**CMT212 COURSEWORK 2 – EVALUATION**

**SECTION 1: VISUALISATION EVALUATION**

**SECTION 1.1: VISUALISATION SHOWING THE GVAP = GVAI RELATIONSHIP.**

1. This visualisation took the most time and effort to code, despite looking simple. The main reasons for this were the large number of exception cases related to negative values of GOS, net taxes and GVA, and (secondarily) the lack of an easy way in Javascript to take the pixel length of text, resulting in extensive testing of various label positions.
2. I feel that, taken in conjunction with the surrounding text, this visualisation communicates the message it is meant to – the fact that GVAP = GVAI, the components of the two measures, and the status of GVA as both a residual (output less intermediate consumption) and the sum of income components.
3. I believe that the design of the visualisation contributes to this by:
   * showing the GVA identity with the lines
   * using the natural interpretation of the lines + the two upper bars to help the viewer interpret the “gap” as a residual of the upper bar less the lower
   * using the flexible design of the income component bars to show GVA as a sum (with 2+ positive components) and/or a residual (with one or more negative components
4. Moreover, it highlights “problem” industry/year combinations (eg arms manufacture in 2003 – a somewhat incongruous industry/year combination to have negative GVA!) and *why* these are a problem from an economic perspective.
5. Nevertheless, the visualisation didn’t meet my goals for it in two ways. The first and most important flaw is that it doesn’t have a way to directly select industries or years; you have to click through. I also hoped to make it more representative of the SUT framework by allowing clicking on the bars to move to a product view; however, this proved to be too ambitious.

**SECTION 1.2: NON-INTERACTIVE LINE GRAPH SHOWING WAGE SHARE OVER TIME.**

This simple visualisation, largely adapted from the course code, shows the main message – the flatness of WS over time – effectively by using an appropriate line-graph design for the data being displayed.

**SECTION 1.3: SCATTERPLOT OF WAGE SHARE BY INDUSTRY**

I feel that this visualisation – adapted from course code – serves its purpose of showing possible patterns in the wage share data and allows identification of interesting industries through the tooltip functionality. The scatterplot design is intended for similar uses and serves this purpose in the current usage.

**SECTION 1.4: SCATTERPLOT OF IC SHARE BY INDUSTRY**

I feel that this visualisation – adapted from course code – serves its purpose in a similar way to the other scatterplot.

**SECTION 2: ANALYSIS EVALUATION**

**SECTION 2.1: THEORETICAL ANALYSIS EVALUATION.**

The theoretical analysis serves two purposes. Firstly, it identifies the actual meaning of the data, without which the statistical analysis can’t be interpreted accurately. As well as understanding the meaning of the variables presented in the SUTs (eg, COE = labour costs), this helps to avoid meaningless or invalid analysis – for example, it would be purposeless to regress GDP on its own components, yet without the theoretical analysis this is possible using the SUTs. Other problems this approach identifies and avoids are set out in the Data Report section 2.3 – the nominal value and annual nature of the data.

Secondly, it helps to guide the analysis towards meaningful relationships. Understanding the production function and how the SUT variables fit into it, combined with the economic theory presented, suggests and justifies the wage share analysis.

I feel that the theoretical analysis presented meets these objectives.

**SECTION 2.2: STATISTICAL ANALYSIS EVALUATION.**

The statistical analyses chosen have wider relevance – in the case of wage share, to economic theory, in that of IC share, to the fundamental quality of the SUTs and, therefore, UK GDP estimates and economic modelling in the UK. They use appropriate, if simple, methods (linear regression), making the standard Gauss-Markov assumptions for statistical analysis. Their failure to find statistically significant relationships does not decrease their value; science depends on negative results as well as positive ones.

That said, given the importance and extent of the SUTs, the available analysis (and, therefore, the analysis I’ve done) is limited in scope and informative power. Although other simple regressions could be done – eg, regressing import share on some chosen categories of product – truly convincing and comprehensive modelling is difficult to implement with them for the reasons outlined in section 2.3 in the Data Report. Other datasets are required, and that implies extensive assumptions regarding the relationship between the SUTs and those other datasets.

These assumptions are necessary because of a lack of metadata on how the SUTs are compiled. For example, ONS (2010)’s entire description of the calculation of COE is (p. 34):

“1.4.4 This is the total remuneration in cash or in kind, payable by an enterprise or government to an employee, in return for work done during the accounting period. It has two components: wages and salaries payable in cash or in kind; and employers’ social contributions.

1.4.5 Wages and salaries are measured through tax records, which are collected in the UK by a system known as "Pay-As-You-Earn" (PAYE). In order to completely cover wages and salaries, a number of supplementary estimates are made for income not covered in sufficient detail by the PAYE system (e.g. pay below tax threshold).

1.4.6 Employers’ social contributions represent the value of the contributions paid by employers in order to ensure their employees are entitled to social benefits. They comprise payments by the employers to insurers pension funds and the cost of benefits paid directly to employees or former employees (i.e. unfunded pension schemes). They also include payments to government under the National Insurance Scheme. These employers’ contributions are treated as a component of the compensation of employees, since they are seen as being paid to the employee who then passes on the payment to the insurance company or government even though, usually, payment goes direct to the insurance company or to government. This employers’ contributions component is mainly measured through data supplied by government administrative records.”

This is not enough information to be able to use the COE data to its full potential, as potential biases, errors and autocorrelations within the discussed data sources are not explained.

To perform a more detailed analysis using the SUTs, therefore, the problems outlined in Section 2.3 (the lack of quarterly and constant price SUTs), as well as the above metadata problem, should be resolved. Eurostat (2008) sets out frameworks for the latter two, so it is possible. As well as providing useful information on relevant economic questions, the analysis has highlighted these issues.