

# SALES AND PROFIT FORECASTING IN THE INTERNATIONAL ARENA USING PRO FORMA FINANCIAL STATEMENTS

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## ABSTRACT

In an era of flexible foreign exchange rates, with currency values sometimes fluctuating daily, strategies are being employed to minimize the cost of funds and to maximize the return on the investment over time. As international investors explore protection against adverse exchange rate movements, they continue to explore alternative approaches of avoiding risk. By utilizing various tools, the foreign investor can better manage foreign exchange risk and minimize foreign exchange losses due to currency fluctuations.

The purpose of this paper is to demonstrate the procedures required to make sales and profit forecasting for a firm involved in international trade. This is done by constructing pro forma income statements with the help of a spreadsheet program. As it is customary in all forecasting techniques, certain assumptions are made. Once the initial forecasts are made, sensitivity analysis is conducted to see how these assumptions affect the final predictions.

## INTRODUCTION

Forecasting is very useful and powerful technique used in many industries to predict future values of their financial statements. For example, a company may want to find the predicted sales and profit figures for the next 3 years. Although, forecasting is very advantageous, forecasting too far ahead in the future is problematic. This is because macro-environmental factors such as major political, economic, or technological changes can affect your company as well as your products.

To determine future sales and profits, many businesses construct **Pro Forma** financial statements. A Pro Forma is a provisional financial statement of an enterprise. Pro forma financial information can serve useful purposes. Public companies may quite appropriately wish to focus investors' attention on critical components of quarterly or annual financial results in order to provide a meaningful comparison to results for the same period of prior years or to emphasize the results of core operations. In this paper, the Excel spreadsheet program is used to prepare a pro forma income statement.

When looking at growth, a forecaster can begin by

making an initial assumption of a certain percentage of growth, for example, 5%, and then make forecasts of the future based on this assumption. Once the forecast has been made, it is important that a sensitivity (what-if) analysis is performed. Sensitivity analysis looks at the various scenarios that may take place if the initial assumptions do not hold. For instance, if we start out with an initial assumption of 5% growth in sales, we also want to investigate what the estimated profits will be if growth declines to 1% (worst scenario) or if it increases to 10% (best scenario) and of course, all the possible numbers within this range.

## FOREIGN EXCHANGE RISK

Exchange rate risk is a potential problem for anyone engaged in international trade. This includes importers and exporters, multinational companies, banks, investment companies, or even individuals planning to travel abroad.

Relatively small changes in exchange rates can have immediate and significant effects on the economy, ranging from corporate profits to overseas traveling. Large changes in exchange rates can destabilize governments as was demonstrated in the 1990's in Mexico and Southeast Asia.

The effect of foreign exchange risk on U.S. firms can be significant as firms, large or small, have substantial exposure to foreign exchange risk (see, for example, International Trade Statistics 2001 and Crain's List of Largest Exporters, 2000).

## PROCEDURE

The Pro Forma Income Statement presented here is designed to calculate the estimated sales and profits of a company for the years 2005 thru 2008, given the figures for the year 2004 (base year). The estimated sales and profits are affected by such variables as commission rate, annual growth of sales, tax rate, and cost of goods sold (COGS). When one or more of these factors change, the estimated values for profits will also change.

We start by reconstructing the income statement for the base year (2004). Following certain assumptions, we will predict net profits for the years 2005, 2006, 2007 and 2008. The only figures that are given to us are: gross sales for 2004, commission rate, tax rate, annual

growth rate of sales and cost of goods sold (as % of net sales). Given this information, we can figure out the value of commissions, net sales, COGS, gross profits, tax amount, and net profits by using the simple financial formulas in Table 1.

**TABLE 1**

<b>Commissions:</b>	= Gross Sales x Commission Rate
<b>Net Sales:</b>	= Gross Sales - Commissions
<b>COGS:</b>	= Net Sales x COGS Rate
<b>Gross Profits:</b>	= Net sales - COGS
<b>Tax Amount:</b>	= Gross Profits x Tax Rate
<b>Net Profit:</b>	= Gross Profit - Tax Amount

**Constructing Pro Forma for an International Firm**

In order to use pro forma income statements to investigate the effect of exchange rates, we need to make some assumptions:

- A U.S.-based firm has a subsidiary in Japan
- The subsidiary generates all its revenue in Japan.
- The firm relies on Japanese resources, such as raw material and sales force, and pays for them in Yen.
- Since the firm is a U.S.-based company, it must pay income taxes in U.S. The firm pays no tax in Japan.
- The firm is subject to exchange rate volatility.
- Use a simple sales and profit forecasting model.

We can use the same formulas as explained earlier to build pro forma statements for the firm in Japan and the United State. This is summarized in the following:

**TABLE 2**

	A	I	C	D
<b>2</b>	<b>Pro Forma Income Statements in Japan</b>			
<b>3</b>	<b>Sales and Profit Forecasting in the International Arena</b>			
<b>4</b>	<b>(For an American Firm Selling Products in Japan)</b>			
<b>5</b>				
<b>6</b>	Total Sales for 2004 (in Japan):		¥20,000,000	Yen
<b>7</b>	Exchange Rate (\$ vs. Yen):		110	
<b>8</b>	Commission Rate:		10%	
<b>9</b>	Tax Rate in the U.S.:		40%	
<b>10</b>	Annual Growth Rate of Sales		5%	
<b>11</b>	COGS (% of Net Sales):		65%	

To construct the growth of sales in Japan under the

above assumptions, we need to insert the appropriate formulas in our worksheet. Table 3 in the appendix will be displayed.

Now, we need to use the exchange rate to see the results in U.S. dollars. This is demonstrated in Table 4. This table represents the pro forma income statements of the firm in U.S. dollars for the next 4 years. In row 33 we have the estimated net profits for years 2005, 2006, 2007, and 2008. If any one of the assumptions of this problem (for example, exchange rate) changes, it can drastically affect the estimated profits. This type of what-if analysis can be performed with the help of data tables type I and type II.

**SENSITIVITY (WHAT-IF) ANALYSIS**

Once the pro forma income statements are completed, we need to perform sensitivity analysis. For example, what will happen to net profit of the next four years, if sales do not grow by 5% a year? How about the exchange rate? How will changes in exchange rate affect net profits? We can do this in Excel with the help of Data Table commands. There are two types of Data Tables. In type I, change in one factor is investigated and in Data Table type II, two factors are changed simultaneously.

**Data Table Type I**

To perform sensitivity analysis with one variable factor, we need to pick a range of possible values for one of the variables. Let us assume the variable of interest is the exchange rate. The pro forma incomes statements in the previous tables assumed that this rate is 110 and stays the same over the next four years. What if this rate changes anywhere from 100 (worst possible scenario) to 120 (best possible scenario) in increments of 1. In Excel we can type this in cells C23 through C41, for example. The best way to do this is to type 1% in cell C23 and enter the formula =C23+.005 in the cell below it, C24, and then copy it down all the way to cell C41. Since we are interested in finding out the effect of changes in the annual growth rate of sales on the estimated profits of the next four years (2005, 2006, 2007, and 2008), we need to identify the cells that contain this information. Therefore, we type:

- =C33 in cell J10 (cell C33 contains the estimated profits of year 2005)
- =D33 in cell K10 (cell D33 contains the estimated profits of year 2006)
- =E33 in cell L10 (cell E33 contains the estimated profits of year 2007)
- =F33 in cell M10 (cell F33 contains the estimated profits of year 2008)
- Cell I9 is left blank

Now highlight the table starting from cell I10 through cell M31. From the tool bar, click on "DATA", "TABLE" and enter C7 for column input cell on the menu and press "OK." Table 5 will be displayed. The table represents all values of estimated net profits of years 2005-2008 at varying rates of exchange.

### Data Table Type II

Data Table Type 2 expands on the features introduced in Data Table Type 1 by allowing changes in two variables at the same time. Since two factors are changed at the same time, we can only investigate the effect of changes in these two factors on estimated profits of **one year only**. In our analysis, we will investigate the effect of exchange rate and growth rate of sales on the estimated profits of year 2008 as displayed in cell H40.

- Go to an empty area of the worksheet (for example, H40) and type a formula that refers to the cell address that holds the net profit figure for the year 2008, in this case it is =F33.
- Type the various growth rates of sales (for example, 1% through 10%) to the right of cell where =F33 was typed. Instead of typing all the numbers, it is advantageous to use formulas instead.
- Enter exchange rates using the same formulas as in data table 1 in column H starting in cell H41.

After the table is set up, highlight cells H40 through R61 and from the task bar, click on "DATA", "TABLE". On the menu, enter C10 for row input cell and C7 for column input cell and press "OK." Table 6 will appear. The number in cell M51 (\$41,769) corresponds to the original value of estimated profits for year 2008 under the assumption of 5% growth in sales and an exchange rate equal to 110.

### REFERENCES

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### APPENDIX

TABLE 3

	A	B	C	D	E	F
13	Growth of Sales in Japan (in Yen)					
14		2004	2005	2006	2007	2008
15	Gross Sales:	¥20,000,000	¥21,000,000	¥22,050,000	¥23,152,500	¥24,310,125
16	Commissions Paid in Japan:	2,000,000	2,100,000	2,205,000	2,315,250	2,431,013
17	Net Sales:	18,000,000	18,900,000	19,845,000	20,837,250	21,879,113
18	COGS:	11,700,000	12,285,000	12,899,250	13,544,213	14,221,423
19	Gross Profits:	¥6,300,000	¥6,615,000	¥6,945,750	¥7,293,038	¥6,657,689

**TABLE 4**

	A	B	C	D	E	F
21	<b>Growth of Sales in Dollars</b>					
22		2004	2005	2006	2007	2008
23						
24	Gross Sales:	\$181,818	\$190,909	\$200,455	\$210,477	\$221,001
25	- Commissions:	18,182	19,091	20,045	21,048	22,100
26						
27	= Net Sales:	\$163,636	\$171,818	\$180,409	\$189,430	\$198,901
28	- COGS:	106,364	111,682	117,266	123,129	129,286
29						
30	= Gross Profits:	\$57,273	\$60,136	\$63,143	\$66,300	\$69,615
31	- Tax:	22,909	24,055	25,257	26,520	27,846
32						
33	= Net Profits:	\$34,364	\$36,082	\$37,886	\$39,780	\$41,769

**TABLE 5**

	I	J	K	L	M
4	<b>What if exchange rate changes? Assume the range is between 100 to 120.</b>				
5	<b>Sensitivity Analysis: (What-If Analysis)</b>				
6	<b>DATA TABLE TYPE 1</b>				
7	<b>The effect of exchange rate volatility on estimated net profit in U.S. \$</b>				
8					
9		2005	2006	2007	2008
10		=C33	=D33	=E33	=F33
11	100	\$39,690	\$41,675	\$43,758	\$45,946
12	101	39,297	41,262	43,325	45,491
13	102	38,912	40,857	42,900	45,045
14	103	38,534	40,461	42,484	44,608
15	104	38,163	40,072	42,075	44,179
16	105	37,800	39,690	41,675	43,758
17	106	37,443	39,316	41,281	43,345
18	107	37,093	38,948	40,896	42,940
19	108	36,750	38,588	40,517	42,543
20	109	36,413	38,233	40,145	42,152
21	110	<b>\$36,082</b>	<b>\$37,886</b>	<b>\$39,780</b>	<b>\$41,769</b>
22	111	35,757	37,545	39,422	41,393
23	112	35,438	37,209	39,070	41,023
24	113	35,124	36,880	38,724	40,660
25	114	34,816	36,557	38,384	40,304
26	115	34,513	36,239	38,051	39,953
27	116	34,216	35,926	37,723	39,609
28	117	33,923	35,619	37,400	39,270
29	118	33,636	35,317	37,083	38,937
30	119	33,353	35,021	36,772	38,610
31	120	33,075	34,729	36,465	38,288

**TABLE 6**

	H	I	J	K	L	M	N	O	P	Q	R
<b>34</b>	<b>What if exchange rate and growth rate of sales change?</b>										
<b>35</b>	<b>Assume the exchange rate changes between 100 to 120 &amp; sales grow between 1 and 10%.</b>										
<b>36</b>	<b>Sensitivity Analysis: (What-if Analysis)</b>										
<b>37</b>	<b>DATA TABLE TYPE 2 (2008)</b>										
<b>38</b>	<b>The effect of exchange rate &amp; sales volatility on estimated net profit in U.S. dollars.</b>										
<b>39</b>											
<b>40</b>	<b>=F33</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>
<b>41</b>	100	\$39,335	\$40,916	\$42,544	\$44,221	\$45,946	\$47,722	\$49,548	\$51,426	\$53,358	\$55,343
<b>42</b>	101	38,945	40,511	42,123	43,783	45,491	47,249	49,058	50,917	52,829	54,795
<b>43</b>	102	38,564	40,114	41,710	43,354	45,045	46,786	48,577	50,418	52,312	54,258
<b>44</b>	103	38,189	39,724	41,305	42,933	44,608	46,332	48,105	49,929	51,804	53,731
<b>45</b>	104	37,822	39,342	40,908	42,520	44,179	45,886	47,642	49,449	51,306	53,214
<b>46</b>	105	37,462	38,968	40,518	42,115	43,758	45,449	47,189	48,978	50,817	52,708
<b>47</b>	106	37,108	38,600	40,136	41,718	43,345	45,020	46,743	48,516	50,338	52,210
<b>48</b>	107	36,762	38,239	39,761	41,328	42,940	44,600	46,307	48,062	49,867	51,722
<b>49</b>	108	36,421	37,885	39,393	40,945	42,543	44,187	45,878	47,617	49,405	51,244
<b>50</b>	109	36,087	37,538	39,031	40,569	42,152	43,781	45,457	47,180	48,952	50,773
<b>51</b>	110	35,759	37,196	38,677	40,201	<b>41,769</b>	43,383	45,044	46,751	48,507	50,312
<b>52</b>	111	35,437	36,861	38,328	39,838	41,393	42,992	44,638	46,330	48,070	49,859
<b>53</b>	112	35,120	36,532	37,986	39,483	41,023	42,609	44,239	45,917	47,641	49,413
<b>54</b>	113	34,810	36,209	37,650	39,133	40,660	42,232	43,848	45,510	47,219	48,976
<b>55</b>	114	34,504	35,891	37,320	38,790	40,304	41,861	43,463	45,111	46,805	48,546
<b>56</b>	115	34,204	35,579	36,995	38,453	39,953	41,497	43,085	44,719	46,398	48,124
<b>57</b>	116	33,909	35,272	36,676	38,121	39,609	41,139	42,714	44,333	45,998	47,709
<b>58</b>	117	33,620	34,971	36,363	37,795	39,270	40,788	42,349	43,954	45,605	47,302
<b>59</b>	118	33,335	34,675	36,054	37,475	38,937	40,442	41,990	43,582	45,218	46,901
<b>60</b>	119	33,054	34,383	35,751	37,160	38,610	40,102	41,637	43,216	44,838	46,507
<b>61</b>	120	32,779	34,097	35,454	36,851	38,288	39,768	41,290	42,855	44,465	46,119