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Colin Balogh
Georgia State University

John B. Corgel
Cornell University, jc81@cornell.edu

Gregg Logan
Robert Charles Lesser & Co.

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Financial Planning for Real Estate Production Decisions

Abstract

Recently, the production and service components of the real estate business have evolved from collections of mom and pop operations to full-fledged industries comprised of highly competitive, small and medium-sized firms. This evolution to larger-scale business operations has important implications for the type of financial analysis to be conducted by real estate firms in the future. Specifically, the traditional project-specific financial analysis of real estate investment opportunities will be subsumed by strategic financial planning for real estate decisions at the firm level. Even with a radical change in emphasis and interpretation, the discounted cash flow tradition, firmly established in project-specific analysis, is likely to remain since it underlies most strategic financial planning models. This article details how such a model can be used by firms to make real estate production decisions.

Keywords

commercial real estate, project specific analysis, real estate investment, financial planning

Disciplines

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Comments

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FINANCIAL PLANNING FOR REAL ESTATE PRODUCTION DECISIONS

A new sophistication is taking hold in the financial analysis procedures of emerging real estate companies.

by Colin Balogh, John Corgel and Gregg Logan

Recently, the production and service components of the real estate business have evolved from collections of mom and pop operations to full-fledged industries comprised of highly competitive, small and medium-sized firms.¹ This evolution to larger-scale business operations has important implications for the type of financial analysis to be conducted by real estate firms in the future. Specifically, the traditional project-specific financial analysis of real estate investment opportunities will be subsumed by strategic financial planning for real estate decisions at the firm level. Even with a radical change in emphasis and interpretation, the discounted cash flow tradition, firmly established in project-specific analysis, is likely to remain since it underlies most strategic financial planning models. This article details how such a model can be used by firms to make real estate production decisions.

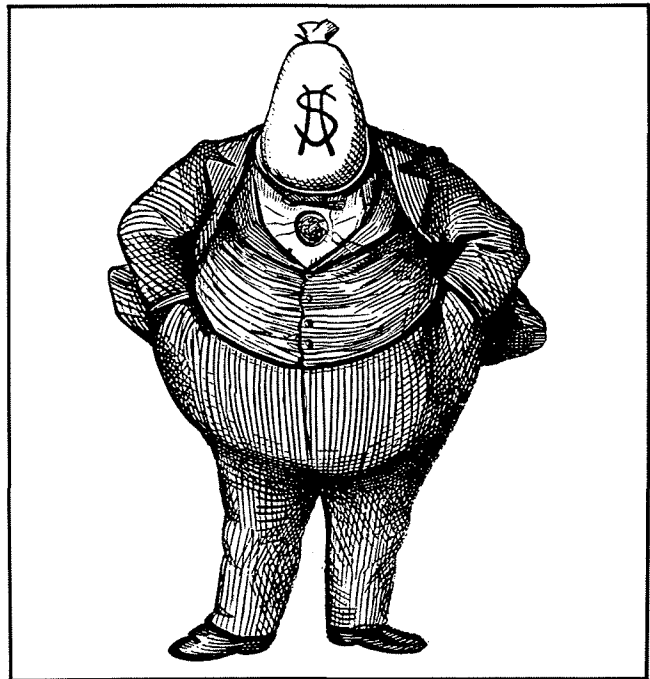
Strategic Financial Planning

Financial planning at the firm level is broadly defined as the process by which financial managers consider the overall effect of the company's financing and investment decisions. The focus, as explained in this article, is with financial decision making which is "strategic" in nature rather than "operational". Strategic financial planning

Colin Balogh is a doctoral student in land economics and urban affairs at Georgia State University. He was previously with Coldwell Banker in California.

John B. Corgel is professor of real estate at Georgia State University. He formerly served on the faculty of the University of Florida and was a visiting scholar at the Federal Home Loan Bank Board. Corgel's articles have appeared in the AREUEA Journal, Journal of Urban Economics, Housing Finance Review and the Journal of Risk and Insurance.

Gregg T. Logan is founding director of the Atlanta office of Robert Charles Lesser & Co. He is responsible for the firm's marketing, consulting and administration. Logan was previously with the company's Beverly Hills office before opening the Atlanta location.



involves the evaluation of financing and investment options that may ultimately change the course of the firm's operations vis à vis the evaluation of options. It may simply enhance the efficiency of the firm's operations while on its present course.

Brealey and Meyers define strategic financial planning more specifically as the process of:

- analyzing the interactions of the financing and investment choices open to the firm.
- projecting the future consequences of present decisions in order to avoid surprise and understand the link between present and future decisions.
- deciding which alternatives to undertake (these decisions are embodied in the final financial plan).

- measuring subsequent performance against the goals set in the financial plan.²

A good financial planning model will accommodate these tasks and possess the general characteristics such as parsimony: the model should be economical or efficient, robust and insensitive to changes in the underlying assumptions.³ Also, the model must be flexible enough to handle the unique aspects of real estate markets.

Financial Planning And Real Estate Production Decisions

Traditionally, real estate financial planning has been confined to the firm level and has consisted of consolidated analyses. However, as the cost of doing business has increased and marketing and production methods have become more sophisticated, larger development organizations have begun to dominate. These firms must maintain a production pipeline to support the various functions of the line organization.

For example, a firm may be organized with the following departments—land acquisition and processing, land development, building and construction, and sales and marketing. Also, the company needs to have enough projects at various stages (i.e., start-up, construction, sales, completion) to keep all the departments functioning.

Decision making takes place beyond the project level of analysis. Real estate development firms, particularly those that are fully integrated (taking a project from raw land, to building the homes, through sales and marketing) need to analyze strategic planning questions in order to set the future direction of the company for at least a three to five year period. Strategic planning is an ongoing process that requires new methods of financial analysis.

For a real estate firm, this requires the company to define

its industry role, expansion options, rationalization, efficiency and organization.⁴ (See Exhibit I) *Industry role* is a decision made by management concerning the role or roles it will play in the building/development industry. Often numerous roles are required to take raw land through the development process. *Expansion options* are plentiful and most firms want to grow by increasing their market share in an existing area, entering new geographic locations, serving new market segments or introducing a new product. *Rationalization* strategies consider leaving or altering how a firm serves a geographic location, market segment or product category. It is the opposite of expansion and sometimes is necessary when responding to changing economic conditions. *Efficiency* strategies deal with producing at lower costs and/or quickly. This is an important component of most strategies. *Organizational* strategies reflect the ways to organize a builder/developer company, from project management at one extreme to functional management on the other. By definition, smaller entrepreneurial firms are project management oriented, while larger organizations may have different people responsible for site acquisition, development, building and sales. Finally, any strategy needs to be evaluated in terms of the three potential economic phases—a growing economy (demand increasing), a stable economy (demand level) and a contracting economy (recession with demand decreasing).

These strategy evaluations exceed the typical requirements of project level financial analysis. The builder/developer needs to determine what shareholder value increases will accrue when different sets of strategies are followed. Varying strategies need to consider sales volume goals, which, in order to be achieved, have specific fixed asset and working capital requirements and a level of risk.

A model is presented here (see Exhibit II) that calculates a before-tax equity contribution after the target earnings

EXHIBIT I

Shareholder Wealth Increase Resulting From Implementation Of Expansion Plan

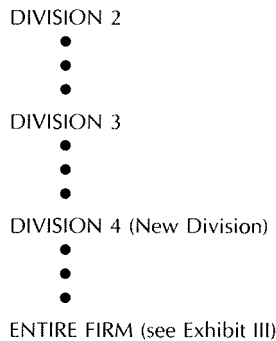
	1	2	Year 3	4	5	Total
Sales	\$57,500,000	\$66,120,000	\$76,040,000	\$87,450,000	\$100,570,000	\$387,680,000
Sales increase	7,500,000	8,260,000	9,920,000	11,410,000	13,120,000	50,570,000
Projected return on incremental sales minus minimum return (p - p min)	.01	.01	.02	.02	.02	
Shareholder present value increase (Calculated using Equation 3)	\$ 290,000	\$ 290,000	\$ 590,000	\$ 590,000	\$ 600,000	\$ 2,360,000

Source: Rappaport (see footnote #5)

EXHIBIT II

Multi-Divisional/Probabilistic Financial Planning Model: Case Example

Years	Division 1				
	1	2	3	4	5
Pessimistic (Probability = 30 percent)					
Sales (\$000,000)	60.00	64.80	51.80	36.00	51.80
Assets (\$000,000)	22.20	22.60	22.20	20.70	20.70
Ebit (%)	10.00	11.00	9.00	6.00	10.00
Ebit (\$000,000)	6.00	7.13	4.66	2.16	5.18
Realistic (Probability = 60 percent)					
Sales (\$000,000)	60.00	64.80	55.00	45.50	55.00
Assets (\$000,000)	22.20	22.60	22.30	21.50	21.50
Ebit (%)	10.00	11.00	10.00	7.00	11.00
Ebit (\$000,000)	6.00	7.13	5.50	3.19	6.05
Optimistic (Probability = 10 percent)					
Sales (\$000,000)	60.00	64.80	70.00	75.60	81.60
Assets (\$000,000)	22.20	22.60	23.30	23.40	23.60
Ebit (%)	10.00	11.00	12.00	13.00	14.00
Ebit (\$000,000)	6.00	7.13	8.40	9.83	11.42



are achieved. A financial analysis for building/development firms needs to measure sensitivity to cycles, and therefore is probabilistic. Included in the model are pessimistic, likely and optimistic evaluations of each strategy, as well as an analysis of the probability for each of the scenarios to occur. Finally, given that different strategies will have different levels of risks, higher rates of return are assigned to reflect the increased chance.

Strategic Financial Planning Model

In a 1981 *Harvard Business Review* article, Alfred Rappaport presented a strategic financial planning model that provided estimates of the shareholder's value when management implements various business strategies.⁵ Specifically, the model yields the present value change in shareholder wealth or equity (ΔE) that results from the firm carrying out strategies to increase gross revenues.

The following equation for the firm's equity value is used to derive change in shareholder wealth:

$$(1) E_t = \frac{p(1-T)S_t}{k} - D_t$$

where:

E_t = value of the equity position in the firm at period t

p = earnings before interest and taxes divided by sales (*i.e.*, rate of return on sales)

T = federal income tax rate

S = sales in period t

k = weighted average cost of capital (*i.e.* discount rate)

D_t = market value of debt outstanding in period t

Thus, the after-tax value of the equity is simply the capitalized after-tax earnings of the firm less the value of the debt outstanding.

Strategic financial planning typically involves an analysis of the methods directed toward *increasing* a firm's sales or gross revenues. Growth in sales alone, however, does not necessarily mean the shareholder's wealth will be enhanced. The change in shareholder wealth (ΔE) given a change in sales (ΔS), is determined in conjunction with an additional set of factors which includes the incremental rate of return on sales (p'). This is defined as the change in earning before interest and taxes, divided by the change in sales, the firm's tax rate and the firm's cost of capital. To increase the level of sales, it is assumed the firm must make additional investments in fixed capital (*i.e.*, plant and equipment) and working capital.

The change in the value of equity for a given level of sales increase is defined as:

$$(2) \Delta E_t = \frac{p'(1-T)\Delta S_t}{k} - \frac{(f_t + w_t)\Delta S_t}{1+k}$$

where:

p' = incremental rate of return on sales, defined as the change in earnings before interest and taxes divided by the change in sales

f = fixed capital expenditures less depreciation per dollar of sales increase

w = cash required for net working capital per dollar of sales increase

The final form of the shareholder wealth equation is given as:

$$(3) \Delta E_t = \frac{(p'_t - p'_{t \min})(1-T_t)\Delta S_t}{k(1+k)^{t-1}}$$

where:

p'_{\min} = the incremental rate of return on sales required to break-even⁶

The term in the denominator of Equation (3) is a discounting factor used to estimate the change in shareholder wealth that results from the implementation of a strategy which causes a *permanent* (and infinite) increase in sales.

Hypothetical Example Utilizing Rappaport's Model

Assume a firm currently has \$50 million in sales and is considering a five year expansion plan. The expected growth rate of sales is 15 percent, the pretax incremental rate of return on sales (p') is 13.5 percent in the first two years and 14.5 percent in the remaining three years, working capital per dollar of sales (w) is 20 cents, capital expenditures per dollar of sales (f) are 35 cents, the tax

EXHIBIT III

Entire Firm Inputs: Case Example

Years	Entire Firm					
	1	2	3	4	5	
Pessimistic (Probability = 30 percent)						
Sales (\$000,000)	104.50	129.20	103.30	74.60	103.30	<i>Cost of Capital</i>
Assets (\$000,000)	33.10	38.40	37.10	34.80	34.80	
Ebit (%)	12.50	12.80	11.30	9.00	12.30	
Ebit (\$000,000)	13.06	16.47	11.62	6.71	12.65	<i>Equity</i>
						Equity/Value: 60.00%
						Equity Rate: 11.90%
Realistic (Probability = 60 percent)						
Sales (\$000,000)	104.50	129.20	109.70	90.80	109.70	<i>Debt</i>
Assets (\$000,000)	33.10	38.40	37.30	36.00	36.00	
Ebit (%)	12.50	12.80	12.00	10.00	12.80	
Ebit (\$000,000)	13.06	16.47	13.16	9.08	13.99	Debt/Value: 40.00%
						Debt Rate: 10.88%
Optimistic (Probability = 10 percent)						
Sales (\$000,000)	104.50	129.20	156.70	181.45	209.00	Weighted Average Cost of Capital: 11.49%
Assets (\$000,000)	33.10	38.40	44.70	49.45	54.88	
Ebit (%)	12.50	12.80	13.00	13.30	13.50	Tax Rate: 46.00%
Ebit (\$000,000)	13.06	16.47	20.37	24.04	28.22	

rate (T) is 46 percent, and the cost of capital (k) is 12.5 percent. First, p' min is determined followed by the calculation of the present value of ΔE for each year of the expansion by using Equation (3).

The present value of the change in shareholder wealth resulting from the implementation of the five year expansion plan is shown in Exhibit I. The expansion plan is considered successful since it will increase the wealth of the firm's shareholders by \$2.36 million.

Case Study

The example just presented is both deterministic and designed for strategic financial planning of a single division firm. For the purposes of analyzing the problem to be described, the model has been extended to allow for multiple divisions and probabilistic estimates of economic conditions. These extensions are accomplished with the aid of a Lotus 1-2-3 spreadsheet routine that permits the analyst to vary the inputs for each strategy without the tedium of manual recalculation.

The case involves a regional firm whose operations consist of two home building divisions (Divisions 1 and 2), located in two different states and an investment division (Division 3) that owns a large apartment complex. The firm's management is considering the addition of a fourth division that would subdivide raw land for sale to one of the firm's home building divisions and to others in the area. While management considers the addition of a land development division would be profitable, there is concern about the effects of implementing this strategy on the company as a whole.

The firm's chief financial officer (CFO) and the

management-marketing consultant assembled the inputs shown in Exhibit II. The data were formulated with consideration given to the appropriate allocation of assets based on the division and sales potential in the market where similar home building and land development activities would take place. Also, the following states of the economy and their respective probabilities of occurrence (i.e., systematic risk) are assumed:

- Boom (moderate) economy-10 percent probability
- Stable economy-60 percent probability
- Recession (mild) economy-30 percent probability.

The sales figures were estimated for the upcoming five year period, and as shown in Exhibit II, they reflect expectations that sales will experience a structural decline in the third and fourth years of the five year planning horizon.⁷

The CFO of the firm determined the levels of assets required to produce each level of sales and estimated the percentage of earnings before income taxes.⁸ This process is repeated for the remaining three divisions.

Exhibit III displays the inputs to the model for the entire firm. The dollar values were obtained by summing the expected values for each division, including the proposed land development division. The CFO provided the capital structure and cost information and the tax rate. The cost of capital reflects the perceived riskiness of the firm with the new division in place. Equity financing constitutes 40 percent of the capital required by the firm, the required rate of return on equity is 11.90 percent, debt financing is 60 percent and the cost of debt is 10.88 percent. A 46 percent tax rate is assumed.

EXHIBIT IV

Change In Shareholder Wealth Resulting
From The Introduction Of A Fourth Division

Year	1	2	3	4	5	Total
Sales	\$104,500,000	\$129,200,000	\$ 112,480,000	\$ 95,005,000	\$117,290,000	
P (i.e., Ebit/Sales) ^a	—	.1381	.1722	.1958	.2330	
fw (i.e., fixed assets plus working capital/ sales) ^a	—	.2146	.0718	.0845	.0197	
Projected return on incremental sales minus minimum return (p - p min) ^b	—	.0971	.1585	.1797	.2292	
Shareholder present value increase ^c	—	\$ 10,112,700	\$ -10,018,900	\$ -10,647,700	\$ 15,832,800	\$5,279,900

^a Calculated using data in Exhibit IV

^b See footnote #5

^c Calculated using Equation (3)

After computing expected values, Equation (3) is used to generate the annual present value increases and decreases in shareholder wealth shown in Exhibit IV. All things considered, the addition of a land development is expected to increase shareholder wealth by more than \$5 million over the planning period. Variations of this strategy, including different assumptions about sales, are easily tested with the spreadsheet routine.

Conclusion

Formal strategic planning began with major corporations in the 1950s. The real estate industry, mainly because of the dominance of smaller firms, has been slow to follow industrial corporations in developing long-term strategic plans. However, such planning may be the key to survival for building/development firms in the future. The effect of alternative corporate strategies on the financial characteristics of the firm now can be analyzed instantaneously with the appropriate financial model and computer software.

NOTES

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2. Brealey, Richard and Meyers, Stewart. *Principles of Corporate Finance*. New York: McGraw-Hill Book Company, 1984.
3. Morris, William T. "On the Art of Modeling," *Management Science* 13 (August, 1967): B-707-717.
4. Leinberger, Christopher B. "Strategic Planning Leads to Increased Bottom Line," *National Real Estate Investor* (February, 1986): 38-46.
5. Rappaport, "Selecting Strategies that Create Shareholder Value," *Harvard Business Review* 59 (May-June, 1981): 139-149.
6. Shareholder wealth does not change when the value of the inflows and outflows are equal such that

$$\frac{p'_t(1-T)}{k} = \frac{(f_t + w_t)}{(1+k)}$$

And, so a breakeven incremental return on sales (p min) can be obtained from the previous equation as

$$p' \text{ min} = \frac{(f+w)k}{(1-T)(1+k)}$$

7. In a boom economy it is assumed that a decline in sales would not take place.
8. The spreadsheet program converts these percentages to dollars.