

## Todd Zenger, STRAT 6070, 9.1 - Investing With a Theory

We want to talk today about the activity of internal investment inside a firm and talk about the role that corporate theory should play in that pattern of investment that a firm pursues. Just to frame this, the fundamental question is, here you are, this business that has lots of activities you should perform or in this case, different product lines or businesses that you are in, and you have to make a decision about which projects get money and which don't. One of the most fundamental activities in any complex corporation is the annual budgeting process in which different entities within the corporation parade through some sort of tribunal or group of senior managers, who make decisions about who gets money and who doesn't. They parade through and present their idea for money, and then they make decisions about who gets it and who doesn't get it. Most common source of this capital is for investment in incorporations. It's actually not going out and raising debt or raising equity, it's really coming from the internal cash flows of a corporation. This is just a graphic showing you that, that somewhere between 80 and 100 percent depending on the year of new investment in corporations is really coming from internal resources, as opposed to equity markets debt or equity markets. Corporations, at least in recent years, have had a fair bit of cash to invest. Some of that cash they have used to pursue mergers and acquisitions, some of that cash they will use to pay out dividends, some of that they'll use to invest in research and development, and some of that they'll use to fund capital expenditure. Our focus here is really on research and development investments, capital expenditures, not efforts to go out and buy things on the outside, or efforts to buy-back shares or pay dividends, this is when you plow money back into the corporation. How does one thoughtfully go about that particular process? Another way to say it is, how does one optimize this annual capital allocation exercise that are budgeting exercise that goes on in an all complex organizations. Of course, the answer is that it should follow and reflect the corporate theory that you have. If you're Disney, they are making decisions about where to invest funds based on an understanding of this underlying theory that they have. Now, well, that's all good, fine, well, and good in theory. In reality, there's a much more complex dynamic that goes on inside organizations. In a famous study, or it's really the reflections on some of these studies... Joe Bower and Clark Gilbert in the Harvard Business Review, made this comment... They said, "What we have found in one research study after another is how business really gets done, has little connection to strategy or the strategy developed at the corporate headquarters. (Think of this as the corporate theory) Rather, strategy is crafted, step by step as managers at all levels of a company- be it in the small firm or a large multinational- commit resources to policies, programs, people, and facilities". The point they're making is that, in most organizations, the way strategy or at least strategy as it relates to investment plays out is just in a pattern of decisions that get made in these annual meetings about who gets money and who does not get money, as opposed to it being orchestrated from some grand vision. That's problematic. Other research that folks have done, what you see is that there is tremendous consistency in the amount of capital that's assigned to different lines of business inside corporations. What you're seeing here is a graphic looking at how much reallocation of capital is occurring. If the correlation between what a business unit got last year and what they got this year is extraordinarily high. It means there's very little a movement or reallocation of capitalists that's occurring. So they track companies that have low where that correlation is nearly one, nearly perfect, and other firms where there's a higher degree of reallocation, and for them even that correlation is still quite high, it's at about 0.8, but they characterize that as a relatively, or at least a higher level of capital reallocation. So you could think about firms in terms of how much they move money around across units versus how stable they are and just giving every unit the same amount of money that they got in prior years. What the study found is that

firms that more frequently reallocate, that is, they say, you know what, that's a bad strategic investment. We've run this experiment, it's not working, it's time for us to take that money, let's rest that money from them and place it somewhere else that companies that are more willing to reallocate enjoy higher levels growth. So you see a higher return to shareholders, higher compound annual growth rate if companies are reallocating relative to firms that are relatively stable, they just do what they did last year. Suggestive, at least consistent with, you need to be following a corporate theory that guiding experiments that you run where these investments or experiments, and when they're failing, you've got to take those funds and place them elsewhere. Run a new experiment, run a new bet, and move, and reallocate capital in a way that's reflective of your theory. This graph is simply showing that returns to internal investment had been extraordinarily high and in recent years, and therefore, firms ought to be doing more internal investment. There had been a whole lot of dialogue about firms doing too much share buyback, paying out dividends as opposed to doing that which in the long run appears to be paying off, which is reinvest that capital. I mentioned this series of meetings that goes on in all complex corporations in which capital gets allocated, and in many ways, those meetings are a beauty contest. Everybody is making their best PowerPoint presentation, trying to convince management that they should invest in their little baby. Finance would of course tell us, "Look, the exercise is relatively straightforward. What this senior management team should be doing as they evaluate investment opportunities, is quite simple, it's a very simple calculation. You calculate the net present value, if it's greater than zero, you invest in the project, and if it's not, you don't invest. NPV should be used to determine where to invest in. It would also say you should invest in all NPV positive projects because if you're discounting capital or your discounting these investments at the cost of capital, and you run out of capital, you should just go to capital markets and gather more to invest. All positive NPV projects should be invested in. Of course, the challenge that you face is, how the heck do we know if this thing is positive NPV? They're just presenting a PowerPoint deck and they're fabricating or creating numbers based on their best analysis or maybe based on other things, and so we're sitting back trying to make these investment decisions, evaluate this series of PowerPoint presentations that had been made and decide, what are the real numbers here? How do we make decisions about, based on NPV when we don't really have access to real numbers? Of course, it isn't just that they're distorting those numbers, we actually don't know what the real numbers are because the problem is that it's all future, and we can't. In these meetings there is what one my characterize a cesspool of distortions that are going on. For those that are making these PowerPoint presentations, the proposers, we know from psychological literature that people tend to be overconfident, we also know that they tend to be self interested. There is also a dynamic that's clearly potentially going on in which there's an arms race in exaggeration. I know that the next presentation that's going to get paraded before the senior management team and the two presentations before me, they all exaggerated their numbers in an effort to win the business. I don't know if that's a reflection of their own overconfidence, but the numbers are exaggerated. Knowing that they exaggerated their numbers, I'm going to need to exaggerate their numbers because otherwise I'm not going to comparatively stand up. Similarly, on the part of the senior management team, they have their own set of evaluation biases or distortions. One is that there's a tendency to want to just be fair. Everybody should get a little bit of money or it should be relatively balanced. These are good people and they're doing their best. Shouldn't they get a shot at pursuing their particular project? Sometimes that bias toward fairness trumps really one's assessment of the quality of the experiment, the quality of the investment that's being proposed. There's also a bias toward the status quo. Well, we gave them \$800,000 last year to invest in this division, isn't the fair thing or the appropriate thing to just fast

forward that amount? Zero-based budgeting is an effort to try to get around that bias that exists. These evaluators may also be biased toward wanting to agree with their fellow evaluators and not to have a contrarian position. So there's a group think effort that can come to play in these evaluations. Given this cesspool of distortions, both on the side of the presenters as well as the evaluators, it becomes very difficult in this environment to actually get to the truth if we want to call it the truth or that is those decisions that will be value maximizing in making choices about investment. One potential solution is to just decentralize. Essentially let everybody keep the money that they generate so businesses all become self-sustained. If you were in the medical devices business create cash, then you get to decide whether it's proven to invest it in your business or return it back to the corporation. The problem with that is if that's what you're going to do, then why be part of a larger corporation if all you're going to do is simply run these things as truly independent businesses not connected by some corporate theory in which you're saying, we're going to fuel this new business that's going to leverage our capability, or whatever that theory is. This doesn't allow you to execute on a corporate theory. One should be using this corporate theory to guide and make better kinds of investment decisions. Let's talk a little bit about some common types of theories, particularly ones that I think are a little bit problematic. One is, it could be your theory that what firms should do is to diversify. That is, diversify for diversification to say. You're a company that's only in the toys industry. It's faddish. It's cyclical. Our earnings are tremendously volatile, if we just expand it into some other businesses that aren't perfectly correlated with our weird, uncertain performance pattern, then we're going to smooth our earnings, we're going to invest in equally good businesses so the returns stay high. But the variance in those returns is going to smooth out. This is classic diversification logic. By diversifying, we're going to create value. We're going to create same high returns, but less volatility in those returns, and this is going to create value as we aggregate this thing together. Now, the question then is, is that value creating? Is it value creating for a company to just purely diversify? There's no sense of synergies between these businesses. There's no corporate theory that's linking them other than the corporate theory of we're going to diversify and in doing so, keep return high but reduce variance and that's going to add value to the enterprise. These are just comedic examples of such diversification that you can read on your own. I think the answer is that shareholders can diversify far more efficiently on their own than you can diversify for them. What does it cost me as an investor in your firm, this toy business that was a pure play for me to diversify into these other businesses? It costs me buying a mutual fund or it's a sequence of trades that essentially allows me to mimic what you have just done. The cost for me to do that as a shareholder is trivial. What are the costs to you in trying to diversify for me? Well, you have to go out and pursue all those acquisitions and deal with the difficulty of actually creating value through acquisitions, and bidding against others, and potentially overpaying, and over-estimating synergies. In addition, you have to actually manage this diverse set of businesses and run these meetings in which you have to optimize capital allocation. That's a very, very costly overhead burden to manage diversification. My alternative as a shareholder is to just buy a mutual fund. So, diversification is a good thing. Individual investors need to be diversified, that's value creating. But you performing the diversification for me does not create value. There's a much cheaper alternative for me to pursue and therefore it's not in and of itself value creating. Now, that's not to say that moving into other businesses isn't value creating. But it can be value creating, but it's only value creating if it's creating unique synergies, if it's reflecting a corporate theory that no one else sees. But just pure diversification is not creating the value. Let me add an addendum to that discussion that we just had about diversification. What if the theory is we're going to diversify, and then we're going to use a portfolio planning tool that's going to guide us through this process of optimizing where

to invest our capital? For instance, the tool we could use is this famous portfolio model that the BCG group introduced some decades ago. It basically is a tool in which what you do is you categorize your businesses into four types. You have your cash cows, these are businesses that are high in market share. You have a really strong position in that industry, but the growth in that industry is not very high. So it doesn't require much cash. Therefore, because of your strong position it's putting off lots of cash that you don't need to reinvest. So it's a cash cow. It's putting off lots of cash that's usable elsewhere. We might also have a bunch of just low market share nascent startup kinds of businesses or fragmented businesses and those are our question marks. We have low market share, but they're high-growth. Maybe we could take our cash and we could invest it in these question mark businesses. We don't know whether they're going to pay off or not. We invested in them and if they don't work, we divest them. If they're working then we prioritize them and they become star businesses. Star businesses are old question marks that we have built up, we have grown to a point where our market share is now relatively high and we have a solid strong position. Then as the stars, where we have high-growth, good market position, as they diminish in their growth rate over time, the industries mature, they become our future cows. The basic model is we take our money from our cash cows, we invest it in these question marks that are our experiments. If they succeed we build them up. They become our future stars, and those future stars as the industries mature become our cows of the future. We play this game. Of course, we might have some dogs and we just get rid of our dogs, where dogs are businesses that aren't growing very fast and our market position is horrible as well. So it's really a game across these three quadrants that we play. This portfolio model gives us real advice about how we manage these different businesses. We don't put money into cash cows, we're managing them for cash. We invest in these question marks and we try to increase their market share. The stars we may invest in what's needed, they're already putting off a fair bit of cash perhaps themselves. But we continue to invest and re-invest in those businesses. This tool tells us a little bit about how we allocate capital across these businesses as well as how we manage them. We can map our different businesses where the circumference of these bubbles is a reflection of the firm's sales and we get a nice map of the overall portfolio that we are trying to manage. Well, maybe if we use this tool, this will cause us to make better. Capital investment decisions. There are several fundamental problems and issues with that corporate theory that would guide investment. One is that this model essentially assumes a causal relationship between market share and profitability. It is true empirically that there is a positive relationship between the amount of market share you have in an industry and your profitability in that industry. But that doesn't mean that by taking strategic actions, it will increase your market share, that that's going to cause your profitability to increase. What actions might we, for instance in this model, take to invest in our question marks and increase their market share? Well, you might lower your prices. By lowering your prices, you will increase your market share. You might heavily advertise. That could increase your market share. Well, it's not obvious that either of those strategic choices necessarily, in fact in all probability, will diminish your level of profitability over time. So it's not as formulaic as just increase market share, and this is going to make the business more attractive. It could be that you're going to go pursue acquisitions to increase market share. Well, acquisitions, as we've talked about, it's very difficult to create value through acquisitions as well, unless one has something else besides just sheer consolidation that's driving that pattern of acquisitions. Do you have some unique synergies with these targets? That becomes essential. It's not as simple as, just go take your cash, put it into these question mark businesses in order to grow their market share, and this is going to create value. There are a number of other problems with this portfolio model. Another is that it assumes that there's a finite pool of

resources, that you need a balance of cows and question marks and stars in order to manage the firm. Well, it's not quite true. We see businesses, take an Amazon, for a long period of time that was simply a portfolio cash consuming businesses. Where does it come up with cash? Well, some of it's just through its own internal resources, but some of it's by dipping into equity markets and debt markets to fund their investment. Similarly, you might think of situations where a firm is simply a bundle of cash cows. The worst thing that they could do would be to reinvest that money into some random portfolio of other businesses. Think of the General Mills example that we already walked through. Another problem with this portfolio model is that it, in some sense, assumes that we're engaging in a comparative evaluation process. That is, NPV is not in this model. It isn't a model which you say, "Let's invest in all positive NPV projects." Instead, it's a model that says, "Well, let's see where these things rank. Which ones are higher market share? Which ones are lower market share? Let's compare these different investments and choose which ones to invest in." Which is really not consistent with, think about being sound investment calculation, which is the funding of project x should not depend on the quality of project y. The funding of project x should depend on the quality of project x, and have no relation to whether you invest in y. If you're discounting at the cost of capital, and you run out of capital, you should be able to go access it. Similarly, if you just got capital lying around, that doesn't mean you should internally invest it. You have to look at the quality of the opportunities that you have to invest in. It assumes that there's value in balance, that you want this balance of cash consumers and cash providers. We already talked through why that doesn't make sense. We have also talked about that there's no value in balance as it relates to diversification. Having a diversified portfolio doesn't necessarily add value as we've already talked about. Of course, most importantly, the most critical driver of value creation is access to synergies, the creation of synergies that are composed through some corporate theory. This model treats each of these businesses as completely independent, they are completely unrelated to each other. There's no capturing of synergies or relationships among these businesses in this model whatsoever. We already talked about the fact that it assumes as causal relationship between market share. The advice here is that we should be investing with a corporate theory. Let me give you just one quick example of a company that I think did this quite effectively over a long period of time, albeit a somewhat controversial company at various times in its history. A CEO composes a unique corporate theory that drives that process of value creation. Dick Mahoney takes over the Monsanto Corporation in 1983, and he really completely rethinks the corporate theory. At the time, they were heavily into commodity chemicals, and paper, and polystyrene businesses. He exits most of those businesses, selling over a five-year period about 18 businesses. He moves this company into pharmaceuticals through the acquisition of Searle, a very divergent strategy from what they had been doing historically. He also heavily invested in specialty chemicals, ag chemicals, pharmaceuticals, biotech, moving the company into more specialty kinds of chemical products including thinking of pharmaceuticals and chemical compositions at the time as well, but also takes a big bet investing in agricultural biotechnology. This is the invention of genetically modified seeds as a way to enhance either the output of farming or to reduce the costs associated with farming, and looking about innovative ways to improve agriculture. Celebrex emerges from their pharma investments. This is a blockbuster drug that becomes extraordinarily successful. Monsanto then spins off its chemical business. This is after Mahoney has actually now left. The pharmaceutical company, Pharmacia, buys Monsanto really for the Celebrex as asset, then spins off Monsanto and leaving it only with these Ag biotech assets. Then a decade or so later, really 15 years later, that Monsanto is now just a pure play Ag biotech business, and that business gets sold to buyer for \$66 billion. If you step back and look at this history, basically this is a

complete rethink of their corporate theory, including a very clairvoyant investment in Ag biotech that ultimately in 1999 was valued by analysts essentially being worthless. Sixteen years later it's worth \$66 billion, but it's a clairvoyance corporate theory on the part of Dick Mahoney to make this investment and pivot this company in a very different direction that leads to this tremendous path of value creation. A quick summary. I think corporations really struggle with this investment decision. These parades of managers having their projects evaluated proves to be not all that effective in most corporations as they do audits of how successful these investment decisions are made. They don't make particularly good decisions in part because of this cesspool of distortions that we walk through, and they have really struggled to come up with better remedies for improving that. I think what's essential to guiding investment in corporations is really having a very clearly articulated corporate theory, think of the Disney picture, and an investment review process that ensures that the proposals that emerge are consistent with that theory. NPV is not sufficient to make those decisions because it's all based on very uncertain numbers. Therefore, the role that theory needs to play in guiding these decisions becomes an extraordinarily essential part. Thank you.