ADSS Assignment s 1 2019 Masters Level

You just commenced work at a financial services firm (think of something like PWC, KPMG, Macquarie Bank, RSM, Resolution Consulting, Freebody Cogent etc.) which provides consultancy services to a wide range of clients. One of these has asked the firm to conduct an analysis of a proposal by a lobby group. This group wants to lobby the government to reduce the number of tax brackets that individual taxpayers face.

The proposal specifies that individuals earning less than $20,000 per year will pay $0 in tax. From $20,001 to $100,000, individuals will pay 20%, from $100,001 they will pay 30%. The client would like to gain some insights into the impact this will have on income equality, as measured by the Gini index and the Lorenz curve. The client also wants to obtain some insights into the impact this would have on the government’s revenues.

Your manager has asked you to develop a spreadsheet-based model which will provide an indication of income inequality using a crude measure of Gini indexes and charts of Lorenz curves for the following cohorts; median income before tax, average income before tax, median income after tax (using the existing tax rates) average income after tax (using existing tax rates) median income after tax (using the proposed tax rates), and average income after tax (using the proposed tax rates).

Your manager indicated the estimation of the Gini index will be ‘crude’ as your calculations will not include many of the adjustments included in calculations used by entities such as the Australian Bureau of Statistics, the OECD etc.

Your manager has conducted some research into how to create charts of Lorenz curves using Excel and likes this explanation. <https://www.youtube.com/watch?v=vDtmaK3E_C0>. You are welcome to use other sources if you wish. He mumbled something about having to make some adjustments.

He noted that the Gini index (aka coefficient) can be calculated on the basis of a Lorenz curve. However, he stated he wants the Gini index calculated using the method in Chapter 1 of the Microsoft Excel book by Winston. (Yes, this is in chapter 1 of that book.) Use this equation to calculate the Gini index for each of the cohorts. Do not use other techniques.

Your manager wants the model to be able to deal with reasonably ‘granular’ information. He suggested you obtain the Australian taxation statistics relating to individuals’ taxable incomes in each postcode in Australia. He said to use this link. <https://data.gov.au/dataset/ds-dga-d170213c-4391-4d10-ac24-b0c11768da3f/details?q=taxation%20statistics%20by%20postcode>

He mentioned that the most recent dataset is for 2015-16 He mumbled that the relevant data can be found in something called Table 8.

Your manager suggested that after you download the dataset to a spreadsheet, you might want to have a look at the name manager, to see if any names have been automatically imported. He said he went nuts trying to work with a similar dataset, as the spreadsheet behaved oddly. He recommended copying the dataset onto another tab, but to do this in two steps, as this seemed to help the spreadsheet’s performance. Before you go any further, see if you can create a number of ‘dummy’ variables and give them names. If you can’t, copy the 2-step table from tax stats data to a new workbook (note the terminology, workbook, not worksheet).

Having done this, he suggests you copy the relevant imported data relating to 2015-16 tax year and paste it to a new tab, called something like working copy. The relevant data will be the state/territory, the postcode, the number of individuals per postcode in 2015-16, as well as the median taxable income, and the average taxable income for the same tax year. The original data should not be manipulated or adjusted.

Check the copied dataset on the working copy tab to ensure the contents of the cells ‘make sense’ and are complete. If you identify any blank cells, remove the relevant rows. Use a function to count the number of rows that have useable data. Make sure the number of postcodes with useable data is easily seen near the top of the working copy worksheet.

Your manager suggested you obtain the tax rates (2018-2019) for individuals from the Australian Taxation Office website. Create a new worksheet called something like tax rates and populate it with the relevant data. Manipulate this data so it can be used in the working copy worksheet to determine the tax that a taxpayer in each cohort (see below) in each postcode would pay. Then work out the after-tax income for each cohort under the current tax rates. Repeat this process using the proposed tax rates set out in the second paragraph of this document. Finally, in the working copy spreadsheet, calculate the total tax collected from each postcode for each cohort.

All of this will be completed in the working copy spreadsheet. Do not worry about the Medicare levy.

The manager asked you to open a new worksheet for each of the following cohorts (that is, one sheet for each of the following.

Average income before tax,

Average income after tax (existing tax rates)

Average income after tax (proposed tax rates),

Median income before tax,

Median income after tax (existing tax rates),

Median income after tax (proposed tax rates).

Use these worksheets to calculate the Gini indexes for each cohort. You will also use each of these worksheets to produce a Lorenz curve for the relevant cohort. Of course, you are free to add columns and hide columns etc.

You glared at the insensitive brute and wondered how on earth you could complete this task in the next 3 lifetimes. He saw the look and explained that it might take some time to build the model for the first cohort. However, if the model is well designed, it would only take a few minutes to modify it for each of the remaining cohorts.

Open a new tab, call it something like total taxes collected and copy paste the aggregate taxes collected by the Australian Taxation Office using the average taxable income under the existing rule. Repeat for the median taxable income under the existing rules. Repeat for the proposed tax rates. This should require less than one dozen cells being used. (The manager does not want big tables here, just formulae.) Estimate the impact the proposal would have on aggregate government revenues. Do this using the median figures and the average figures in the workings worksheet.

The client wants to see the impacts of changes in tax rates (not thresholds) on the original proposal. For example, assume the original proposal reduced tax collected by $100 (compared to the existing system – see para immediately above). Assume we modified the proposed tax rates and this resulted in a reduction in tax of $40 (compared to the existing system). This means the modification in the proposal led to an increase of $60 in tax collected, compared to the original proposal. The client wants the spreadsheet set up so he can easily identify the figure represented by the $60 in the example above.

To help the client achieve this goal, the manager requested you set up 2 separate spin buttons on the taxes paid worksheet (yes, taxes paid, not tax rates) so the client can see what happens when each proposed tax rate is adjusted by 1% increments. Be sure to highlight the cells which show the differences. He wants to be able to work the spinner and see the impact on total taxes collected by the government at the same time, without having to move between worksheets. When he clicks the spinner, he wants to be able to see what the tax rate has changed to, without having to refer to the tax rates sheet.

**Required**

1. Prepare worksheets within a single workbook which address the needs of the client and the manager’s instructions, as set out above. 50%
2. Does the existing tax system promote income equality, as measured by the Gini index? Support your response with figures from the spreadsheet and relevant literature. 5%
3. Explain whether the proposal would have a positive or negative impact on income equality, as measured by the Gini index. Support your argument. 5%
4. **Part A**. Prepare a brief report to the client highlighting the likely impact the proposal would have on the government’s aggregate tax receipts. You will need to put these figures into context. For example, the proposal will increase variable x by y% and/or $z. You must cite your sources. 5%

**Part B**. As part of this report, your manager wants to get a sense of whether the average or median figures are more accurate in estimating the tax paid in 2015-16. He suggests you conduct research in various government documents, such as the Consolidated Financial Statements of the Australian Government, other Commonwealth Government Annual Reports, the Budget Papers and other primary sources. (Please note, a report in the media is not a primary source. This also applies to articles etc. You need to locate figures produced in relevant government reports.) You have to state whether the average or median figures should be relied on. Support your conclusion with figures from primary sources. 5%

Part C. This report must identify any assumptions you have made and any limitations/weaknesses of the models you have developed. Your manager is particularly interested in this section of your report. 5%

1. Assume your client suggests the government will collect a lot of extra taxes if high income earners (those in the higher proposed tax bracket) face tax rates of 70% (rather than 30%) on all income earned above the top proposed threshold. Discuss the impact this will have on total taxes collected. Assume your manager suggests increasing the lower proposed tax rate by 1%. 5%
2. Open a new worksheet, name it bracket creep or something similar. Import average taxable incomes per post codes for the following years; 2003-04, 2013-14, 2014-15, and 2015-16.

The client is interested in looking at what would have happened if the 2003-04 tax thresholds had not been changed and were applied to average taxable incomes by postcodes in 2003-04, 2013-14, 2014-15, and 2015-16.

This time the client wants to gain some understanding of the impact, if any, of bracket creep at the state and territory level, rather than at the postcode level. For example, use formulae to identify how many postcodes in the ACT would have had an average taxable income which would be taxed at the lowest marginal tax rate, the next highest marginal tax rate, etc in 2003-04, 2013-14 etc. Repeat this for the other states and territories. (Do not worry about after-tax income, only focus on average taxable income before tax.)

Your manager suggested preparing tables, from which you will prepare charts to use in your response to the client. Present a brief report explaining your findings. 20%