Management Accounting

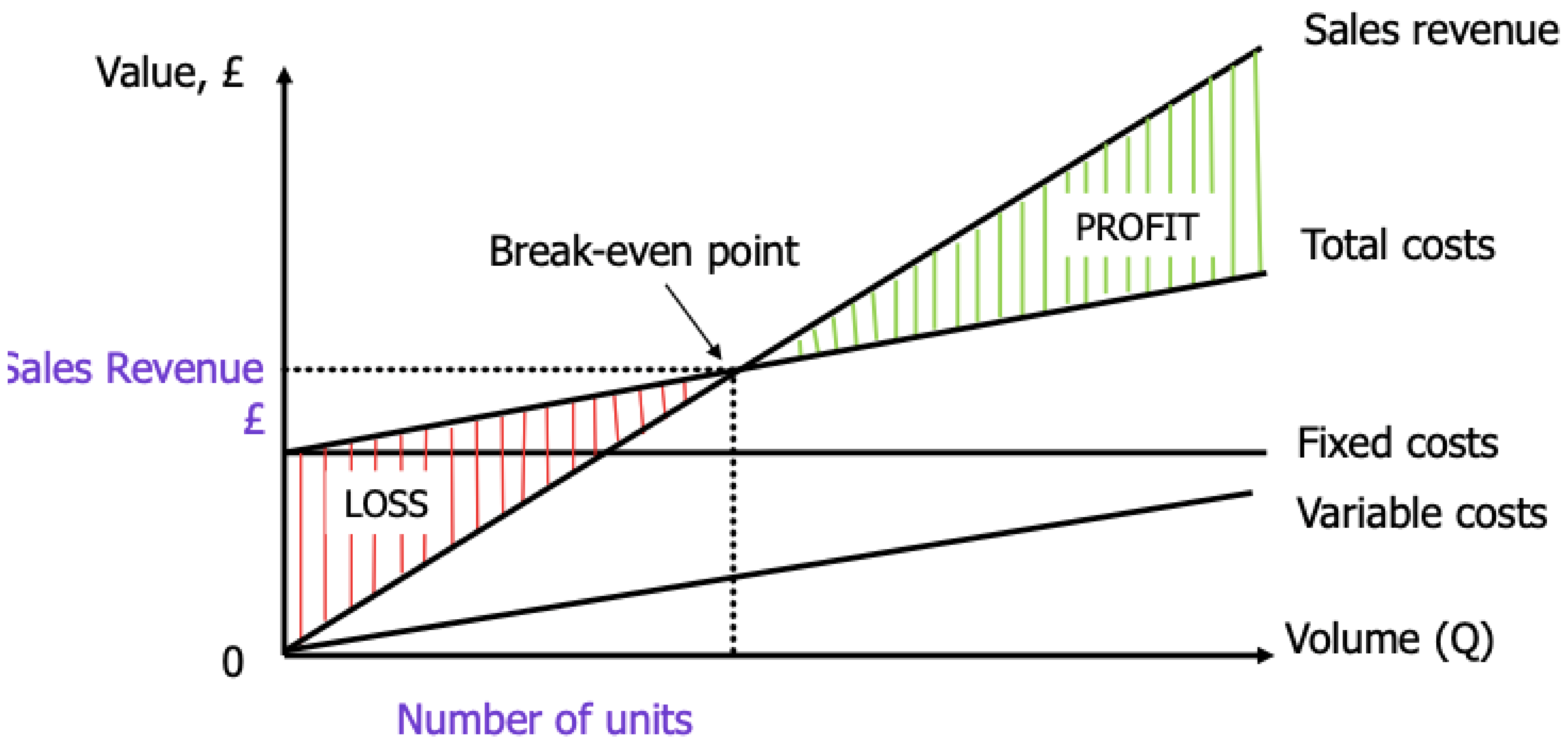
PRACTICAL CLASS 14

NOVA SCHOOL OF BUSINESS & ECONOMICS

Illustration by Ana Seixas

CVP Analysis

HOW PROFITABILITY IS AFFECTED BY VOLUME



$$\textit{Unit Contribution Margin } (CM_{Unit}) = P - VC$$

How much does each unit contributes to profit

$$CM_{\%} = \frac{CM_{unit}}{P} * \frac{Q}{Q} = \frac{CM}{Sales\ Revenue}$$

% of sales available to cover FC and profit

$$BEP_{Units} = \frac{FC}{P - VC},\ BEP_{€} = BEP_{Units} * P$$

Level of Sales such that Profit = 0

$$Safety\ Margin\ 1 = \frac{Sales - BEP}{BEP}$$

Sales are x% above the BEP

$$Safety\ Margin\ 2 = \frac{Sales - BEP}{Sales}$$

Sales may decline x% before the firm incurs into a loss

Note: You can use both units (#) or value (€) if you are consistent!

CVP Analysis

PROFIT LEVEL

Under the CVP Analysis, the Profit of a Company only depends on the volume of the sales against the BEP.

Each unit sold contributes P – VC (CM Unit) to the profit of the firm. The first X ($BEP_{\#}$) units are used to pay the FC, whereas the remaining constitute profit.

Alternatively, from the total value of sales, we know that (CM%) * Sales is divided among profit and payment of FC.

More useful formulas:

$$\boldsymbol{\pi = (Sales\ in\ units - BEP_{Units}) * CM_{Unit}}$$

$$\boldsymbol{\pi = X€ * CM_{\%} - FC}$$

$$\boldsymbol{\pi = (Sales\ revenues\ (€) - BEP_{€}) * CM_{\%}}$$

CVP Analysis

WITH MULTIPLE PRODUCTS

Our analysis so far has assumed a single-product setting. However, most firms produce and sell many products or services.

We can then have 2 situations:

1) Company has direct fixed costs to each product but has no common fixed costs between between both products. In this situation, we only need to calculate two BEPs as we did before
2) Company has common fixed costs. In this situation, we need to calculate a weighted contribution contribution margin based on sales volume (most common situation)

$$\boldsymbol{BEP_{Units}} = \frac{\boldsymbol{FC}}{\boldsymbol{Unit\ CM_x * x\% + Unit\ CM_y * (1-x)\%}}$$, where x% = Sales Mix of Product X in quantities

Exercise

35 –VINHO ESPIRITUOSO COMPANY

Enabling Decision Making

STICK TO WHAT IS RELEVANT, AND PAY ATTENTION TO RESOURCE SCARCITY!

Classification

RELEVANT		IRRELEVANT	
Opportunity Cost	Benefit of the best alternative that was sacrificed	**Sunk Cost**	Past costs that cannot be changed by any current or future action
Avoidable Costs	Costs that can be saved by not adopting an alternative	**Unavoidable Cost**	Costs that cannot be saved by pursuing an alternative
Future Outlay Cost	Costs that vary with the decision	**Committed Cost**	Costs that are agreed in the future and cannot be changed