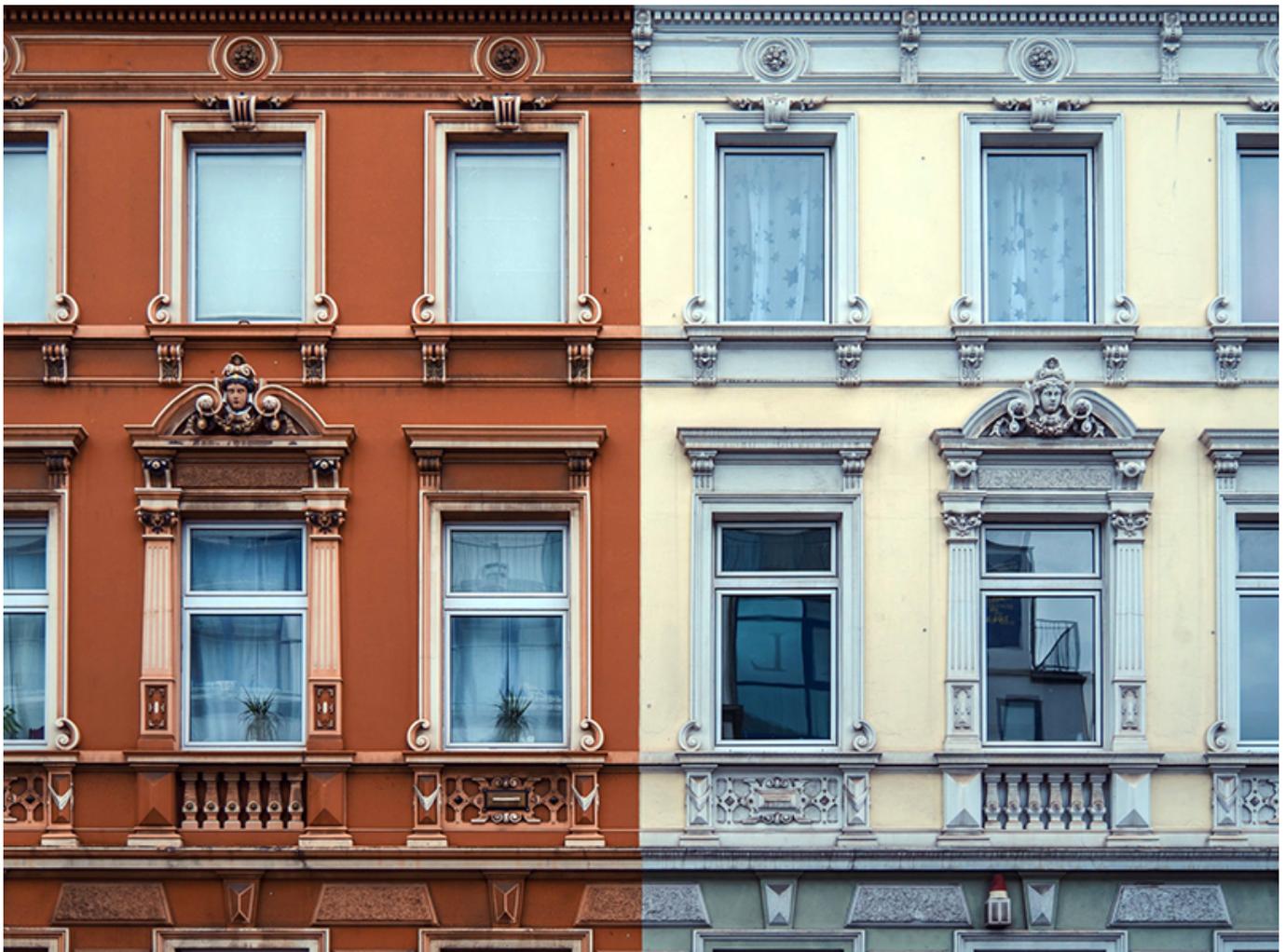


Gauging development feasibility: An introduction to financial modeling using a real estate pro forma

A real estate pro forma allows policymakers to assess the financial impact of changes caused by the imposition of policies laid out in the Housing Policy Library. To determine whether a policy is likely to affect the feasibility of developing affordable housing, mixed income housing, or housing overall, it is important to understand how the policies affect the “bottom lines” of both for-profit and not-for-profit developers.^[1]



Estimating those bottom lines requires assumptions about expected construction and operating costs, sales, or rental incomes as well as the size, configuration, and financing structure (also called the capital stack) of the project.

For-profit developers look for projects, whether for sale or for rent, that can generate enough revenue to cover any operating and maintenance costs plus pay back all of the funding sources used to purchase/renovate/build the project as well as provide a

return that is sufficient to be attractive to both the developer and any other investors whose capital will be needed to provide equity and loans to the project. That return needs to be competitive with returns on other possible investments, including alternative real estate development opportunities in other jurisdictions. In addition, the estimated return needs to account for the risk that the costs and revenues assumed in the pro forma will not be borne out over the time it takes to purchase, construct, and sell or operate the property. While not-for-profit developers may not require a certain rate of return or may not need to contribute as much of their own equity toward the total project cost, they do need a project to generate a positive cash flow and have sufficient resources to properly maintain the property over the long run.^[2]

The basic elements of a housing development pro forma

A pro forma allows a developer to test out the financial feasibility of a new construction project by projecting 1) the cost of construction along with potential sources of funding to cover those costs, and 2) the stream of income minus expenditures once the construction phase is completed and the units are rented or sold. By tying together these two pieces into one pro forma a developer can analyze whether the cost of construction, the sources of funding, and the projected income stream work as a whole. The projected values needed to build the pro forma are contained in the following two financial schedules called **Sources and Uses** and **Income and Expense** (see footer “Prototypical pro forma for multifamily rental property”):

Sources and Uses. This schedule covers the construction phase and requires a match between the projected costs of building the project, such as land acquisition and construction, and the sources of funds that will provide the funding to pay those costs.

Construction costs consist of hard costs (materials and labor costs) as well as soft costs such as architectural, engineering, legal, development fees, financing costs, insurance, and other pre- and post-construction expenses prior to the sale or rental of the units. The construction budget also includes allowances to cover unplanned costs or delays, often referred to as hard and soft cost contingencies. Construction costs can vary depending on the number and size of the units as well as amenities needed to attract the targeted market.

Possible sources of funding can include the developer’s own equity investment, third-party equity investors, banks and other private lenders, and the government through low-cost loans or grants. Each of these funders have their own criteria for judging whether to put up money, including an assessment of the likelihood that the project will be successful, and in the case of the private sources of money, the likelihood of

being sufficiently compensated for the risk they are taking.

The choices made as to what type and size of building to construct, where to locate it, and how to finance it ultimately affects the bottom line as can be seen in the following schedule:

Income and Expense. This schedule projects the future stream of net income that the building can generate once construction is completed and the units are either rented out or sold. Net income is the difference between income and expenses including the cost of servicing any debt on the property. The amount remaining after taxes determines the amount of cash available to provide a return to the developer and any other equity investors. The income and expense related to a project depends on whether the property is for rent or for sale to an owner and the strength of the market in that location:

- For a rental project, annual income is derived from rents and other fees, while annual expenses include the costs of managing and operating the property. These costs include: energy, such as gas and electricity; water; insurance; labor; property taxes; and servicing any debt. The annual difference between income and expense is called net operating income (NOI).
- For projects where the units are being built for sale (e.g., a multi-family condo or a development of single-family homes), the amount and timing of the revenue stream is a function of the expected sale prices and pace of sales. In this case, the annual NOI is the difference between the revenue and any costs for maintaining and financing the project until all of the units are sold.

These two financial schedules, **Sources and Uses** and **Income and Expense**, need to be worked in concert, as changes to any one element can affect the other. For example, altering the mix of unit types (one bedroom versus two or three bedroom units) may affect the expected total rental income or, in the case of an ownership project, the proceeds from the sale of all the units in the building. Additionally, operating costs can vary based on the population served (e.g., seniors) and construction costs can vary based on the level of finishes the developer needs to provide in order to obtain a desired level of rents or sale prices.

Evaluating financial feasibility

Developers decide whether or not to proceed with a new development project based on their assessment of the level of return they can expect on their investment and whether that rate of return matches or exceeds alternative investment opportunities and is sufficient to compensate them for taking on the many risks involved in

development. Some key factors that affect the rate of return on the investment in a development project are the costs of land and construction, potential delays in obtaining the required government approvals, and the expected income from rent or sales. Uncertainties over any of these factors increases the riskiness of undertaking the development, thereby causing developers to want more cushion by requiring higher, pro forma rates-of-return. The following outlines two approaches commonly used to assess financial feasibility:

Net Operating Income (NOI) Yield (rental projects only). NOI Yield for a rental property simply measures the expected net operating income in the year that the property is projected to be fully rented up (i.e., once the property is “stabilized”) divided by the total development cost (total construction cost plus land). This one-year snapshot works best for projects where revenues and expenses are expected to move roughly in concert over time.

However, when revenues or expenses are unlikely to move in concert, e.g., a limited-duration property tax break or a rapidly improving neighborhood where rents are expected to increase faster than costs, a better guide is to use an “internal rate of return (IRR)” analysis for assessing the financial attractiveness of undertaking the development:

Internal Rate of Return (IRR). An IRR calculation allows the developer to assess profitability taking account of changing revenues and expenses over the time. For rental projects, this involves assumptions about future market conditions and the expense of maintaining and operating the property, including debt payments and payments to government for property taxes, water and sewer fees, etc. For for-sale projects, the expected sell-out period may be shorter and so the projections will span a shorter time horizon. In both cases the IRR calculation yields a single number that reflects the long-run rate of return which can then be compared to the IRR of other investments that yield a constant return over time (e.g., a government bond) or involve more risk and have annual returns that vary over time.

Using a pro forma to evaluate policy options

A pro forma can help policymakers evaluate how policy changes are likely to affect the economics of development across the multiplicity of local housing markets with their different land/acquisition prices and their different rents and sale prices. Insights from such an analysis can help policymakers identify the most appropriate mix of policies to achieve their production, affordability, and geographic dispersion goals. They can also be used when engaging with all the stakeholders to arrive at an optimal mix of policies.

For example, if a jurisdiction wants to require that a share of new, private-sector

development be affordable, e.g. mandatory inclusionary housing, it presumably will want to consider what effect the new policy will have on the overall profitability of a development project.^[3] With a real estate pro forma policymakers can model the effects of different levels of affordability requirements and different types of offsetting policies to determine which approach most effectively balances the goals of affordability and production. Imposition of affordability restrictions as part of an inclusionary housing program, for example, could impair financial feasibility based on current land prices.^[4] If the program is voluntary then developers may simply not participate and the program will not create the intended affordable housing. If the program is mandatory, then land prices may have to fall to restore financial feasibility, potentially causing a pause affecting the future pipeline of residential development projects.^[5]

In the case of such a production pause, its length would then depend on how long it takes for land owners to come to terms with having to accept a lower price for their land. Experience has shown that land prices tend to be “sticky” downward as land owners are not generally under generally reluctant to lower their expectations as they often are not under any immediate pressure to sell and they may have options to sell for a non-housing use. Moreover, if market for housing remains strong, land owners have the option of simply waiting for the shortfall in housing production to lead to further increases in rents and home prices with a concomitant rebound in land prices.

Fine-tuning a mix of policies to minimize disruptions to the development pipeline calls for policymakers to assess what private developers require to be able to proceed with new developments. To counteract the effects of a policy that dampens financial feasibility, policymakers have a number of options such as allowing developers to build more units on a site, forgiving property taxes, or offering low-cost loans or capital subsidies.^[6]

Thus, working with a pro forma allows policymakers to test which policies or combinations of policies would have the desired effect. A pro forma can also help shed light on how the effects of policies may differ across a range of housing markets within the local jurisdiction and test whether a policy could render development infeasible in weaker neighborhood markets even if land or other acquisition costs were zero.

MANDATORY INCLUSIONARY HOUSING: A NYC example of using a pro forma to balance increased density with a mandatory

requirement to include affordable housing

In order to support the preservation or creation of mixed-income neighborhoods, NYC has adopted the Mandatory Inclusionary Housing (MIH) zoning program to require developers in certain instances to set aside a portion of the units in a building to be affordable at rents lower than market or to develop such affordable units on another site. While determining how best to set its policy so that it did not diminish the attractiveness of new construction, New York City looked to require affordable housing only where such a requirement was tied to an increase in density/permitted floor area (otherwise known as an “upzoning”). The idea being that, by permitting larger buildings to be constructed, the buildings would generate higher levels of rental income or condominium sale proceeds that would cross-subsidize the construction and operation of the affordable units, allowing the development to be financially viable while also producing affordable units. To understand the potential impacts of a new set of zoning policies, the city worked with a consulting firm to develop a pro forma analysis determining how various combinations of affordability requirements and upzonings would impact the attractiveness of new construction. ^[7]

Related resources

Terner center for housing innovation, UC Berkeley

The Terner Center demystifies how a developer uses a pro forma in [Making It Pencil: The Math Behind Housing Development](#). In addition, the Terner Center has developed an interactive tool called the [Housing Development Dashboard](#), consisting of both a policy calculator and a policy gauge the [development calculator](#) consists of a truncated version of a traditional pro forma that draws out six key factors identified as important influences on financial feasibility. The calculator allows users to estimate the likelihood that a developer will choose to build based on adjustments to each of the key factors. The [policy gauge](#) is designed to help users better understand the cumulative impact of housing policies on the development pipeline.

For more information:

- [Inclusionary Housing Calculator 2.0](#) – Grounded Solutions Network
 - [Creating Affordable Housing Out of Thin Air: The Economics of Mandatory Inclusionary Zoning in New York City](#) – NYU Furman Center
 - [Inclusionary Housing: Creating and Maintaining Equitable Communities](#) – Lincoln Institute for Land Policy
1. Pro formas can also help guide government when negotiating with developers, whether for profit or not for profit, as to the amount of subsidy required to provide a given level of affordability without undermining the projects financial feasibility. _

2. While both for-profit and not-for-profit developers rely on pro formas, details are likely to differ. Not-for-profits often have special missions, limited capital, and outsourcing requirements that affect their costs and “bottom line” requirements. _
3. In some cases, localities offer developer the option of making a payment in lieu of providing the affordable units. A real estate pro can be used to determine what what would be a comparable level of payment as well as provide estimates of how far that money will go in producing affordable units across neighborhoods with different land costs. _
4. In the extreme the increased affordability restrictions could make it difficult to make a project’s finances work, even if the price of land fell to zero. _
5. Land prices may not fall quickly or at all as land owners can decide to hold on to their property rather than sell at a lower price, or they may have the option to sell for other uses, e.g., offices, that offer better prices. _
6. For example, Low-Income Housing Tax Credits (LIHTCs) provide capital subsidies. For further information on the LIHTC program see [here](#). _
7. https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/mih/bae_report_092015.pdf _

See also:

[Age distribution of the housing stock in 2016, New York City](#)

[Housing code violations by community district in 2017, New York City](#)

[Number of small units and households in 2016, New York City](#)