MOODY'S ANALYTICS

METHODOLOGY

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EDF-X Smart Projections At A Glance

Introduction

Analysing financial statements to assess company health is a key step when making a lending or investment decision. Financial ratios and risk scores are widely understood and commonly used by practitioners for this purpose. However, to gain a comprehensive understanding of the financial capacity of a borrower, counterparty, or client, it is often necessary to take the analysis one step further by simulating companies under hypothetical, yet realistic, business scenarios. This ability to test financial statements under flexible assumptions is an important piece in the toolbox of underwriters, credit officers, portfolio managers and consultants.

EDF-X Smart Projections represent a flexible tool for projecting financial statements under user-defined business scenarios. The methodology utilizes parameter values derived from Moody's extensive database of historical financial statements and produces annual "pro forma" financials at a multi-year horizon. EDF-X Smart Projections is a fast and scalable solution for creating individual company-level results as well as portfolio-level projections, ensuring consistency with regards to the business scenarios used.

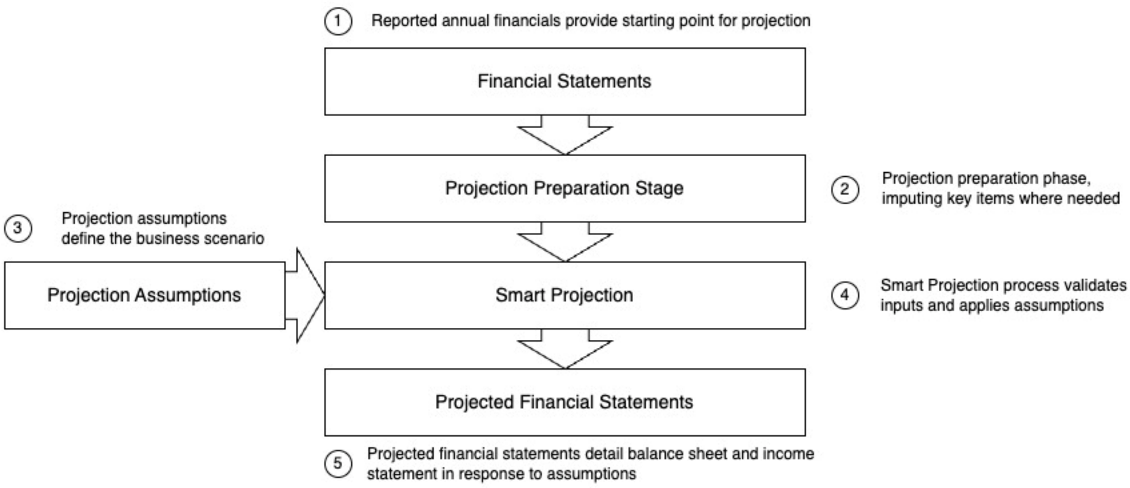
Table of Contents

Methodology Overview

EDF-X Smart Projections combines Moody's deep data assets, proprietary models and experience working with risk management teams, ultimately providing a future view of company-level financial performance given business environment changes. Further, EDF-X leverages extensive ownership information from [Orbis](). Orbis contains entity data on over 450 million companies and entities across the globe, captured from a diverse range of sources. Coverage spans all regions, with over 70 million records in North America, greater than 65 million in Central and South America, over 140 million entries in Europe, more than 115 records in Asia, and over 60 million across the Middle East, Africa and Oceania. Orbis includes extensive historical financial statement data and ratios for both public and private entities updated with new financial statements as soon as they become available, providing a rich supply for the projection process.

EDF-X Smart Projections includes the five steps shown in Figure 1.

Figure 1: Smart Projections Process Overview



Step 1: Financial Statement Starting Point

The most recent annual financial statement is used as the projection starting point; statements are sourced directly from EDF-X based on the Orbis data or loaded by the user.

Step 2: Projection Preparation Stage

Any missing line items in the initial financial statement are imputed using one of two methods:

- Calculated using available values and accounting rules; for example, *Operating Expenses* can be calculated from the *Gross Profit* less *Operating Profit*.
- Calculated as a ratio of populated line items using sector-specific ratios derived from historic statements. For example, missing *Cash* values can be populated based on the sector-specific ratio of *Cash-to-Assets*.

Step 3: Projection Assumptions

User-provided assumptions define a changing business environment that impacts a company's future financial performance. A number of assumptions can be used, as shown in Table 2.

Step 4: Smart Projection

EDF-X Smart Projections combines the initial financial statement with the user-supplied business assumptions, validates the inputs and applies the assumptions to produce multi-year projected financial statements. Further, EDF-X Smart Projections maintains the following:

- If an assumption is not specified, the initial statement value is used throughout the projection horizon unless otherwise specified. Each assumption is explained in detail in Table 2, along with the impact on the approach.

- A company's *Cash* position cannot fall below 4% of *Total Sales*. If this does occur, then new *Short-Term Debt* is originated to return the *Cash* position to the minimum level. This financing appears on the balance sheet under *Notes Payable* and the *Financing Costs* are equivalent to those observed in the initial statement.

- Accounting rules and principles are implemented; for example, the remainder of *Net Income* not paid out as a dividend is classified as *Retained Earnings* in the next period and held as *Cash* and *Marketable Securities* on the balance sheet.

Step 5: Projected Financial Statements

EDF-X Smart Projections provides future values for the items in Table 1 over a horizon of up to five years.

Table 1: Projected Financial Statement Line Items

INCOME STATEMENT	BALANCE SHEET – ASSETS	BALANCE SHEET – LIABILITIES AND EQUITY
Sales	Cash	Accounts Payable
Cost of Goods Sold (COGS)	Accounts Receivable	Short-Term Debt
Gross Profit	Inventory	Notes Payable
Operating Expenses	Current Assets	Current Maturities of Long-Term Debt
Finance Costs	Fixed Assets	Current Liabilities
Profit Before Tax and Extraordinary Items	Intangibles	Long-Term Debt
Extraordinary Items	**Total Assets**	Non-Current Liabilities
Tax		**Total Liabilities**
Net Income		Retained Earnings
		Net Worth

Table 2: Business Assumptions List

PROJECTION ASSUMPTION	PURPOSE	IMPACT DESCRIPTION	USE THIS TO
Sales	Directly impact Sales growth\decline.	One of the most important levers for impacting future performance of a company. The Sales revenue assumptions are applied for the entirety of the projection horizon. Sales revenue is constrained and cannot fall to zero during the projection period.	To capture the effects of a downturn, change in consumer behavior or a shifting competitive landscape.
Cost of Goods Sold (COGS)	Directly impact the cost of producing goods and services sold by the business.	This is an important lever of Gross Profit, as any increase or decrease in COGS is proportional to an increase or decrease in Sales revenue in cases where no explicit assumptions are provided. Where a Gross Profit margin assumption is provided and not a COGS assumption, COGS will be constrained by the change specified in the Gross Profit margin.	To capture increased wage or raw material costs and their impact on profitability.
Selling and General Administration (SGA)	Impact a wide variety of items related to the cost of doing business.	The impact is transmitted through the Operating Expenses line of the income statement and directly impacts a company's Operating Profit. If no change in SGA or EBITDA margin is specified, then a sector-specific parameter governing the elasticity of SGA to changes in Sales is used. This is determined from historic data.	To capture costs that will impact the business's profitability, such as salaries, rent, marketing, or other overhead costs.
Earnings Before Interest Tax Depreciation and Amortization (EBITDA)	Impact the core profitability of company from its operations by excluding Non-Operating Expenses such as Interest, Taxes, and Non-Cash Expenses like Depreciation and Amortization.	The impact on EBITDA margin is transmitted through the SGA line item via an increase or decrease in margin, resulting in the corresponding change in SGA. If no change in SGA or EBITDA margin is specified, a sector-specific parameter governing the elasticity of SGA to changes in Sales is used. This value is determined from historic data.	Provide a direct comparison of profitability across companies and industries, as it removes the effects of financing and accounting decisions, tax environments, and different capital structures.
Dividend Pay-Out Ratio	Disperse earnings to shareholders and remove Cash from the business.	Distributes a percentage of Net Income from the business to shareholders. The dividend pay-out ratio is paid out as a percentage of Net Income from the current year, prior year Retained Earnings cannot be distributed in subsequent years. Where an assumption is not provided, then the dividend ratio from the initial statement is used. If a value from the initial statement cannot be calculated, then the observed industry average is imputed and used. If there is no industry data, then a default value of 25% will be used. Dividend can only be paid from positive Net Income.	Take excess Cash out of the business, reflecting realistic shareholder compensation.
New Debt	To finance growth and expansion of the business or improve liquidity by boosting Cash reserves.	New Debt is originated at the start of each month during the projection period. All New Debt is considered to amortize on an equal basis over the specified maturity period and interest is charged on the outstanding principle each month. The interest charged is applied to the Finance Costs line of the income statement. Financing is allocated based on the proportions of Cash, Inventory, and Fixed Assets.	To increase Assets or Inventory, to grow the business or increase Cash reserves, thereby boosting liquidity and the company's ability to meet obligations over the short to medium term.
Tax Rate	Directly impact costs of operating in certain jurisdictions.	The Tax rate is applied to Profit before Tax. If no value is specified, then the tax rate is calculated from the initial statement using the tax paid as a percentage of the Net Income and tax line. Where the initial statement includes a tax benefit, we assume this is not paid as Cash and is tracked as a deferred tax asset on the balance sheet. In such cases we use the default rate of 20% will be used.	To capture changes in tax rate based on where the business operates versus its competitors.

PROJECTION ASSUMPTION	PURPOSE	IMPACT DESCRIPTION	USE THIS TO
Short-Term Debt Interest Rate	Impact borrowing based on changes in economic conditions.	The interest rate payable on Short-Term Debt. The nominal amount of debt in this category remains constant as the outstanding balance is assumed to roll over during the projection period.	To quantify changing economic conditions that short-term borrowing costs, such as inflation and changes in central bank rates.
Long-Term Debt Interest Rate	Impact long-term financing that needs to be refinanced.	The interest rate payable on Long-Term Debt. The nominal amount of debt in this category remains constant and a maturity profile is not required.	To capture changes in long-term borrowing costs.
Extraordinary Item	Directly impact Income or Sales revenue based on one-time\ non-recurring items.	The extraordinary item impact is applied to Net Income as a percentage of the Sales revenue. This impact can be applied as a single or multi-year event to either the cost or revenue line item.	To record gains or losses from the sale of a major Asset, losses from a natural disaster or litigation expenses.
Depreciation Rate	Allocating cost of tangible assets over their useful life.	The Depreciation Rate is applied to the Fixed Assets line item and reduces the value of the asset over time. Further, it reduces Net Income by the same amount. The value is recorded on the Total Depreciation line. The value of Fixed Assets returns to the initial statement amount, with the cost being borne from Cash and marketable securities.	To spread the cost of Fixed Assets over the life matching the cost of assets with the revenue they generate.
Amortization rate	Allocating cost of intangible assets over their life.	The Amortization Rate shows the current book value of an intangible asset. Intangible assets, such as patents, trademarks, or copyrights, lose value over time as they get closer to their expiration date. The Amortization Rate is used to gradually write off the cost of these assets over their useful life. If the Amortization Rate is not available in the input statement, industry-level values observed historically are used by the process.	Reduce the value of intangible assets over time, reflecting its decreasing value as it is used up.
Write-Off	Account for situations where asset balance sheet values do not match their economic value	Write-offs occur when the reported balance sheet value of an asset significantly exceeds its economic value. Such situations arise from various circumstances, including problems collecting receivables from customers, a decline in inventory value due to technological advancements, shifts in customer preferences or physical damage to fixed assets. Modeling asset write-offs are critical in these scenarios as it ensures the financial statements accurately reflect an asset's diminished value.	Write down assets to their reduced economic value
Fixed Assets	Long-term tangible assets, such as land, buildings, and machinery, that are not intended for sale and are used in the production or provision of goods and services.	Company investment and divestment decisions in fixed assets provide insights into strategic planning, growth prospects and asset utilization. Additionally, fixed assets often constitute a significant portion of a company's balance sheet and impact future profitability and cash flows.	Account for changing investment strategies

Using Smart Projections

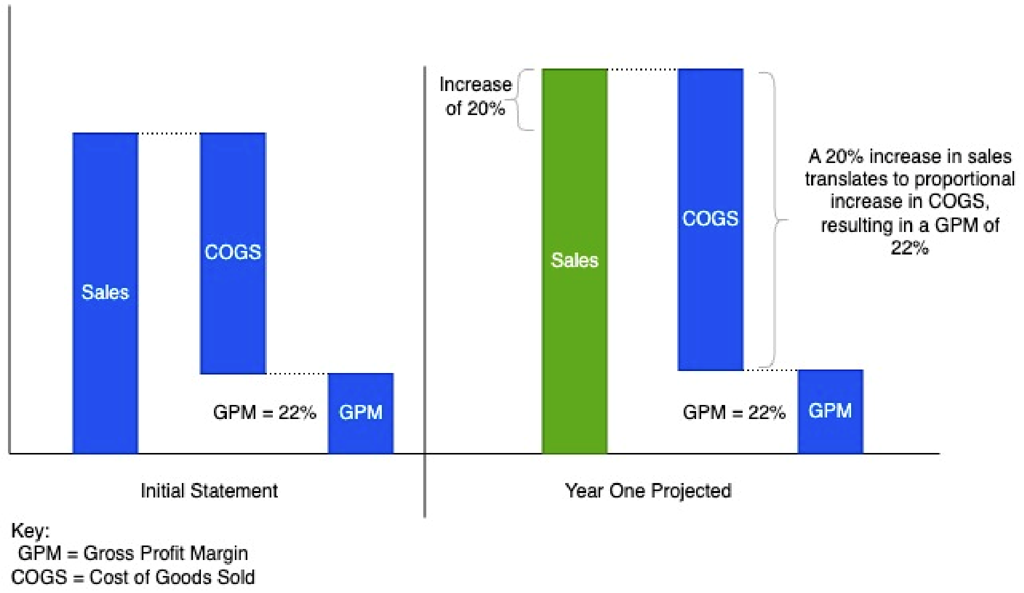
In this section, we provide a brief guide for using EDF-X Smart Projections. To illustrate, we take the example of a fictitious company and apply two assumed business projections:

- Scenario One: A 20% increase in Sales.
- Scenario Two: A 20% increase in Sales combined with a Gross Profit margin improvement of 5%.

Scenario One: Increase in Sales

In Scenario One, it is assumed that the 20% increase in Sales revenue leads to a corresponding increase in COGS, resulting in a constant Gross Profit-to-Sales ratio. Essentially, any change in an assumption causes proportional adjustments in other income statement components, assuming all else remains equal. Figure 2 illustrates the relationship between Sales and COGS.

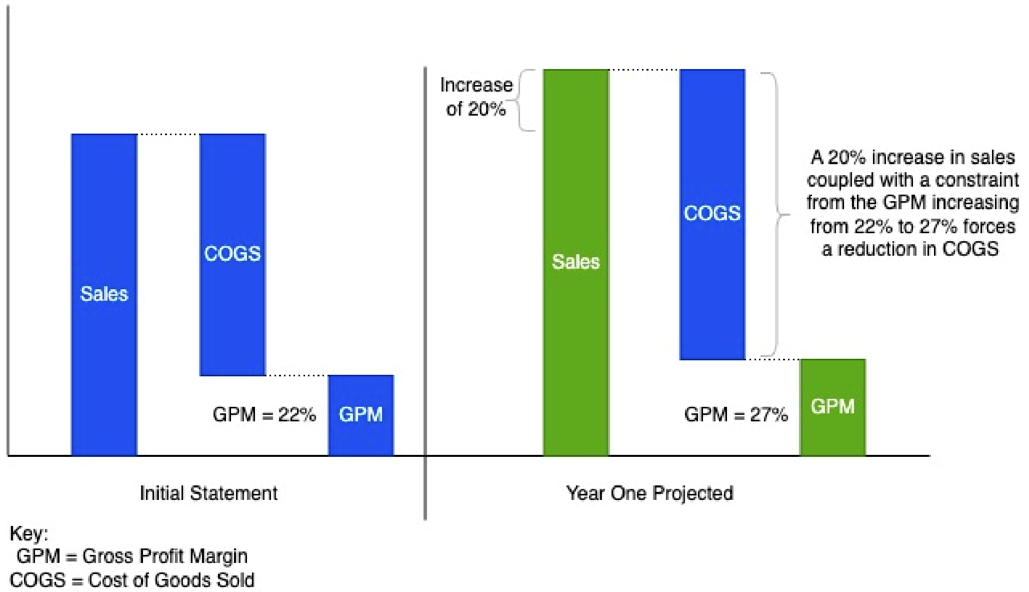
Figure 2: Scenario One Projections



Scenario Two: Increase in Sales and Improvement in Gross Profit Margin

In Scenario Two, an additional constraint is applied to the Gross Profit margin, suggesting the company is more efficient and leading to a margin increase of five percentage points. This, when combined with the Sales revenue increase, forces COGS downward to meet the constraints of our assumptions. Figure 3 illustrates the change in Sales and the improving Gross Profit margin constraining COGS.

Figure 3: Scenario Two Projections



Smart Projections Worked Example

With the above in mind, we will now walk through an example of EDF-X Smart Projections. Table 3 details the business assumptions we have applied to a fictitious company. Table 4 shows the projected financial statements for three years into the future, with the projections starting in 2023.

Table 3: Projection Assumptions

	YEAR-OVER-YEAR CHANGE		
PROJECTION ASSUMPTION	YEAR 1	YEAR 2	YEAR 3
Sales	+10%	+5%	0%
Gross Profit Margin	+5%	+2.5	-1%

Table 4: Projected Financial Statements

INCOME STATEMENT	2022 ACTUAL	2023 (F)	2024 (F)	2025 (F)
Sales[1]	585.7	644.3	676.5	676.5
Cost of Goods Sold (COGS)	-	329.8	329.8	337.1
Gross Profit	-	314.5	346.7	339.4
Operating Expenses	-	202.3	202.5	202.5
Finance Costs[2]	10.9	10.9	10.9	10.9
Profit Before Tax and Extraordinary Items	43.1	101.3	133.3	126.1
Extraordinary Items	-	-	-	-
Tax	-	2.0	2.6	2.5
Net Income	**46.2**	**99.4**	**130.7**	**123.6**
EBITDA	**249.6**	**307.7**	**339.7**	**332.5**
BALANCE SHEET				
Cash	248.4	310.4	401.6	494.4
Accounts Receivable[3]	190.0	209.0	219.5	219.5
Inventory[3]	25.5	28.1	29.5	29.5
Current Assets	507.2	590.8	693.8	786.6
Fixed Assets	746.9	746.9	746.9	746.9
Intangibles	-	-	-	-
Total Assets	**1,254.1**	**1,337.7**	**1,440.8**	**1,533.6**
Accounts Payable	89.9	98.9	103.8	103.8
Short-Term Debt[2]	190.7	190.7	190.7	190.7
Notes Payable	190.7	190.7	190.7	190.7
Current Maturities of Long-Term Debt				
Current Liabilities	567.0	576.0	580.9	580.9
Long-Term Debt[2]	354.6	354.6	354.6	354.6
Non-Current Liabilities	354.6	354.6	354.6	354.6
Total Liabilities	**921.6**	**930.6**	**935.6**	**935.6**
Retained Earnings[4]		231.3	329.5	422.3
Net Worth	**332.5**	**407.1**	**505.2**	**598.0**

Of note:

1. *Sales* revenue increases year-over-year based on the values provided, there is no change in sales between 2024 and 2025 as no change was specified.
2. *Financing Costs* remain constant during the projection period as no new debt is required by the company and a change in interest rates has not been specified.

3. Given that no change in *Accounts Receivable* and *Inventory* is specified in the assumptions, the ratio of each of these line items to *Sales* is derived from the initial statement and is used to derive the values relative to *Sales* during the projection period. For example, *Accounts Receivable* is approximately 33% of *Sales* in the initial statement, and thus, the projected value of *Accounts Receivable* is 33% of the projected *Sales* for that year.
4. 25% of *Net Income* is paid to shareholders and the remainder flows to the *Retained Earnings* balance sheet line.

Conclusion

Understanding the financial position of borrowers, counterparties and clients under various business scenarios is a key element of financial risk analysis. EDF-X Smart Projections fills this need, allowing users to simulate the impact of financial disruptions and hypothetical scenarios on a company's financial health. Users can leverage historical economic upheavals—for example, the drop in Sales during the pandemic or an increase in interest rates—to assess the impact on a company's revenues, expenses and overall financial performance. Further, the platform provides a flexible approach for instances when users want to deviate from historical precedent and define their own stress assumptions. By defining business assumptions and applying them across a portfolio, EDF-X Smart Projections provides a robust solution with important use cases in portfolio management, monitoring, stress testing, and risk.

For More Information

To learn more about EDF-X and other Moody's solutions, contact our experts at clientservices@moodys.com.