Additional Problems: Chapter Nine: Inflation

9S.1

On January 1, 2 000, a one-dollar coin falls out of your pocket and rolls under the couch. You find it a year later. When you find it, is it worth a real dollar, or an actual dollar? Or is there no difference?

***9S.2**

Three women are having breakfast: the CEO of a life insurance company, the CEO of a mortgage company, and a retired CEO. The morning paper has a headline: "Inflation rates expected to rise sharply!" For whom is this good news, and for whom is it bad news?

9S.3

On January 1 you are offered a choice of two jobs. One job is in Canada, and has a starting salary of $45 000 per year, rising at 5% per year. The other is in the Republic of Placidia, and has a starting salary of 55 000 placidos a year, rising at 12% per year. At present, one placido is worth one Canadian dollar; however, Placidia has experienced 15% annual inflation every year for the last ten years, and is expected to continue to experience the same rate in the future. Currently, the cost of living is the same in Canada and Placidia; to maintain the lifestyle to which you have become accustomed, you expect to spend $10 000 a year on living expenses.

Whichever job you take, you plan to buy a house in BC in five years time, and want to maximise the amount you can put down for a deposit. Which job will give you the larger amount? (Assume you get paid your annual salary in a single cheque on December 31 of each year.)

If Placidian banks and Canadian banks both pay interest at 5% per year, can you improve the worth of the Placidian job by converting your Placidian salary to Canadian dollars and depositing it in a Canadian bank as soon as you get it?

***9S.4**

You own a large company in British Columbia, Canada. You can buy an asset for $100 000. It has a ten-year life, and the tax laws allow you to depreciate it at 20% by the declining balance method. Alternatively, you can lease it at $20 000 a year for eight years, then buy it for $5 000 at the end of the eighth year. Your company is taxed at 40%, and you can deduct the lease cost from your pre-tax cash flow. Your after-tax MARR is 10%. Which option is better?

If you expect all cash flows, including your lease costs, to inflate at 10%, which option is better?

9S.5

An Australian company is considering a proposal which will produce a revenue in real dollars of $110 000 annually for the next ten years. It will require an initial investment of $150 000 in equipment that will be fully written off in ten years by straight-line depreciation. Operating costs will be $52 000/year. In addition, facilities will be leased for $6 000/year for five years; then the lease will be renegotiated for five more years at a constant annual charge of $6 000$(1+f)^5$, where f is the inflation

rate, expected to be 6%. The firm pays taxes at 46%, and requires an after-tax rate of return of 4%. What is the present worth of the proposal?

***9S.6**

The general inflation rate in the UK is 8%, and a large Bristol machining company requires a real rate of return of 10%. The company purchases a lathe for £10 000. The lathe will have no salvage value at the end of its seven-year useful life. It is expected to produce a revenue of £2 000 the first year, with annual increases of 20%, over and above the inflation rate, in subsequent years. Operating costs are £1 000 in the first year, and rise with the inflation rate.

Determine the pre-tax present worth.

Calculate the after-tax PW if the machine depreciates at 25% per annum, the tax rate is 50% and the after-tax real rate of return is 5%.

9S.7

On completing a doctorate in industrial engineering from the University of Witwaterstrand, a student has been offered two jobs. One, a faculty position in a university, pays a starting salary of R 450 000 with expected annual raises of 8% over the next five years. The other, a research position with an aerospace company, has a starting salary of R 520 000 with annual raises of 5% over the next five years. If inflation is 5% per annum and the market interest rate is 15% per annum, what is the difference in the present worths of the two job offers?