MBA Teaching Note 08-01
Calculating Your Wealth

As MBA students, you learn tools and techniques to help you make better business decisions. Many of these same tools will help you make better personal finance decisions. For example, the concept of present value encapsulates into a single figure what a series of future cash amounts is worth today. Thus, if you are considering establishing, buying, or selling a business, you should be able to use present value analysis to help you make your decision. This approach is usually known as discounted cash flow analysis.

This tool can also be used to determine how much you are worth. No, I do not mean that we can assign a definitive value to a human life. Your personal qualities cannot be quantified. But your future earning power can be. By projecting a stream of future salaries, expenses, their growth rates, and by specifying a discount rate, you can determine a reasonable estimate of your net worth or equity value, which we can just call your wealth.

The spreadsheet, wealthcalculator.xls, available on this same web site will do that for you. Let's walk through an example.

We start with the assumption that you will receive all of your annual income and pay all of your expenses at the end of a year. We know this is not correct and you could refine the spreadsheet to reflect a more appropriate time period, such as monthly, but the difference will not be that much. We will assume you are leaving the MBA program, starting a job, and getting your salary at the end of one year. We assume you work for 40 years.

The inputs required are as follows:

- Estimated starting salary: I have taken a recent figure of $56,750 that was given for the 2005-2006 LSU MBA class and increased it by 3% for four years to $63,873.
- Salary growth rate: An estimate of the rate at which you believe your salary will grow over your 40-year career. I use 6%.
- 1st year expenses: This figure should reflect housing, food, clothing, insurance, etc. I am using $30,000.
- Inflation rate: This figure should be the rate at which your expenses increase per year. I estimate 3% because that is a conservative long-term inflation rate.
- Investment rate of return: This is the rate you expect to receive on your investments. I use 8% because it is close to but slightly lower than the long-run return on stocks.
- Discount (risk-free) rate: This is essentially the government t-bill rate. I use 4%.
- Wealth risk premium: Your salary earnings over your lifetime are of fairly low risk but not risk-free. I add a small 1% risk premium. You should add more if you are feeling less certain about the growth rate of your salary.

In year 1, the spreadsheet computes net savings based on salary minus expenses. This figure is your year-end wealth for the first year. In year 2, your year-end wealth will be your year 1 wealth increased by the investment rate of return plus the net savings from year 2. This continues until year 40. Expenses are increased every year at the inflation rate.

To find your wealth, you should find the present value of the final year-end wealth figure, which is positioned 40 years later. This is done as follows:

$$\text{Pre-tax wealth today} = \frac{\text{Year 40 Wealth}}{(1 + \text{risk-free rate} + \text{inflation rate} + \text{risk premium})^{40}}$$

Note that this figure is pre-tax. The government will take a portion of this money every year. The highest marginal tax rate is typically in the 30-40 percent range, and you do not lose that full percentage of your gross income every year. You can conservatively assume that government will probably take about a 15-25 % slice of your wealth through its claim on your income.

Irrespective of taxes, however, you will not stop earning income when you retire. Your portfolio will continue to grow. In addition, over your life, much of your portfolio will grow tax-free until you start to withdraw the money.

You may wish to play around with various assumptions and also incorporate the possibility of job changes and larger salary increases at various points. Other major expenses such as children, higher education, and weddings could be incorporated, but you might wish to simply view these as expenses that you either can or cannot afford based on your wealth.

The overall final wealth figure is a very rough estimate, but it does give you some idea of how much more you are worth than you probably thought. I predict that you will be pleasantly surprised to find out that you are worth considerably more than you thought.

And now you understand why it is fairly easy to get credit cards and student loans.

Personal Wealth Calculator

		Inputs:			***Outputs:***	
		Starting salary:	$61,707	*	Pre-tax wealth today	$1,114,649
		Salary growth rate:	6.00%		(Present value of wealth in 40 years)	
		1st year expenses	$30,000			
		Inflation rate:	3.00%		*For LSU MBA class of 2006-2007	
		Investment rate of return:	8.00%			
		Discount (risk-free) rate:	4.00%			
		Wealth risk premium:	1.00%			

	Year	Salary (end of year)	Expenses	Savings	Year-end Wealth	
	0					
	1	$61,707	$30,000	$31,707	$31,707	
	2	$65,409	$30,900	$34,509	$68,753	
	3	$69,334	$31,827	$37,507	$111,760	
	4	$73,494	$32,782	$40,712	$161,413	
	5	$77,904	$33,765	$44,138	$218,465	
	6	$82,578	$34,778	$47,800	$283,742	
	7	$87,533	$35,822	$51,711	$358,152	
	8	$92,785	$36,896	$55,888	$442,692	
	9	$98,352	$38,003	$60,348	$538,456	
	10	$104,253	$39,143	$65,109	$646,642	
	11	$110,508	$40,317	$70,190	$768,564	
	12	$117,138	$41,527	$75,611	$905,660	
	13	$124,167	$42,773	$81,394	$1,059,507	
	14	$131,617	$44,056	$87,561	$1,231,828	
	15	$139,514	$45,378	$94,136	$1,424,510	
	16	$147,884	$46,739	$101,145	$1,639,616	
	17	$156,757	$48,141	$108,616	$1,879,402	
	18	$166,163	$49,585	$116,578	$2,146,332	
	19	$176,133	$51,073	$125,060	$2,443,098	
	20	$186,701	$52,605	$134,095	$2,772,641	
	21	$197,903	$54,183	$143,719	$3,138,172	
	22	$209,777	$55,809	$153,968	$3,543,194	
	23	$222,363	$57,483	$164,880	$3,991,529	
	24	$235,705	$59,208	$176,498	$4,487,350	
	25	$249,848	$60,984	$188,864	$5,035,201	
	26	$264,838	$62,813	$202,025	$5,640,042	
	27	$280,729	$64,698	$216,031	$6,307,277	
	28	$297,573	$66,639	$230,934	$7,042,793	
	29	$315,427	$68,638	$246,789	$7,853,005	
	30	$334,352	$70,697	$263,655	$8,744,901	
	31	$354,414	$72,818	$281,596	$9,726,089	
	32	$375,678	$75,002	$300,676	$10,804,852	
	33	$398,219	$77,252	$320,967	$11,990,207	
	34	$422,112	$79,570	$342,542	$13,291,966	
	35	$447,439	$81,957	$365,482	$14,720,805	
	36	$474,285	$84,416	$389,869	$16,288,339	
	37	$502,742	$86,948	$415,794	$18,007,200	
	38	$532,907	$89,557	$443,350	$19,891,126	
	39	$564,881	$92,244	$472,638	$21,955,054	
	40	$598,774	$95,011	$503,764	$24,215,222	