



Financial Forecasting

TRANSITION FROM FINANCIAL ACCOUNTING TO CORPORATE FINANCE

This brief lecture note covers short-term financial planning. It provides a simple exercise in forecasting financial statements with the purpose of assessing a short-term cash surplus or cash deficiency. Do not view this note as a comprehensive treatment of cash planning. Rather, given that executives spend a lot of time with short-term planning and preparing budgets, it is useful to have a rudimentary understanding of forecasting financial statements.

FORECASTING AT GIDDY-UP CORPORATION

Let's consider the fictional company, Giddy-Up Corporation, in this cursory overview of financial forecasting. Giddy-Up manufactures western hats, which are distributed through retail outlets such as Walmart on the low end and Neiman Marcus on the high end. Exhibit 1 displays the income statement for Giddy-Up during 2017 and 2018, and Giddy-Up's pro forma income statement for 2019. Note that Giddy-Up's income statement is a sparse listing of accounts; income statements for most firms contain far more detail than is presented here. Exhibit 2 displays the 2017 and 2018 balance sheet for Giddy-Up, and the pro forma balance sheet for 2019. As the case for the income statement, the balance sheet for Giddy-Up displays a limited number of accounts, compared to that shown on the balance sheet of most large corporations. There are no line items on either Giddy-Up's balance sheets or income statements with which you should not be already familiar.

The exercise is to construct the 2019 pro forma income statement and balance sheet for Giddy-Up with the goal of assessing any financing needs.¹ The starting point is the revenue line on the income statement.

¹ Note that this is not an advanced valuation course in which you will be required to build an elaborate model of linked spreadsheets including income statements, balance sheets, statement of cash flows, dilution analysis, depreciation schedules, etc. If you are interested in building such financial models which many of us employ in

Given the lack of macroeconomic, industry, and firm-specific data which can be used to assist in forecasting Giddy-Up's revenue for 2019, we assume the same 4.12% growth rate in revenue as realized from 2017 to 2018, and thus arrive at an estimate revenue of \$60.948 million.

For some of the subsequent line items, such as cost of goods sold, we assume that the 2019 estimate is comprised of the same percent of revenue as for 2018, 67.4%. Alternatively, we can assume the 2019 estimate for cost of goods sold is the average percent of revenue during 2017-2018 (67.8%). In many cases, averaging over multiple years is preferable, to minimize the variability of the forecasted estimates. In this example, there is minimal difference across the two years. Due to the 2018 change in the corporate tax rate (which impacts certain calculations), we chose to look back to 2018 only. With respect to selling, general and administrative expenses, as well as to other operating expenses, we also assume the 2019 line items make up the same percent of revenue as they did for 2018.²

The net interest expense drops sharply in 2018, from \$121,000 in 2017 to \$56,000. This decline in the net interest expense is primarily due to two factors: 1) a decline in the long-term debt of Giddy-Up and 2) a corresponding increase in cash balances. As shown on Giddy-Up's balance sheet in Exhibit 2, Giddy-Up's long-term debt declined from \$2.0 million to \$400,000 from 2017 to 2018, and its cash balance increased from \$861,000 to \$966,000 over the same period. Since the line item for net interest expense reflects interest earnings on cash held in addition to actual interest paid, the combination of the substantially reduced debt amount and the increase in cash balances is expected to have a significant reduction in net interest expense, as displayed. Looking forward to 2019, it is likely the net interest expense will be minimal, given the large reduction of debt in 2018, and thus we assume zero net interest expense for 2019.³

Whereas Giddy-Up's corporate taxes paid in 2017 were 37.0% of profit before taxes, the 2018 corporate taxes declined to 21.0% due to the 2018 tax law change. For 2019, we assume the same 21.0% corporate tax rate realized in 2018.⁴ The pro forma net income in 2019 for Giddy-Up is \$3.40 million.

The process for forecasting the line items on the balance sheet is similar to forecasting the line items on the income statement. For most of the balance sheet items, we estimate the 2019 values will have the same percent of sales as the 2018 values. On the asset side of the balance sheet, we note one exception, namely goodwill (net); we keep goodwill fixed at \$4.1 million, assuming Giddy-Up plans no acquisitions

practice, a good starting place is Training the Street (www.trainingthestreet.com), which in addition to providing online training and training at many Wall Street firms, also provides training at MBA programs, including Chicago Booth.

² Judgement is required with respect to forecasting various line items, and it is important you employ economic intuition to back up your assumptions. Moreover, there is no hard and fast rule; each situation can be different.

³ Alternatively, with more information available, we can produce a more precise estimate than zero, but due to the relatively small size of the debt outstanding, more precise estimates are not materially different than those assumed.

⁴ The 21.0% rate is with respect to corporate taxes at the federal level. We assume that Giddy-Up Corporation operates in a zero corporate-tax rate state, such as Texas.

for 2019 (which would result in an increase to goodwill). Likewise, we assume there is no impairment or write down of goodwill created by prior acquisitions.

On the liability side of the balance sheet, we assume Giddy-Up will redeem its \$400,000 remaining debt outstanding in 2019, since it redeemed \$1.6 million in debt in 2018 due to strong net income, and 2019 forecasts to be even more profitable than 2018. In addition, management does not intend to issue new common stock, which will remain fixed at \$182,000.

Retained earnings are not calculated as a percent of sales as we did with many of the line items. Rather, we calculate retained earnings via its link between the income statement and balance sheet, as displayed in Exhibit 3. Retained earnings represent the sum of all prior net profits (or losses), of a corporation, after paying dividends. Giddy-Up retained earnings of \$6.919 million in 2017, which increased to \$8.755 million in 2018. Since Giddy-Up realized net income of \$3.218 million in 2018, we can infer that it paid \$1.382 million in dividends during 2018. That said, dividends paid do not appear on either the income statement or balance sheet. Rather, we can deduce this value based on net income on the income statement and retained earnings on the balance sheet.

To calculate the retained earnings for 2019, the first step is to estimate Giddy-Up's 2019 dividends. Rather than forecasting dividends as a percent of sales, we calculate the dividend payout relative to net income for 2018, which is 42.95%. We assume it will be the same ratio for 2019, thus generating \$1.459 million ($\$3.397 \text{ million} \times 42.95\%$) of pro forma dividends in 2019.

Based on the above assumptions for the 2019 income statement and balance sheet, the value of the pro forma total assets on the balance sheet is \$10.452 million, versus \$11.775 million for the pro forma total liabilities and shareholder equity. The difference of \$1.323 million reflects excess cash. There are two options in terms of handling the \$1.323 million difference. The first is that the excess cash can go on the balance sheet under cash and equivalents, which will increase that amount from \$1.006 million to \$2.329 million (and thus the assets on the left-hand side of the balance sheet equals the total liabilities and equity on the right-hand side). Alternatively, Giddy-Up can issue a special one-time dividend in the aggregate amount of \$1.323 million to its shareholders. After the payment of the special dividend, the retained earnings are \$9.370 million, as opposed to \$10.693 million. In this case, total assets equal total liabilities and equity at \$10.452 million.

Suppose the pro forma estimates for the total assets and total liabilities and equity were reversed. That is, what if the pro forma total assets were \$11.775 million and the pro forma total liabilities and equity were \$10.452 million? In this case, Giddy-Up will have a financing deficiency, and thus will require external capital in the amount of \$1.323 million to support the higher level of assets on the left-hand side of the balance sheet. If management chooses to finance the required cash using equity, the new equity issue appears on the balance sheet via common stock of \$1.505 million. It is thus \$1.323 million higher than the 2018 amount of \$182,000.

Alternatively, Giddy-Up can utilize new debt to make up the financing deficiency of \$1.323 million. If debt rather than equity is employed to eliminate the financing deficiency, the amount raised, however, will have to exceed the \$1.323 million deficiency. Assume for example that Giddy-Up raises \$1.323 million at an

annual coupon, or interest, rate of 6.8%. This debt raise will result in interest expense of \$90,000, which reduces net income by \$71,000, after accounting for a 21% tax rate. As a result, there is less retained earnings due to the decline in net income. That results in a higher financing deficiency than \$1.323 million, given the interdependency between the interest expense and the required external financing.⁵

CONCLUDING THOUGHTS

As indicated at the beginning of this lecture note, my objective is to provide a brief overview of financial forecasting with the goal of assessing the excess cash or cash deficiency in future periods. For those who want to take the Giddy-Up exercise a step forward, you can also estimate the statement of cash flows for 2018 and the forecasted cash flows for 2019 using either the direct or indirect method of computing cash flows (starting with net income).

This note doesn't cover working capital management -- it is just an extension of short-term financial forecasting. With working capital management, the cash cycle is important, since for many corporations, there is a lengthy delay between when they start expending funds on materials, and when they are paid by their customers. Firms which hold large amounts of inventory for long periods of time, and firms which wait lengthy periods before getting paid, must finance this working capital. When these firms grow rapidly, the rapid growth can put huge stress on their near-term financing needs. Likewise, firms subject to seasonal production will exhibit large swings in inventory, and thus must be able to finance inventory build-ups. When Covid-19 wreaked havoc on the world in 2020, many manufacturers attempted to stockpile larger inventories of its basic supplies needed for production, though often without success. The cost of the additional inventory includes the fact that it must be stored, as well as that it needs to be financed on the balance sheet. Indeed, the logic behind just-in-time inventory management is to not only reduce storage costs, but more importantly, to reduce the amount of inventory on the balance sheet, and thus reduce the need for financing.

⁵ It is relatively straightforward to account for this interdependency in Excel. Click "Options," then "Formulas," and check the box next to "Enable iterative calculation." In this example, the financing requirement would be \$1.365 million, assuming an interest rate of 6.8%.

Exhibit 1: Giddy-Up Corporation Income Statement (thousands)

	<u>2017</u>	<u>2018</u>	<i>Pro Forma</i> <u>2019</u>	<u>Comments</u>
Sales	56,219	58,536	60,948	2018 revenue growth
Cost of goods sold	38,296	39,459	41,085	2018 percent of sales
Gross profit	17,923	19,077	19,863	
Selling, general, and administrative expenses	11,930	12,773	13,299	2018 percent of sales
Other operating expenses	2,131	2,174	2,264	2018 percent of sales
Net interest expense	121	56	0	Low net debt balance
Profit before tax	3,741	4,074	4,300	
Provision for taxes	1,384	856	904	2018 percent of profit before taxes
Net income	2,357	3,218	3,397	

Exhibit 2: Giddy-Up Corporation Balance Sheet (thousands)

	<u>2017</u>	<u>2018</u>	<i>Pro Forma</i> <u>2019</u>	<u>Comments</u>
Current Assets				
Cash and equivalents	861	966	1,006	2018 percent of sales
Accounts receivable	1,514	1,652	1,720	2018 percent of sales
Inventory	939	903	940	2018 percent of sales
Other current assets	121	142	148	2018 percent of sales
Total current assets	3,435	3,663	3,814	
Net property, plant, and equipment	2,281	2,416	2,516	2018 percent of sales
Goodwill, net	4,122	4,122	4,122	No new acquisitions
Total assets	9,838	10,201	10,452	
Current Liabilities				
Accounts payable	621	743	774	2018 percent of sales
Other current liabilities	116	121	126	2018 percent of sales
Total current liabilities	737	864	900	
Long-term debt	2,000	400	0	Payoff of all debt
Common Stock	182	182	182	No new equity issuance
Retained earnings	6,919	8,755	10,693	
Total liabilities and equity	9,838	10,201	11,775	
		Excess Cash	1,323	

Exhibit 3: Linking Giddy-Up's Income Statement to the Balance Sheet (thousands)

2017 Retained Earnings	6,919	2018 Retained Earnings	8,755
+ 2018 Net Income	3,218	+ 2019 Pro Forma Net Income	3,397
- 2018 Dividends	-1,382	- 2019 Pro Forma Dividends	-1,459
= 2018 Retained Earnings	8,755	= 2019 Pro Forma Retained Earnings	10,693