

Data, Notes, and References for Blog Post on the Economics of the Empire State Building

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August 17, 2020

I. The Empire State Building vs. Kingston and Clark

1. Clark and Kingston

Data for the Clark and Kingston skyscraper can be found in Clark and Kingston (1930), and their key table is given here.

TABLE No. 1
SUMMARY OF INVESTMENT COST, GROSS AND NET INCOME AND RETURN UPON INVESTMENT
(Assuming land value at \$200 per square foot)

	8-Story Building	15-Story Building	22-Story Building	30-Story Building	37-Story Building	50-Story Building	63-Story Building	75-Story Building
INVESTMENT								
A. LAND (81,000 sq. ft. @ \$200).....	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200
B. BUILDING.....	4,769	7,307	9,310	11,775	13,808	16,537	19,390	22,558
C. CARRYING CHARGES:								
1. Interest during construction:								
(a) Land (6% on cost for full period).....	810	972	1,134	1,296	1,458	1,620	1,780	1,944
(b) Building (6% on cost for half period).....	119	219	326	471	622	826	1,065	1,353
2. Taxes during construction—Land.....	292	350	408	466	524	584	642	700
3. Insurance during construction.....	3	5	8	12	21	35	65	95
TOTAL CARRYING CHARGES.....	\$1,224	\$1,546	\$1,876	\$2,245	\$2,625	\$3,065	\$3,552	\$4,092
D. GRAND TOTAL COST.....	22,193	25,053	27,386	30,220	32,633	35,802	39,142	42,850
Total assignable to Land.....	17,302	17,522	17,742	17,962	18,182	18,404	18,622	18,844
Total assignable to Building.....	4,891	7,531	9,644	12,258	14,451	17,398	20,520	24,006
INCOME								
E. GROSS INCOME.....	1,819	2,780	3,483	4,181	4,755	5,581	6,302	6,901
F. EXPENSES:								
1. Operating.....	311	482	592	723	814	942	1,058	1,213
2. Taxes.....	479	541	591	653	725	774	846	926
3. Depreciation.....	95	146	186	235	276	331	388	451
TOTAL EXPENSES.....	\$885	\$1,169	\$1,369	\$1,611	\$1,795	\$2,047	\$2,292	\$2,590
G. NET INCOME.....	934	1,611	2,114	2,570	2,960	3,534	4,010	4,311
NET RETURN								
H. NET RETURN ON TOTAL INVESTMENT.....	4.22%	6.44%	7.73%	8.50%	9.07%	9.87%	10.25%	10.06%
I. INCREASE IN INVESTMENT FROM LAST ADDITION OF STORIES.....	.....	\$2,860	\$2,833	\$2,834	\$2,413	\$3,169	\$3,340	\$3,708
J. INCREASE IN NET INCOME RESULTING THEREFROM.....	.....	677	503	456	390	574	476	301
K. NET RETURN ON INCREASE IN INVESTMENT.....	.....	23.69%	21.51%	16.09%	16.15%	18.13%	14.25%	8.12%

Note the following:

- For simplicity, we compare the original ESB design of 80-stories to the highest-profit building of 63 stories.
- CK assume that total revenue is based on 100% occupancy.
- There are no additional financing costs beyond during construction (and for which are common for all buildings).
- Their key measure of return on investment (ROI) is the annual net operating income for one year (total revenue from 100% occupancy minus operating costs divided by the total cost to buy the land and erect the structure). The inverse of this ROI is the number of years it would take to earn back the total costs (without discounting).

- Line (H) shows the 63-story building has an ROI of 10.25% and the 75-story one has an ROI of 10.06%.

2. The Empire State Building

Data for the estimates from the Empire State Building is primarily from the summary cost and income sheet produced by the ESB developers and from other publicly available sources. Their estimates are reproduced here, and is take from Willis (1995).

55 Storeys		80 Storeys	
Land -----	-\$16,000,000	Land -----	-\$16,000,000
29,000,000 sq. ft. @ \$1.00 -----	29,000,000	34,000,000 sq. ft. @ \$1.00 (25 addtl storeys) -----	34,000,000
Total cost -----	45,000,000	80 x 240 -----	50,000,000
1st Mtg (5% - 2% S.F.) -----	25,000,000		27,500,000
Balance -----	20,000,000		22,500,000
2nd Mtg (6% with 20% of Com. Stk as bonus) -----	10,000,000		12,500,000
Balance -----	10,000,000		10,000,000
Pfd. Srk (7% with 80% of Com. bonus) -----	10,000,000		10,000,000
I N C O M E			
1,750,000 sq. ft. @ \$3.25 -----	5,690,000	1,750,000 sq. ft. @ \$3.25 -----	5,690,000
Vacancies 10% -----	570,000	330,000 " " @ \$4.00 -----	1,310,000
	5,120,000		7,000,000
Op. Exp. 1,750,000 sq. ft. @ 75¢ -----	1,312,500	2,080,000 sq. ft. @ 75¢ -----	1,560,000
Taxes 40,000,000 " @ \$2.66 -----	1,047,500	44,000,000 " @ \$2.66 -----	1,170,000
Total Expense -----	2,360,000		2,730,000
Bal. for Capital -----	2,760,000		3,570,000
1st Mortg. Interest -----	1,375,000		1,510,000
	1,385,000		2,060,000
1st Mtg. S. F. 2% -----	500,000		550,000
	885,000		1,510,000
2nd Mtg. Int -----	650,000		810,000
Bal. for owners -----	235,000		700,000
\$10,000,000 - 7% Pfd. Stk -----	700,000		700,000
Bal. for Com. Stk -----	465,000		

Handwritten notes:
 2.49 \$12,500,000
 1.1 \$10,000,000
 \$1,000,000
 \$2,500,000
 \$2,000,000
 \$2,000,000
 \$2,000,000

Figure 1: original costing sheet for the Empire State Building. Source: Willis (1995).

Note that the original plans for the ESB called for an 80-story building with 2.08 million square feet of rentable space. By early January 1930, this changed to a building with 85 stories of offices, two observation decks (one on the 86th floor, and one in the mooring mast on floor 102). The total rentable office space stayed about the same.

Also note that similar to Clark and Kington, the taller of the two buildings that they priced out was more profitable (e.g., $(5.12-2.36)/45=0.0613$ vs. $(6.3-2.73)/50 = 0.0714$).

Smith and Raskob estimated a total construction cost of \$34 million. The actual cost was substantially lower at \$24.7 million ([Emporis entry for ESB](#)). If the original cost was used it would have reduced the ROI to 7.9%. Furthermore, their costing sheet did not include land carrying charges. To make their land costs comparable to those of CK—item (C)—we calculated the fraction of CK’s total cost assignable to the item (C) (10%). We then increased the ESB’s last cost by this amount. For revenues, we assume the maximum amount of \$7 million and used their operating expenses given in the table.

II. Empire State Building Market Value Sources

1931: Total construction cost of \$41 million. Discussed above. (\$16 million + \$25 million)

1934, 1935, 1937, 1940, 1945, 1946: Market values taken as assessed values from NYC.

Sources: Values reported in respective years in *The New York Times*. Before WWII, assessed values were close to a 100% of market values.

1951: Sale price of \$51 million from Ennis (1961).

1961: Building sale price of \$65 and land sale price of \$17 million from Ennis (1961)

1991: Estimated market value of \$600-800 million from Hylton (1991). We assume the average of \$700 million.

2001: Average of NOI for 1999-2001 divided by cap rate of .05.

Year	NOI
1999	16,164,218
2000	30,167,523
2001	53,145,005
Avg.	\$ 33,158,915
Market Value (5% cap rate)	\$ 663,178,306.67

Source: SEC 10K Reports for 2002 and 2001 for the Empire State Building Associates, in the EDGAR database.

2013: Estimated market value of \$2 billion from several sources:

- First is from [Samtani and Pincus \(2013\)](#). Given the argument among parties, there were several estimates about the ESB’s market value.
 - o \$1.89 billion value by the REIT itself.
 - o \$2.2 billion offer from outside investors

Taking the average gives about \$2 billion.

- Additionally, if we use a three-year moving average (2011, 2012, 2013) of net income that was submitted for the ESB to the [NYC Department of Finance](#) we get the following (assuming a 5% cap rate, which is typical for New York Real Estate (based on a email correspondence with Adam Pincus, of [PincusCo Media](#))).

Year	NOI
2011	\$ 96,961,280
2012	\$ 99,356,204
2013	\$ 106,528,619
Avg.	\$ 100,948,701
Market Value (5% cap rate)	\$ 2,018,974,020

2019: Average of NOI from [NYC DOF](#) for 2017-2019 divided by cap rate of 0.05.

Year	NOI
2017	\$ 107,119,619
2018	\$ 115,179,324
2019	\$ 124,178,467
Avg.	\$ 115,492,470
Market Value (5% cap rate)	\$ 2,309,849,400

Notes

Figure 1 Sources: Left image is from Willis (1995). Center is image is from [Wikipedia entry](#) for the ESB. Right image is from Clark and Kingston (1930).

Note that land values of \$175-200 per square foot, while high, were certainly not excessive for the times. For example, in 1928, the southeast corner of Broadway and 43rd Street sold for \$278 per square foot. Closer to Grand Central, a lot at 5th Avenue and 43rd Street sold for \$376 per square foot (*NY Times*, 1928). Similarly, average rents of less than \$4.00 per square foot were not excessive given that the *Wall Street Journal* reported in 1936 about the Grand Central district, “Rents on average declined about 60% from the 1928-29, when floor space in the better buildings was renting at around \$5 to \$7 a square foot.” Having said that, on average, land values in 1929 were likely above a sustainable level. We should not, however, judge land values in the Roaring Twenties by the events of the Great Depression, which was utterly unpredictable and novel.

While the economics of skyscrapers in 1929 favored a tall building on the site, even for 1929 standards the Empire State Building was likely [economically too tall](#). The first design by Bethlehem Engineering—the 50-story showroom, loft, and office building (with two million square feet (185,806 m²) of office space—better reflected the economic characteristics of the neighborhood and the rents that were possible. Smith and Raskob were gambling that they could improve the character of the neighborhood with their iconic structure. Whether their gamble would have paid off or not if the Great Depression never occurred is debatable.

Quote that the ESB “was said to be the highest price ever paid for an office building” is from Ennis (1961).

Quote: “The structure...is now reported to be one of the most profitable single building operations in the world” is from *NY Times* (1951).

Quote: “If it could be sold outright, unencumbered by the leases, the building would have a value of \$600 million to \$800 million in today’s real estate market” is from Hylton (1991).

The foreign investors he represented lost money on the gamble, and Trump walked away with substantial brokerage fees is from Bagli (2002).

The value of the S&P Stock Index is from <https://www.measuringworth.com/>, “The Annual Standard and Poor's Composite Stock Index, the Yield, and the Accumulated Index of "Portfolio" with Dividends Reinvested -- 1871 to Present.” We just used the Composite Index from 1931 to 2019, normalized with a starting value of 41, the same value as the cost of the Empire State Building (in millions).

Figures for observation deck attendance and revenues is from the [Annual Reports](#) of the Empire State Realty Trust.

References

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