# **MGT 8803 FINANCE MODULE**

# **Week 5 TRANSCRIPTS**

## **Capital Investment Analysis- Part 7: Relevant Cash Flows**

>> Now that we have learned the different techniques, my focus is going to be on how best you made the relevant cash flows. The two key principles that you have to remember when you estimate cash flows is first one is we always focus on when the money actually moves, okay?

Not when the accountant says money is accruing. So a good simple example would be that if you sold something worth $1 million for 90 days credit. In our timeline, we would recognize the $1 million only after 90 days. As you have learned in the accounting modules, they might recognize based on the accrual accounting day you book the sales.

So we always focus on when the money goes in. The second thing is you have to always imagine two worlds, one in which the investment is made and one in which it is rejected. So the cash flows that are different in these two worlds are the relevant to the decision making, okay?

So what I mean by this I'll explain to you with couple of examples going forward. But simplest way to think about it is let me think of Home Depot as an example. Suppose Home Depot is thinking in terms of establishing a new location. Let's assume that Home Depot has 3,000 locations, and the location number 3,001 is under capital investment Analysis- Part proposal.

So the cash flows that is going to count is what cash flows are different with the new location, minus cash flows with the existing 3,000 location.. For example let's say, Home Depot spend $1 million less to do marketing research Analysis- Part. But when they are doing the cash flow computation for the new location 3,000 first.

They will not treat the marketing research expenditure of $1 million as a cash flow, because that money has already been spent by the company. So whether or not they do the project, the money is not going to come back. So we would ignore that marketing research cause in our computation.

So I'll explain to you as we go along, but I want to walk you through couple of simple examples. The first example is a company called Microdyne and the company is thinking about investing in a marketing campaign worth $10 million, costing $10 million. The reason they want to do it is if they do that campaign, they are going to benefit $100,000 after tax cash flows.

If they do not do the campaign, they are going to be losing $3 million annual cash flows. Here comes an important assumption, that is they have decided to stay in its chosen business. So the option of shutting down the business does not exist. And we want to answer the question, should the company do the marketing campaign or the promotional campaign or not?

So let's get to work on this problem. So let's work on this Microdyne problem. It's a good idea to draw the timeline, and there are five cash flows we are estimating, right? The investment is very easy, about $10 million. Where the challenge comes as in, identifying the benefits of the projects.

One of the natural things you might think is the $100,000 they say is the benefit. I you did that, you are not actually using the width and without principle. Remember, if they did not do the investment, they are going to lose $3 million cash flows. So the true benefit is not just $100,000 but $3.1 million.

That's a key thing to understand, not 0.1, but 3.1. Once you got that NPV, you can do using a simple Excel function, or from the first principles 3.1 divided by 1.1, 3.1 divided by 1.1 squared, plus 3.1 divided by 1.1 to the power of 3. 3.1, 1.1 to the power of 4.plus 3.1 divided by 1.1 to the power of 5.

So if you do that math, it comes to +$1.75 million. So you would accept the project. So notice that if you wrongly used $0.1 million, you'd have come to the incorrect decision to reject the project. So that's a first example. Before I go to the next example, let me briefly talk about some of the costs you'll be faced up within investment decision making.

One of them would be the sunk costs. So sunk costs would be something which you already spend and whether or not you do the project, it's not going to be materially impacting the cash flow, so the project. The test marketing expenses I explained to you with the Home Depot example.

Now if you look at the erosion cause, one way to think about erosion is, when our Home Depot opens up a new location. Some of the customers from the existing Home Depot locations are going to shop at the new location, right? So not all of the customer traffic is brand new to this location for the company.

So they have to take off some of the costs that are coming from the existing locations. And lastly, the opportunity costs. Suppose for whatever reason about ten years back Home Depot add investor in the land, piece of property, thinking that they might open a new location. And now when they are thinking about opening up the new location they have to remember that if they do not open up the locations they could lease out that property to some other company, right?

And let's say the lease brings about $1 million annual revenue, then you have to treat the $1 million as the cost. Because without the project, the company would have benefited $1 million lease revenue from another company, right? So that's a way to think about the treatment of cost, etc.

Okay, so at the highest level if you think about the cash flows. Always one of the simplest way to remember the cash flow computation is, remember that depreciation is a non cash expense. So you would construct the projects net income statements, which is revenue minus cost minus depreciation times 1 minus the tax rate.

Then you would add back depreciation to get after tax cash flows. If you want an alternative specification of the same, take the depreciation term outside this parenthesis and you'll get depreciation times the tax rate. And lastly, working capital becomes an important part of decision making. So working capital is because of your investment in the project, you have to lock up some amount of current assets in the project, right?

So in my Home Depot example, you have to stock up the store with all the items. Let's say Home Depot 10,000 items. And that is going to show up in your where? Inventory statement in current assets. So that has to be accounted for in the working capital investments.

So the typical thumb rule is at the beginning of the project, it's cash outflows, at the end of the project, it is cash inflows. So this is the mechanics. And let me show you one more schematic to help you understand and that would wrap up the this video recording.

And so whenever you are thinking about cash flow estimates at the high level. Think about how much price you're going to get for the product, how many units you're going to sell. What are going to be the costs, both variable and fixed costs, what are the capital expenditures and investments in working capital?

So all of these factors go into your computation. And this is a good comprehensive schematic to understand the entire process, right? So revenues coming from price volume decisions, costs coming from variable costs, and fixed costs that gives you margins. Subtract the taxes, you get the operating cash flows, subtract the capital expenditures and the working capital.

That's going to depend upon your receivable policy, credit policy, what type of credit your suppliers are giving. That gives you the free cash flow, so free cash flow is operating cash flow, minus the capital requirements that you discount at the cost of capital to get NPV, right? So remember in the very beginning I said that the goal of the company is to maximize free cash flow and minimize cost of capital.

And you can see that concept is explicitly included in the net present value computation. So with that, I'm going to wrap us this video recording. And in the next one I'm going to walk you through another example to show you how to do a replacement decision for a project.

Thank you.

## **Capital Investment Analysis- Part 8: Cash Flow Examples**

>> Okay, as promised, I want to walk you through one more example to understand how to do the cash flow computation. So, Here's a company called Baffle Bag and Box Company. This company last year, one year ago, purchased a new folder costing $11,000. But suddenly, they find that in the marketplace, there is new machine available for $15,000.

With a life of 10 years and to make our life simple no salvage value. That is, after 10 years you're not going to get any value out of selling this equipment. And the reason they are considering the new machine is the benefit is $4,000 per year. You think straight line depreciation, remember 15,000 divided by 10 gives you 1,500.

So if you subtract 1,500 from 4,000 you get this 2500 benefits, okay? But if you decide to replace old machine with that new machine, the current machine is giving you $2000 gross profit. And with a straight line depreciation it is $1000 a year, why 1000? $11,000 divided by 11 gives you 1,000.

So that is 1,000, so you'll have $1,000 is the profit before taxes. But if you decide to do the switch, you can sell the old machine for $5,000. Assume that the cost for capital is 10% and the tax rate is 45%. So, assume that you won't be taxed for profits or losses in selling the old machine, should the company replace.

So let's try to work out this problem. So to make it easy, I have given you the numbers for the old machine, let's work through the new machine. Remember the new machine, the gross profit is $4,000, correct? Depreciation we just now saw saw is much? 1500, so profit before taxes is 2500, and the taxes, if you do the computation, comes to 1,125, 45% of 2,500 is 1,125.

So your profit after taxes is 1,375. Always remember we have to add back depreciation to get cash flows, which is 1,500. So we get 2,875, is that clear? So we've just reproduced for the new machine but remember, we are going to use the incremental principle. We can't say all of this 2,875 is incremental benefits.

Because if you do the switch, you're not gonna to get this 1550, right? So the incremental benefits, is going to be 2875 minus 1550, that's 1325. That's going to come for 10 years right. So we have gotten the incremental operating cash flow for the next ten years. In the next slide we'll work through the rest of the problem.

So the initial cash flow, remember the new machine costs 15,000. You're going to sell the old machine for 5,000, so your cost is going to be 10,000. Operating cash flow, we just now computed to be how much? 1,325, For 10 years, terminal cash flow is zero, so I got 10,000.

First, 1,325 discounted at 10%, second 110 percent squared, 10 to the power of 10. Remember, you don't have to do step by step this number crunching, you can always invoke the NPV function in Excel. And it turns out the answer for this comes to negative 1858. So the answer would be, DO NOT REPLACE.

As you can imagine, suppose, suddenly you find the buyer of the old machine for not $5,000 but $7,000. Then the project might be worth doing it because it overcomes the negative 1858. So in the real world, you can't hang your hat on one simple base case. You have to always think in terms of what if Analysis- Part.

So what I'm going to do in the next couple of slides is come up with two additional problems that you can work out on your own. And just as I said before, these two problems will work out in our weekly video conference call. The idea behind this is I want you to try to work this on your own.

And then when the when the actual course is on you can participate on. And even if you're not able to participate on the call, you can see the recorded version and we'll post solutions to these problems. One is the Auger Biotech problem and the second one is Caffe Vita Roasting Company.

So both of these problems are very similar to the two represented problems I went through. And if you can work through them you are in a good situation to handle difficult questions. So, what I'm going to do in the next video is walk you through how to take into account inflation.

And what are the techniques you could use like sensitivity Analysis- Part and simulation etc. So, thank you and see you the next time.

## **Capital Investment Analysis- Part 9: Inflation, Sensitivity, and Simulation Analysis**

>> So in this video, I want to start talking about how to take into account inflation. I know you're thinking in your mind that we are living in the US with such a low rate of inflation, should we worry about it at all? But the point is a lot of American companies invest abroad, and many of the foreign countries inflation can be very large number.

So we want to learn how to address inflation in estimation of cash flows, okay? I want to motivate this with a very simple example where, think in terms of what $1,000 can buy, in terms of Diet Coke. You can probably get 500 six packs of Diet Coke at $2 per six pack.

And suppose inflation is 5%. So the Coca Cola company is going to price it next year at $2.10, right? And let's say you put your money in a bank for one year at 10% per interest rate and you get $1,100. Let's try to understand what $1,100 can, what rate of return you're getting in $1,100, and also how much is the rate of return if you measure in terms of number of six packs of Diet Coke they can buy, right?

So if it is $1 rate of return, it's very easy to see it is 10% right 1,100 minus 1,000 divided by 1,000. If you measure it in terms of what the money can buy in terms of real goods and services, you're going to find that you can only buy 523.81 six packs.

And if you measure in terms of what the stuff money can buy it is 4.76%. So you have lost 5% purchasing power and the real return is only 4.76% whereas the dollar return is 10%, so we call the dollar return as a nominal rate of return. That is a percentage change in the amount of money you have.

Whereas real return is a percentage change in the amount of stuff you can actually buy. In our example, actual number of six packs of diet coke that you could buy. So there is a definite relationship between nominal return, real return, and the inflation rate and that relationship is called the Fisher Effect.

The Fisher Effect is 1 plus the nominal return is equal to 1 plus the real return times 1 plus the inflation. So if you do 1.0476 times 1 plus the inflation, you get 1.10. But as an approximation, we can simply say that nominal return is real plus inflation.

So in our example approximately we are talking about 5% real return exactly 4.76%. So, how do you take into account inflation in estimation of cash flows? Be consistent, you can express all the cash flows in real terms and discount them at the real rates of return. Or convert the real cash flows to nominal cash flows by allowing them to grow at the inflation rate and discount them at the nominal rate.

I like the second method because we'll learn later on that cost of capital is expressed in nominal terms. So it's a good idea to forecast your cash flows in nominal terms and this problem becomes very important, then you are living through high inflationary times or long horizons. So if you are a Boeing Company, you are looking at production process for 10, 15, 20 years, so you have to take into account inflation, right?

Always remember that depreciation is expressed in nominal terms. So as long as you're consistent, you're going to be doing the right thing in terms of inflation. And some other things I want to point out is, you can do sensitivity Analysis- Part by asking what if questions. What if the target market share is not 10%?

If it's only 8%, how does it affect MPB? This is where Excel spreadsheet becomes very important, because it can easily change the assumptions, and ask what-if questions. What if your cost of goods sold is not 70%, 72%? Is the project worthwhile doing? What if the inflation is not 5%?

More like 6%. What if your competitor is going to enter the market in three years, how would it impact your market share? What if your discount rate or cost of capital is not 10, it's more like 12? What by investing in the project, you can get valuable options.

One example I want you to think about is Home Depot expanding to different new countries. They can learn a lot by investing in the project, right? So let me, since I talked so much about Home Depot, let me give you some real numbers of Home Depot opening up new locations.

Here are some numbers for Home Depots. These are approximate numbers. Let's say Home Depot want to open up a new location with $20 million investment. They expect to borrow $5 million at 5.8%. They're going to repay the money in 10 years. Salvage value is $7.5 million. They expect $40 million growth growing at 5%.

The margins are 10%. I'm going to give you the numbers for depreciation and operating income in the next page, and working capital investment is 8%, okay? So going to the next page, assuming that the cost of capital is 9.78%, assume that all these numbers are given to us, right?

The way if you wanted to compute this number is $40 million growing at 5%, you can estimate it. The depreciation we are going to allocate over the 10 years and calculate interest payment, remember the company's borrowing money. And you compute minus the taxes, you get the net income, and ultimately remember always you have to add back the depreciation to get the cash flows.

So these are the cash flows coming atone two three up to ten. The initial investment is $20 million, the borrowing is $5 million positive. The working capital investment we are told is 8% of the sales, 8% of $40 million is 3.2. So you compute the cash flow to equity for every period.

The last thing is always remember the working capital investment is recovered back at the end of the life of the project. And salvage value, you're given at the beginning 7,500, so you've got all the estimated cash flows to the equity holders. And then you can discount the cash flows at 9.78%.

Remember the 9.78% is assumed cost of equity capital, and say the NPV of the project is $4.1 million. You can also do the IRR computation which is greater than 9.7. So accept the project. So that is how you will do the NPV computation for the project. And if you want to, you can make it even more sophisticated by doing simulation.

So this simulation of the project would call for making some assumptions about the variables. So our four key variables are the base case in terms of the revenues, the growth rate, the margins, profit margins, working capital. So if we are not sure of these numbers, then we are going to assume some probability distribution for these numbers.

So, for example growth rate instead of saying for sure it is 5%, we are going to say it's 5% but normally distributed with sigma of 2%. So similarly, working capital is 10% with a standard deviation of 2.5%. So once I make the assumption, I'll let the computer program, one of my preferred package for doing simulation is something called address software.

That will pick up one realized outcome for each one of those four variables and estimate the NPV and IRR and repeat it for 5,000 times. Since a computing cost are inexpensive, you would get an output like this, that will tell you as a manager. If you do the simulation 5,000 times, only 20% of the time the project is not worthwhile doing.

So if you have willing to take 20% risk, you would say, go ahead and do the project. So unlike hanging our hat on just one base case of $4.63 million, this one helps you to address the uncertainty better. This will be highly recommended in the real world. And it helps you answer a lot of questions, what if questions.

So I'm going to wrap up the module by summarizing what you should have learned. I want to emphasize that NPV is the most preferred technique. Always think of capital investment Analysis- Part cash flow estimation on incremental basis. Don't forget to ignore sunk costs and include opportunity costs and side effects, address inflation correctly.

Lastly, address uncertainty at the minimum with sensitivity Analysis- Part and if you want to be more cautious about uncertainty, use simulation. Thank you and this completes the Module 2. Thank you.

## **Stock Valuation- Part 1: Introduction and Constant Growth Valuation Model**

>> Hi, welcome back. So this module, I'm going to focus on stock valuation. So just to recap from the previous two modules, introduction I told you about why a manager should focus on investment and financing decision to create shareholder value. And then we spent quite a bit of time in module two focusing on capital investment analysis.

And in particular, I highlighted the importance of net present value rules and using simulation and other techniques to analyze projects. Now I'm going to go on and link it to stock evaluation, because remember, ultimately, there is a one-to-one correspondence between good projects and stock evaluation. So this module, I'm going to focus on how stocks are valued in the marketplace.

So let's get started. So the learning objectives of this model are going to be to learn that stock prices depend upon future dividends and the expected growth in dividends, or in the future. And we are going to learn how to compute the stock prices using dividend growth model.

And then explain how to compute growth opportunities for companies that form a key input for stock values and describe the fixation of the analysts and others on the price earnings ratio, okay? So simply put, the valuation of common stocks is nothing but the present value of all future expected cash flows.

This technique works for any security, but since we are focusing on stock ownership, we know that stock ownership produces two types of cash flows, dividends and capital gains. So we're going to understand how to estimate future dividends and future capital gains and backup today's valuation. I'm going to walk you through three simple models.

One is called the zero growth model, second is constant growth, third is differential growth. Differential goal growth is the most real world case. But to get to that, I want you to start off with the simple zero growth model okay? So zero growth model what it says is, how do we value a company whose stock price is going to be constant for foreseeable future?

You may think what could be a good real world example of such a company. One good example that comes through my mind is the preferred stock of a company. Preferred stock of a corporation is essentially the promise dividend payment for foreseeable future. So how do we value a company who is expecting to pay the same dividend year after year, right?

So it's going to be simply nothing but the present value of all future expected dividends. So in the cash flow valuation, the time value of money problem, if you remember, This is called perpetuity. What is perpetuity? Same cash flows year after year. So then the formula simplifies to simply dividend divided by the discount rate.

In the stock valuation example, R would be given to us. When I go through the next module, I'll teach you how to estimate R for different company. For example, we are going to assume that R is always given to us. So zero growth model stock valuation is simply the present value of all future cash flows.

It simplifies to the constant dividend divided by the cost of equity capital. On the other hand, the constant growth model, we are going to assume that dividends are growing at a steady rate of g. g is called the growth rate. So dividend at time 1, would be dividend at times 0 times 1 + g, dividend time two is dividend at 1 times 1 + g, or dividend at 0 time 1 + g squared, etc.

So that is called the constant growth rate models. And that is the simplifying formula if a stock is growing at a constant rate, and that's called growing perpetuity. And as you would see, it simply dividend 1 over R- g. Extremely important to note that numerator is dividend 1, not dividend 0.

Dividend 1 is also dividend 0 times 1 + g divided by R- g. So it's the next paid dividend, Divided by R- g, okay? Those are the two examples. The third and the last model, Is the constant growth model. So before I go to the third model, here is a simple example of how to apply the constant growth model supposing the company just paid a dividend of $.50.

Remember whenever you say the word just paid that means the last dividend, is $.50. And we expect the company to grow the dividend at 2% per year. If the market required rate of return or the discount rate is 15% what should the stock sell for? So the denominator would be $.50 times 1 + .02, that captures the next dividend, divided by .15 divided by .2, that gives you $3 92.

That's a simple example of it. So I'm going to stop here. And in the next video, I'm going to continue with the differential growth model to value stocks. Thank you.

## **Stock Valuation- Part 2: Differential Growth Model and Estimation of Parameters**

>> If you remember in the last recording I talked about zero growth and constant growth. But in the real world, most of the time we're faced with the situation that in the early part of the company's life cycle, the dividends may grow at differential rates, right? Then beyond certain point in time we can assume that it will grow at a constant rate, okay?

So what we're going to do is estimate the future dividends and start that estimating for next three to four years the differential growth rate. And estimate the future stock price using the dividend when it becomes a constant growth stock. Then combine all of them to estimate the value of the company, okay?

This technique would be the clearer than I walk you through and example. So here is a differential growth example. The company just paid a dividend of $2. We expect the dividend to grow at 8% for 3 years. And beyond that, it will be a constant dividend growth stock at 4% per year.

So when you think of it year four, five, six, seven, eight etc. And we are going to assume that the discount rate is 12%. So always a great idea to put the timeline. And notice that as it pointed out, we need to escalate the dividends at 8% per year, right?

2 times 1.08, 1.08 square cube. Then we come to dividend 4, it's growing at 4%. So that's why we are using 4%. Why do we need the dividend 4? Because dividend 4 is needed to estimate the price at 3. Remember, price at three is dividend 4 divided by r minus g.

So we need the dividend 4, r minus g, 12 minus 4%, you get $32.75. So you got dividend 1, discounted at 12%, dividend 2, 1.12 to the power of 2. Dividend 3, 1.12 to the power of 3. You should not forget to discount the price at 3 also for three parents and you get the valuation at $28 89 cents, okay, is that clear?

$32.75 cents is price at three and that is given here. So that's how you do a problem like this. So we have learned three different dividend discount models. Now let's see, how do we go about estimating the parameters needed to estimate, right? The big one is the growth rate.

How do we get the growth rate? One of the simplest way to estimate the growth rate is simply look at the company's dividend rates dividend policy in the recent years and subtract 1 minus that dividend payout ratio and that gives you retention ratio. That multiplied by the return on retained earnings.

Return on retained earnings we can say net income divided by return on equity and multiply by the retention ratio, you get the growth rate. For example, if you take a company like Google. It retains all of the income. It does not pay any dividends to the shareholders. So g for a company like Google would simply be, just taking 1 times whatever is the return on equity.

If I assume it is 25%, growth rate is going to be 0.25. So g can be estimated using the retention ratio and return on retained earnings. Remember that discount rate can be broken up into dividend yield and the growth rates in dividends. What do I mean by that, we said that the price at times 0 at dividend 1 over R minus g.

So if you recalibrate R, is going to be D1 over P not + g, right? So you can estimate if you want a discount rate by simply taking the dividend yield and the growth rate, that could be a good estimate for the discount rate. But in the real world there are a lot of estimation errors when you try to do this growth rate estimation.

If anything, you always want to do sensitivity analysis on the growth rate. So whenever you see a company's stock price, you can try to break it up into what portion of the price comes from dividends and what portion comes from the growth opportunities. So let me walk you through this breakup in a example.

So price can be treated as EPS over R + net present value of the growth opportunities. So the idea here is if you have a company that is not growing, it pays all of the earnings as dividends, we would call such a company, cash cow. So, for a cash cow price would be simply EPS over R, right?

On the other hand, the company has a growth opportunity, net present value of growth opportunity, the valuation would be greater than cash cow valuation. So let me show you how we can break up a company's stock price into two parts. So here is an example, a company is expected to pay EPS of $5 with a discount rate of 16% and currently trades for $75 per share.

We know the cash cow valuation of the company would be 5 divided by 16 which is $31.25 cents. So the growth opportunity of the company should be $75 minus $31.25, $43.75. So out of the $75 pricing, $43.75, comes from the fact that the investors expect lot of growth opportunities for this company, okay?

So if you look at the relationship between the retention rate and firm value, we see that an increase in retention rate, they'll allow the company to grow at a much higher rate. So that can increase a valuation of the company, but whether return on equity dominates or vice versa, the key rule always remember is, the company shirt will only retain more of the earnings.

If they are able to invest in projects that earns the rate of return greater than the cost of capital. That is what we learned in the earlier module. The key to creating value for shareholders is investing in projects where internal rate of return is greater than cost of capital.

Now you see the relationship between the importance of investing in projects with positive net present value, okay? So, one last point and then I'll wrap up the module on stock valuation is, oftentimes the comparable values are also used to value companies based on some kind of multiples either the P multiples or enterprise value ratios.

So the P multiples, let me talk briefly about it. What is price-earnings ratio? The Wall Street Journal often times called surprised earning ratios, or Yahoo finance page, or Google finance page, you simply divide the price per share by the earnings per share and you can estimate the value of the business, okay.

So let me wrap up the presentation. So one last point is price-earnings ratio and net present value growth opportunities are related, how? Remember I told you that price can be expressed as EPS over R + Net Present Value Growth Opportunities. So if a company is growing you would see that PE ratio is positively related to growth opportunities.

So in the real world sometimes two companies with the same earnings share would be selling for different prices because they're expecting the one of the firms to grow at a higher rates. And sometimes in addition to price earnings ratios, people don't talk about enterprise value ratios. Enterprise value ratio says market value of + plus market value of debt minus cash or sometimes the value of debt minus cash is called net debt.

So, price earnings ratio could sometimes people talk about enterprise value to a EBITDA ratio. So you can do the comparison analysis bunch of different ways. So I'm going to introduce this problem and wrap this stock valuation separately the next video. Let me just introduce you to this problem and I'll work you through work through the solution in the next few slides.

So this problem gives us the sales and costs of a company. We have to compute the enterprise value, and also the stock price per share. So let me stop the recording here, and in the next video I'll wrap up the stock valuation. Thank you.

## **Stock Valuation- Part 3: Stock Valuation Numerical Examples and Summary**

>> Okay, so what I'm going to do is walk you through two problems and wrap up the stock valuation. So in this example, this company has $48 million sales and cost of $15 million. And the balance sheet shows debt of $64 million and cash of $23 million. We are also given the enterprise value multiple.

We are to compute the enterprise value and the stock price. Let's get to work. So if I want to compute the EBITDA. We know that EBITDA is $48 million minus 15 million. Remember, that's the cost. $33 million, right? So using the multiple approach, we'll get the enterprise value as 33 times 6.4.

That gives us 211.2 million right? So what is the equity value? So that answers the first part. Remember equity value is enterprise value, correct. Plus cash. Why, because enterprise value is equity value plus debt minus cash, right? Minus Debt, so 211.2. Add 23 as a cash, we are told $64 million is a debt.

So we get equity value as 170 2.2 million. Stock price, all we have to do is divide the equity value of 170 2.2 million by the number of shares outstanding, right? So 1.94 million, so you get $87.28. So what we did was computed enterprise value using the multiple.

Then subtracted the debt, added the cash to get the equity value. Divided the equity value by the stock price to get $87.28. So we divided the equity value by the number of shares outstanding to get the stock price. Okay, let me do one more problem. This is a nonconstant growth model.

Whenever you see the word, just paid, always remember that this is D0, $3.40. They are going to increase the dividend by 20% next year, but steadily decline by 5%. After that, once it hits 5%, it's going to be constant growth model. If the stock return is 13% discount rate, what is the price of the stock?

So let's try to work out this problem, it's going to help you draw that timeline, right? So remember The dividends are growing at 20% for the first year, 15% for the second year, 10% for the third year and 5% forever. Okay so we need the price at time three, right?

How are we going to get entire price time three? It is dividend four divided by r-g, correct? Are you with me here? Okay, $3.40 times first year, it grows at 1.2. Second year, 15%, third year, 10%, fourth year, 5%. The whole thing divided by 13 minus 0.5. Right, if you do the math, it comes to $67.74, okay?

Now, price at time 0, which is what we are interested, all that we are go to do is take the first dividend. Multiplied by 1.13, take the second dividend, 3.4 times 1.2 times 1.15 1.13 to the power of 2, take the third dividend, 3.14, 1.1 1.2 times 1.15 times 1.1 right?

1.1 to the power of, 3, got it? And don't forget that we are to discount 67.74 at 1.13, to the power of 1.13 to the power of 3, and you get price of 57.81. One of the common mistakes people make is not discounting the estimated stock price at 1.13 to the power of 3.

This RV would solve the problem. As always, if you have difficulty getting these numbers, you can always send us an email or speak to us during the weekly video recorded conference call. Okay, so let me wrap up the module. So the way we are going to value stock is the present value of all future expected dividends.

If we assume zero growth rate in dividends, it simplifies to simply constant dividend divided by r. If you think the stock dividends are going to grow at a constant rate, we take the next period's dividend and divide by r-g. And lastly, the real world case of differential growth rate.

If you want to do it there's a complex formula, but that's a example we went through, we want to first find the dividend of first differential growth rate. What the dividend discounted value is plus the present value of a stock price, in our numeric example this was the 3p we computed this counted for three periods.

So that's the stock evaluation. And lastly, growth rate can be estimated as the retention ratio times return on retained earnings. And lastly, whenever the companies have growth opportunities, you can think of the stock price as nothing but the value of the cash cow, which is EPS over r plus net present value of growth opportunities.

It is appropriate for me to conclude that there's a one to one correspondence between stock price and the company adopting positive net present value projects. Okay, so we'll keep talking about it as we go along in the finance models. But it's extremely important that we are building towards that framework,.

I've already hit upon in the three modules the value creation process, the NPV decision-making and how stock prices critically depend upon the growth in the company. And growth comes through investing and positive net present value projects. Thank you.