

23-31 (25 min.) ROI, RI, ROS management incentives.

1. If Mason Industries uses return on investment to measure the Jump-Start Division's (JSD's) performance, Grieco may be reluctant to invest in the new plant because, as shown below, return on investment for the plant of 19.2% is lower than JSD's current ROI of 24%.

Operating income for new plant	\$480,000
New investment	\$2,500,000
Return on investment for new plant	19.2%

Investing in the new plant would lower JSD's ROI and, hence, limit Grieco's bonus.

2. The residual income computation for the new plant is as follows:

$$\text{Residual income} = \text{Income} - (\text{Imputed interest} \times \text{Investment})$$

Investment	<u>\$2,500,000</u>
Operating income	\$ 480,000
Charge for funds	
(Investment, \$2,500,000 × 15%)	<u>375,000</u>
Residual income	<u>\$ 105,000</u>

Investing in the new plant would add \$105,000 to JSD's residual income. Consequently, if Mason Industries could be persuaded to use residual income to measure performance, Grieco would be more willing to invest in the new plant.

$$3. \quad \text{Return on Sales (ROS)} = \frac{\text{Operating income}}{\text{Sales}} = \frac{480,000}{2,400,000} = 20\%$$

If Mason Industries uses ROS to determine Grieco's bonus, Grieco will be more willing to invest in the new plant because ROS for the new plant of 20% exceeds the current ROS of 19%.

The advantages of using ROS are (a) that it is simpler to calculate and (b) that it avoids the negative short-run effects of ROI measures that may induce Grieco to not make the investment in the new plant. Grieco may favor ROS because she believes that eventually increases in ROS will increase ROI and RI.

The main disadvantage of using ROS is that it ignores the amount of investment needed to earn a return. For example, ROS may be high but not high enough to justify the level of investment needed to earn the required return on an investment.