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Analysis Of Real Estate Sale Prices And Expenditures.

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Abstract

This article focuses on the main drivers of a real estate project, including assumptions such as construction start and date, how much the lenders will get back, and whether the interest rate is floating or fixed. Other key assumptions in this model include rezoning, pre-development costs, and others that include cost-push inflation. We recommend further analysis and research on this alternative asset if inflation will have a significant effect on the value of the project and return attribution to investors.

1. Introduction

1.1 Land loan and construction loan

Here, we're going to talk about things to consider when getting a land loan. The first thing you want to consider is how much you can get. Lenders are going to look at things in three different ways: the cost of the property, the income it can generate, and the comparable prices that other properties have traded for. You're also going to have to consider the interest rate. You'll have to understand the pros and cons of a fixed versus variable rate. And if you pay the interest as you go, called current pay, or if it accrues and is capitalized, you can repay it later. Other things you'll want to consider when getting a land loan are the time and cost of rezoning, predevelopment costs, the term or length of the loan that you need, and any other security covenants that might be required by the lenders. So in the case study, we are going to complete this template and actually figure out what the land lift is that you can get by buying this land, rezoning it, and then getting it reappraised. So here's the information you need to fill in the spreadsheet: You can purchase the land for $10 million. There's zero property tax due. There are pursuit costs. Before completing the transaction of $50,000, there'll be a 1% closing cost fee. But then you can have it appraised for $13.5 million and get a loan-to-value ratio of 50%. Now you can fill out the spreadsheet that's required to calculate the land lift.

1.1 Purpose of the Study

The purpose of the study was to analyze the effects of sale prices and construction expenses on the cost to fund and the proceeds to pay back capital.

1.2 Significance of the Study

The significance of the study was to develop a model that will be used to drive cash flow analysis and ultimately return attributions for real estate partners.

2. Literature Review

Now let's look at funding construction. With the construction loan, the first thing you want to know is how much you can get. The most common approach is the cost approach, where a lender looks at the total cost of the project but may separate eligible versus ineligible costs (Real Estate Financial Modeling, 2020). Financial modeling and valuation analyst studies (Corporate Finance Institute Canada, 33–34), which are part of the calculation, The interest rate is very important. It can be fixed or floated again, and it could be approved where it capitalizes or pays as you go. Other things to consider are covenants or guarantees, the length or term of the loan, any requirements for pre-sales or pre-leasing, and repayment terms as well. When you're analyzing a construction budget, you have to consider the hard costs, which are the costs related to the construction itself, things like land acquisition, site improvement, and the actual building. Then you have to consider the soft costs that are eligible to be included in the budget. These costs include things like engineering, architecture, marketing, insurance, property taxes, etc. And then there are typically some soft costs that are ineligible to be included in the loan amount relative to the budget. Those include things like financing costs, developer profits, taxes from an area, costs, or other items. So it's important when looking at the budget to clearly break down these hard costs into eligible soft costs and ineligible soft costs. Now it's your turn to go back to Excel and, using the case study that's included, calculate the total hard costs, eligible soft costs, and ineligible soft costs and figure out what construction loan value you can get assuming a 70% loan-to-value ratio on this project. Development model. In this chapter, we're going to start building our real estate development model. We begin by setting out all of the assumptions that are required to drive the model. They'll all be contained on one worksheet called Deal Summary. Once we have that in place, we will then start linking up and creating the formulas to build the cash flow model. It consists of several sections, including revenue buildup, development costs, financing leverage, free cash flow, and finally a cash flow waterfall. We're going to go through all of the formulas step by step with you in Excel. So let's get ready now and jump over to Excel to start building our model. Assumptions. In this chapter, we're going to look at all of the assumptions that drive the model. We'll start with this schedule, where we have important dates and timelines like the transaction date, when sales start, and when construction starts and ends, which will then calculate the number of months to complete the project. We will look at the absorption rate, how quickly units are sold, and how quickly they close. Then look at the property stats: the gross salable area, any deductions, the net saleable area, the floor space ratio, units, and some other key ratios. Then we'll

build in our development costs. These will include things like the cost of land building, servicing, consulting, marketing, and much more. In addition to those development costs, we're also going to include purchase and sale assumptions such as financing with the loan, the loan-to-cost ratio, total loan equity, interest rates, dollars per square foot, commissions, and much more. So this is just designed to give you a flavor of some of the assumptions that we're about to make in much more detail when we start building the model together in Excel. In the figure called Case Study Development Model Assumptions, you'll see in this figure that we've got a list of assumptions that are organized by category and are going to be used to drive the financial model. Just this simple set of assumptions is enough to build our entire cash flow model. You can imagine that these assumptions are provided either by a client or by a senior member of your team and your task. Now that we've performed the analysis based on this set of numbers, let's begin by selecting all of the assumptions under the Schedule section, copying those, and then flipping over to your blank. Financial model and paste those in. Here we are in the real estate financial model. And we move from the cover page into the deal summary, where we have all of the sections that we're going to be pasting our assumptions into. So let's start by pasting in the raw data from the assumptions file. Paste it as values. Can we get all these numbers in place here? So let's quickly review that each of these means.

Schedule	
Transaction Date	1-Apr-17
Sales Start	1-Sep-18
Construction Start	1-Oct-17
Construction End	1-Dec-18
# of Months	15.0
% Sold at Commencement	35%
Units Sold/Month	3
% Closed at Completion	35%
Units Closed Per Month Post	4

Transaction date Is the date that we are using for valuation purposes. We're going to discount cash flows back to this transaction date and calculate the internal rate of return back to this transaction date. The sale start date is when the project actually starts selling the units that are being built. This is the date when construction starts and ends. Now let's calculate the number of months that construction lasts. We will use Excel's M-round function. Open two brackets and round the number to whatever we specify, which in this case will be the nearest whole number, but we're going to take the difference between these two dates, that is, the date when construction ends and the date when construction starts. And then divide that difference, which is the number of days, by 30. If you take the difference in days and divide by 30, we get the number of months, which is one because we're going to round it to the nearest whole number. And then plus one at the end, because we want to round it up, and you'll notice that we're including the first day of December 2018 in this, which means it rolls into the next month. So it's 15 months, it's up, and it's always better to err on the side of caution. Then below that, you have the percent sold. That means that when sales start on September 1st, 2018, we assume that 35% have already been sold, most likely to insiders, family, friends, and others who may have initially put in some orders before this even started. Then, once sales have started, the units are going to sell on average 3 per month until they are complete. This assumption points out how many of the units will have closed when the project is completed. And then finally, once it has been completed, the number of units that are going to close per month after completion will be this assumption, which is 4. This will all become clear when we build the development schedule formulas in the following model.

Now that the schedule assumptions are in place, you can start filling in the property statistics.

Figure 1

Property stats(Square Feet)			
Gross Site Area	100,000	FSR GBA	80,000
Deductions	25,000	Constr. GBA	80,000
Net Site Area	75,000	Net Salable	80,000
Density (FSR)	1.07		
# of Units	60	Avg Unit Size	1,333

Let's go back to our raw data file. here we are in the case study development model assumptions file, and we're going to be grabbing these assumptions and bringing them over. So let's start by copying the gross site area in deductions. Then we'll copy and paste the number of units, and finally, FSR construction and net sales will be assumed. So copy each of these sections. And paste them in, and we'll meet you on the other side. Let's start by pasting these first numbers as values. Then we'll go get the number of units and then the GPA numbers. The number of units is 60. Paste that in. Now select the floor space ratio and gross buildable area assumptions. And paste those in the file up here. So you've got these assumptions in place. So we can see from our assumptions that the gross site area is 100,000 square feet. But then we have deductions of 25,000, so the net site area is 75,000 square feet. The net salable area could be less than the construction gross buildable area, but in our model, we do not need to make any deductions over here. So the actual amount of square footage that can be sold on this project is 80,000. To calculate the density, which is the floor space ratio. Calculate it. We simply take the floor space ratio (gross bubble area) and divide it by the net site area, so we get 1.07. So we've got a net salable area or net saleable square footage, that is slightly larger than the net site area. So what that means is that, for this development project as an example, the actual buildable area, which is the construction area that's going to be sold as units, is slightly larger but almost exactly the same. The exact same size as the square footage of the site, meaning of land, and as this FSR increases. Then you are getting a denser and taller construction. So, for example, if this were to actually double, at 160,000 square feet, you can see that the density is 2 to 1, meaning twice as much. Condos, or twice as many townhouses, have been built relative to the site area. So that's how we can think about this number. Now, finally, let's calculate the average unit size, which is simply the net sales for our footage divided by the number of units. So we've got the average unit being 1333 square feet, as demonstrated in the figure above.

3. Methodology

Now let's start filling in the development cost section. Here we've got three columns: the total dollar cost. The dollar cost per unit and the dollar cost per square foot So we can think of the cost of the project in any of these three categories. Let's go to the assumptions and grab the information that we have. Here we are back in the assumptions, and you can see that we've got total dollar assumptions here. In this case study, you may be given the totals like this: dollars per unit or dollars per square foot. Whichever you're given, you can always convert between them. So let's take these numbers here, copy them, and paste them over. But space is special here. As always, those total dollar costs The heart contingencies we will actually have to calculate as a percentage of the costs that are above, and the same with the soft contingencies. Let's go make those assumptions. So we see here that the hard contingencies are 5%, and the soft contingencies are also 5%. And then the 50%, or half, of commissions that are paid on sale or on closing are 4 1/2%. So let's take the two 5% and 4 1/2% and bring them over to the model. So we'll put these assumptions on this side. We'll put 5% for hard contingencies, 5% for soft contingencies, and 4 1/2% for the first half of the commissions that are paid to realtors. So now let's calculate what the hard contingency dollar costs are. To do that, we're going to use the M round function

because we want to round things to the nearest thousand. And then we're going to take the sum. Of these hard-cost numbers and multiply them by the contingency percentage, which is 5%. So then, to round this to the nearest thousand, So there we have our hard contingency numbers. Now let's go back to our assumptions file and get the numbers for these costs. So we want to take all of these soft-cost items here, copy them, and paste them over. Let's taste those values. We can then calculate the soft contingency in the same way we did with the hard contingency. So M is the sum of all the soft costs multiplied by the contingency assumption. Rounded to the nearest 1000. Now we can sum up the development costs, which are all the way up to the land. So there is the total dollar cost for development. Now what we'll do is fill in all these costs on a per-unit, per-square-foot basis. So to do that, we're going to take the total cost and divide it by, in the assumptions here, the number of units anchored with A4. You will also take the total and divide it by the total square feet. Anchored with those four, and we're going to use the net salable square feet. Now we can copy the formulas here and paste them, just pasting the formulas so we keep our formatting in place, and then we can fill across at the bottom. This is the sum number, so we've got everything in place now on a total dollar cost right here, a per unit cost, and a per square foot cost. If you want to switch it around so that dollars per square foot are driving the model, we would copy these numbers and taste them as values. And then recalculate the totals, thereby reverse-engineering things. So whichever method you prefer is totally fine. It's not going to have any impact on the cash flow model. Just be clear when you're setting it up that you either have the total cost drive or the per-square-foot cost drive.

Figure 2

Development Costs					
		$ Total	$ / Unit	$/SF	
Land		**$14,000,000**	**$233,333**	**$175**	
Building Costs	0%	10,000,000	166,667	$125	
Servicing		1,500,000	25,000	$19	
Hard Contingency	5%	575,000	9,583	$7	
DCCs		225,000	3,750	$3	
Consulting & Warranty		700,000	11,667	$9	
Finance / Bank Costs - Other		225,000	3,750	$3	
Marketing		800,000	13,333	$10	
Overhead		850,000	14,167	$11	
Soft Contingency	5%	140,000	2,333	$2	
Development Costs		**15,015,000**	**250,250**		**188**
Finance - Interest		667,138	11,119	$8	
50% Commissions	4.5%	900,000	15,000	$11	
TOTAL		**30,582,138**	**509,702**		**382**
Pre-Construction Spending ($/month)		100,000			

Now let's move on to calculate the sales assumptions and the net proceeds from the development project. In this cell, we've got our key assumption for the selling price in terms of dollars per square foot. So we

performed our own independent analysis as an analyst, let's say, on this project when we thought that $500 a square foot was what we could get for these units. So what we're going to do is fill in the table, and then the selling price per square foot is just going to refer to this assumption that we've pulled out so that it really stands out as a key driver. Then we can calculate, per unit, what that equals. So we take the price per square foot and multiply it by the average unit size. So that's the average selling price per unit. Now we can get the total for the whole development by taking that and multiplying it by the number of units, so $40 million. In gross sales. Now we're going to have to deduct the sales commissions. 50% of which is paid upon the sale of units; the other 50% is included in the cost of the development. So we split the commissions in half, with half deducted from gross revenue right here and the other half deducted later as an operating cost. 50% is going to be taken off. We can then calculate the total because it's going to be equal to the gross revenue. Multiplied by 4 1/2% selling commission and then cut in half. Now let's put brackets around this so that we can show it as a negative number. So we have this as a negative here. We can take that and divide it by the number of units. And then we can divide that again by the average square foot per unit. So we've got $11 in sales commissions coming off the gross revenue. And then lastly, we have to deduct the warrant, and let's go back to our assumptions worksheet. Give me suggestions for the worksheet. If we scroll down to the bottom, we see that there's a warranty cost of $1500 per unit. So we're going to copy that 1500 and paste it over. Let's taste it here. And we'll flip it. To be a negative cost. We can then divide it by the average square foot to get per square foot, and then we can multiply it by the number of units. To get the total cost. Now let's sum up. To net proceeds. And fill that in. So now we can see here our net revenue, or net proceeds, which is the selling price minus half, the sales commission minus the warranty, and the total dollar term, per unit and per square foot.

4.Data Analysis and Results

Figure 3

Sales Assumptions				
			0%	$500
		$ Total	$ / Unit	$/SF
Sale Price		$40,000,000	$666,667	$500
Sales Comm.	50%	($900,000)	($15,000)	($11)
Warranty		($90,000)	($1,500)	($1)
Net Proceeds		$39,010,000	$650,167	$488

Let's look at the financing assumptions and fill in this table. If we flip back to our Case Study Assumptions worksheet, You can get some numbers here. In the assumptions area, we see that for financing, we can get a loan-to-cost ratio of 70% with an interest rate of 3 1/2% and a total land loan of $5 million. Let's copy over the five million, and then we'll type in 70% and 3 1/2. So let's paste in the land loan here. We're going to get a 70% loan to cover costs. And an interest rate of 3 1/2%. So those are the key assumptions that we've been given in this case study. Of course, it could be different under all sorts of different scenarios with different interest rates, different loan costs, et cetera. But for this model, these would be appropriate numbers. With those assumptions in place, let's now think about how to continue filling in our development cost schedule. We need to know what the total interest expense is since interest is an operating expense. And in order to know the interest cost, we need to know how much of the loan is drawn upon. We have a 70% loan-to-cost allowance, but we don't know what's actually going to be drawn until we have the model built. So let's go into the cash flow model. Let's open up all the sections. And under the financing assumption here? Where interest accrued is on row 43. In Column C, right here in this cell, let's highlight this in light gray because this is where we're going to have the total interest expense over the life of the development project. So we're going to link to that here, since we want the total interest cost and total interest expense. We're going to link to this cell when the model is complete. It will fill in the rest of this table. The other thing we can link to now is the

50% commission. And we're going to flip the sign back to being positive since we're showing all expenses here as positive numbers, levelling with that there. Then we can copy the formulas here that we have to get per square foot and per unit. Still pays. Then we can calculate the grand total here, which is equal to The cost of the land plus the development costs. Plus the financing and commission expenses. All that builds across So now we see our total cost, although it's not quite complete because we haven't calculated total interest until the model is finished.

Figure 4

Development Costs

		$ Total	$ / Unit	$/SF	
Land		**$14,000,000**	**$233,333**	**$175**	
Building Costs	0%	10,000,000	166,667	$125	
Servicing		1,500,000	25,000	$19	
Hard Contingency	5%	575,000	9,583	$7	
DCCs		225,000	3,750	$3	
Consulting & Warranty		700,000	11,667	$9	
Finance / Bank Costs - Other		225,000	3,750	$3	
Marketing		800,000	13,333	$10	
Overhead		850,000	14,167	$11	
Soft Contingency	5%	140,000	2,333	$2	
Development Costs		**15,015,000**	**250,250**		**188**
Finance - Interest		-	-	$0	
50% Commissions	4.5%	900,000	15,000	$11	
TOTAL		**29,915,000**	**498,583**		**374**

Going back to finish this table. We can calculate the maximum loan amount. It's going to be equal to the total cost of the development, including land development costs, finance, and commission. Multiplied by this 70% threshold. That means that the equity required to fund the project is the difference between the total cost here. And the loan amount. So that's the amount of equity required to fund the project. And if we take these two numbers and add them up, when we look at the sum down in the bottom right corner here, we see that that number is exactly the same. It's this number here.

Figure 5

Purchase Financing & Costs

Construction Loan	
Loan to Cost	70%
Max Loan Amount	$20,940,500
Equity	$8,974,500
Interest Rate	3.5%
Land Loan	$5,000,000

So everything ties together, and we've got these assumptions all complete. Now we're going to move on to start calculating the monthly Cash flow model.

5. Conclusion and recommendation

We can see what significant impact these model drivers will have on our cash flow and, ultimately, return attributions for investors. It is therefore very important to estimate things like the maximum construction loan amount and the interest rate that will impact the construction draw amount and loan to value for this real estate development project.

We recommend including inflation in our cash flow forecast analysis, as this might have a significant impact on the internal rate of return by investor type.

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