

Corporate Finance - Yossi Spiegel

Problem set 1

Problem 1

Carefully read the paper "What Do We Know about Capital Structure? Some Evidence from International Data" by Rajan and Zingales (*Journal of Finance*, December 1995, pp. 1421-1460) and answer the following questions.

- (a) What are the three major sources of difference in accounting practices between the G-7 countries?
- (b) Compare the balance sheets of firms across the G-7 countries.
- (c) What are the five measures of leverage that Rajan and Zingales use and what are the problems with each one of these measures?
- (d) Compare the leverage of firms across the G-7 countries.
- (e) What are the four adjustments that Rajan and Zingales make in the leverage measures?
- (f) Why are these adjustments needed? What is the effect of these adjustments on the cross-country comparisons?
- (g) Compare the flow of financing (external vs. internal and net debt vs. equity) across the G-7 countries.
- (h) Compare the allocation of the pre-tax dollar to debt, dividends, and capital gains, across the G-7 countries.
- (i) Compare the size of the capital markets relative to GDP in the G-7 countries (which countries have large banking sector? Which have large stock markets? And which have large bond markets?)
- (j) Compare the regression results across the G-7 countries? Which factors are important in which country? Are these results surprising (given what you read in the paper) or are they expected?

Problem 2

The following question is a variant of the Kraus and Litzenberger (1973) model with personal taxes.

A firm is established in period 0 and operates only in period 1. The firm's earnings are represented by a random variable \tilde{X} distributed on the interval $[0, 100]$ according to a distribution function $F(\tilde{X})$ and density $f(\tilde{X})$. When the firm is established in period 0 it issues debt with face value D . Debt is due at the end of period 1, at which point the firm is liquidated and its equityholders and debtholders are paid according to their respective claims. If the firm cannot pay D in full, then it goes bankrupt. Bankruptcy imposes extra costs on the firm equal to $b\tilde{X}$, where $b < 1$ (this cost is borne by debtholders who become the residual claimants). The firm pays a corporate tax rate t_C on its net earnings (the difference between its earnings and its tax liability, D) provided that this difference is positive. In addition, there is a personal tax rate t_D on income from debt and a personal tax rate t_E on income from equity (that is, debtholders and equityholders pay personal tax rates t_D and t_E respectively on the amounts they receive from the firm).

- (a) Write down the market value of equity, debt, and the market value of the entire firm.
- (b) Suppose that the firm chooses D to maximize its market value. Write down the first order condition for the firm's problem and explain the intuition for this first order condition.
- (c) What is the condition that ensures that the firm will not issue debt at all? What's the intuition for this condition?
- (d) What is the condition that ensures that the firm wish to become all-debt? What's the intuition for this condition?
- (e) Now suppose that the firm's problem attains an interior solution, D^* . How is D^* affected by changes in the various tax rates, t_C , t_D and t_E ? Carefully explain the intuition for the comparative statics results.