

Finance Theory II (15.402)
Practice Exam

Exam courtesy of Prof. David Scharfstein. Used with permission.

Bradley W. Bushengore sat back in his extremely comfortable chair in his extremely comfortable office looking out over the New Jersey Turnpike. He could see the smoke billowing out of the oil refineries on the other side of the Turnpike and, if he opened his window, he could smell them too. Mr. Bushengore thought back on his last few years as Chief Financial Officer of Apex Drugs and Products. By 1992, Apex had become a major player in prescription drugs with sizable market share in quite a few of them, and several "blockbuster" drugs. Apex also had numerous brand name home products such as *Clean* detergent and *Chef Girlardee* canned food.

The three pillars of Apex's strategy were conservatism, marketing and cost control. Apex consistently avoided much of the risk of product development and introduction in the volatile drug industry. Most of its new products were acquired or licensed after their development by other firms. Others were copies and clever extensions of products introduced by competitors. Apex's success was built on its expertise in marketing, which eroded its competitors' headstart, and on cost control, which ensured substantial margins. The results were impressive. Selected financial data for Apex (in \$ millions):

	1988	1989	1990	1991	1992
Sales	2,471.7	2,685.1	3,062.6	3,406.3	3,798.5
Net income	277.9	306.2	348.4	396.0	445.9
EPS	1.75	1.94	2.21	2.51	2.84
DPS	1.00	1.15	1.33	1.50	1.70
Cash	358.8	322.9	436.6	493.8	593.3
Total assets	1,510.9	1,611.3	1,862.2	2,090.7	2,370.3
A/P and other non-interest bearing liabilities	511.60	565.70	670.50	758.40	883.60
Long-term + short-term debt	7.8	10.3	13.7	10.3	13.9
Net worth	991.5	1,035.3	1,178.0	1,322.0	1,472.8

Balance Sheet 1992

Assets	Liabilities		
	A/P and other non-interest		
Cash and equivalent	593.3	bearing liabilities	883.6
A/R	517.3	Long-term + short-term debt	13.9
Inventory	557.3	Total liabilities	897.5
PPE	450.5	Net Worth	1,472.8
Other	251.9		
Total assets	2,370.3	Total liabilities + Net worth	2,370.3

As he thought more about Apex's past performance, and sat further back in his extremely comfortable chair in his extremely comfortable office, Mr. Bushengore fell asleep.

Please answer the following 4 questions on the attached blank sheets. Each question is worth 25 points. If you make assumptions, mention them explicitly. Answers to each question should more or less fit in one page (No need to write a novel).

- 1) Before Mr. Bushengore wakes up, describe Apex's capital structure over the period 1988-92. What are the likely factors that explain this capital structure? (Your discussion should be based on simple statistics computed from the available data).
- 2) Based on the information given above, is this capital structure likely to be optimal? If yes, explain its merits relative to alternative capital structures. If not, discuss this capital structure's main drawbacks, as well as the relative merits of the different possible paths to a more suitable capital structure. (No calculations needed).

After several hours of snoozing, Mr. Bushengore woke up with a start and a stiff neck. He realized that all industries undergo change at some point and the pharmaceutical industry was no different. The Clinton administration was threatening the industry with tighter regulation with measures increasing the control of prices, and favoring the development and diffusion of generic drugs. At the same time, some of Apex's most profitable patents were about to expire. Also, many industry analysts believed that advances in bio-technologies would lead, in the longer run, to a new generation of drugs replacing more traditional ones. Developing these new drugs, as well as building up expertise in the new industry, was bound to require a considerable R&D effort.

- 3) Mr. Bushengore's quick forecast was that Apex's sales were likely to grow 11% the following year, but that its margins (net income/sales) were likely to fall to 7%. He wondered what his capital structure would look like the following year given that he did not want to cut the dividend ratio, or issue equity. Please help Mr. Bushengore out with these calculations, as he is not very good with numbers. (Calculations needed).
- 4) Given these changes in the industry and assuming that they persist, what do you think Apex's target capital structure should be in the long run? What impediments, if any, might Mr. Bushengore face in maintaining this target?