| Basic X variables | Column Name in dataset (compstate) | Definition |
| --- | --- | --- |
| number of common shares outstanding | cshoq |  |
| Common Shares Traded | cshtrq |  |
| Capital Expenditure | capxy | funds used by a company to acquire, upgrade, and maintain physical assets |
| Revenue | revtq (quarterly) / revty (yearly) | Our target1 |
| Operating Income (After Depreciation) | oiadpq / oiadpy | total earnings from its core business functions |
| Net Income | niq / niy |  |
| Operating Expense | xoprq/xopry |  |
| Shareholder’s Equity | teqq |  |
| Total Assets | atq |  |
| EPS | epsfiq / epsfxq/epspiq/epspxq  choose one with the fewest missing value | how much profit each outstanding share of common stock has earned |
| Interest expense | tieq / tiey | Only used to calculate EBITDA |
| Pretax Income | piq / piy | Only used to calculate EBITDA |
| Income Taxes | txtq | Only used to calculate EBITDA |
| Ps: Pretax Income = Net Income + Income Taxes |  |  |
| Depreciation and Amortization | dpq | Only used to calculate EBITDA |
| Current Liabilities | lctq | Only used to calculate quick ratio and CFROI |
| Current Assets | actq | Only used to calculate quick ratio |
| Inventories | invtq | Only used to calculate quick ratio |
| Close Price | prccq | Only used to calculate RSI |
|  |  |  |
| Maybe some variable from “Industry Specific Quarterly.csv  ” but not sure which columns are related to real estate… | Need to merge the dataset and filter those columns with few missing values to decide |  |
| Operating Income Taxes | uopittq  In “Industry Specific Quarterly.csv” (not sure whether it is for real estate industry) | Only used to calculate EVA |
| Operating Activities - Net Cash Flow (OFC) | oancfy | Only used to calculate CFROI |

| Features Engineering | Calculation | Definition |
| --- | --- | --- |
| EBITDA | First calculate EBIT =  Net Income + Interest expense+ Income Taxes = Pretax Income + Interest expense  Then EBITDA =  EBIT+Depreciation+ Amortization | Our target2 |
| Debt to Total Asset | Total Debt / Total Assets  = 1 - Shareholder’s Equity / Total assets | grasping financial health and stability (Solvency) |
| NI to Asset | NI/Average asset |  |
| ROA | net income / total assets | how profitable a company is relative to its total assets |
| ROE | net income / shareholder’s equity | how profitable a company is relative to its net assets |
| Revenue Growth | (current period revenue – previous period revenue) / previous period revenue |  |
| Operating Income Growth | (current period Operating Profit – previous period Operating Profit) / previous period Operating Profit |  |
| Net Income Growth | (current period Net Income – previous period Net Income) / previous period Net Income |  |
| Quick Ratio | ​current assets - inventories ​​/ current liabilities | indicate liquidity |

| **Others** | **Calculation** | **Definition** |
| --- | --- | --- |
| relative strength index (RSI) | 100 – 100 / (1 + RS)  RS = Average gain/Average loss | a momentum oscillator that is widely used in technical analysis of stocks and commodities to identify changes in momentum and price direction |
| MVA (Market value-added) | Market Value of Shares – Book Value of Shareholders’ Equity | the amount of wealth that a company is able to create for its stakeholders since its foundation |
| CFROI (Cash flow return on investment) | Operating Cash Flow (OCF) / Capital Employed  CE = Total Assets – Current Liabilities | a proxy for a company's economic return |

Final version:

**Table 1:** X Variables Construction

| Basic X variables | Column Name in dataset (compstate) | Definition |
| --- | --- | --- |
| Number of common shares outstanding | cshoq |  |
| Common Shares Traded | cshtrq |  |
| Capital Expenditure | capxy | Funds used by a company to acquire, upgrade, and maintain physical assets |
| Revenue | **revtq (quarterly)** | **Our target1** |
| Operating Income (After Depreciation) | oiadpq | Total earnings from its core business functions (Not use it in EBITDA prediction due to target leakage) |
| Net Income | niq |  |
| Operating Expense | xoprq |  |
| Shareholder’s Equity | teqq |  |
| Total Assets | atq |  |
| EPS | epsfiq | How much profit each outstanding share of common stock has earned |
| Features Engineering | **Calculation** | **Definition** |
| EBITDA | Operating Income + Depreciation and Amortization | Our target2 |
| Debt to Total Asset | Total Debt / Total Assets  = 1 - Shareholder’s Equity / Total assets | Grasping financial health and stability (Solvency) |
| NI to Asset | NI/Average asset |  |
| ROA | net income / total assets | How profitable a company is relative to its total assets |
| ROE | net income / shareholder’s equity | How profitable a company is relative to its net assets |
| Revenue Growth | (current period revenue – previous period revenue) / previous period revenue |  |
| Operating Income Growth | (current period Operating Profit – previous period Operating Profit) / previous period Operating Profit |  |
| Net Income Growth | (current period Net Income – previous period Net Income) / previous period Net Income |  |
| Quick Ratio | ​current assets - inventories ​​/ current liabilities | Indicate liquidity |
| RSI (Relative Strength Index) | 100 – 100 / (1 + RS)  RS = Average gain/Average loss | A momentum oscillator that is widely used in technical analysis of stocks and commodities to identify changes in momentum and price direction |
| MVA (Market value-added) | Market Value of Shares – Book Value of Shareholders’ Equity | The amount of wealth that a company is able to create for its stakeholders since its foundation |
| CFROI (Cash flow return on investment) | Operating Cash Flow (OCF) / Capital Employed  CE = Total Assets – Current Liabilities | a proxy for a company's economic return |

#### 