Contents

Chapter 1

Algorithmic Mindset and Functions

1.1 Coding Performance Evaluation Functions

1.1.1 The Hit Ratio

The hit ratio in trading jargon is the number of past profitable trades divided by the total number of realized past trades. This means that the hit ratio measures the percentage of when you were right about the future direction.

$$\text{Hit ratio} = \frac{\text{Number of profitable trades}}{\text{Number of total trades}} \tag{1.1}$$

1.1.2 The Rate of Return

$$\text{Rate of return} = \frac{\text{New balance}}{\text{Initial balance}} - 1 \tag{1.2}$$

You can also calculate several types of returns, namely, the *gross* rate of return and the *net* rate of return. Surely what should interest you is the latter as it is net of fees.

> Some portfolios switch from winners to losers after removing the costs, which is why it is important to choose a broker with an acceptable fee structure so that it does not eat away your profits over time. Even small differences in commissions can have a huge impact on active traders.

1.1.3 The Profit Factor

The *profit factor* is a quick measure to see how much you are winning for every 1 currency unit of loss. It is calculated as the ratio between gross overall profit and gross overall loss, meaning that you divide the sum of the profits from all profitable trades by the sum of the losses from all losing trades. Mathematically, it is expressed as follows:

$$\text{Profit factor} = \frac{\text{Gross total profit}}{|\text{Gross total loss}|} \tag{1.3}$$

1.1.4 The Risk-Reward Ratio

$$\text{Risk reward ratio } = \frac{|\text{Entry price - Target price}|}{|\text{Entry price - Stop price}|} \tag{1.4}$$

The break-even hit ratio is the minimum hit ratio needed to achieve zero profit and loss, excluding costs and fees. As it is just an indicative measure, the break-even hit ratio is rarely presented in performance reports. However, you can easily calculate it through the risk-reward ratio like this:

$$\text{Break-even hit ratio} = \frac{1}{1 + \text{Risk reward ratio}} \tag{1.5}$$

In reality, some trades can be closed before getting stopped out or before seeing their targets, and this is due to various reasons, like getting another signal in the same direction. Therefore, you have two different risk-reward ratios:

The theoretical risk-reward ratio This is generally set before the trade and is a forecast.

The realized risk-reward ratio This is the average profit per trade divided by the average loss per trade, which gives an idea of how close you are to your theoretical risk-reward ratio.

1.1.5 The Number of Trades

The frequency of trades is important for performance evaluation. A rule of thumb to keep in mind is to have at least 30 trades in order to meet the minimum threshold for reliability.

Chapter 2

技术分析引言

2.1 指标分析

RSI

我们来讨论一下反向指标。相对强弱指数 (RSI) 最初由 J. Welles Wilder Jr. 提出，是最流行、最通用的有界指标之一。它主要用作反向指标，其中极值表明可以利用的反应。使用以下步骤计算RSI（默认的计算周期是 14 条数据）：

1. 计算收盘价与前一日收盘价的变化。
2. 将正净变化与负净变化分开。
3. 计算正净变化和负净变化绝对值的平滑移动平均值。
4. 将平滑后的正变化除以平滑后的绝对负变化，将此计算称为相对强度(RS)。
5. 对每个时间应用归一化公式以获得 RSI：

$$RSI_i = 100 - \frac{100}{1 + RS_i} \tag{2.1}$$

> 平滑移动平均线是 RSI 创建者开发的一种特殊类型的移动平均线。它比简单移动平均线更平滑、更稳定。

一般来说，RSI 默认使用 14 的周期，尽管每个交易者对此可能有自己的偏好。以下是如何使用该指标：

- 当 RSI 显示为 30 或更低时，市场被视为超卖，并且可能会出现向上修正。
- 当 RSI 显示 70 或更高时，市场就被认为是超买，并且可能会出现下行修正。

- 当 RSI 超过或突破 50 时，新的趋势可能会出现，但这通常是一个薄弱的假设，并且本质上更理论化而不是实用。

Chapter 3

经典的趋势跟踪模式

> 对模式进行回测的方法是假设我在验证前一次收盘时的信号后，在下一次开盘时启动买入或卖出头寸。

3.1 Marubozu 趋势

第一个经典的趋势跟踪模式是 Marubozu。这个词在日语中指的是秃头或短发。

区分 Marubozu K 线和普通K 线相对容易，因为 Marubozu K 线没有任何影线。这意味着看涨的 Marubozu K 线具有相同的开盘价和最低价以及相同的收盘价和最高价。相比之下，看跌的 Marubozu K 线具有相同的开盘价和高价以及相同的收盘价和低价。Figure 3.1 显示了 Marubozu K 线的这两个情况。

Marubozu 模式通常发生在较短的时间范围内，因为波动和超出其范围的时间较短。分析 1 分钟和 5 分钟图表并将其与日线图进行比较时可以看出这一点。

> 当开盘价和收盘价之间的时间较短时，K 线更有可能呈现 Marubozu 形态。

当市场处于强劲的上升趋势时，由于对标的证券的巨大需求，它很少会创下更低的低点，并且通常会在高点附近收盘。一根烛台中需求的最大力量是通过没有低点且以高点收盘来证明的，而这正是看涨 Marubozu 的全部内容。当一项资产以高价收盘时，您会得到买家渴望更多的信号，而当没有最低价低于开盘价时，您应该进一步确信没有人有兴趣卖出来价格推至低于开盘价。

同样，当市场处于强劲下跌趋势时，由于标的证券的供应量巨大，它很少会创下更高的

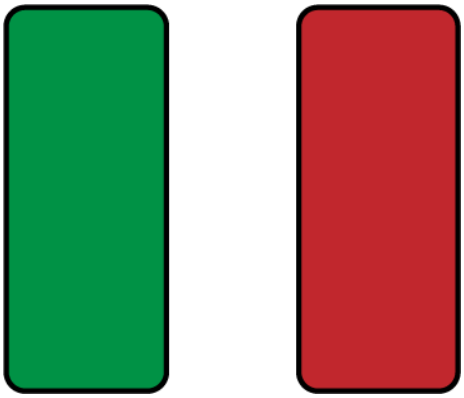

Figure 3.1: 左边是看涨的 Marubozu K 线；右侧是看跌的 Marubozu K 线

高点，并且通常会在低点附近收盘。一根烛台的最大供应力是通过没有高点且收于低点来证明的，正如看跌的 Marubozu 所证明的那样。