

Public Funds Management
PROJECT ONE
Professor Dwight Denison

PART A: Due in class Wednesday, Feb 27. *Show your assumptions and calculations to get full or partial credit.*

1. Lock-box System (10%)

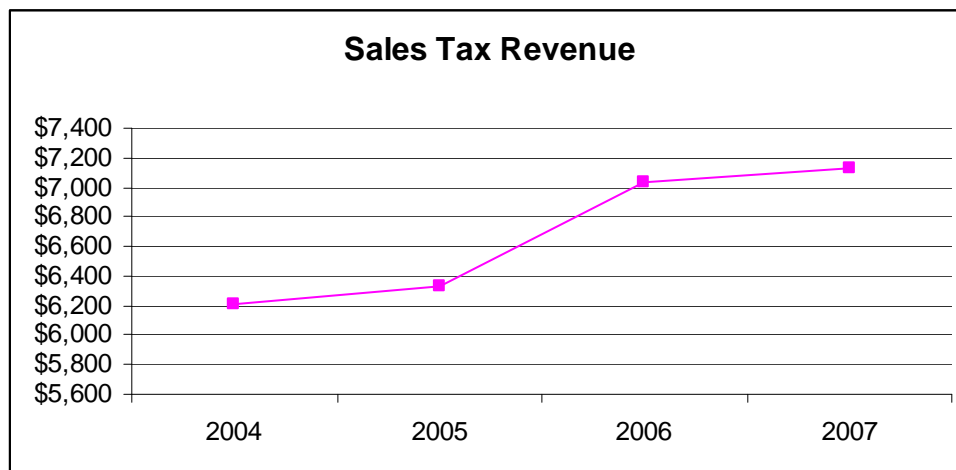
Assume that the average amount of a check is \$2,450. Calculate the annual net cost/benefit of a lock box system that reduces the transit time by three (1.5) days. The bank will charge \$0.08 per item for 27,000 items plus \$1,000 per month. The average rate on investments is 6.5%. Explain the general benefits of lock-box systems and your recommendations regarding this particular revenue source.

2. Forecasting (30%)

The City of Metro has asked you to forecast the sales tax revenue it will collect in 2008, 2009 and 2010. Data on revenue in recent years is presented below.

<u>FY</u>	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>TOTAL</u>
2004	1,390	1,442	1,469	1,914	\$6,215
2005	1,401	1,435	1,494	2,002	\$6,332
2006	1,464	1,497	1,844	2,223	\$7,028
2007	1,489	1,499	1,871	2,277	\$7,136

The annual data are graphed below:



You see an upward trend in the data, and you decide to try the moving average method and regression models to develop your forecast.

a. Estimate annual sales tax revenue for 2008, 2009 and 2010 using a moving average “3-day” (MA3) model.

b. Forecast the expected annual sales tax revenue for 2008, 2009 and 2010 using the trend regression model.

c. Chart the lag model data. (Note: total sales tax revenue for 2003 was \$5,491,000.) Do you recommend that the lag model be employed in this case? Why or why not? Find the expected annual sales tax revenue for 2008, 2009 and 2010 using the lag regression model. Hint: chart the lag model data using XY scatter plot in Excel.

d. What factors should you consider in deciding which forecast estimates to use?

e. In order to create a cash budget for Metro, you need to know how much sales tax revenue to expect each quarter. Plot the quarterly data for the years 2004 through 2007. Do you see a trend in the revenue collection?

f. Using one of the methods covered in class, forecast the quarterly sales tax revenue for 2008. Clearly show the process you use to come up with your estimates. (Hint: consider average or moving average by quarter, or ratio / percents.)

3. Bond Pricing (5%) Find the value of a 10 year treasury bonds with a 6% coupon rate. The bond was issued 3 years ago (6 interest payments already paid) and the current market rate on comparable bonds is 5.5%. Face value of bond is \$5,000.

4. Bank Fees. (10%) The city is comparing two contracts for comparable bank services. Bank A will provide the services for \$5,000 a month and a minimum balance requirement of 100,000 dollars. The other contract with Bank B requires a minimum balance of 200,000 dollars and a monthly fee of \$4,500. Assume an earning allowance of 3.00% annual and the reserve requirement is 12%. Which bank is the best deal on just the basis of cost? What other factors should be considered in making the choice?

PART B: Investment Strategy

Assignment #1 –

1. Investment Policy (15%)

You are the public funds manager for a city government. You have been instructed by the City Manager to draft an investment policy for the City that sets the guidelines for investment of City funds. The policy shall include the types of instruments city funds can be invested in and the policies for liquidity, protection of capital, maximization of return on capital, and the like. You can find examples of investment policies in the text, GFOA literature and/or at various municipal websites. Lexington has its investment policy codified in its Code of Ordinances, which is available online. (Note: you are not necessarily limited to the investment options in question #B-2.)

2. Investment Return Calculations (20%)

The City has sold a bond issue which generated \$59,171,124 to fund a building project that will require the following quarterly expenditures based on the anticipated construction schedule. The contractor will receive partial payments as the construction project proceeds. Each payment will be made as a predetermined milestone of project completion is reached. These stages are expected to correspond to the end of each quarter (March, June, September, and December), but again, are *dependent on milestone completion*.

Expected Quarterly Payments

	Year 0	Year 1	Year 2
Q1	\$5,969,602	\$5,400,052	\$4,773,452
Q2	\$4,384,052	\$4,711,652	\$5,732,702
Q3	\$4,973,152	\$4,728,902	\$3,752,352
Q4	\$5,584,302	\$4,741,002	\$4,419,902
Total	\$20,911,108	\$19,581,608	\$18,678,408

To simplify the project, assume each month has 30 days. Being an astute public funds manager, you recognize that the revenues from the bond issue should be invested until they are needed. You may choose from the following list of “permissible” asset investments in making your investment decisions.

<u>Asset</u>	<u>Year 0 Interest Rate</u>	<u>Minimum Amount</u>
Overnight Repos	2.75% annual	\$100,000 denominations
1 month CP	3.25% annual	\$1,000 denominations
3 month CP	4.00% annual	\$10,000 denominations
6 month CD	4.00% annual Non-Negotiable	\$10,000 denominations
12 month CD	5.75% annual Non-Negotiable	\$100,000 denominations
24 month CD	6.00% annual Non-Negotiable	\$100,000 denominations
6 month T-Bill	4.75% annual Non-Negotiable	\$1000 denominations
12 month T-Note	4.25% annual Non-Negotiable	\$1000 denominations
24 month T-Note	5.50% annual Non-Negotiable	\$1000 denominations

Interest payments are received at the end of the investment period for each asset. Funds not invested are kept in a checking account that pays 0% annual interest. Your supervisor requires that each interest payment be immediately transferred to a contingency fund and will be invested by another office. Therefore, you will not have to account for the investment of those funds.

Using the preceding information, determine the following:

- a. What are the expected interest earnings if all the funds are invested in one month commercial paper (CP)? (Note: The funds are invested for the full one month period.)
- b. What are the expected interest earnings if all the funds are invested in 3 month CPs? (Note: The funds are invested for the full three month period.)
- c. What are the expected interest earnings if all the funds are invested in 6 month CDs? (Note: The funds are invested for the full six month period.)
- d. What are the expected interest earnings if all the funds are invested in 12 month CDs? (Note: The funds are invested for the full twelve month period.)

3. Portfolio Development (10%)

Create an “initial” investment portfolio for the three year construction project. You will be selecting assets to match your “payout” schedule for the 3-year period, so plan accordingly. Consider available funds (total funds available by quarter less expected payouts to the contractor based on the initial payout schedule), and utilize the available securities and interest rates quoted for Year 0. Assume that if you have to liquidate investments to meet your contractor payout schedule that you will have to forego all interest earned for that investment period. You should anticipate interest rate changes for years 1 and 2 due to changes in the economy and FED policy, but since the changes are unknown, use the interest rates quoted for Year 0.

Your portfolio should be accompanied by a brief memo (one page) describing your investment strategy and anticipated interest income revenue. Be sure to provide information regarding the “match-up” of expenditures to “liquid” funds for all three years of the project.

Other Project Guidelines:

Each student is individually responsible for the quality of his or her work (meaning this is an individual project!). You are encouraged to use a spreadsheet to assist in completing this assignment. There are several possible solutions to the exercise; therefore, you must demonstrate how you arrived at your answers. Please include a copy of your calculations or your spreadsheet formulas with your project. The final memo should briefly explain the assumptions of your investment schedule and a simple discussion of the principle of time value of money. The memo will be graded for form and clarity. Assume only the information that is given in Part B (not Part A or outside information.)

Good Luck!