**Managerial Economics:**

**A Problem-Solving Approach**

**4th Edition**

*End-of-Chapter Individual Problems - Key*

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# Chapter 1

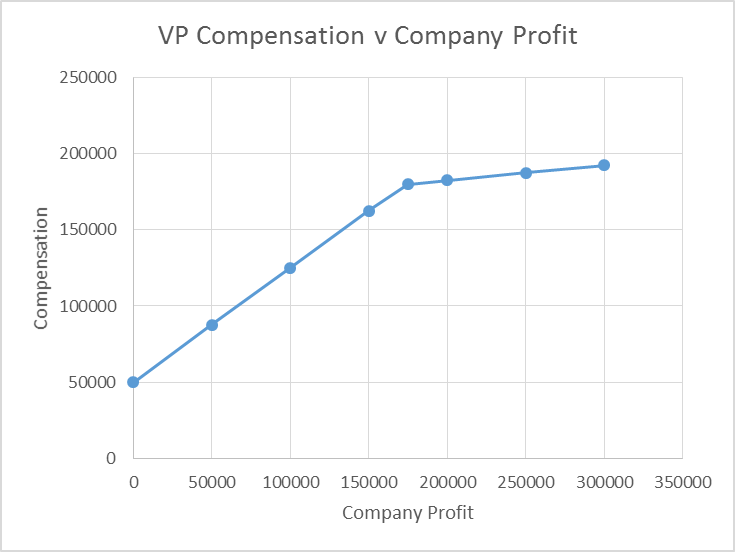
*Short Answer Key:*

## 1-1 Goal Alignment at a Small Manufacturing Concern

The owners of a small manufacturing concern have hired a manger to run the company with the expectation that he will buy the company after five years. Compensation of the new Vice President is a flat salary plus 75% of the first $150,000 profit, then 10% of profit over $150,000. Purchase price for the company is set at 4.5 times earnings (profit), computed as average annual profitability over the next five years.

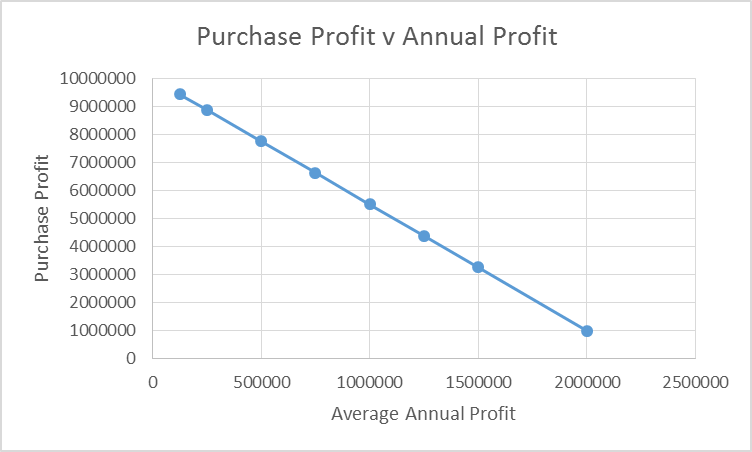
a. Plot the annual compensation of the vice president as a function of annual profit.

*Assume for now the VP has a base salary of 50,000. If so, when P≤$150000, his compensation can be determined by the equation C = 50000+0.75(P). When P≥150000, compensation is determined by the equation C=(50000+0.75(150000)) + 0.1P, which means C=162500+0.1P. The plot for compensation can be seen below.*

b. Assume the company will be worth $10million in five years. Plot the profit of buying the company as a function of annual profit.

*The purchase price will be 4.5x earnings, calculated as 4.5x average annual profitability. Therefore, the profitability of the purchase can be seen by the equation Ppurchase = 10,000,000 – 4.5(Pannual). The plot of this equation can be seen below.*

** 

## 1-2 Goal Alignment at a Small Manufacturing Concern (cont.)

Does this contract align the incentives of the new vice president with the profitability goals of the owners?

*No. Both the purchase price and the profit sharing create perverse incentives. The VP keeps $0.75 of each dollar earned up to $150,000, but only $0.10 of each dollar earned after $150K. Since earning more requires more effort (increasing marginal effort), he has little incentive to earn more than $150,000. And every dollar the VP earns raises the price that he will eventually pay for the company by $4.50, effectively penalizing him for increasing company profitability.*

## 1-3 Goal Alignment at a Small Manufacturing Concern (cont.)

Re-design the contract to better align the incentives of the new vice president with the profitability goals of the owners.

*One approach would be to establish a purchase price at the initiation of the contract. This would encourage the VP to make the company as profitable as possible, as it the increases to his marginal wealth of 10% above 150000 are not offset by the dramatic increases in purchase price. Also, this encourages him to make the company as profitable as possible as it will ultimately be his once the 5 years have passed.*

## 1-4 Goal Alignment at New York City schools

1,800 New York City teachers who lost their jobs earlier this year have yet to apply for another job despite the fact that there are 1,200 openings. Why not?

*New York is the only city in the U.S. where teachers are guaranteed pay for life even if their school closes and they no longer have a permanent job. The policy costs DOE more than $100 million per year in salary and benefits. Those teachers go into the Absent Teacher Reserve pool, where they can be used as substitutes. The average salary for an ATR pool teacher? $82,000, with some making $100,000. Some teachers have been in the pool since 2006.*

## 1-5 Goal Alignment between Airlines and Flight Crews

Planes frequently push back from the gate on time, but then wait 2 feet away from the gate until it is time to queue up for take-off. This increases fuel consumption, and increases the time that passengers must sit in a cramped plane awaiting take-off. Why does this happen?

*Airlines are often evaluated and measured by their “on time” performance metrics. As this refers to boarding times rather than the time of actual departure, airlines would rather board the planes on time and wait on the tarmac than leaves passengers waiting at the gate.*

## 1-6 Goal Alignment between Hospitals and the British Government

In 2008, the Labour party in Britain promised that patients would have to wait for no more than four hours to be seen in an emergency room. How is the National Health Service meeting this performance goal?

*To meet this performance goal, seriously ill patients are being kept in ambulances. Thousands of people a year are having to wait outside the emergency departments because the trusts will not let them in until they will be able to be treated within four hours in accordance with the Labour pledge and government targets. In addition to keeping people outside, this also has reduced the ability of the ambulances to respond to emergency calls, leading to serious problems throughout the region.*