

# Manual

## Real Estate Business



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# 1. THE VALUE OF LAND

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# THE VALUE OF LAND

This section explains the land valuation process. It begins with an introduction to basic concepts, to then understand how developed and undeveloped lots are appraised. The value of large land extensions is then explained based on this, and the relationship between lot size and price per sq. mt. of land can be understood. Finally, mixed use, a fundamental concept for the valuation of large land extensions, is presented.

## 1.1. GROSS AREA, NET DEVELOPABLE AREA AND USEFUL AREA

Before talking about price, the differences between gross area, net developable area and useful area must be understood. Gross area refers to the total size of a plot that has not be intervened in any manner whatsoever (see Figure 1).

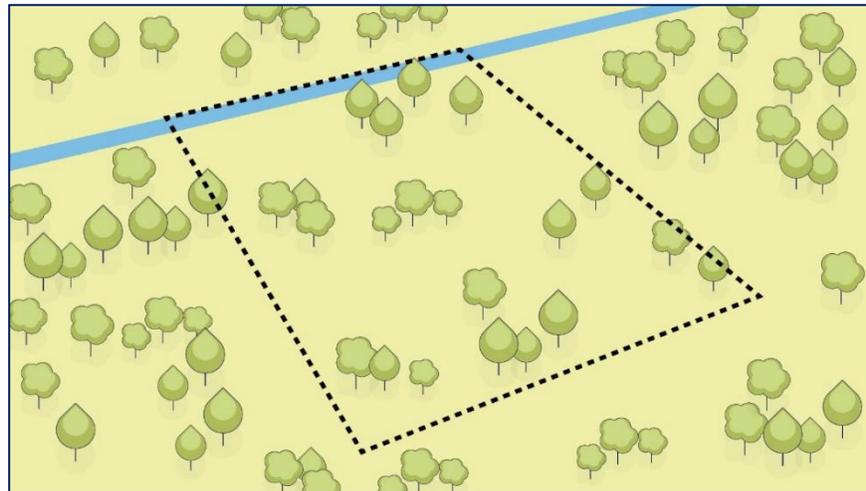


Figure 1. Gross area.

Gross Area
(-) Affectations
= Net Developable Area
(-) Transfers
= Useful Area

Net developable area by subtracting from the gross area all the affectations of the plot. Affectations are extensions of land that reduce the developable area of the lot. For example: a stream (the blue area in Figure 2) or the planned space for a future highway (the red area in Figure 2) cannot be intervened. The net developable area is the area that can actually be intervened in a real estate development project (see Figure 2).

Finally, the useful area results from subtracting all transfers from the net developable area. These transfers are obligations acquired with the municipality in exchange for the right to build on the lot (roads and park in Figure 3). Transfers can include, for example, parks, green areas, roads, among others. The useful area is the area where vertical development can actually take place (see Figure 3).

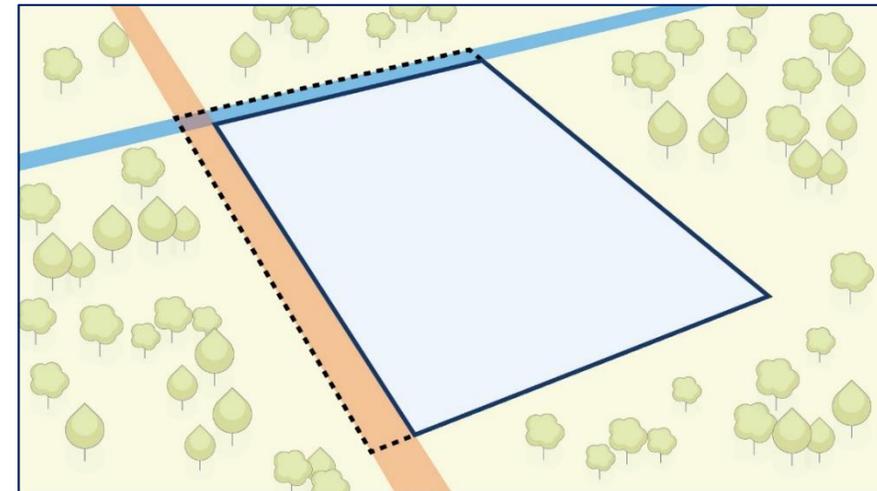


Figure 2. Net developable area and affectations.

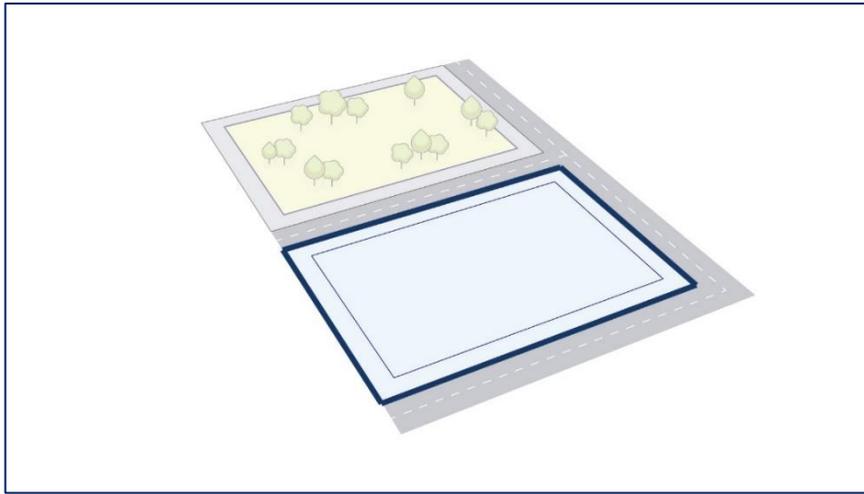


Figure 3. Useful area and transfers.

It should be mentioned that, when dealing with an undeveloped lot, the area referred to is the gross area. When talking about a developed lot, the area referred to is the useful area. As the gross area is equal to the sum of the affectations, transfers and the useful area, the gross area is greater than the useful area. Finally, it is important to highlight that, in each jurisdiction, the terms to refer to these concepts may vary, but the concepts as such do not change.

### 1.2. THE PRICE OF LAND

Land does not have intrinsic value. Its value depends on what can be built on it and, in turn, what the market can and is interested in demanding. The value of land is the price a developer is willing to pay such that, when embarking on a real estate project, it will receive adequate returns given the project's revenue and cost structure. In consequence, to calculate the value of a lot, the revenue of the real estate project, its construction costs (both direct and indirect), urban development costs (if applicable), development time and associated risk must be calculated. The following formula expresses the above in mathematical terms:

$$\text{Land Value} = \sum_{i=1}^n \frac{I_i - (CD_i + CI_i + CU_i)}{(1 + \text{profitability})^i}$$

Where,  $I_i$  is revenue,  $CD_i$  is direct construction costs,  $CI_i$  is indirect construction costs, and  $CU_i$  represents urban development costs. According to this formula lot value is found by considering time and the value of money over time and subtracting (direct and indirect) construction costs and urban development costs from revenue.

### 1.3. THE PRICE OF A DEVELOPED LOT

To better understand how this formula functions and is applied, we will look at a simple example: a developed lot. Figure 4 shows a lot in the city of Apolo (hypothetical city). As can be seen, this lot has been developed or, in other words is ready for a builder to build on it.

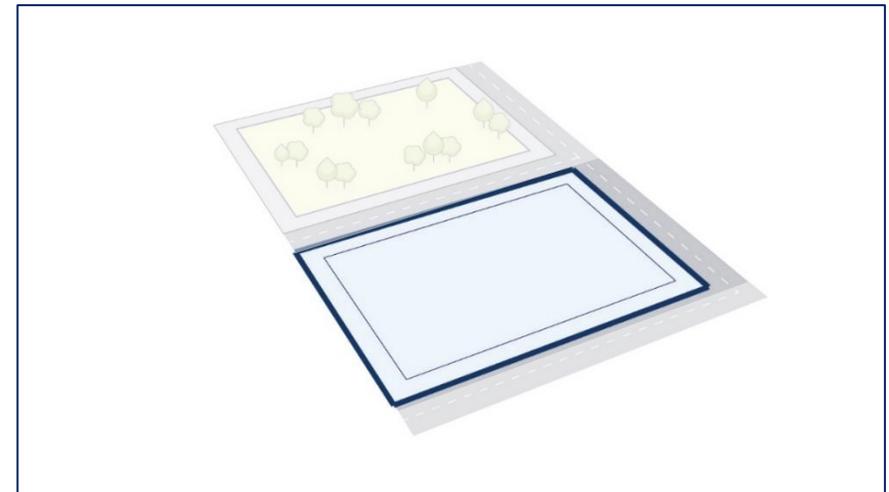


Figure 4. Developed lot.

To appraise this lot, first the revenue ( $I_i$ ) must be estimated. These correspond to the sales of the asset to be built on the lot and can be expressed as price times quantity ( $P * Q$ ). Other examples of revenue are: sales of apartments, offices or warehouses. Revenue mainly depends on current regulations and the market. Regulations and the market will determine the type of asset that can be developed (use) and how much can be built (development potential). In other words, the regulations and the market will define the  $Q$  in the equation. The market will dictate the price and the speed at which each real estate product will be sold.

Regulations for each zone are contained in Territorial Organization Plans (*Plan de Ordenamiento Territorial* - POT), Basic Territorial Organization Plans (*Plan Básico de Ordenamiento Territorial* - PBOT) or Territorial Organization Schemas (*Esquema de Ordenamiento Territorial* - EOT), as the case may be. On the one hand, regulations determine the uses permitted on each portion of land. For example, there is land on which housing can be built, but not warehouses, or where schools and clinics can be built but no commercial buildings. All cities have a specific definition of the use permitted for each plot (Figure 5 shows, as an example, the land use plan under the Barranquilla POT). On the other hand, regulations establish, based on certain restrictions, the maximum development allowed on a lot. The most important restrictions are:

- **Construction index:** this indicates the maximum development potential; in other words, the maximum number of sq. mts. that can be built on a lot.
- **Occupation index:** this index determines the maximum lot percentage that can be occupied with roofed buildings.
- **Height:** refers to the maximum number of floors the buildings on a lot may have.
- **Density:** applies only to residential lots. Determines the maximum number of residences that can be built on a lot.
- **Other architectural conditions:** besides the above there are other architectural conditions to be complied with, including the required number of parking lots, open space requirements between roads and other buildings, among others.

Besides the restrictions imposed by regulations, the market may be another factor restricting development. For example, despite the fact that a 20 floor shopping mall could be built on a lot, it is unlikely that the developer will build up to that height, as shopping malls generally have a maximum of 2 to 3 floors and there is no market for shopping malls with that number of floors. Similarly, a builder would not develop an upper income housing project in an industrial area, even though it may be permitted by regulations, because it would be difficult to sell.

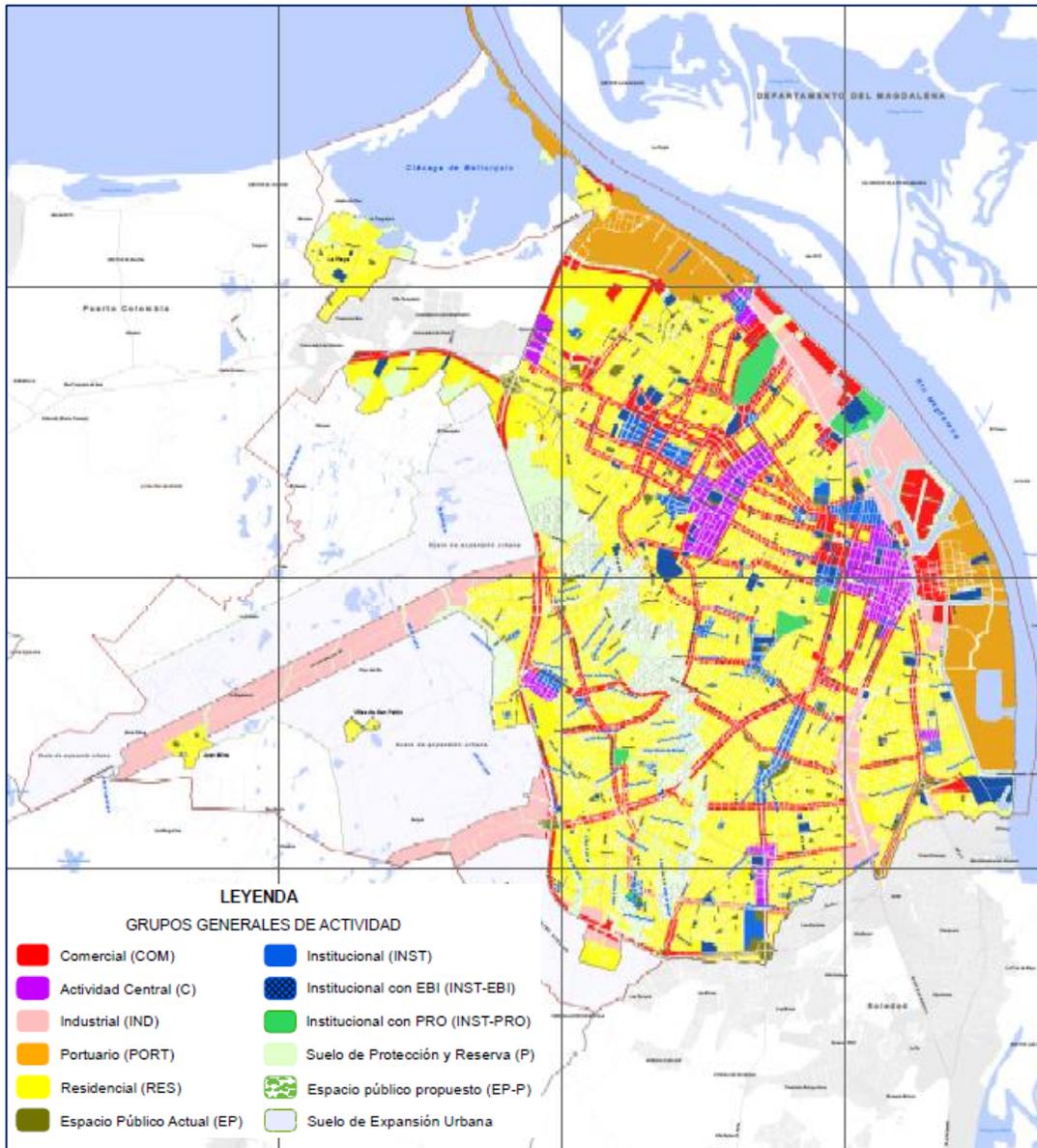


Figure 5. Land use plan in the Barranquilla POT.

As was mentioned before, the market will determine the price and speed at which the real estate products to be built on the lot will be sold. If an upper income residential complex will be built on a plot, the market must be consulted to estimate the price per sq. mt. of the apartments in that segment as well as the turnover or speed at which they could be sold. The latter is important because it helps define the project's development time.

After estimating revenue, direct and indirect construction costs and construction times must be projected. Direct costs are directly associated with the physical construction of the property. For example: bricks, direct labor, cement, among others. Indirect costs are those that are not directly part of the property's construction but are necessary for the execution of the construction work. For example: fees, property taxes and other obligations, sales costs, team of professionals responsible for designing and developing the construction, among others.

Finally, a profit must be defined that will adequately compensate for the risks incurred by a builder when embarking upon a real estate project. This rate will depend on different factors including, for example, the profitability associated with the stabilized assets and the builder's cost of opportunity.

Note that urban development costs are not used to find the value of a developed lot as, since these costs were already executed, the purchaser of the land will not have to incur them and, thus, should not obtain a profit from such investments. In consequence, the value of a developed lot can be calculated using the following formula:

$$Develop\ Land\ Value = \sum_{i=1}^n \frac{I_i - CD_i - CI_i}{(1 + profitability)^i}$$

## 1.4 THE PRICE OF AN UNDEVELOPED LOT

The price of an undeveloped lot is derived from what its price would be if it were already developed; this will be of great help to understand how to determine the price of an undeveloped lot. Figure 6 contains a sequence showing how an undeveloped lot eventually becomes a built real estate asset.

As can be seen, the difference in value between a developed lot and a built asset lies mainly in the construction costs and the time it takes to build the asset. For this reason, as explained before, to find the value of a developed lot, it is sufficient to calculate the value of the asset to be built thereupon (revenue) and, considering time and capital costs, subtract any necessary construction costs. Similarly, Figure 6 shows that the difference between an undeveloped and a developed lot can be found in the urban development costs, the time necessary for development, and the required profitability. In consequence, to calculate the price of an undeveloped lot, it is sufficient to calculate the price of that same lot as if it were developed and, considering time and capital costs, subtract urban development costs. The formula below shows this mathematically:

$$\text{Undevelop Land Value} = \sum_{i=1}^n \frac{\text{Develop Lot Value}_i - CU_i}{(1 + \text{profitability})^i}$$

According to the above, whenever the value of an undeveloped lot is calculated, the value of the same lot after development is being also calculated. It should be noted that the same lot's price when developed will be higher than its price while undeveloped.

With this in mind and considering that, on the one hand, the useful area is smaller than the gross area and that, on the other, the useful area is associated with developed lots and the gross area with undeveloped lots, we can conclude that when comparing the prices per sq. mt. of different lots it is important to consider whether the prices are for developed or undeveloped lots and if we are talking about gross or useful area. For example, when comparing two lots with a similar area, if one is developed and the other is not, the price per sq. mt. of the developed lot will be higher. This is because: i) the overall price of the developed lot is higher; and ii) the useful area is smaller than the gross area.



Figure 6. Different stages of the real estate chain.

## 1.5. THE VALUE OF LARGE EXTENSIONS OF LAND

A large extension of land can be understood as the sum of several smaller lots that must be developed before being sold or built upon. Figure 7 shows the master plan of a Grupo Argos lot in Barranquilla. This figure shows the developed lots that would result from the urban development of this lot; in other words, it shows how a large lot can be understood as the sum of several smaller lots.

When appraising an individual undeveloped lot, the flows arising from developing (urban development costs) and selling (revenue) the lot. As we saw before, this exercise should estimate both the value of the developed lot and its value at the time the plot will be sold. To find the value of a large extension of land, a similar exercise is performed. The flows arising from developing the lot and selling the resulting developed lots are appraised. As in the previous case, to perform this exercise the price of the developed lots and the speed with which those lots will be sold over the years must be estimated. To calculate the prices of the developed lots, estimations must be made of how the prices of and the costs for building the apartments will evolve over the years. The price of a lot sold in year X must be estimated according to apartment prices and construction costs for the same year.

To illustrate the concept of appraising large extensions of land, we can assume that in Apolo there is a single lot like the one shown in Figure 8. As can be seen in this figure, this lot can be divided into 19 equal developed lots. To be able to sell or develop these lots, urban development costs must be incurred. 100 housing units can be developed on each lot and, in Apolo, the annual housing demand is 100 units. In consequence, the owner of this land could sell one lot per year.

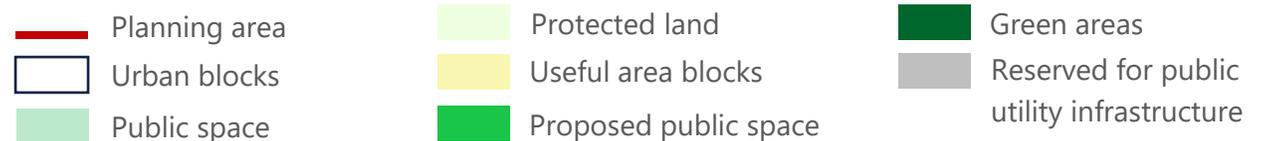


Figure 7. Master Plan for a Grupo Argos lot in Barranquilla

In order to appraise the entire lot, first the price at which each lot will be sold over time must be estimated. The blue bars in Figure 9 show a revenue projection considering market demand. The sales price of developed lots must be estimated using the above-mentioned methodology. In consequence, sales prices and construction costs must be estimated for the apartments in each specific year.

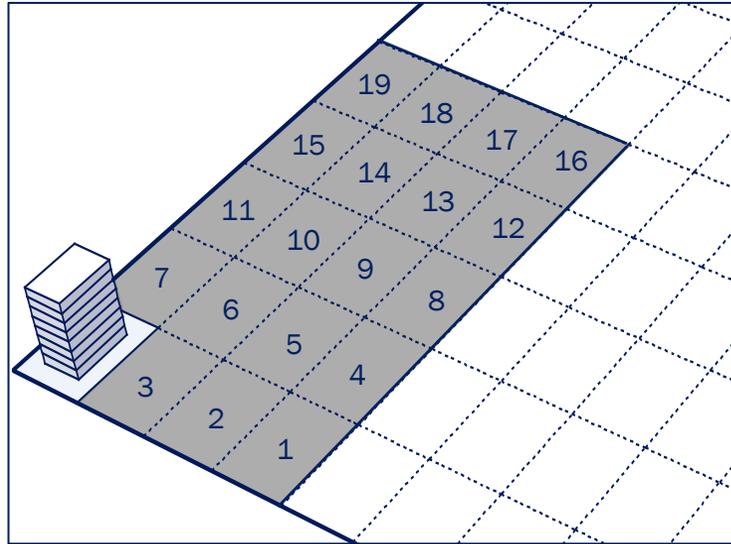


Figure 8. Large extension of land.

Additionally, the value and the manner in which the required urban developments costs are to be executed must be decided. It should be noted that, ideally, urban development must be tied to lot sales, such that no more land is developed than is required each year. The gray bars in Figure 9 show estimated urban development costs for the lot at hand. In this case it was assumed that the largest urban development investments would arise at the beginning and that, therefore, costs will go down year-on-year, but this will not necessarily be the case. The price of the full lot containing the 19 smaller lots can be found by calculating the NPV of the flows in Figure 9.



Figure 9. Revenue from the sale of developed lots and urban development costs (millions of peso).

### 1.6. DIFFERENCES BETWEEN THE PRICE PER SQ. MT. OF A LARGE EXTENSION OF LAND AND THE PRICE PER SQ. MT. OF A SMALLER LOT

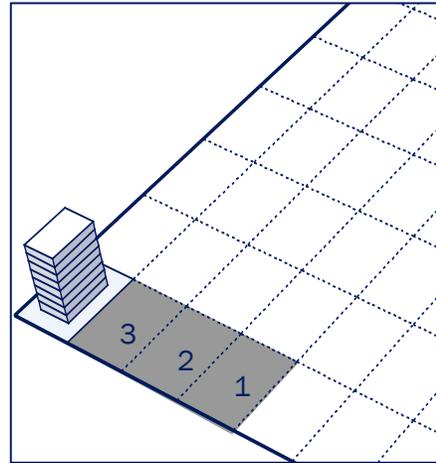
Time and the discount rate play a very important role in the valuation of land, especially land that has long development periods (large extensions of land). It is precisely these factors that create an important difference in the price per sq. mt. in lots that have the same regulations but differ significantly in size. Figure 10 is of great help to illustrate this concept.

The top part of Figure 10 shows a 15,000 sq. mt. lot containing 3 lots measuring 5,000 sq. mts. each. The lower part of the figure contains a 55,000 sq. mt. lot containing 11 lots measuring 5,000 sq. mts. each. Each 5,000 sq. mt. lot has the same development potential. Let's assume that, in both cases, the first lot sold (lot 1) has a value of \$5 billion pesos or \$1,000,000 per sq. mt. (this price will depend on the development potential of this lot). Additionally, let us assume that one lot will be sold per year and that the price of the lots will increase annually at a given rate (the graphs in Figure 10 show how the revenue from the lots grows annually).

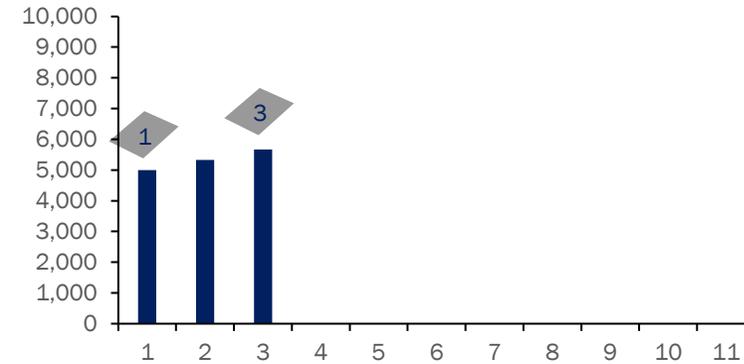
The value of the 15,000 sq. mt. lot can be found by bringing the cash flow from the sale of the 3 lots it contains to present value. In the same manner, the value of the 55,000 sq. mt. lot can be calculated bringing to present value the revenue from the sale of each of the 11 lots it contains. When this exercise is performed something important can be noted: Even though the price of the lots increases every year, the present value of the income generated falls as each year goes by. This is because the discount rate is higher than the rate at which the value of 5,000 sq. mt. lots grows.

Let's look at the 15,000 sq. mt. lot as an example. In year 1, the value of lot 1 should not be discounted and so its NPV is equal to its sale price (\$5 billion pesos or \$1,000,000 per sq. mt.). Revenues from the sale of lots 2 and 3 must be discounted one and two periods and, in consequence, the present value of these plots is \$4.61 billion pesos (\$922,078 per sq. mt.) and \$4.25 billion pesos (\$850,228 per sq. mt.) respectively. The price of the entire lot is reached by adding the values together: \$13.86 billion pesos or \$924,102 per sq. mt.

### 15,000 sq. mt. lot

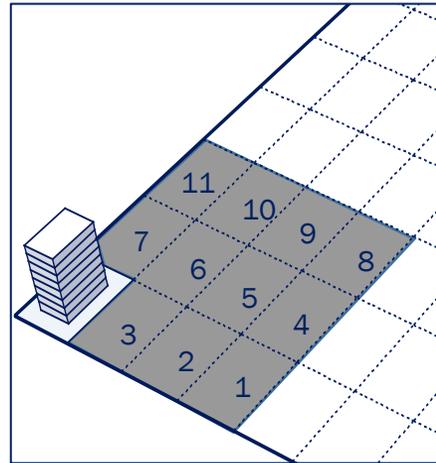


Annual revenue from lot sales (millions of COP)

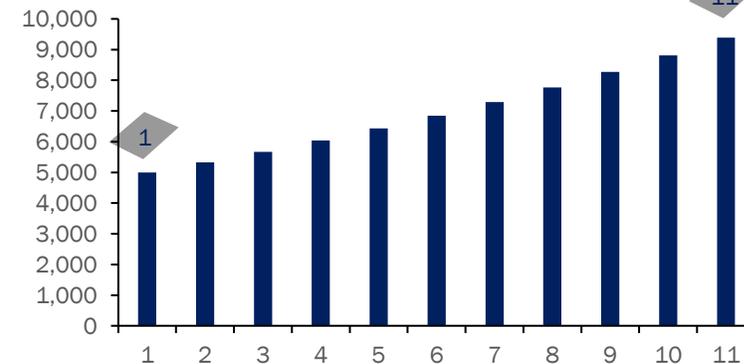


Total lot value:  
\$13.86 billion  
(\$924,102/sq. mt.)

### 55,000 sq. mt. lot



Annual revenue from lot sales (millions of COP)



Total lot value:  
\$37.88 billion  
(\$688,708/sq. mt.)

Figure 10. Relationship between the size of a lot and the price of a lot per sq. mt.

If the same exercise is done for the 55,000 sq. mt. lot, it will be found that the NPV for lot 1 is \$5 billion pesos (\$1,000,000 per sq. mt.) and the NPV for lot 11 is \$2.22 billion pesos (\$444,300 per sq. mt.). The value of the entire lot is \$37.88 billion pesos or \$688,708 per sq. mt. This exercise shows that, as the development period for the lot grows, its price per sq. mt. shrinks. This is mainly due to the relationship between the discount rate and the growth in price of the lots.

It could be argued that the discount rate is, in some cases, greater to or less than the land price growth rate. In any of these cases, the price per sq. mt. of a large extension of land would be no less than that of a smaller scale lot. Although this is not impossible, in our experience in our areas of influence, this is not the case.

Development time is not the only factor that makes the value per sq. mt. of a large extension of land different to that associated with a subdivided lot. Mixed uses could also create differences between these values. To understand this, let's imagine that there is a 20,000 sq. mt. lot. Due to the market and regulations, on half of this lot an income level 4 housing project can be built, and an income level 6 housing project on the other half (see Figure 11).

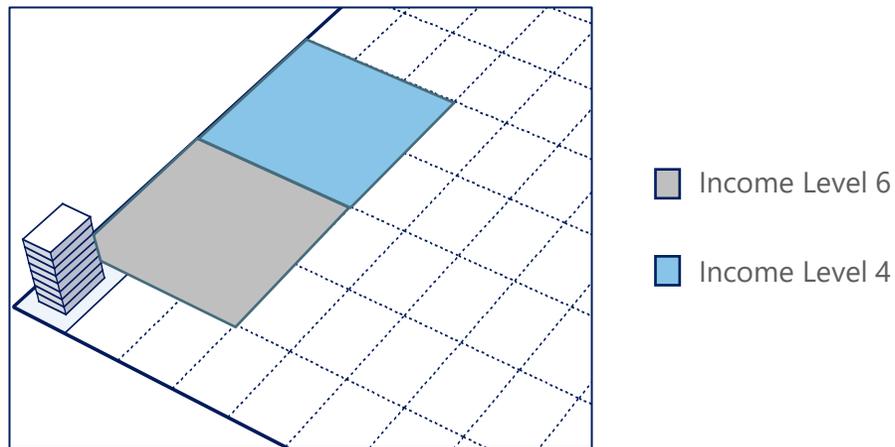


Figure 11. 20,000 sq. mt. lot with income level 4 and 6 housing.

Let's assume that the price for the lot used for income level 4 housing is \$12 billion (\$1,200,000/sq. mt.) and the value of the income level 6 housing lot is \$20 billion (\$2,000,000/sq. mt.). According to this, the price of the entire lot would be \$32 billion and, per sq. mt., it would have a value of \$1,600,000. It is easy to see how the price per sq. mt. of the full extension is different from the price per sq. mt. of the two lots making up the 20,000 sq. mt. lot.

This example illustrates the general concept, ignoring the time factor. By having several uses on one plot of land, the price per sq. mt. of that land will be the weighted average of the price per sq. mt. of the lots that make up the land.

### 1.7. MIXED USAGE AND THE VALUE OF LAND

The concept of mixed usage is very relevant to land valuation, especially when looking at large extensions of land. To help understand this concept, let's use a hypothetical case. Let's assume that there is only one 10,000 sq. mt. lot in Apolo and that on this lot, according to regulations, only 100 housing units or 1,000 sq. mt. of commercial space can be built. Let's imagine that the market absorbs 100 units of housing a year and 1,000 sq. mt. of commerce a year. In this scenario, the owner could sell the lot to a developer wanting to develop housing or to another one wanting to develop a commercial space.

The owner of the land should choose the offer that generates the greatest value. Let's assume that the developer interested in housing can pay \$3.5 billion pesos while the developer interested in commerce can only pay \$2 billion pesos. Under these circumstances, it seems evident that the landowner should choose to sell the plot to the housing developer..

Now, let's say we're not dealing with a 10,000 sq. mt. lot but a 70,000 sq. mt. one. As can be seen in Figure 12, this lot can be subdivided into 7 10,000 sq. mt. lots. As in the previous case, 100 housing units or 1,000 sq. mts. of commercial space can be built on each lot, and the market absorbs the same number of housing units and sq. mts. Of commercial space a year.

The owner of this land has many different options for selling the lot. For example: they could choose to sell all 7 lots for building housing on them (selling one a year); they could sell all the lots for developing commercial spaces on them (selling one a year); or they could sell some lots for commerce and others for housing. What the owner is interested in is finding a path that will provide the greatest value from the lot, or, in other words, maximize its value.

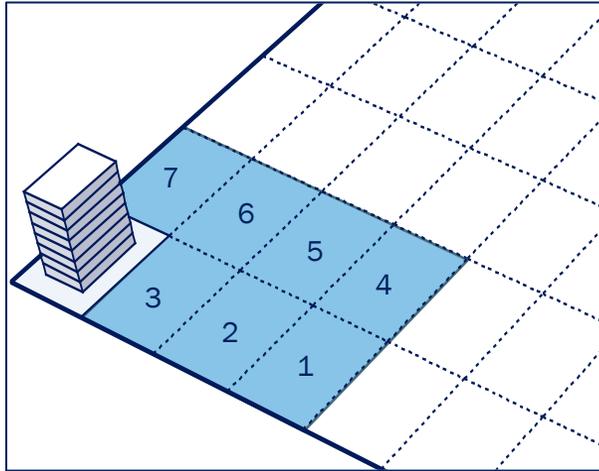


Figure 12. 70,000 sq. mt. lot in Apollo.

The decision generating the most value is the one with the highest NPV. As we saw previously, it seems evident that the first lot should be sold to a housing builder, since \$1.5 billion more will be perceived compared to selling the lot for commerce. Now, the second lot could be sold in year 1 to a builder interested in commerce for \$2 billion or the owner could wait a year and sell it to another housing builder for \$3.64 billion (the price of the residential lot is assumed to increase year-on-year as a function of the behavior of apartment prices and housing construction costs). To decide between both options, the owner must calculate the NPV for each (in this case we will assume that the discount rate for calculating the NPV is greater than the growth in the price of land).

As the commercial space could be sold in year 1, its NPV is equal to its sales value, but since the owner must wait a year to sell the housing lot, this price must be discounted by one period. With this in mind, the NPV for both options is: \$2 billion for the commercial space and \$3.15 billion for housing. According to this, the owner should sell the second lot for housing to be built on it. As can be seen in Table 1, the NPV in the first case would be \$2.84 billion and, in the second, would be \$2 billion. This exercise should be repeated for each of the seven lots.

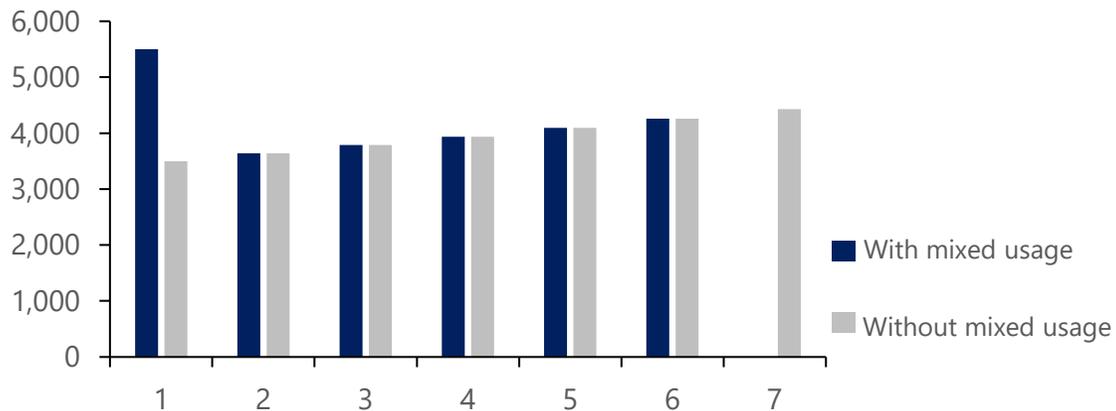
Table 1 contains the sales prices and the NPVs for the lots depending on the use they are sold for and the year they are sold in. This table is useful for making quick comparisons between scenarios. Looking at it, we can conclude that the lot owner should sell the first 6 lots for housing during the first 6 year and the remaining lot should be sold for commercial use during year 1. The owner can sell lot 7 for housing in year 7 for a price of \$4.43 billion (NPV: \$1.86 billion) or can sell it for \$2 billion in year 1 for commercial use. Selling it for commercial use will generate over \$100 million more in NPV than selling it for housing. Therefore, the owner should sell it for building commerce. Figure 13 helps us better understand the value of mixed usage. This figure compares a case in which mixed usage is used to maximize the value of the land in the event the owner sells for the use with the highest present value.

Year	Residential		Commercial	
	Sale price	NPV	Sale price	NPV
1	3,500	3,500	2,000	<b>2,000</b>
2	3,640	3,152	2,080	1,801
3	3,786	2,838	2,163	1,622
4	3,937	2,555	2,250	1,460
5	4,095	2,301	2,340	1,315
6	4,258	2,072	2,433	1,184
7	4,429	<b>1,865</b>	2,531	1,066

Table 1. Prices en NPV of lots over time (in millions of COP).

The impact of mixed usage can be seen clearly in Figure 13. First, mixed usage reduces the development time for a plot of land. Second, more income can be generated during the first years with no need for an increase in market demand. Finally, it generates greater value for the land's owner because it increases NPV.

This example illustrates the value of mixed usage. When the discount rate is higher than the rate at which lot prices grow, in certain cases they can be sold for uses with lower prices, decreasing development time and increasing value for the lot's owner. This is possible because different real estate markets do not necessarily compete and there is the possibility that different uses can be absorbed during the same year. In the above example, the housing and commercial markets are two different markets and can be sold at the same time without competing.



	NPV	YEARS
With mixed usage	18,418	6
Without mixed usage	18,283	7
Value creation	135	

Figure 13. Impact of mixed usage (in millions of COP)



## 2. FACTORS AFFECTING REAL ESTATE BUSINESS RESULTS

## FACTORS AFFECTING REAL ESTATE BUSINESS RESULTS

This second section discusses factors impacting the results of Grupo Argos' Real Estate Business. It will go over topics like the determinants of the demand for land, the impact of certain factors upon price, and the effects of competition between land sellers upon Grupo Argos' results.

### 2.1. DETERMINANTS OF THE DEMAND FOR LAND

The demand for land is directly tied to the demand of different real estate products (housing, offices, warehouses, etc.). This is because land is a fundamental input for the construction of these products (real estate projects cannot be developed without land). If there is housing demand in a city, the first thing a builder needs to do is find land to develop a residential project and then sell it to those interested (it works the same for other uses). On the contrary, if there is no demand in the city for any real estate products, it is perfectly feasible that nobody will be interested in acquiring land. Due to this close relationship between the demand for real estate products and the demand for land, the cycle of the real estate market is fundamental to determine the rate of land sales. Likewise, given this relationship and keeping in mind that there is a finite demand for housing and other real estate assets, the demand for land is also finite. This has important implications for the owners of large extensions of land, because there is a limit to the amount of land they can sell during each period.

As an example, let's suppose that in the city of Apolo (hypothetical city) there is only one landowner. Let's also assume that, due to applicable regulations, residential uses can only be built with a density of 100 housing units per hectare of available land in the city. If the city were to demand 100 housing units a year, 10,000 sq. mts. a year would be need to cover this demand. Table 2 shows this dynamic for the first two years.

	Year 1	Year 2	Year 3	Year 4	Year 5
Apolo housing demand	100	100	50	150	200
Houses per lot hectare	100	100	100	100	100
Hectares of land for covering housing demand	1.0	1.0	0.5	1.5	2.0
Sq. mts. of land to cover housing demand	10,000	10,000	5,000	15,000	20,000

Table 2. Effect of the demand for real estate assets on land sales.

Now, if the demand for housing increases or decreases, the underlying demand for land each year will increase or decrease (see Table 2). This is because 100 housing units can be built per hectare. If 100 residential units can be built and the market absorbs 50 units per year, the amount of land necessary to supply this demand would be half a hectare, in other words 5,000 sq. mts.

Considering the close relationship between the demand for land and the above-mentioned demand for real estate products, it is worth studying the determinants for the demand of different real estate products. Table 3 shows the different determinants for each use.

Use	Main determinants of demand
Residential	<ul style="list-style-type: none"> <li>• Total population and growth.</li> <li>• Population structure (for example: household size, working age population, among others).</li> <li>• Population purchasing capacity. This is related to government policy (subsidies) and access to credit by the population, for example.</li> <li>• Employment and growth.</li> <li>• Consumer confidence.</li> <li>• Mortgage interest rates.</li> </ul>
Offices	<ul style="list-style-type: none"> <li>• Employment and growth.</li> <li>• Employment structure (number of workers in different industries).</li> <li>• Consumer and producer confidence.</li> </ul>
Commercial	<ul style="list-style-type: none"> <li>• Total population and growth.</li> <li>• Household available income.</li> <li>• Household wealth.</li> <li>• Traffic in the area.</li> </ul>
Industrial	<ul style="list-style-type: none"> <li>• Manufacturing jobs and growth.</li> <li>• Transportation sector jobs.</li> <li>• Air cargo volume.</li> <li>• Rail and land cargo volume.</li> </ul>
Hotels	<ul style="list-style-type: none"> <li>• Air passenger volume.</li> <li>• Number of visitors.</li> </ul>

Table 3. Determinants of demand for different real estate products.  
 Note: this table was built based on information in the book "Commercial Real Estate Analysis & Investments" by Geltner Miller and Clayton Eichholtz.

## 2.2. IMPACT OF THE PRICE PER SQ. MT. AND THE COST PER SQ. MT. OF DIFFERENT REAL ESTATE PRODUCTS ON THE PRICE OF LAND

To understand how the price per sq. mt. and the cost per sq. mt. of each real estate product impact the price of land, it is worth remembering how land is valued. The price of a lot is a residual value, and, to be calculated, the following must be estimated: i) the revenue to be obtained from the sale of the product to be built on the lot (to calculate revenue, the price per sq. mt. of the asset must be calculated and multiplied by the number of sq. mts. to be sold); ii) the annual absorption of the real estate product to be built on the lot; iii) the costs of building the edifice (to estimate costs, the cost per sq. mt. to build the asset is estimated and multiplied by the number of sq. mts. to be sold); and iv) the profitability a developer should receive for building the project. Considering the time and the value of money over time, if construction costs are subtracted from revenue, the value of the lot is found..

$$Land\ Value = \sum_{i=1}^n \frac{P_i * Q_i - C_i * Q_i}{(1 + profitability)^i}$$

The above formula clearly shows that, if the price per sq. mt. of the real estate product to be built on the lot increases, the price of the lot will increase (so long as there is no variation in the remaining variables). Using the empirical rule known as the "percentage of sales", used in the real estate world to determine the value of a lot (according to which the price of a lot is determined by multiplying total income by a given percentage), it is also easy to see the positive relationship that exists between the prices per sq. mt. and the value of a lot. The more income that can be produced by a lot, the greater will be the value of a lot.

In contrast, if there is an increase in costs per sq. mt. for the real estate product to be built on the lot, the price of the lot will be reduced (if all other variables remain the same). Given this relationship between the costs per sq. mt. and the lot value, the price of a plot of land depends on factors like the exchange rate, as there are different inputs and construction equipment to be imported.

In reality, the prices per sq. mt. of real estate products are constantly moving and, therefore, analyzing the impact of one when the other is not moving is not very relevant. It is much more important to study how the interaction between these two variables impacts the value of land. We will look at three different cases to understand how the relationship between them impacts the price of a plot of land: i) prices per sq. mt. and costs per sq. mt. grow at the same rate (real price growth equal to zero); ii) prices per sq. mt. grow more than costs per sq. mt. (real price growth); and iii) costs per sq. mt. grow more than prices per sq. mt. (real price decline).

When the prices per sq. mt. and the costs per sq. mt. grow at the same rate, i.e., when there is neither a growth or a decline in real prices, the price of the lot grows at the same rate as the prices and the costs per sq. mt. grow. Table 4 shows an example illustrating this case. When prices per sq. mt. and costs per sq. mt. grow at a rate of 3.5%, the value of the lot grows by 3.5%.

	Year 1	Year 2	Change %
Revenue (1)	100.0	103.5	3.5%
Costs (2)	75.0	77.6	3.5%
Profit (3)	10.0	10.4	3.5%
Lot value (=1-2-3)	15.0	15.5	3.5%

Table 4. Impact on lot value with a real price growth of 0%.

When prices per sq. mt. grow more than costs per sq. mt., in other words when there is a real price growth, the value of the lot grows at a higher rate than the rate at which prices per sq. mt. are growing. Table 5 shows an example of this: prices per sq. mt. grow 4.5% and costs per sq. mt. grow at a rate of 3.5% (real price growth of 1%). This results in a land price growth of 9.5%,

	Year 1	Year 2	Change %
Revenue (1)	100.0	104.5	4.5%
Costs (2)	75.0	77.6	3.5%
Profit (3)	10.0	10.5	4.5%
Lot value (=1-2-3)	15.0	16.4	9.5%

Table 5. Impact of a real price growth on lot value.

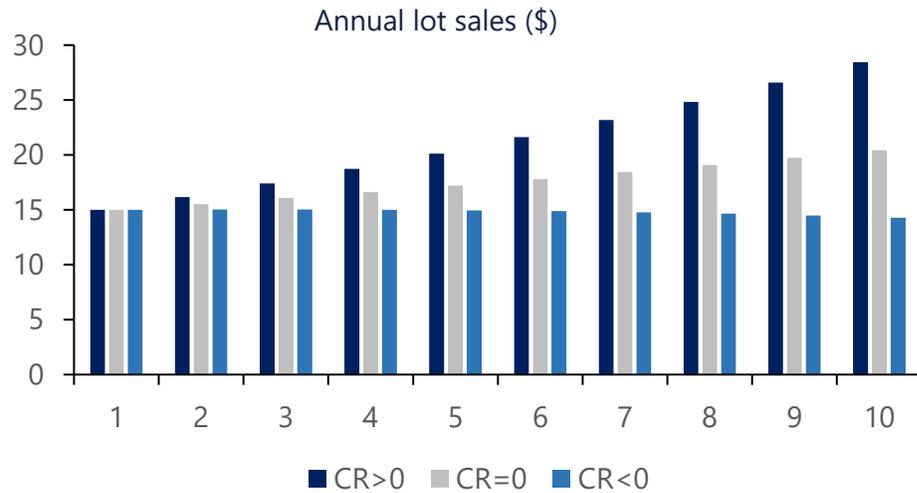
Finally, when prices per sq. mt. grow at a lower rate than costs per sq. mt., the value of the land will decrease. Table 6 contains an example in which costs per sq. mt. Grow at a rate of 4.5% while prices per sq. mt. Grow 3.5%. In this context, the value of the lot would fall 1.5% between year 1 and year 2.

	Year 1	Year 2	Change %
Revenue (1)	100.0	103.5	3.5%
Costs (2)	75.0	78.4	4.5%
Profit (3)	10.0	10.4	3.5%
Lot value (=1-2-3)	15.0	14.8	-1.5%

Table 6. Impact of real price decline upon lot value.

This relationship that exists between the real price growth and the value of a lot is very important for land valuation, especially when considering large extensions of land. When appraising large extensions of land, how the subdivided lots will be sold over time must be estimated. These sales must be estimated based on the expected performance of real estate asset markets. As certain lots will be sold in the future, the price growth of these lots, which will depend on the real price growth of the real estate assets, is an important determinant for land price, which is a net present value.

As an illustration, let's suppose there is a land extension in Apolo that measures 100,000 sq. mts. Let's imagine that, in Apolo, the market absorbs 10,000 sq. mts. of land per year. With this absorption, development of this land would take 10 years. Figure 14 shows annual sales projections and the value of this extension of land under three scenarios: i) real price growth of 1%; ii) real price growth of 0%; and iii) real price growth of -1%.



Scenario	Lot value
Positive real price growth (CR>0)	136
Real price growth equal to zero (CR=0)	116
Negative real price growth (CR<0)	101

Figure 14. Impact of real price growth upon land prices

As can be seen in the table included in Figure 14, lot value is extremely sensitive to the real price growth of real estate assets. It is because of this sensitivity that real price growth is so important when appraising a lot. As can be seen in Figure 14, the greatest differences between the three cases appear in the final flows; for this reason, real price growth is even more important when appraising large extensions of land.

### 2.3. RISK TOLERANCE AND CAPITAL COSTS FOR DEVELOPERS

Let us look at the formula to calculate the value of a lot again:

$$Land\ Value = \sum_{i=1}^n \frac{P_i * Q_i - C_i * Q_i}{(1 + profitability)^i}$$

We can see that the profitability required by a developer to build a real estate project is the rate at which the expected future flows for that project are discounted. Therefore, if developers increase the profitability they require for embarking on real estate projects, the value of the land would decrease. Similarly, if developers decrease their expected profitability, land value will increase.

A developer's profitability is tied to the perceived risk of developing a real estate project and to an investor's cost of opportunity (other real estate projects and other opportunities for investment in other sectors). The perceived risk of developing a real estate project depends mainly on the uncertainty a developer faces regarding construction costs, the time to build and sell the project, the sales price of the project under construction, and the procedures required for development. Uncertainty regarding the time required to sell the project depends, for example, on the market dynamics of the proposed use (if there is oversupply or if there is uncovered demand) and how consolidated the zone the project would be located in (if it is a greenfield project, the developer may require greater profitability). Due to the latter, when the development of a new area begins, the sale of the first lots will be challenging. Developers perceive that the area is high risk, as there is no proven market, and they will not be willing to pay a fair price for the land. Therefore, it is important that, when a new sector is to be developed, it be positioned as quickly as possible.

## 2.4. OTHER SOURCES OF SUPPLY AND COMPETITION

As the demand for land is finite, Grupo Argos competes against other land sellers to sell its lots every period. This competition that exists between sellers of lots has important implications for the price of land. As in any market, the less competition exists between offerors, the more power of negotiation the sellers have, and the greater their capacity for selling at a higher price. On the contrary, as more competition exists, offerors will have a lower power of negotiation and, in consequence, their capacity for charging higher prices will be reduced. If we add to this the possibility that the offerors include agents that have no knowledge of the real estate market and, in consequence, do not know the fair price of land and are willing to sell beneath this price, competition can have an even more pronounced effect upon the price of land.

Besides the impact on price, competition also has important implications for the capacity of every seller of land to capture more market share. As can be expected, the more competition exists in a market, the harder it is for one offeror to capture all the demand. If, as in the above paragraph, we consider the possibility that there will be competitors willing to sell at a price below the fair value of the land (either because they do not understand the real estate market or for any other reason), the capacity of a seller seeking to sell land at a fair price to capture more market share is reduced. To be able to increase their market share, this offeror will probably have to reduce their price, otherwise they will have to wait for the lower priced plots to be sold.

Given the importance of competition for the land market, a better understanding of the sources of competition in this market is important. Competition for the sale of land can come from two sources:

- Other land with similar regulations and usage: for two plots to compete they must have similar regulations and uses, otherwise each lot will be covering different markets and, thus, will not compete for the same demand. For example, a lot for commercial use will not compete with a lot for residential use.

- Assets that are built or are being built that are for sale or lease: developers demand land to supply the demand for built assets. Therefore, if there are assets being built or built assets that can cover part of the market demand, the demand to be covered by building new projects will be less and, in consequence, developers would buy less land.

Competition for Grupo Argos can increase due to different factors, for example:

- Landowners that had no previous intention to sell their lands and now begin to market them.
- Changes in regulations that enable for development, plots of land that used to be agricultural, were affected, were low density, or had uses that did not allow real estate development on them.

## 2.5. REGULATORY CHANGES

Changes in the regulations of Grupo Argos plots have an important impact on real estate business results. On the one hand, when regulations change for a lot, the price per sq. mt. of the land in the lot is affected. Positive changes to the regulations (increased construction indexes, construction indexes, occupation indexes, densities, height, among others) increase the price per sq. mt. of the land, whereas negative changes (decreased construction indexes, occupation indexes, densities, heights, among others) decrease the price per sq. mt. On the other hand, changes to regulations impact the number of sq. mts. of land that can be sold year on year. This is because more sq. mts. of real estate assets can be built per sq. mt. of land. Naturally, negative changes to regulations have the opposite effect, a larger number of sq. mts. required to cover the demand for real estate assets.

Let's look at an illustrative case that will help us better understand how regulatory changes impact land price per sq. mt. Let's assume there is a 10,000 sq. mt. developed lot in Apolo on which 100 housing units can be built. Upon appraising the plot using data from the Barranquilla market (apartment price per sq. mt.: \$3,500,000 and apartment area: 80 sq. mt.), we find that the value of the lot could be \$3.24 billion pesos (see Table 7). Now, let's suppose there is a change in the regulations that duplicates the density for Apolo; in other words, it doubles the number of housing units that can be built on the lot. With the same market assumptions as the previous case, the price of the lot would go up to \$6.05 billion pesos. In Table 7 it can easily be seen that the price per sq. mt. in the case with 200 units is higher than the price per sq. mt. for the case with 100 units (\$604,972 vs. \$324,242). This proves what was said previously, positive changes to the regulations have a positive impact on the price per sq. mt. of lots as they allow improved utilization.

	Lot 100 units	Lot 200 units
Revenue	28,000,000,000	56,000,000,000
Construction costs	21,000,000,000	42,000,000,000
Lot value	3,242,424,242*	6,049,717,959*
Lot sq. mts.	10,000	10,000
Value per sq. mt. of the lot	324,242	604,972

Table 7. Value of a lot with 100 units vs. value of a lot with 200 units.

\*The time it takes to sell 200 housing units vs. 100 housing units is the reason the value is not double.

Now let's look at an example that will allow us to understand how changes to regulations impact the amount of land that can be sold in a year. Let's assume that only housing can be built on the land available in Apolo, that the city's density is 100 units per hectare and that the annual demand is 100 units. According to this, every year one hectare (10,000 sq. mts.) would be required to supply the housing demand. Now, if the city's density is doubled and moves to 200 housing units per hectare, only half a hectare (5,000 sq. mt.) would be required to supply the yearly housing demand.

This is because, under the new regulations, 100 units can be built on 5,000 sq. mts., whereas only 50 housing units could be built on 5,000 sq. mts. under previous regulations.

## 2.6. IMPLICATIONS OF PAST SALES FOR CURRENT SALES

Every time Grupo Argos sells a lot from its land portfolio, either developed or undeveloped, it is covering the future demand of a real estate product (housing, commerce, offices, etc.) for a buyer. For this reason, the sale of a lot by Group Argos has implications for future sales. If, when selling a lot, Grupo Argos is covering future demand, in the future there will be less demand to supply, and, therefore, Grupo Argos' capacity to sell lots may be reduced. As an illustration, let's look at the case in Figure 15. Let's assume that Grupo Argos is the only seller of land in a market and let's imagine that it sells a 10,000 sq. mt. lot upon which 200 housing units can be developed. The annual demand for housing in this market is 100 units.

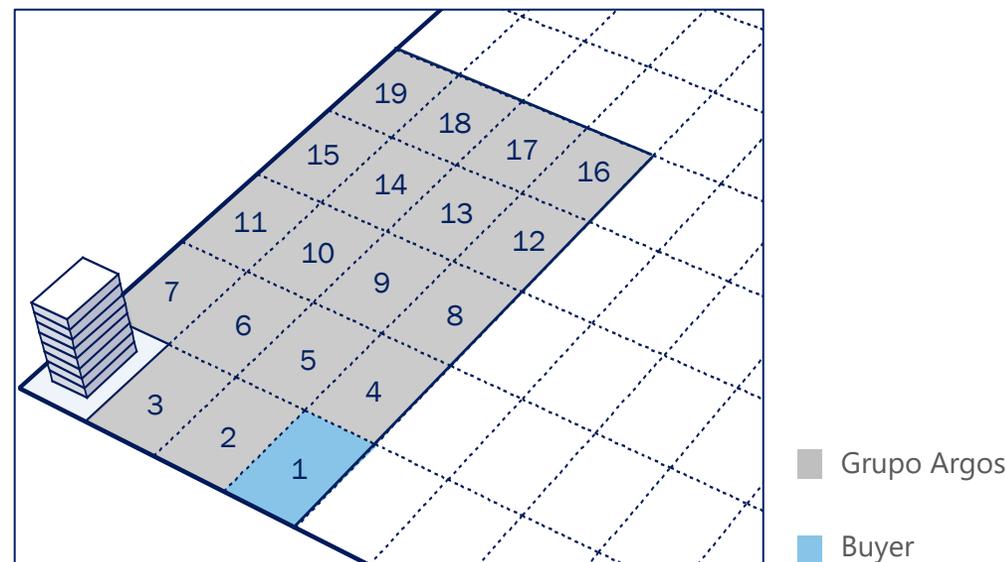


Figure 15. Implications of current sales for future sales.

The lot acquired by the buyer will allow it to cover two years of demand. Let's assume that the project is a success and covers the entire demand for the next 2 years. In this case, other buyers will not be interested in buying a lot from Grupo Argos in year 2, unless the price of that lot reflects the reality of the market, i.e., that there will be no available demand in year 2. We could assume that the buyer does not capture the entire demand but only a part of the demand during the first years, and this would not change our conclusion. It is possible that other buyers will be interested in acquiring other lots from Grupo Argos because there is still demand available, so long as the price of those lots reflect competition in the market. When buyers have the feeling that there is abundant supply and they will not be able to capture demand in the near future, they will not be interested in acquiring more lots until the perceived market saturation disappears.

What happens if, instead of selling a developed lot, a large extension of land is sold? The impact of the sale of a large extension of land upon Grupo Argos' capacity for selling lots in the future is greater and longer lasting than the impact of the sale of a developed lot. This is, because a large extension of land has greater development potential, by selling it more future demand is being sold. The effect of selling a large extension of land can be compared to the sale of several developed lots.

This effect of current sales upon future sales has an important impact upon the real estate business's annual results. An extraordinary year for land sales, where sufficient land was sold to cover the demand for certain real estate products in upcoming years, could go hand-in-hand with a following year with lower sales as a result of market saturation.



### 3. ACCOUNTING PRACTICES

## ACCOUNTING PRACTICES

This third section intends to explain how accounting practices influence the manner in which the results of Grupo Argos' Real Estate Business are presented.

### 3.1. INVENTORY VS. INVESTMENT PROPERTY

All the land we have had was, at the beginning, held under the general balance sheet account called investment properties. According to Grupo Argos' accounting practices, as soon as it is decided that an urban development project will be developed on a plot and that costs will be incurred to develop it, this plot moves from investment properties to the inventory account. Given that, in general, we will always have lots under these two accounts, it is important to clarify the differences existing between them.

We will begin with the implications of holding a plot under one account or another. When an asset is under investment properties, this asset must be appraised annually. In consequence, and considering that Grupo Argos has adhered to the reasonable value policy, the value of the plot changes yearly according to this appraisal. Plots under the inventory account are not appraised because their carrying value remains constant as soon as they enter that account. The value of the plot will only increase with the improvements (urban development investments) made to it. It should be noted that, while increases in value of investment properties are reflected immediately in the P&L, improvements to inventory properties will only enter the P&L statement when the asset is sold. So long as the asset is unsold, urban development costs will accumulate under the inventory account of the balance sheet.

The most relevant differences arise when a lot is sold from each of these two accounts. Let's assume that we sell an undeveloped lot that has a carrying value of \$5 billion pesos for \$10 billion pesos. If this lot were in inventory, the total sales price would be recorded under operational income and the urban development costs (which do not exist in this case) and the carrying cost (or carrying value) of the lot would be recorded under the cost of sales item.

As the Real Estate Business is a division dedicated to urban development, the sale of inventory plots is part of its operation and they are booked as described. However, if this lot were sold from the investment properties account, only the difference between revenues and costs (urban development and the carrying cost of the lot) would be booked, \$5 billion in this case, under the line of other revenue. The operation is recorded this way because, theoretically, sales of investment properties are non-operational sales and represent occasional earnings.

Table 8 contains an illustration of what the P&L would look like in each case. Looking at this table it is easy to conclude that there is no difference in the pre-tax profit of selling lots from each account. What changes between one case and the other is associated with the structure of the P&L.

	Inventory	Investment Property
Operating revenue	10,000	0
Sales costs	5,000	0
<b>Gross profit</b>	<b>5,000</b>	<b>0</b>
Operating expenses	0	0
<b>Operating profit</b>	<b>5,000</b>	<b>0</b>
Other revenue	0	5,000
<b>Pre-tax earnings</b>	<b>5,000</b>	<b>5,000</b>

Table 8. Differences in the P&L due to the sale of lots held under inventory vs. lots held as investment property

On the Grupo Argos P&L, Real Estate Business results are booked as shown in the above table. However, when the detail of the Real Estate Business results are presented, a modification is made, and all revenue is included, both for inventory lots and for lots under investment properties. This is done because all revenue from lot sales correspond to the business unit's operations, even though, under accounting rules, they are not booked in the same manner.

Besides the above, there is one peculiarity when selling a developed lot. As it is part of the inventory account it is recorded under the accounts mentioned for lots under this account, however, the full amount of revenue and costs will not be booked unless the urban development work is finished. In the event the urban development work has not been finished at the time of sale, only the revenue and costs proportional to the execution of said urban development will be recorded. For example, if when the lot is sold 50% of the urban development costs for the project have been executed, only 50% of the urban development costs will be recorded, 100% of the carrying cost and 50% of the profit from urban development. Revenue will be recorded as a proportion of total recorded costs. This is important for the Real Estate Business, as it always intends to sell the lots for a project prior to beginning construction of the same. This is similar to what builders do when selling residential units. First, they sell the apartments and then they build with the certainty that they have already sold a significant percentage of the project.

Finally, it is worth reviewing the tax differences between inventory sales and investment property sales. The first case generates income tax. Taxes are calculated using the following formula:

$$(Revenue - Fiscal\ cost) \times (current\ rate\ 35\%)$$

Revenue is equal to the total transaction price and fiscal cost is the price of acquisition plus the improvements made to the asset. In the second case, as the transaction is considered occasional earnings, an occasional earnings tax is accrued.

$$(Revenue - Max(Fiscal\ cost, Cadastral\ cost)) \times (current\ rate\ 10\%)$$

The higher value between the fiscal cost and the cadastral cost is subtracted from the revenue and this value is multiplied by 10%.

### 3.2. P&L REVENUE VS. CASH FLOW REVENUE

When a lot is sold, two records are made: the sale and the payments associated to the sale. The sale of the asset occurs when the notarial deed certifying the transfer of ownership to the buyer is signed. The total value of the business deal is registered as revenue in the P&L as soon as the transfer of all the risks and responsibilities associated with the plot is made. Payments received from the sale of the asset are registered as cash flow revenue. When a lot is paid for up front, the cash flow revenue and the P&L revenue are registered at the same time, as payment and the transfer of ownership occur at the same time, and, in consequence, are equal. Our experience has shown us that few deals are paid up front and, in general, almost all buyers of Grupo Argos' lots require financing when they acquire one of our lots. Forms of payment vary depending on each deal, and whenever the sale of a lot is financed, an interest rate is required. Most commonly, clients pay over 12 or 24 months. When a lot is not paid for up front, P&L revenue and cash flow revenue are recorded at different times.

Due to potential differences between these two types of revenue, it is important to be clear on each of them in order to appropriately interpret the results of the Real Estate Business. Cash flow revenue is caused whenever we receive payment for an installment from our clients, while P&L revenue is caused, in its entirety, when the document certifying the transfer of ownership from Grupo Argos to the customer is signed. It is worth mentioning that we have flexibility to decide when the transfer of ownership of the property occurs and this is not necessarily tied to payment of installments by the customer. Depending on different factors, such as the purchaser's credit rating and the size of the deal, we define the moment at which said transfer will occur: at times we have required that the client pay 100% of the value, and at others we have agreed to transfer ownership before the client completes payment.

Figure 16 illustrates the way the two types of revenue would be recognized if a lot with a value of \$10 billion were sold and paid for in 24 monthly installments, and if the transfer deed were signed once the purchaser had paid for 50% of the value of the lot. As can be seen in Figure 16, the revenue associated with cashflow has a dynamic component as they respond to the way in which payment for the lot is received. In contrast, the revenue associated with the P&L is a single point in time and does not take into account the form of payment of the plots. Due to this difference, cash flow helps better appreciate what is happening with the Real Estate Business at any given time.

Considering that, as was mentioned before, most commonly customers pay the full value of a lot over 12 or 24 months, it is difficult to judge the performance of the Real Estate Business by its annual results (cash flow and P&L). For example, if a deal like that in Figure 16 is entered into in any given year, the Real Estate Business could only recognize 50% maximum of the cash flow revenue (if entered into in January, 50% of the cash flow revenue could be recorded, as it would receive 12 installments, but if entered into in July, only 25% could be recognized as only 6 installments would be received) and P&L revenue would be recorded the following year (unless the deal was made in January).

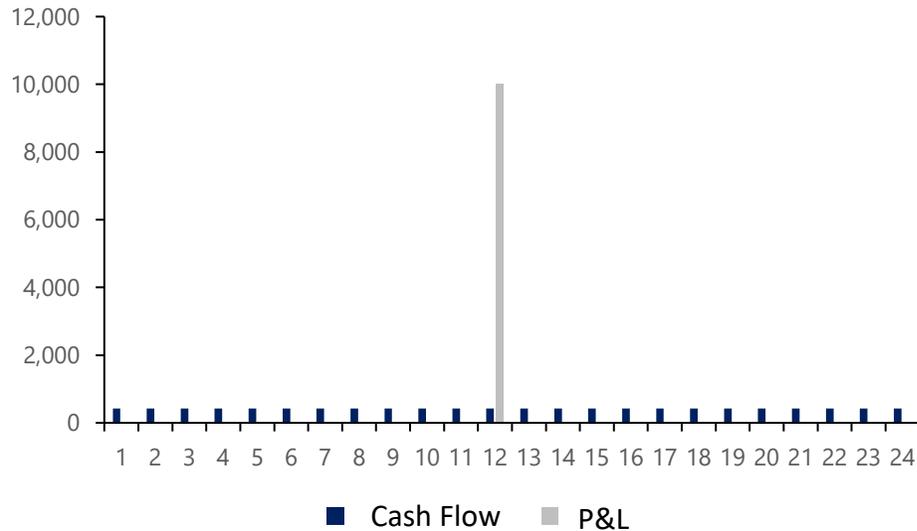


Figure 16. P&L revenue and cash flow revenue.

### 3.3. URBAN DEVELOPMENT INVESTMENTS

When the Real Estate Business decides to embark on an urban development project, before developing the plot it usually seeks to sell the developed lots resulting from the urban development of the land. For example, let's take the case of a project called "Portal de Alejandría" that appears in Figure 17. Un this case, before building roads, sidewalks, parks, etc., lots M7, M8, M19 and M20 will be sold.



Figura 17. Proyecto de urbanismo "Portal de Alejandría".

This is done to finance urban development costs with the revenue resulting from the sale of developed lots. This is possible, since our commitment to our clients is that we will deliver the developed lots when they finish building their real estate project. As an example, let's take the case of the purchaser of one of our lots who is going to develop a housing project. Figure 18 shows an estimated timeline for the development of this type of project. After signing the promise of purchase and sale, the purchaser must begin license and permit procedures, which could take up to 5 months. Then, it begins selling the residential units. In this case we assume that the builder will take 12 months to reach the break-even point. Finally, upon reaching the break even point, building begins, which could take, more or less, 18 months. When the builder delivers the apartments, the urban development of the lot we sold must be completed.

We usually begin urban development at the same time the purchaser begins building the real estate project, which gives us 18 months, more or less, from the sale of the lot to begin investing in urban development. Considering that our clients take between 12 and 24 months to pay full price for the lots we sell them, by selling using this structure we get cash to fund the urban development in advance.

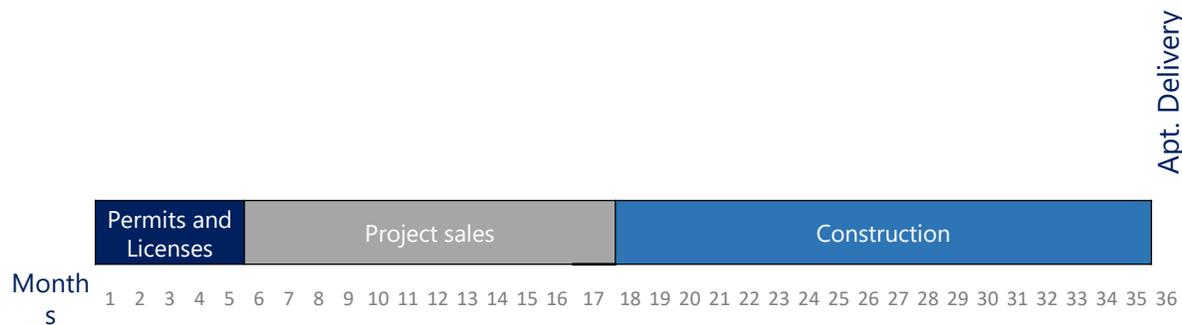


Figure 18. Timeline for a housing project.

This structure is solid, as self-financing urban development is financially very efficient. However, it has important consequences for the annual cash flow results of the Real Estate Business. As we are receiving revenue before costs, it is possible that the revenue and costs of a project be recorded in different years. For example, if we sell the four lots in Figure 18 in January 2019, and in all four deals a 12-month payment period is agreed, by the end of December 2019 we will have received 100% of the value of each deal. And therefore, in 2019, in the cash flow we will have revenue without associated costs. In contrast, in 2020 we will need to begin executing the urban development costs associated with these four lots, and thus, for this year, there will be costs without associated cash flow revenues.

As explained before, lots to be developed move to the inventory account. As a consequence of this and considering that they will be sold before being developed, the same thing would not happen with the P&L results, as for the lots in this account, if the urban development has not been completed at the time of sale, the percentage of

project execution will be estimated at the time of sale, and the revenue and costs will only be recorded in that proportion.

### 3.4. BUSINESS DEALS WITH FIXED AND VARIABLE COMPONENTS

Certain sales are structured with one fixed and another variable component. The idea behind considering this type of deal is to ensure an appropriate minimum price for the land (fixed component) and leave the door open for receiving greater benefits as a function of the future performance of the lot purchaser's project (variable component).

As for the accounting of a deal of this type, the fixed part is booked in the same manner a business deal with no variable part would be. In other words, the revenue associated with the fixed component are accounted for at the time the document certifying the transfer of ownership of the land to the purchaser is signed.

Booking of the variable component will depend on the contract containing the conditions regulating the deal. Revenue arising from the variable component will be booked depending on the contract containing the conditions regulating the business deal. Revenue from the variable component can only be booked once contract conditions have been met and, therefore, payment to the Real Estate Business is guaranteed. It should be mentioned that, in some cases, this only occurs as payment is received.

It should be noted that, the costs associated (carrying value of the lot and urban development costs) of the lot sold using this type of structure (fixed and variable components) are booked together with the fixed revenue. Therefore, the revenue received under the variable component are not associated with any costs.

One example of this type of business is the sale of a lot with a fixed price of \$5 billion plus a variable price equal to 2.5% of the sales of the apartment the builder will sell on the lot. Let's imagine that the purchaser pays a fixed component up front. Additionally, let's assume that the carrying value of the lot is \$1.5 billion and that the associated urban development cost is \$1 billion. Table 9 shows how this sale would be booked at the time the document through which Grupo Argos transfers ownership of the lot to the buyer is signed.

(Millions of pesos)	
Operating revenue	5,000
Sales costs	2,500
<b>Gross profit</b>	<b>2,500</b>

Table 9. Initial registration of a business deal with a variable component.

In the year when the conditions for Grupo Argos to receive the variable component are met, it would be booked as appears in Table 10.

(Millions of pesos)	
Operating revenue	1,250
Sales costs	0
<b>Gross profit</b>	<b>1,250</b>

Table 10. Registration of the variable component.

### 3.5. EBITDA VS VALUE CREATION

At times tension exists between EBITDA generation and value creation due to revenue recognition principles. Attractive sales measured by the EBITDA they generate can produce destruction of value, whereas sales that contribute to value creation can result in a low or even a negative EBITDA..

The accounting principles that define the manner in which revenue from the sale of lots is to be booked, sometimes generate opportunities that make sales that destroy value look attractive in terms of the EBITDA they would generate. As mentioned in previous sections, revenue from the sale of a lot is registered in the company P&L when the document certifying the transfer of ownership of the property from Grupo Argos to the client is signed. If we add to this that accounting rules do not require booking the present value of the payments to be received for the lot sold, we can see that the form of payment is a tool by which the EBITDA from the sale of a lot can be increased at the expense of the value the sale generates for the company (net present value of the payments for the lot sold). Let's use a hypothetical case to clarify this concept: let's assume that a lot with a carrying value of \$2 billion pesos is sold for \$10 billion pesos, generating \$8 billion pesos in EBITDA.

At first glance, this might be considered a good deal, however, let's assume that the payment is structured such that the buyer will pay one million pesos today, and the rest, i.e. \$9.999 billion pesos, in 20 years. Considering the company's costs of capital, a deal of this type could end up destroying value despite its potential to generate EBITDA.

For mixed usage lots, the carrying value per sq. mt. is an average weighted by the development time and the value uses of the subdivided lots that could be sold after developing the lot (see sections 1.5., 1.6. and 1.7.). In consequence, cases could arise where, despite making decisions to maximize future cash flows, the resulting EBITDA is negative. The following example will help understand this more clearly. Let's imagine a 110,000 sq. mt. lot for which the intention is to develop and sell 11 subdivided plots measuring 10,000 sq. mts. each for the development of single-family homes (See Figure 19).

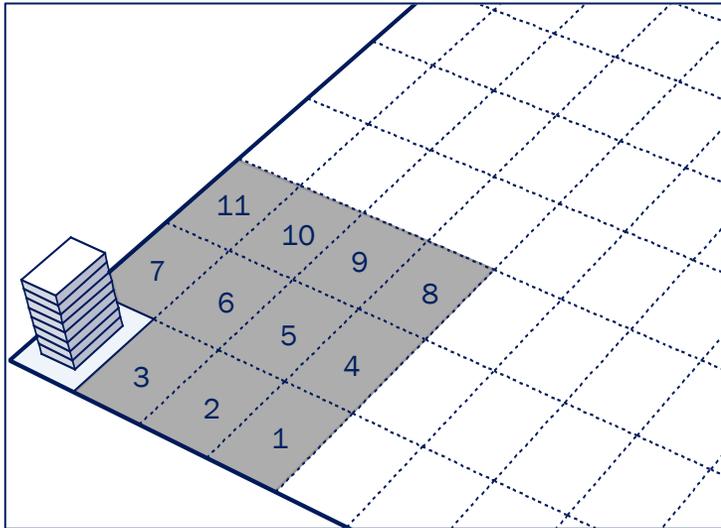


Figure 19. 100,000 sq. mt. lot

Given that the demand for land for building single family housing is 10,000 sq. mts. Per year and that this is the only lot on the market, development of the lot under this plan would take 11 years. If the present value of the flows expected by the contemplated plan results in a carrying value of \$661,118 per sq. mt. and if the present value of the last lot in year 11 results in a value of \$402,638 per sq. mt., the owner of the land can potentially generate value or increase the NPV of the flows that could be obtained from developing the 110,000 sq. mt. by selling, at the present time, a lot for another use that would capture another source of demand and that would pay a price per sq. mt. greater than \$402,638 per sq. mt. (see Table 11). For example, there is a buyer that wishes to buy a 10,000 sq. mt. lot to build a school and is willing to pay \$550,000 per sq. mt. (\$5.5 billion in total) for the lot. If the owner of the lot sells to this buyer, (\$550,000 - \$402,638)\*10,000 in value would be generated, however the sale would result in a negative EBITDA of (\$550,000 - \$661,118)\*10,000.

Year	Single family housing		School	
	Sale price/sq.mt.	NPV	Sale price/sq.mt.	NPV
1	1,000,000	1,000,000	550,000	550,000
2	1,050,000	913,043	577,500	502,174
3	1,102,500	833,648	606,375	458,507
4	1,157,625	761,157	636,694	418,636
5	1,215,506	694,970	668,528	382,233
6	1,276,282	634,538	701,955	348,996
7	1,340,096	579,360	737,053	318,648
8	1,407,100	528,981	773,905	290,940
9	1,477,455	482,983	812,600	265,641
10	1,551,328	440,984	853,231	242,541
11	1,628,895	402,638	895,892	221,451
Total		661,118		

Table 11. Example 1 of value creation and EBITDA with mixed usage.

This does not occur because it is included in a use that was not contemplated under the development plan. Let's assume that the development plan for the 110,000 sq. mt. lot mentioned previously contemplates the development of 10 lots for single family housing and one lot for building a school. Considering the values of the previous exercise and assuming that the housing lots will be sold at a pace of one per year and that the lot for the school is sold in year 1, the present value of the expected flows result in a carrying value of \$674,515 per sq. mt. (see Table 12). By fulfilling the plan in year 1, i.e., by selling one lot for single family housing for \$1,000,000 per sq. mt. and one commercial lot for \$550,000 per sq. mt., a negative EBITDA of (\$550,000 - \$674,515)\*10,000 due to selling the lot for the school.

Year	Single family housing		School	
	Sale price/sq.mt.	NPV	Sale price/sq.mt.	NPV
1	1,000,000	1,000,000	550,000	550,000
2	1,050,000	913,043		
3	1,102,500	833,648		
4	1,157,625	761,157		
5	1,215,506	694,970		
6	1,276,282	634,538		
7	1,340,096	579,360		
8	1,407,100	528,981		
9	1,477,455	482,983		
10	1,551,328	440,984		
11				

Table 12. Example 1 of value creation and EBITDA with mixed use.

Additionally, these lots are usually of a moderate size. For these two reasons, the price per sq. mt. of these lots tends to be greater than the price of undeveloped lots.

- Sale of undeveloped lots: the sale of undeveloped lots refers to the sale of lots the buyer will have to develop in order to build a real estate project. These lots tend to have a larger extension and are undeveloped. Thus, their price per sq. mt. is lower than that of developed lots and is closer to their carrying value.
- Leases: besides leases from certain real estate assets that are a part of the Real Estate Business, at times we have the opportunity to lease land. These opportunities generally arise for rural lots used for mining. These leases help cover expenses like maintenance, security and property taxes.
- Land purchase options: although they are not common, in certain specific cases we have collected premiums in exchange for giving a client the option to buy a lot at a given price over a limited time period. The price we charge for the option considers the property's current market value, the price of exercising the option, the time period, expected volatility and capital costs.

### 3.6. SOURCES OF INCOME AND COSTS

The Real Estate Business has different sources of income and costs explained below.

#### Sources of income:

- Sale of developed lots: the sale of developed lots refers to the sale of lots that are ready or will be ready in the near future for a builder to develop a real estate project on. It should be mentioned that, in general, Grupo Argos tries to sell these lots before developing them. This allows us to be more efficient from a financial point of view. The price of these lots includes the fact that investments were or will be made to develop them.

- Percentage of sales of real estate projects: On occasion, we sell lots under a scheme that consists of a fixed portion and a variable portion. With this type of deal we seek to ensure a minimum adequate price for the land and leave the door open for receiving greater benefit in the future. The fixed component is a certain income that does not depend on project performance and is paid under an agreed payment scheme, while the variable component will depend on project development and is an uncertain payment made over the life of the project.
- Increased value of investment property: Given accounting practices, every year we hire a third party to appraise all the land included under the investment property account (this account contains all the plots on which an urban development project is not yet going to be developed). Increases in value resulting from this exercise are recognized under other income on the Real Estate Business's books. Lots increase in price depending on several different factors.
- For example, changes in the prices and construction costs of real estate assets, changes in the demand for different real estate products, changes in discount rates, changes in the regulations applicable to each lot, among others (see chapter 2 for more information). From a simplified point of view, the price of the lots will be closely related to the price of the assets that can be built thereon. For example, a good proxy for the increase in price of a plot on which housing can be built is an increase in housing prices. This relationship between land prices and asset prices can be seen clearly if you use the rule according to which the price of a lot is calculated as a percentage of the revenue arising from the sale of the assets to be built on the lot. This rule is not entirely precise, but it serves as a simplification to understand how the price of a plot of land could behave when the price of the assets increases.
- Income from clauses that limit the development allowed on sold lots: in order to maximize the value of our lots with a mix of uses and to increase the pace of sales of our lots, on occasion we accept offers for lots on which the buyer's project does not use the entire development potential for the plot and permitted by regulations. When accepting these offers, for Grupo Argos it is important that, on the one hand the price offered is a fair price for the intended development and that, on the other, the client accept the inclusion of clauses regulating the maximum development

allowed on the lot within the document regulating the conditions of sale for the lot. The idea with these clauses is that the client not use more of the development potential than the potential suggested by the price to be paid. In other words, these clauses allow us to avoid cases in which a buyer pays a low price associated with a low-density development and ends up building a high-density project. If we did not require these clauses we would be risking our future capacity for selling lots since, for example, a client could buy a lot to develop 100 apartments and then decide to build 200 or 300 and compete with our capacity to sell lots to supply the demand for the 100 or 200 additional units that the buyer would offer the market. These clauses are structured in such a manner that the buyer can freely build up to a certain development potential and would have to pay a fair price for any development over and above that potential. Even though we have not yet perceived revenue for this concept, we have already signed deals including these clauses and could see this type of revenue in the future.

- Share of Pactia: Given that the Real Estate Business is the division responsible for overseeing Grupo Argos' investment in Pactia, the revenue arising from our share of Pactia (for example: dividends and increases in value) are recorded in the Real Estate Business P&L.

### Sources of costs:

- Cost of Goods Sold (COGS): our COGS consist mainly of:
  - Carrying cost for lots: these refer to the carrying value of lots sold. When the sale of a lot is booked, that lot must be taken off the books, and so the value with which said lot was registered on the company books is counted as a cost.
  - Direct and indirect urban development costs: these refer to the costs incurred for developing or modifying a lot such that a builder or developer can develop a real estate project thereon. Because lots under the inventory account are those on which it has been decided to carry out urban development, urban development costs will be reflected on the books when lots are sold from this account.
- Maintenance: these include the expenses incurred by Grupo Argos to maintain the lots it owns in good order. The most important items of these expenses are maintenance of the enclosures defining the company's lots and gardening work.
- Security: to prevent lot invasions or the improper use of lots by third parties, Grupo Argos incurs expenses related to a security scheme for its lots.
- Property taxes: property taxes on our lots are an important component of Real Estate Business expenses. In the cities where our most important properties are located, these taxes are collected annually during the first quarter of the year (February and March). For this reason, the first quarter results for the Real Estate Business tend to be negative, as expenses related to property taxes for the entire year are reflected in a single quarter. It should be mentioned that every year there is a certain risk associated with the possibility the municipality will increase the property tax to be paid for a plot of land.
- Other taxes: there are other taxes that are not recurring like the property tax, but which could still appear within the results of the Real Estate Business. These include impact fees and taxes, which are charged to finance infrastructure projects that the municipality may embark upon near our lots, and property appreciation taxes, which are charged when the municipality increases the development potential of our lots. The latter is collected under the understanding that, upon an increase in development potential, the owner must pay a tax related to the economic benefit received from an increase in the regulations applicable to the lot.
- Administration and sales expenses: These include expenses related to the business's sales and operations, such as, for example the salary of the business's employees or corporate travel. It should be noted that this account includes expenses and taxes associated with lot sales closing costs.



#### 4. BUSINESS MODELS: SALES OF LARGE UNDEVELOPED EXTENSIONS OF LAND VS. SALES OF SUBDIVIDED LOTS

## BUSINESS MODELS: SALES OF LARGE UNDEVELOPED EXTENSIONS OF LAND VS. SALE OF SUBDIVIDED LOTS

This final section better explains the differences between: i) developing and selling subdivided lots and ii) selling undeveloped lots.

### 4.1. VALUE CREATION VS. EARNINGS POWER

The decision between selling an undeveloped lot (i.e. with no interventions to the lot whatsoever) and developing and selling the subdivided lots resulting from that lot, is not necessarily a decision implying value generation or creation. It is simply a decision to sell capacity for future earnings power. In other words, when one sells an undeveloped lot, one is selling the purchaser the capacity to generate income for selling subdivided lots in the future. This is done under the understanding that the fair price of an undeveloped lot is equivalent to the Net Present Value (NPV) of all flows associated with development costs and revenue from the sale of subdivided lots.

Let's assume we have an undeveloped lot, like the one that appears in the graph to the left of Figure 20, that can be subdivided into 11 lots. If the owner is going to sell it to a developer in an undeveloped state, the owner should estimate the cash flow it could obtain if it didn't sell the lot and developed it itself (the difference between the revenue from selling the subdivided lots and the urban development costs).

To do this, let's assume that, in the city of Apolo, the owner can sell one of the 11 lots each year and, in consequence, will carry out the urban development necessary to sell one lot each year. The fair price of the plot must be equal to the result of bringing those flows to present value at an adequate rate for the risk associated with this activity. Supposing that all the players in this market have the same expectations, when the potential buyers of this lot analyze how much they could pay for the lot, they will reach the same value as the owner. If the owner sells the lot at this price, the owner will obtain the same NPV as if he or she did not sell it and rather develops it him or herself. Therefore, in theory, this decision does not necessarily imply value generation.

Now, in practice, it is possible that the buyer and the seller of the land may have very different expectations. Two cases could occur: that the buyer's expectations are more optimistic than the seller's or that the buyer's expectations are more conservative than the seller's. In the first case, the price the buyer may be willing pay may be higher than the price the seller considers fair. In this specific case, two things could be happening: the buyer may have better resources than the seller, allowing it to do better work when developing and selling the lot, or the seller may not be assigning the correct value to its lot. If the buyer has better resources and the seller sells to this buyer, value would be generated, but if the seller has inadequately appraised its lot, it would not. In the second case, the seller could be overvaluing the lot, or the buyer could be making an offer below the fair price of the lot. If the former occurs, the owner could sell if he or she concludes that the buyer is offering a fair price, whereas, in the latter case, the seller should not consider the buyer's offer.

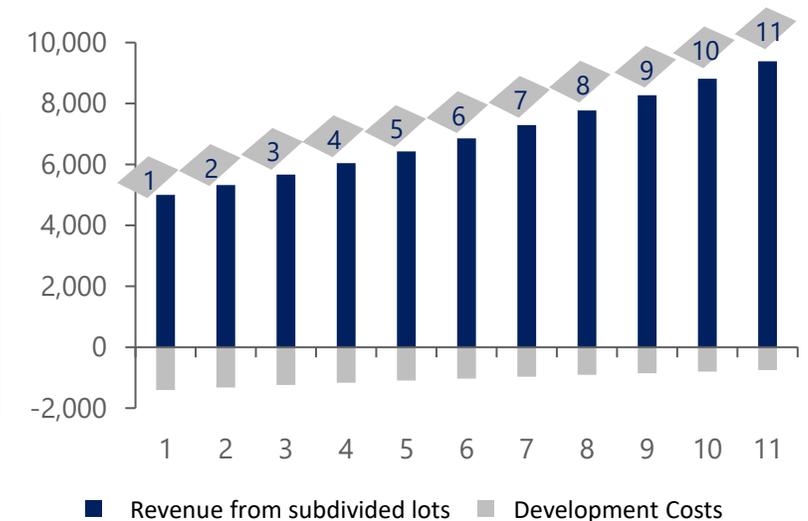
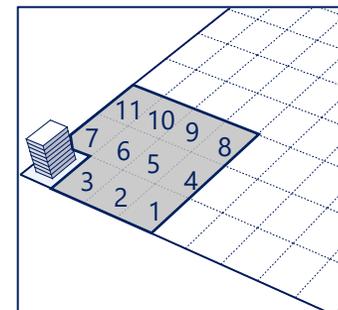


Figure 20. Value of an undeveloped lot

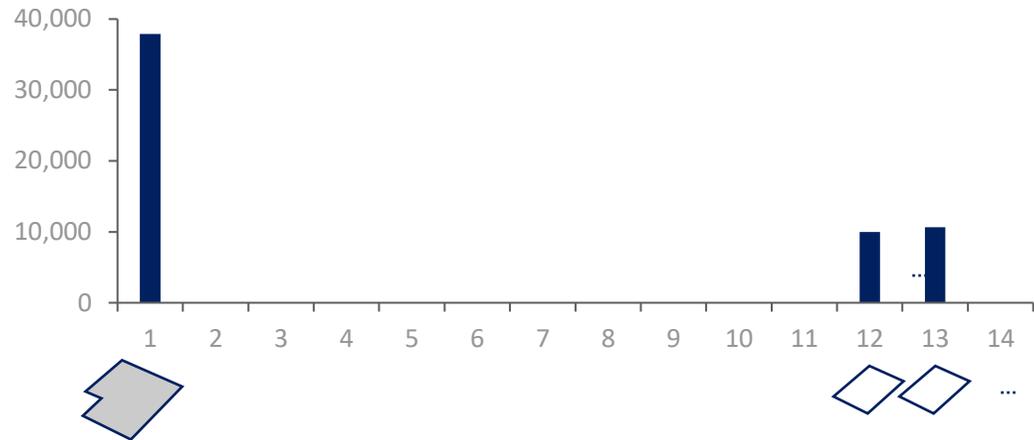
## 4.2. IMPLICATIONS OF SELLING UNDEVELOPED LOTS AND SELLING SUBDIVIDED LOTS

An owner of large extensions of land, like Grupo Argos, has the option to define the strategy to be used to sell each lot it owns. On one extreme, it can sell developed lots, which would require urban development, and, on the other, it can sell large extensions of undeveloped land. Although strategies could be used that combine these two extremes, we will focus solely on these two strategies for simplicity's sake.

So long as the lots are sold for their fair value in each case, the two strategies considered will have an equivalent NPV. Remember that in the previous section we showed that the price of an undeveloped lot is equal to the NPV of the flows associated with urban development costs and the revenue from the sale of subdivided lots. Given their equivalent NPV, it is fundamental to understand the implications of each strategy when choosing one or the other. To do this we can look at Figure 21, that shows an example in which these two strategies are used to sell the same lot. The bars in each chart correspond to the income from lot sales every year. It is important to mention that the lots that appear in white also belong to the owner of the lots in gray.

In first place, and as we saw previously, selling large extensions of land generates ongoing competition in the market. Before selling, the owner of the land was the sole owner. After the sale there are two owners or competitors with large extensions of land. In contrast, the sale of developed lots does not generate lasting competition in the market.

### Sale of a large extension of land



### Sale of developed lots

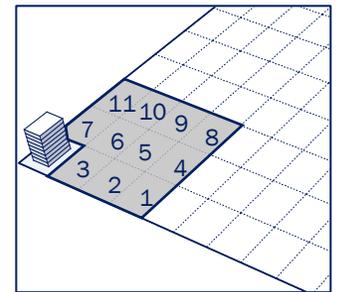
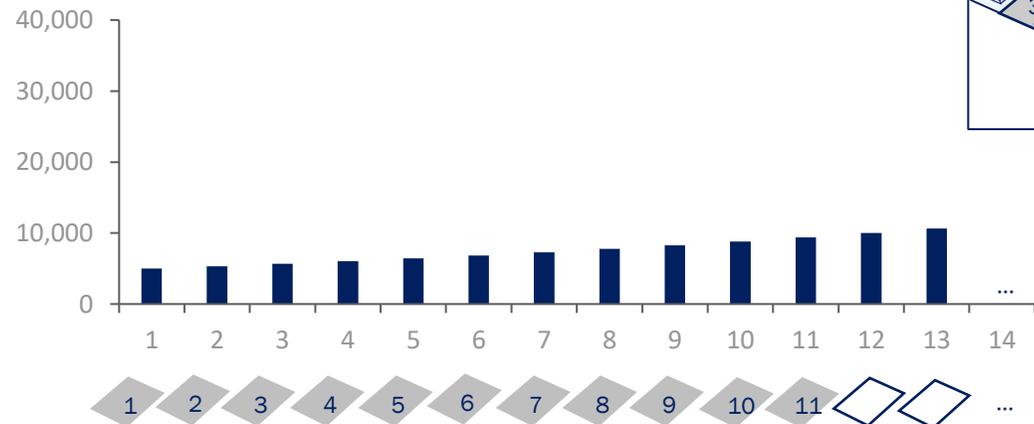


Figure 21. Sale of large extensions of undeveloped land vs. sale of subdivided lots.

The sale of large extensions of land also has a significant impact upon recurring future lot sales. This results from increased competition in the market. Under this strategy, revenue in year 1 would be higher than revenue if developed lots are sold, but revenue between years 2 and 11 could be far less, or even zero, as shown in Figure 21. This occurs because, between years 2 and 11 there is a new owner who can capture the entire demand for those years. As the graph in Figure 21 shows, selling developed lots year by year allows recurring year-on-year sales, but choosing the opposite strategy will increase the uncertainty of having constant year-on-year sales.

On the other hand, the sale of large extensions of land is more challenging than the sale of developed lots. This is because, when selling large lots is, the deals are more expensive, in consequence: i) there are fewer potential buyers capable of paying fair price for this type of lot; and ii) negotiations for these lots are more complex. As a result, the sale of this type of lots takes more time and effort. Conversations that begin one year could end up closing one or two years later.

When selling a large extension of land, there is a transfer of risk from the seller to the buyer. Although this transfer of risk also occurs when selling subdivided lots, since extensive lots have long development period. The risks transferred are those associated with lot ownership and lot sells/marketing, for example: risks associated with regulatory changes due to POT changes; increased property taxes or imposition of new taxes, such as impact fees; risks related to land invasions; among others.

Finally, if an owner were to choose to sell subdivided lots, he or she would have to incur all the costs required to subdivide and develop the lots as they are sold. In contrast, if this owner decides to sell large extensions of land, these costs will not be incurred as the lots being sold are undeveloped.

