

*Real Estate Financial Modeling*  
Development Modeling Basics

Module Audio Transcript



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## Introduction

- Hello, and thank you for visiting Real Estate Financial Modeling, the premier provider of Excel-based financial spreadsheet models, financial modeling education, and financial modeling consulting for real estate development transactions of all types. In this Foundation Video, we will teach the basics of real estate development financial modeling.
- First we are going to review our goals with this video, then we will define real estate financial modeling, identify some of the “cardinal rules” of financial modeling, learn about what makes modeling for development transactions unique, then take a close look at some
- common cost ratios amongst the various cost categories in a development budget, and finally see the relative magnitude and timing of costs in a typical development transaction.

## Goals

- Our goals with this video are to build your confidence in your modeling capabilities, to enable you to analyze potential investments better, to increase your credibility with potential partners, lenders and investors, and to make you more knowledgeable and valuable as a student or real estate professional.

## Slide: What is Financial Modeling?

- Financial modeling is the forecasting of future financial outcomes based on current assumptions.
- We have formatted the word assumptions in bold blue type because throughout our pro-formas, as a rule we format all of our assumptions this way so that we can easily and quickly identify which items are assumptions and which are calculations.

## Slide: Cardinal Rules of Financial Modeling

- Some of the cardinal rules of financial modeling that we have collected over the years are as follows:
- First, garbage in, garbage out. What this speaks to is “Do your assumptions have current and reliable bases and can you defend them?”
- Secondly, we encourage you to annotate your spreadsheets as much as you can bear – as your spreadsheets grow from 5 tabs to 15 tabs to 50 tabs, you will be at risk of forgetting important information that determines the contents of a cell. To mitigate

this, try to annotate your spreadsheets as much as possible and keep a running record of the thought processes that determine the contents of each cell.

- The third cardinal rule is to learn keyboard shortcuts – if you spend a lot of time in Excel, shortcuts will end up being your best friends to perform functions and format cells quickly and easily, especially when you are under deadline.
- The fourth rule is to save multiple copies of all of your models as you work on them throughout the day. If you save your model as a new version every half an hour, you will guarantee yourself that, should your computer crash, you will never lose more than a half an hour's worth of work.
- Next, you should always sanity check your outputs. It's very easy to get lost in the numbers when you are working in Excel for long periods of time. What we suggest you do is periodically take a step back from your computer and ask yourself out loud: Do my numbers make sense? Are my cost assumptions reasonable, and are my profits reasonable given these costs? Have I timed my costs and revenues appropriately?
- And lastly, in financial modeling, if you have a gut feeling that you need to do something in your model now, you have the choice of doing it now or doing it later, but sometimes doing that thing now is better than doing it later.

#### Slide: Modeling Fundamentals

- Now let's talk about some modeling fundamentals.
- At its most basic, financial modeling is really about “How much?” and “When?” and then the “Why?” behind that When.
- When we are talking about the Why behind the When, we are referring to the driver for the timing of certain expenses or revenues.
- For instance, if law mandates that we pay our real estate taxes in Time Period 3, then that is exactly when the real estate taxes are going to be paid in the model.
- And the When element is important of course because it affects affects our cash flow in each period, as well as our Internal Rate of Return. Paying for items any sooner than necessary would negatively affect our Internal Rate of Return, which is a measure of investment performance for a multi-period investment that can also be thought of as the rate of growth in cash flow that the investment is expected to generate. More technically, it is the discount rate, measured as a percentage, at which the net present value of all cash flows for that investment would equal zero. As

stated, the Internal Rate of Return is affected both by the magnitude of the positive and negative cash flows and their timing relative to one another.

#### Slide: Modeling Fundamentals – Existing Commercial Building

Let's first take a look at a very simple pro-forma, or financial projection model, for an existing tenanted commercial building.

- What we have here are just basic Revenue and Expense line items, and the net of those two would be the Pre-Tax Profit.
- For an existing commercial building that's already operating, if you were to acquire it, you will have revenues and expenses, and hopefully, pre-tax profit, all starting in Time Period 1.

#### Slide: Revenue Lag Illustration

- However, for a ground-up development project, where we are building the building and we are not operating it starting in Time Period 1, we are going to have expenses starting in Time Period 1, but we are not going to have revenues until sometime into the project.

#### Slide: What Makes Ground-Up Development Different?

- So what makes ground-up development different is the time it takes to produce your revenues.
- Let's take a look at an example of a 200,000 square foot commercial office tower with underground parking.
- Here we have a table of the tasks and the durations required to get to the point where we are producing revenues on a development project of this nature. These tasks are listed from top to bottom in their order in the development process, and we ask for each task if we are spending money during that task, and then we ask if we are producing revenues.
- Even in the Low scenario, we see that we have a very long runway to get to the point where we are producing revenues.

### Slide: So Why Bother Developing?

- With all of the time and money and hard work that are required to develop a building, and the inherent risk of doing so, you might ask the question “Why bother developing at all?”
- Well, there are a number of good reasons, and we have shown five of them here:
- The first is, there is a shortage of high-quality real estate in the market for all uses – office, industrial, retail, housing, institutional. Second, there is capital that is seeking these types of long-term investment opportunities. Third, by developing real estate, you can spur economic and neighborhood development. Fourth, naturally you can create and reap a lot of value, and fifth, it’s fun and you can put your thumbprint on the landscape through development.

### Slide: Development Project Timeline

- Next let’s take a look at a typical development project timeline.
- What we have done here is separated a development transaction into four main phases, and we move forward in time as we move from left to right across the screen.
- The first phase is Pursuit or Site Control. The second is Pre-Construction or Entitlement, third is Construction, and the fourth, Post-Construction.
- For the purpose of the discussion of the four phases and the balance of this video, note that we will be using a commercial office building as our example.
- Let’s take a look at the first phase of Pursuit or Site Control. What we mean by this is, in order to develop a piece of real estate, you need to have the right to do so. So you will have to pursue and then control, as developers say, a "piece of dirt".
- In the course of pursuing a site, you are going to want to figure out what you can afford to pay for the site. Generally, for a development site, this is done in two ways:
- The first is a residual valuation, and what we mean here is you will run a financial projection model, or pro-forma, by plugging in assumed costs and assumed revenues, and you will have an assumed target profit margin, and then you will back into the price of the land that you can afford to pay given those assumed costs, assumed revenues, and assumed profit margin that you have targeted.

- The second method of land valuation for a development site is based off of comparables, which are often referred to as “comps”. Comps are similar transactions that have occurred recently in your subject sub-market area.
- So if you are looking at a downtown central business district office building site, you would talk to brokers and identify those other similar office development sites that have transacted recently and learn at what price those sites traded.
- And then as a sanity check, and to help you shore up your conviction, you will compare your residual land valuation and the comps and see if they gel with one another.
- If the most recent site traded among sophisticated parties at \$50 a foot, and you’re intending to pay \$75 a foot, you need to be able to explain and justify that difference to yourself – for instance, is your site appreciably better located and more desirable to tenants? Did the last site trade 2 years ago in a significantly weaker market?
- And in the course of doing your residual land valuation and looking at comps, what you are essentially doing is your preliminary Due Diligence – you’re taking a look at construction costs and potentially achievable rents, you’re looking at the market, and putting together an investment case for developing this piece of real estate.
- Once you get comfortable with a price to pay for the land, keeping in mind that this is the beginning of a negotiation, you will probably put together a Letter of Intent for the land seller, as opposed to moving to a full-blown Purchase and Sale Contract.
- A Letter of Intent, or LOI, can be as short as one page, and it will cover the key terms of price, deposit amounts, and when closing would occur.
- And once the seller has received your Letter of Intent, the negotiation has begun. You will likely go through several iterations with the land seller with respect to price and the timing of closing and the sharing of closing costs, and eventually you will move to the signing of a Purchase and Sale Contract.
- Sometimes the Seller will insist that their attorney will draw up the contract. Generally speaking, it is not inexpensive to have a Purchase and Sale Contract drawn up, especially if it is a sophisticated transaction. The legal fees for the contract alone could cost you anywhere between \$20,000 and \$100,000, or even more.
- And typically as part of signing the contract, you will put your Initial Deposit into escrow.

- As the purchaser, you will want your Initial Deposit to be refundable for a certain period of time that is prescribed in the Purchase and Sale Contract. Once you put your Deposit into escrow, you are in your Final Due Diligence period, the length of which is also prescribed in the Purchase and Sale contract.
- During this Final Due Diligence period, you will study the site and transaction further by doing environmental analysis, and inspection of the title, you will re-run your pro-forma multiple times to see what the investment would look like under multiple sets of circumstances to make sure that you are still comfortable with the transaction.
- Now let's move on to the second major phase of development, which is Pre-Construction or Entitlement.
- You will most likely as you move forward have to put some additional deposit amounts into escrow, and those will most likely be non-refundable.
- You are going to start to work very closely with your selected architect, land use counsel and civil engineer to understand the site – where the building will sit on the site, and how the building will mass on the site given the zoning. And you will be working very closely with your land use attorney to identify all of the steps that need to be taken to get all of the approvals and entitlements you will need to develop the site.
- The end of the Pre-Construction and Entitlement phase is marked once you have your Building Permit in hand.
- The next phase is Construction, and we note here that this is your preferred land closing timing. For any development, your land is going to be a significant portion of your cost structure, and to keep your Internal Rate of Return as high as possible, you are going to want to push that cost as far into the future as you can.
- So if you are lucky and you are able to negotiate with the Land Seller to close on the land at the start of construction, you will be in better shape than if you had to close earlier in the development process.
- You will also be closing on your construction loan during the construction phase once all of the equity is invested in the project, and then you will build the building.
- When you are done building the project, and you have put all of your finishing touches on the lobby and you have planted flowers in the flower beds in the public areas, you are then in your Post-Construction phase.

- The most important activity during this phase is the leasing up or selling of the space. As you are doing so, you are going to be paying out for tenant improvements as you build out space for each of your tenants.
- Once you are fully leased up and you are receiving all of the rent, you will be in what is called the project's Stabilized period.
- As you are collecting rent and your Net Operating Income less interest turns positive, you will begin paying back, or paying down, your Construction loan, which has the senior claim on cash flow from the project until it is repaid in full.
- If you do end up selling, or disposing of the building, you will repay your outstanding balance in a lump sum. Otherwise, you will repay the construction loan with a permanent loan you place on the property.

Slide: Building the Development Pro-Forma

- Now let's talk about building the development pro-forma, which has the following major components: the Sources and Uses tab, the Cash Flow and Returns tab, a dedicated tab for calculating the Stabilized Net Operating Income and Capitalized Value, and supporting sheets for the three major sheets above.
- For the Sources and Uses tab, we will start by identifying, quantifying and timing our costs to get to our Total Development Cost, or TDC.
- The table here breaks out the major cost categories, and while it is important to understand that all transactions are unique, we ascribe a percentage of Total Development Cost that these line items could typically represent in a development transaction.
- To emphasize this again, we have chosen these numbers for the sake of discussion. Your transaction ratios will likely differ, but if they differ significantly from these ratios, something may be awry or may need to be reconsidered. For instance, if 40% of your cost is allocated to your Land and Transfer costs, you may be grossly overvaluing the land.
- Let's take a look at each line in the table now.
- First we have our Land and Transfer Costs, which we say are typically 15% of our Total Development Cost.

- We say our Hard Costs and Contingency are 55%, Soft Costs and Soft Costs Contingency are 20%, our Furniture, Fixtures and Equipment are under 1%, and lastly the cost to borrow money to build the building, is around 10% of the Total Development Cost.
- Next we will take each one of these individual line items and identify their components and we will get a better understanding of the timing of these component costs over the course of the development timeline.

#### Slide: Land and Transfer Costs

- Let's talk first about land and transfer costs.
- We have put together a table that identifies the major line items, addresses their timing, and once again, we have ascribed percentages to each line item for the purposes of the lesson so that we can understand in relative terms how each line item contributes to the total Land and Transfer costs.
- First we have our Initial Deposit, which will be paid up-front, and by that we mean we will wire these funds into escrow at the time of signature of the Purchase and Sale contract.
- As the land purchaser, you would want to put down as little as possible. We assume an Initial Deposit that comprises 3% of the total Land and Transfer costs, which means that it is more than 3% of the land Purchase Price itself.
- The next line item is the Additional Deposit. In large, sophisticated transactions, you will likely have at least one Additional Deposit after the Initial Deposit has become non-refundable, or gone "hard".
- For the timing, we say this is per the contract, which emphasizes that this is a negotiated item between the purchaser and the seller. We assume an amount here that comprises 3.7% of the total Land and Transfer costs.
- The reason that this is larger than the Initial Deposit is that generally speaking, by the time you have completed your Due Diligence and your Initial Deposit has gone hard, you are ready to show a further commitment towards going to closing on the land, so you will put even more down as a secondary deposit.
- You will pay the balance of the land Purchase Price at Closing. As you can see, this is the lion's share of the total land and transfer costs, and all of the line items that follow are based off of the Purchase Price.

- You have a broker's fee, typically also paid at Closing, Transfer and Recordation taxes to the jurisdiction, and some recording fees as well to have the transfer of ownership recorded in the land records of that jurisdiction.
- These are all very small percentages, but they are not to be overlooked.

Slide: Land and Transfer Costs Graph

- Let's take a look next at the typical timing of these costs over the course of the entire transaction, which in this case we have set at 60 months in total duration.
- In month 1, we show our Initial Deposit of \$1MM, followed by the Secondary Deposit of \$3MM in month 5, followed by the land Closing in month 19 of \$12MM. Next let's move on to our hard costs.

Slide: Hard Costs

- Hard costs are generally modeled as a bell-shaped curve, and the way we define them is that they do not commence until you have your building permit in hand and you put a shovel in the ground.
- Hard costs are modeled as a bell-shaped curve because empirically this is the way the construction budget is spent over the course of the construction schedule for buildings. You start out incurring costs slowly, gain speed, and then slow down again at the end.
- As a result, what we do in our model is allocate our total hard costs budget according to the percentages for the bell-shaped curve that matches our construction schedule duration.
- Our major hard cost line items in rough chronological order are relocation and undergrounding of utilities, excavation of the site, environmental cleanup or abatement, pouring of the foundation, construction of the underground parking structure if the building has one, construction of the above-ground tower, application and installation of the tower's skin and windows, and then construction of the public spaces.
- As we noted earlier, we look at our tenant improvements separately in the Post-Construction phase, and these will be modeled based on our lease-up assumptions. And lastly, we can never forget to include ample Contingency, but we note that the Contingency does not apply to the Tenant Improvements budget.

### Slide: Hard Costs Graph

- Next let's take a look at the Hard Costs over the course of the entire 60-month timeline.
- We note that we don't have any hard costs until month 18, when we begin our utility relocation. The hard cost spending then follows the approximate bell-shaped curve for the assumed construction schedule, and then as we finish construction on the base building and public areas, we note that we have a plateau, which is the payment over time of the tenant improvement allowances for the tenants building out their interiors, followed by a final lump sum payment to the last of the tenants.
- We note that the values reflected in the graph contain our Hard Cost Contingency as well, but that once again this Contingency does not apply to our Tenant Improvement allowances since these are negotiated amounts, and any interior construction costs above the allowance are borne by the tenants.

### Slide: Soft Costs

- Next let's look at Soft Costs. Unlike the Hard Costs, Soft Costs are incurred throughout the entire project.
- The major soft cost line items include:
  - The Developer Fee, which is an allowance charged against the project that you will want to cover your overhead associated with the project;
  - the Equity Fees;
  - Accounting, Insurance,
  - Letter of Credit and Bonding fees;
  - Real estate taxes;
  - Impact taxes levied by the jurisdiction, such as a schools impact tax;
  - Utility costs;
  - Legal costs;
  - Design, which includes architecture and landscape architecture;
  - Multiple consultants and testing and inspection fees;
  - Permit fees;
  - Marketing and miscellaneous costs,
  - Leasing commissions,
  - and of course, contingency.

### Slide: Soft Costs Graph

- Next let's look at the Soft Costs over the course of the project timeline.
- You will see that we have soft costs starting in month 1 of the project and going through month 60.
- In contrast to the allocation of hard costs, there is no typical curve off of which soft costs are modeled. Each transaction is unique, and it will be the total soft costs in each period that end up defining the curve for your transaction.
- The areas of the graph that represent the largest cost are associated with the initial design of the building, and in the case of the four spikes, the payment of leasing commissions.

### Slide: Hard Costs vs. Soft Costs Graph

- We see when we put the hard costs and soft costs on the same graph that they differ considerably, both in scale and timing.
- Here the hard costs are in red, and the soft costs are in blue. The soft costs never peak as high as the hard costs do, and they begin as we noted in month 1, whereas the hard costs don't begin until month 19.

### Slide: Furniture, Fixtures & Equipment (FF&E)

- Next we have Furniture, Fixtures & Equipment, also known as FF&E. These are the costs associated with fitting out the lobby of the building with millwork and art, and furnishing the fitness center.
- These costs are going to come at the very end of construction because we are dealing with physical space and construction logistics, and these items would be at risk of being damaged if they were installed while there was still heavy construction foot traffic going through the building.

### Slide: Furniture, Fixtures & Equipment Graph

- In our hypothetical transaction, we have modeled the FF&E costs to come in one period towards the end of the construction schedule. Because we have kept in mind that furniture, carpet and tile are often long lead-time items, we have modeled the FF&E costs to start several months prior to the end of construction to ensure delivery in time for installation.

### Slide: Financing Costs

- Next let's move on to our Financing Costs. Just to review, in a typical real estate development transaction, equity will be invested first before debt will be funded by the bank.
- As you close on the loan, you will likely have to pay any mortgage broker fees, as well as origination fees to the bank and a mortgage recording tax. And the moment you begin to draw down principal, the interest clock starts.
- Other financing costs include lender-related legal expenses.
- When you structure your construction loan, you will want it to accrue, or accumulate, the interest until the building starts to have positive Net Operating Income less Interest.
- Otherwise, you will have to pay interest all along during the course of the development, and you will need to have a separate source of funds to do that.
- From an accounting standpoint, you will count this accrued interest as a financing cost through the point of receiving the building's Certificate of Occupancy.
- We note that if you have a mezzanine loan, or a land loan, you will also have all of these same items related to those layers of financing as well.
- Lastly, you will account for your negative cash flow during the lease-up phase here in your financing costs as an Operating Deficit.
- Next let's take a look at our financing costs over the course of the project timeline.

### Slide: Financing Costs Graph

- The spike in month 19 is a reflection of closing on the construction loan, and comprises the origination costs and lender fees.
- The upward slope is the capitalized interest, which continually increases as we draw down the loan and our outstanding balance increases. The downward slope reflects the fact that we are signing tenants and more rent is coming in, and thus our Operating Deficit is decreasing as more rent comes in.

- And finally, our financing costs end up as zero after we repay the construction loan in full.

Slide: Total Project Costs 1 (Individual lines)

- Finally, let's take a look at all of our costs on a single graph, which is a very interesting and educational exercise.
- We have truncated the vertical scale so that we can retain some detail in the items that don't have as much in any one period.
- The purple line is our Land, the blue our soft costs, the red our hard costs, the green our financing costs, and the orange our FF&E.

Slide: Total Project Costs 1 (Blended)

- Blending all of these costs together, this is how the Total Project Cost shows over the course of the 60-month timeline.

Slide: Real Estate Financial Modeling

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