difference between the median TSRs of the high and low groups, we felt we had uncovered a relationship worth exploring further. In the case of the corporate reinvestment rate, that difference in TSRs turned out to be 3.3% per year, and was in fact one of our most important findings.

So, we used this rolling three-year approach to give us a sense of what really drives success over a long series of intermediate term periods. And we replicated this process for a host of other capital deployment metrics, including the acquisition rate, R&D reinvestment rate, and so forth. We also took this approach when looking at the relationship of TSR with a group of operating performance measures, including return on capital, profit margins, changes in margins, and so forth. And more relevant to this conversation, we examined the relationship of TSR to a number of aspects of financial policy, including leverage ratios, debt paydowns, and stock buybacks. Finally, we also examined issues of seasoned equity, where I thought our findings were pretty striking—and in fact completely consistent with the findings of Cliff's study.

But before I summarize our findings on financial strategy, there are a couple of things to note. First of all, over the last ten years, health care has been the most value-creating of all the sectors in the U.S. economy. During the past ten years, it produced almost double the cumulative total shareholder return of the overall market. And let me emphasize that our findings here are very specific to health care. If you had an industry that created less value, the answers undoubtedly would be different on some dimensions.

We also resliced the data and produced separate findings for five different subsectors within healthcare, including pharmaceuticals, biotechnology, healthcare equipment and supplies, life sciences tools and services, and healthcare providers. The study was funded by a couple of large healthcare companies. And we used some of these findings in our recent *JACF* article—we called it "Improving the Health of Healthcare Companies"—that Don mentioned at the beginning.

What did we find? For the entire healthcare sector, the capital deployment variable with the strongest positive association with TSR was the percentage of operating cash flow that was invested in R&D, or what we called the "R&D reinvestment rate." The second most important capital deployment variable was the reinvestment rate in acquisitions, which, in contrast to much of the published research on acquisitions, had a strong *positive* association with TSR. In other words, healthcare acquisitions tended to create significant value for the acquiring companies.

When examining measures of operating performance, we tended to find that the increases, or changes, in such measures had stronger effects on TSR than the levels.

For example, the improvement in EBIT margin had the strongest positive association of all the variables we examined. But at the same time, the level of a company's EBIT was actually negatively related to TSR. And this meant that companies with low or medium EBIT margins typically had higher TSRs than the high EBIT margin companies, in part probably because the high ones had more room to fall and the low ones more room to rise. But by far the overwhelming factor on every performance measure was either growth—in the case of revenue or EBITDA—or the change in margins or in returns. Take operating returns on invested capital; whereas the levels of such returns had no relationship with TSR, the change in returns on invested capital was very positive, almost as positive as the change in EBIT margins.

Now, what about our findings in the area of financial policies and strategy? We like to think of the capital structure decision as a trade-off between minimizing your weighted average cost of capital by making full use of your debt capacity, and maintaining enough financial flexibility. And we always say to companies that if you have a lot of investment opportunities, and especially if you're uncertain about when they're going to come—which tends to be the case with acquisitions—then you want to have the financing capacity, the ability to invest opportunistically, that is provided by a large equity base. And the converse is true for companies with limited opportunities. For example, when we work with commodity chemicals businesses that struggle to cover their cost of capital at the top of the cycle, we tell them there's really not much benefit to keeping a lot of financial flexibility because they lack good investment opportunities. And that's a case where companies are actually better off having at least moderate leverage, although they still have to be careful given the cyclicality of commodity prices.

Most of our findings—though not all—are consistent with the view of pharma and biotech, and healthcare generally, as having lots of potentially valuable growth options. For our entire sample of healthcare companies, the low leverage group—defined as having low levels of debt as a percentage of their debt plus the book value of their equity—produced median TSR that was 5.1 percent higher per year than the high leverage companies. We found similar results when we examined other measures of debt such as debt to EBITDA. What's more, when we examined the proportion of their gross cash earnings companies used to pay down debt, we found an even stronger relationship to TSR. The top debt paydown group had a TSR that was 7.2% higher than that of the low debt paydown group.

By contrast, healthcare companies that distributed the largest percentage of their operating cash flow in the form of dividends and share buybacks had 7.2% lower TSR than the companies that paid out the smallest part of their cash flow to their stockholders. The only thing that surprised us was that dividends had a more negative relationship to TSR than buybacks. We expected worse from buybacks because of a tendency of companies to buy back their stock when their stock prices are high. In most industries we find that dividends are usually more neutral, and buybacks are usually pretty bad. But in health care it seems to go the other way.

But to us perhaps the most interesting finding on financial policy was that the large equity issuers—measured as the percentage increase in net shares outstanding over the three-year period—had median TSR that was 9% higher per year than the companies on the other end of the spectrum, which in most cycles typically reduced their share counts. We thought that was phenomenal. Though we really didn't expect issuing shares to be as bad as people think—they talk about dilution like it's the end of the world—we never expected such a positive relationship to TSR.

Now, clearly it's not the act of issuing equity that creates value. What matters is what you're going to do with the equity. The companies in our sample that turned to equity finance tended to be companies with good investment ideas, whether a promising acquisition or organic investment they were pursuing. And as Cliff said, they also tend to

announce their investments at around the same time—if not well before—their equity offerings. At the same time, they also tended to be somewhat smaller companies, with less debt capacity, in part because they hadn't started to generate a lot of cash flow and earnings.

Pharma Acquisitions (and Do Big-Brother Deals Really Add Value?)

Chew: Greg, in your *JACF* article, you spend time talking about smaller biotech firms and seem critical of their decisions to license their drugs to larger pharma companies instead of issuing equity themselves. Can you elaborate on that point?

Milano: Smaller biotech companies face the challenge of where to get capital to expand in order to reach the next level. Because such biotechs tend to be short on EBITDA and easily marketable assets, they have trouble issuing debt. So they either issue equity, or they sign what's known in the industry as a "Big Brother" deal, where they get one of the big pharma companies to provide capital to fund their growth in exchange for giving up, say, the international rights to one or all of their most promising drugs. And I think that it is an excessive, and so misguided, unwillingness to bear "dilution" that is behind many of these deals.

I say that in part because we find such a strong positive relationship between TSR and the acquisitiveness of pharmaceutical companies. You might pay two times or more what a company was trading for right before you bought it, but still make it worth three times what you paid for it because you've got this well established and efficient distribution network.

But if you think about all this from the perspective of the board of directors of the small company, you have to question what they are getting out of these deals. The value of the rights they give away often represents a much bigger economic cost than the actual cost of dilution. My suspicion is that in many cases their excessive concern about the cost of dilution is leading them to prefer Big Brother deals even when it would have been better for them to issue stock and build the company themselves. If they want to sell out, they should at least try to get to a much later stage of development and a higher valuation, thereby making their existing shareholders richer.

Smith: You may be right about the costs of dilution. But in thinking about these big Brother deals, it's important to keep in mind that the pharmaceutical industry is heavily regulated. And it's not unusual for somebody in a university medical center to come up with a really good idea in the lab, yet not have the infrastructure to carry out clinical trials that will satisfy the requirements of the FDA. Somebody like Merck would come in at that point and buy them up because they've got the infrastructure to deal with the FDA and jump through all those regulatory hoops. And then on top of that, they've got the manufacturing capabilities and distribution system that you were so appropriately pointing out.

Chew: Let's turn to our biotech expert. Asthika, why do you think small biotechs tend to go for the big-brother deals?

Dealing with the regulator is one part of the story. But the commercial roll-out itself is also a very significant part. When I was working at a small biotech company, we did a deal with Genentech (which was then acquired by Roche), and the access we got to the prescriber community through that deal was a huge benefit. For us to come up and create our own sales force with a single product would have been prohibitively expensive. We needed to partner with a company that already had a portfolio of drugs they were marketing. And as I said, the synergies on that turned out to be massive.

These kinds of deals tend to fall into two categories. In the first, a Pfizer or other large company buys another big pharma company, or even a mid-cap biotech company, takes the IP, and then guts the rest of it, which is essentially what they did with Wyatt. But that produces massive synergies; and the profit margins on the acquired assets make it very accretive very quickly. The second kind of deal has no synergies. Take, for example, Gilead's acquisition of Kite Pharma. They're basically buying a technology platform and then trying to expand into a new area with no connection to Gilead's existing operations.

Chew: So, as Greg suggested, then, the market appears to have been rewarding big pharma for reducing their own in-house R&D and effectively outsourcing to the small biotech firms that they either buy or purchase licenses from using the Big Brother Deals discussed above.

Jonathan Palmer: An ecosystem has developed over the last ten or fifteen years that is far more sophisticated than it was twenty or thirty years ago. The venture community finds a lot of these assets as they spin out of academia or government labs. But rather than trying to grow

these small projects into the next Pfizer or Merck over twenty or more years, they want an exit in five to ten years. So as we think about biotech and pharma and those small companies, we have to think not just of the public markets, but also some of the private markets as well.

Milano: Our Russell 1000 study included smaller public companies. But they're actually fairly sizeable companies, with market caps on the order of a billion dollars. And our finding that equity offerings are associated with higher TSRs probably applies even more to these smaller companies.

Gina Adams: Did you try to isolate the small cap effects in those high returns? So could you take the largest relative to the median relative to the smaller companies, and then look at the returns for various factors?

Milano: No, we looked at size, but not in combination with other factors.

Adams: Okay; and when you look at the effect of these various factors on TSR, did you find that leverage was as critical to performance as, say, profitability or value? What we find in our work on health care is that leverage falls way below value or profitability or momentum in driving stock price return.

Milano: Leverage—and all the financial policy factors as a group, as well as the capital deployment factors—was much less significant than the measures of operating performance. The effects on TSR of changes in margins and return measures, and of the revenue and EBITDA growth metrics, dwarfed anything in the other categories.

Smith: But wouldn't you be shocked if that were not the case?

Milano: Yes, because it's an outcome instead of an input.

Smith: Right, and it's also the basic message of M&M. Namely, that what's happening on the asset side of the balance sheet—a company's investment policy, and the cash flows it produces—is by far the most important source of value. Capital structure is at most second order of magnitude. And dividend policy and repurchases are probably third order.

Milano: One thing that jumps out in our study is that the differences among companies in return on capital are so much larger than the differences in cost of capital. And this says to me that the risk of losing a good investment opportunity because you had too much debt when the opportunity came along is far more important in the pharma industry than the value of the tax shield provided by that debt. And I think that holds for most generally successful industries with at least the potential for significant investment opportunities.

And for pretty much the same reason, one of the things we do when measuring corporate performance is to treat R&D as an investment by capitalizing and then amortizing it over time, as if it were a kind of plant and equipment. In fact, one of our health care clients has decided to evaluate the performance of and compensate its top executives using a kind of cash-based EVA type measure in which R&D is capitalized instead of being expensed immediately. When we did all the research, we actually got a much better fit with stock returns when we treated R&D as an investment than when we treated it as an expense.

In the case of one potential client who was measuring performance in terms of EPS, we pointed out that R&D reduces their main performance measure, EPS, even though it is really important to their business. And we asked them if they thought it might be a bad idea to ask people to reduce their bonuses in order to do the right thing for the company.

Smith: If you hire only people who are close substitutes for Mother Theresa, then you're unlikely to have problems. But I try to teach my students that you want to design systems to make the right thing to do and the easy thing to do the same thing.

Mike Holland: Well, as a high-yield credit analyst who's been looking at stressed credit for the past ten years, I tend to be skeptical about adjustments of GAAP accounting. About ten years ago, a Goldman banker and a McKinsey consultant formed a pharma company called Valeant, and they decided that big pharma R&D was not only failing to add much value, but in many cases was reducing it. And so Valeant decided to go out and buy companies that were already past phase four, that already had drugs on market; and after buying the companies, Valeant cut their R&D budgets and jacked up the prices of their drugs. And part of the reason why I think health care has been such a grower for the past 15 years is because of their ability to raise

drug prices. I think that probably skews the data a lot.

Another company that comes to mind is called Covis Pharma, which was backed by the hedge fund Cerberus. The company bought the rights to a handful of off-patent branded drugs that had been off patent for 50 years. But in each of these cases, there were very small populations of folks who took the drugs and were viewed by the company as "price insensitive." After basically doubling the prices of these drugs every year, the company was then sold to Concordia, which just went bankrupt and is restructuring in Canada right now.

So, one of my takes on Greg's data is that companies like Valeant figured out that, in the case of big pharma, R&D has not always proved to be a great way to spend shareholders' money. But after cutting back on R&D, which may have been the right thing to do, Pierson then gamed the system by using Valeant's adjusted earnings per share to increase the firm's reported earnings by hundreds of millions of dollars—before the market caught on and his fall from grace.

And I think health care has been a space where there are lots of opportunities to game the system. If you look at hospitals for the past several years, they have been using their excess cash to just buy back shares, instead of reinvesting or paying down debt. Think about Community Health and Tennant, both of which are now levered eight times as a result of extensive stock buyback programs that have been designed to boost their stock prices. Though it seems to have worked for a while, both of these companies are struggling to service their debt.

So, in all of these cases, management appears to have been gaming the system for their own benefit, generating inflated earnings to which their own compensation was pegged.

Goonewardene: Analysts like us also pay attention to the way companies account for their R&D spending. Celgene's "adjusted" P&L, for example, shows it spending a relatively modest percentage of its revenues on R&D compared to its peers. But what you have to look at is how much they actually spend on licensing deal payments, which is not included in the "Adjusted R&D" line on the P&L. These licensing payments include upfront and milestone payments Celgene makes to other companies as part of a deal that gives it access to their research programs and assets in the pipeline. In the company's adjusted P&L, these upfront and milestone payments are presented by the company itself as "one-offs," and so treated as non-recurring items. But by including the licensing payments, the GAAP R&D number provides a more accurate picture of Celgene's annual spend. And because Celgene is one of the most active deal-making companies in biotech, its GAAP R&D margin puts it at the upper end of its peers.

Deteriorating Credit Standards in Healthcare—and The Importance of Flexibility

Joel Levington: I want to add to what Cliff and Greg said earlier about the importance of maintaining financial flexibility to fund growth opportunities. When I look at the Bloomberg/Barclays High Yield Index, there are only two issuers that have $20 billion or more of debt: Sprint and HCA. The fact that both of these companies are fallen angels suggests to me that large capital structures with continuous refinancing requirements should target investment grade ratings both to manage their risk and meet their business planning needs.

So, if you're in the treasurer's seat of a company with a large balance sheet and you're being told by top management, "we want to grow the business strategically," I think you want to have an investment grade rating. And I think that's one of the key areas where Valeant fell short: although they were pursuing a strategy of growth through acquisitions, they were overleveraged to begin with; and when their growth opportunities didn't play out exactly as planned, their leverage exacerbated the problems and limited the company's ability to work through its difficulties, and magnified the downside risk in its capital structure.

And I see this happen all the time in industrial companies. Gina and I were working on an analysis last week that showed that, during the last ten years, higher-rated entities with investment-grade credit ratings have had higher total returns, on average, than below-investment grade companies, which have significantly underperformed. Whether it's a drug that misses or a drug pricing that gets slashed, or it's a sharp downturn in a more cyclical sector, it's the same basic combination of high cyclicality or operating leverage with financial leverage that so often leads to disaster.

But that said, what I find pretty interesting is that the investment grade side of health care has levered up a lot over the past few years. Between medical services, products, pharma, and biotech, there have been about $4.2 trillion worth of healthcare deals over the past decade. Whether you pay a relatively low EBITDA of eleven

times multiple in services, or twenty times with biotech, most deals have been financed with around 40% stock, 60% cash pay. So even if I'm paying just the eleven times and it's 60% cash pay, that's about five and a half times on the leverage side. And taking on that amount of new debt is clearly going to increase leverage for most public companies, if you're looking at the Russell 1000.

Having worked at a rating agency in the past, I'm surprised by the willingness of the agencies to allow companies to push leverage this far. The assumption of the agencies, I think, is that health care is very stable, much like the food industry. I think Kraft was actually the inventor of this game when they went after Cadbury, pushing their leverage to four and a half to five and a half times cash flow or EBITDA. To reassure the agencies, Kraft probably told them that they would pay down the debt over the next couple of years and get their metrics more in line with what investment grade looks like. And so the rating agencies have allowed leverage to go as high as four or five times. In the meantime, our studies of the credit medians for investment grade companies in general draw the line at much lower levels, at about 2.7 times for BBB entities. And we see a lot of companies, at least in my world of industrials, now operating with about 2.5 to 3 times leverage.

So, M&A certainly has been a huge driver of higher leverage in healthcare. Take the case of Abbott, which after acquiring St. Jude's and Alere, is now leveraged at about six times. Agencies have allowed them to push the envelope, while retaining their investment grade rating. When you have multiples that high, you expose all stakeholders to outside risk should unforeseen events occur—and they almost always do.

Chew: Joel, do you think the agencies have gotten it wrong?

Levington: I've been surprised at the level of flexibility that the rating agencies have given their clients to leverage over the past several years. As a former analyst, I recall several times viewing 2.5x leverage as about the maximum level of comfort folks might have with an investment grade rating. Times have changed; companies have become bigger and perhaps more global, yet the incremental debt capacity provided in some cases has really been extraordinary, and I find it hard to justify.

Holland: I think the agencies may have been caught off guard when drug pricing kind of came into the forefront with Hillary Clinton's tweet back in September of '15. That was kind of when the music stopped.

As an example of what Joel was telling us about, Mylan was a name that was raised to investment grade after doing an acquisition. They said to the rating agencies, "Trust us. In twelve to eighteen months, we're going to reduce our leverage from six to three and a half."

Back then, however, drug pricing was a free for all. The companies just increased their prices, and then kept re-levering up. And then they would bring the leverage back down. But I think that price acceleration has slowed. The average drug price increases are probably under 10% per annum now, and they were much higher than that several years ago.

Chew: And some of those companies are distressed as a result?

Holland: Concordia just went bankrupt, as I mentioned. But if you look at Mylan and Teva today, they're both experiencing pressures with earnings growth as drug pricing has come under scrutiny and generic drug price deflation has entered the picture. Their leverage is four or five times, and they're both rated Triple B-, with Teva on the verge of becoming a fallen angel and Mylan facing potentially costly litigation.

Adams: The Hillary Clinton tweet in 2015 also happens to be the exact time when the relative performance of health care peaked.

The share price reaction over the two years following that was incredibly negative, relative to the rest of the index. So there is a very strong tie between drug pricing and the measures that matter most for health care. And that played out in 2015 and 2017. It wasn't until earlier this year when some of that started to wash through, and the sector started to perform better again.

Goonewardene: We have to make an important distinction, though, between the pricing of the innovative drugs, and the pricing of the more specialty and generic pharmaceutical drugs. The most susceptible to drug pricing pressures have been the specialty pharma and the generic drugs.

But even to this day, you can still be a biotech company, and so long as you have a very innovative therapy, you can price at very high levels and find people willing pay for it. There's speculation that this one gene therapy drug with the potential to

restore sight to people clinically diagnosed as blind might go for as much as a million dollars. So, the innovative drug companies still have some pricing power.

But when you see the price increases of more generic drugs or products, like the Albuterol inhaler—and Mylan's got a couple of drugs whose price they tripled or quadrupled—then you scratch your head, and ask yourself how much longer this can go on. It looks to me like a temporary imbalance of supply and demand, and making that the basis for increases in leverage looks pretty risky to me.

Smith: Well, during the the time period you're talking about, I think it's important to recognize that there was a shift in demand for drugs that came about because of the Affordable Health Care Act. The demand shifted to the right—and a lot quicker than capacity was increased.

Holland: Right. The other thing that has changed in the last three years is that health care in general has become much more "consumer discretionary" in the sense that many more consumers now have very large deductibles that have made them much more price-sensitive. And that is a big change in the health care space.

The Cost of Raising Equity Capital

Chew: Mike, can you think of companies that have raised equity not to fund growth, but for a different reason—namely, to help them work through the pressures created by financial distress?

Holland: One that comes to mind is a home infusion company called BioScrip. Though it has about a billion-dollar top line, it has generated minimal to negative EBITDA since 2014 because the prior management team would keep buying more companies instead of focusing on collecting cash. So they ran into some issues during the last year and a half, including cutbacks in reimbursements.

And when faced with a number of liquidity crunches, the company issued preferred stock with warrants and then, on another occasion, dilutive common equity. The buyers in both cases were hedge funds with existing equity investments in the companies. And one thing that was especially interesting to me about these deals is that the company has very low EBITDA, almost no operating cash flow—and so the leverage there is effectively infinite. And this suggests to me that the company's management—and the hedge funds—either have a plan to make the company cash flow positive before too long or, more likely, they were trying to protect their existing investments in the company.

Chew: Mike, but these are clearly both private, not public, issues of equity—transactions in which the buyers presumably have a lot more information about the company than public investors?

Holland: That's right, it's very different from the public offerings of seasoned stock that Cliff was talking about.

Chew: In the last year or so, a publicly traded oil and gas limited partnership called the Williams Companies raised equity through a private process that has some similarities to what you just described. The company was widely believed to be overleveraged. And my understanding is that J.P. Morgan Chase brought together a small group of large sophisticated investors and put together a deal that enabled Williams to raise equity. As I recall, that stock was issued at a price of about $28, or about two dollars below the stock price of the firm just before the financing was announced, which was about $30.

And my question is, how does a transaction like that end up affecting the value of the company? When the transaction and the terms were announced, the price went down—to about $28. Is that the reaction you would have expected from the market?

Smith: The answer depends a lot on not only the terms of the deal, but who the person on the other side of the table is. When Goldman was getting a little nervous about not having enough capital during the financial crisis, Warren Buffett came in and bought a lot of stock—or convertible preferred. Goldman offered him an effective purchase price that was below what the stock price had been the day before the deal was announced. And the day after that deal was announced, Goldman's stock went up substantially, making it an even better deal for Buffett. There's a benefit that comes with having an investor like Warren Buffett certify that this is a good deal. It's like the Good Housekeeping Seal of Approval.

Chew: Okay, so the market reaction to having somebody like Warren Buffett buy your stock is very different from its reaction to the average public equity offering. When public companies announce they are raising more equity, my understanding is that their stock prices tend to fall by about 3%, on average.

Milano: That's why to us it's really important to look at longer periods than just a couple of days or weeks surrounding the announcement. I think a lot of this negative announcement effect reflects investor concern about the dilutive effect of new equity on earnings per share. But I think it also reflects investor uncertainty about the current value of the firm and management's motive for issuing equity—is management issuing stock because it thinks the firm is overvalued?—and, probably most important, uncertainty about the value of what management's going to do with the proceeds. Will they be doing mostly positive-NPV projects?

So, if you really want to get a sense of the value to companies of raising equity, you have to have a good sense of what they plan to do with the money. And to do that, I think we have to look at much longer time periods than the academic event studies.

Smith: If you open a wider window on how you measure the market's reaction to the announcement, you really complicate the measurement problem. For our sample of 8,500 companies, although the average company experienced a 2.2% negative reaction to the announcement of their equity offerings, it had also experienced a run-up in its stock price of 37% during the six months leading up to the announcement.

Now, it's true that some people view this run-up as evidence of the "market timing" hypothesis that Don mentioned earlier, the tendency of corporate managers to issue equity when—and, in some versions of the theory, mainly *because*—they think it's overpriced. I don't believe that's really what's going on here. If your company has a great new investment opportunity, before you raise more equity to fund that investment, you want to let the market process the information and decide if those opportunities are credible and real. And so if I'm the CFO, I want to announce this equity offering only when I feel that the stock price appropriately reflects the value of this opportunity, and of what the company plans to do with the proceeds.

So, let's say I'm an investor watching this firm—and let's say the price was $30 six months ago and it's $40 now. But as an outside investor I could only estimate a reasonable range of values. Now let's assume I'm the CFO or a board member, and I think I know exactly what the right value might be. Let's say I believe it might be as high as $45, and it might be as low as $35; but that given what I know right now, $40 seems like a reasonable price. However, if the CFO says, we've decided that today is a particularly good day to announce that we're selling equity, what does that do to the likelihood that the real value is $45 as opposed to something lower? It reduces it, of course—and so the price falls, and by a little over 2% according to our study.

My point is that part of this stock price fall is a reflection of the fact that managers inside the firm have better information about these issues than external investors do; and as representatives of the existing stockholders, they have an incentive to sell stock that is "fully valued."

Milano: Right, and that's why when I'm with executives talking about a big financing decision, before they decide to go ahead and announce the transaction, I always ask them, "Would you be willing to do this if you knew that on announcement it might drive the share price down five or ten percent, but you're confident that it's going to work—and when it works, two years from now your share price is going to be twenty percent higher?"

The only thing that matters is if the price goes down enough that you lose your job. As long as you don't lose your job, it's the long run that should matter in making the decision.

Smith: That's right: you want to lay the alternative outcomes face up on the table. If we announce we're going to have a new equity offering, we should expect the stock price to fall by about two percent on the announcement. We need to recognize that that price drop as part of the landscape going into this decision. But we also need to keep in mind that the stock price has gone up by 37% over the last six months because of what we're talking about doing with the new capital—and that's in fact why we're raising this capital: to fund those opportunities. But what if we don't raise equity—say, we end up issuing debt instead? Then it may be substantially harder for us to carry out our plan.

Goonewardene: That's basically what happens in the biotech sector. The development process for drugs has different stages, and the release of good data at each validates progression to the next. Many biotechs are in the development stage; they have no real revenues, but are investing in developing a drug to bring it to market.

So these interim data reports create binary events for the company's share price—and compelling data may drive

the share price up 50% or even more. Smart biotechs plan their equity offerings to follow the release of good data, and that way they can raise equity on favorable terms that will be used to fund further research programs and continue development.

High Yield in Healthcare (and the Case for Going Private)

Chew: Mike, let me ask you one more question. What do you consider to be the legitimate uses of high-yield debt in your industry, if any? What kind of healthcare company would consider doing an original issue of high yield, and under what circumstances?

Holland: To answer that I think you have to step back and think about what financial sponsors are doing, what are the P.E. shops doing? There are a lot of decent health care credits out there. Take HCA. It's been high yield—and it's been IG. It's been public—and it's been private. And the company has grown its earnings nearly 50% in the six years since it went public in an IPO. They've done incredibly well. And I think their use of debt has been very effective in supporting their strategy.

Chew: Ok, but let me ask a slightly different question: When does a company suddenly start to become underleveraged, and then decide they should take on more debt to satisfy its investors? Do they wake up one day and see some kind of shrinkage in their investment opportunities? Microsoft was a famous case where Michael Jensen was complaining about all the cash on the balance sheet, saying you've got to pay this out. And Carl Icahn, of course, has gone after Apple and said, "You've got to pay out some of this cash. Can you tell us some similar stories about healthcare?

Five or six years ago, Pfizer announced it was cutting its R&D by about $1 billion, and the stock price went up by about 10% on the day of the announcement. So there was a clear perception in the market that some big pharma companies were overinvesting in R&D, and they needed to cut it back. And they also talked about outsourcing. So, although they might end up spending the same amount of dollars on R&D, a lot of it was now going to be done outside the company.

Palmer: Yes, there's a huge effort to outsource R&D costs. It's interesting you mentioned Pfizer because I used to work there. I remember that in the year of that first big R&D cut, Pfizer was one of the best performers in the market. The stock went up because our investors thought we had a bloated infrastructure, and that it would be more efficient to outsource our R&D.

Holland: The CRO space—contract research outsourcing—has been one of the fastest growers in health care for the past ten years. But those companies are all of course private, and funded mainly by private equity.

Chew: There's a school of thought that says that much of private equity has moved from a low-growth, cost-cutting mode to a higher-growth model. And they've done that in part by cutting their capital structures from the 80-90% leverage of the 1980s to 70% or less. And thanks to these larger equity cushions, they've been able to increase the amount of new investment they take on. Have you seen anything like that?

Holland: I wouldn't disagree with that. We're definitely still seeing a lot of health care consolidation and roll-ups across all healthcare subsectors. At the same time, some larger, diversified companies are now trying to deconsolidate, including recent carve-outs of businesses by J&J and Kimberly-Clark, among others. And I think private equity is viewing many of those carve-outs as creating possible platforms for roll-ups.

One thing I would mention that we haven't addressed here is the fact that most of the buy side analysts and credit analysts I talk to spend half if not more of their time analyzing *private* debt—that is, direct lending by hedge funds and other fairly sophisticated and active investors. And this means that the corporate issuers, the companies themselves, don't have to deal with public disclosures. And they don't need to deal with short sellers. They deal with just one, or maybe two or three, lenders. And that's a trend that I think is worth watching.

Smith: Well, after things like Sarbanes-Oxley and Dodd-Frank, I will go to my grave believing that regulatory costs are the primary reason the company on whose board I served ended up doing an LBO. When I joined the board following the IPO in 1994, we were a NYSE-list company worth about $300 million—21 years later the LBO valued us at $8.5 billion. It just got more and more expensive to be a public firm.

Levington: Okay, let's leave it at that. Thank you all for taking part in this discussion.

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