

CSO's Large Cases Unit – A strategy for dealing with Multinationals and Globalization

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1. As far back as the late 1950s and early 1960s it was recognized that, in order for Ireland to achieve sustainable economic growth, the country would require substantial foreign investment. In the intervening period Ireland has become one of the most globalised economies in the World. Indeed such is the concentration of large Multinational Groups operating in Ireland that roughly 36 of these Enterprise Groups account almost 60% of total exports of goods and services and a substantial part of total production.
2. However, with this greater level of internationalization comes the challenge of measurement. This paper will outline how the Irish Central Statistics Office (CSO) deals with this challenge. In particular it will explore some of the statistical challenges encountered in the establishment of the Large Cases Unit (LCU) in the National Accounts Department of CSO.

Large Cases Unit is Created

3. In Mid 2009 the “Plan for Business and Organization Development¹” was published by CSO with the objective of implementing a series of structural changes by the end of that year. Recommendation 2 of the plan was to “Establish a *Large Cases Unit to focus on the collection and processing of data for the largest enterprises.....*”
4. The LCU was also to take over responsibility for the Consistency Unit which had been in existence since the mid 1990s. The Consistency Unit had responsibility for analyzing all aspects of data submitted to CSO by Multinational Enterprises (MNEs) operating in Ireland. The objective was to ensure the coherence and plausibility of the various statistical and administrative returns used in the compilation of the Irish National Accounts and related macro economic statistics.
5. The LCU was to become a central point of communication between the CSO and MNEs. Effectively this corporate decision to establish the LCU was a strategy to reduce the respondent

¹ CSO (2009)

reporting burden through simplifying the interface between the company and the CSO. Ultimately the plan was to introduce a more streamlined reporting arrangement for these companies through a small number of generic forms covering practically all statistical reporting requirements.

6. The creation of the LCU also marked a major step forward by CSO in dealing with the effects of globalization on a small open economy. The model followed in CSO generally in producing statistical results from survey data is to split the process into two parts. A Data Collection Unit (DCU) is responsible for the issue of survey forms, together with the subsequent follow-up with respondent companies and ultimately the data capture or recording of survey data returned to CSO. The DCU is responsible for presenting a set of clean unit records to the other Unit called Results, Analysis and Publication (RAP). This RAP Unit produces the results, publishes and disseminates them.
7. To facilitate this data collection and analysis process the LCU designed electronic survey forms which are XML tagged. These forms comprise three generic formats at monthly, quarterly and annual frequency and cover all the data requirements at each frequency. In this way the MNE can prepare the data and transmit it to CSO efficiently. At the same time it has been possible to eliminate duplication of data requirements that can occur when all the surveys are received individually by the companies.
8. The LCU now follow this DCU/RAP model in respect of the large MNEs as it is involved in both data collection and analysis. However, the results have still to be aggregated into the individual publications of the various short term and long term statistics etc. The survey areas covered by the LCU are the following:

Frequency	Survey Name
Monthly	Index of Monthly Industrial Production
	Import Price Index
	Index of Monthly Services
	Wholesale Price Index
Quarterly	Balance of International Payments
	Quarterly Accounts Inquiry to Industry
	Quarterly Accounts Inquiry to Services
Annual	Census of Industrial Production
	Annual Services Inquiry
	Prodcum
	Servcom
	Specific topic surveys*

*Energy, ICT and Research and Development Inquiries

Specific topic surveys that are issued less frequently are also handled by the LCU such as.

9. In order to give a better understanding of the work of the LCU this paper will now focus on three cases which outline key challenges faced by the LCU. These concern:
 - a. dealing with the effects of Global Production,
 - b. identification of the Statistical Unit together with the solutions implemented.
 - c. deflation using price data from Enterprise price surveys and Unit Value indices from administrative sources.

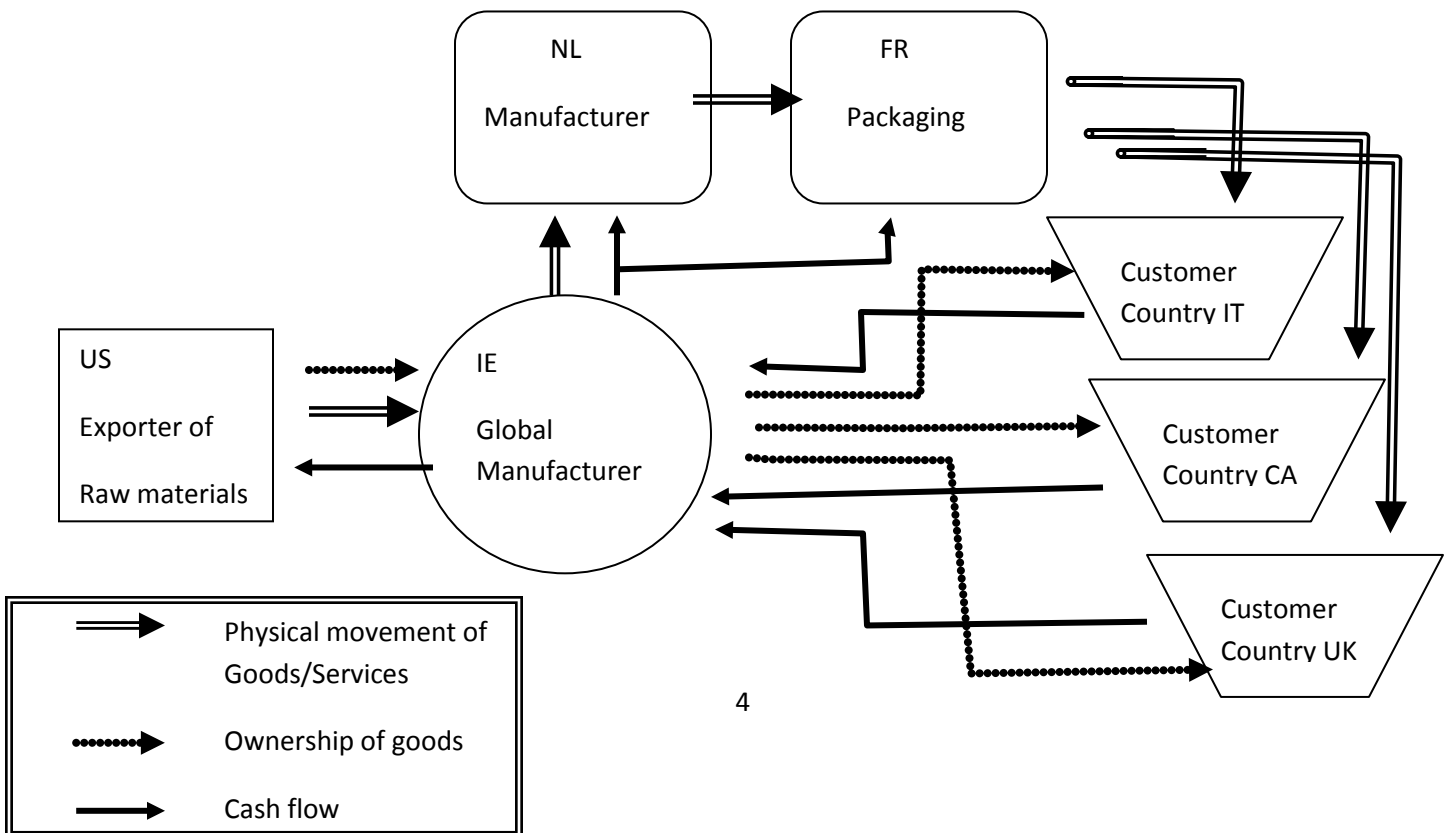
Case 1 : Global Production

10. One of the Multi National Enterprise (MNE) groups taken on by the LCU is a large pharmaceutical group. Over the course of 2010 the production and exports of this MNE grew very substantially. The LCU set about reviewing the various survey forms and administrative data sources submitted to CSO by the various affiliates of this Group in Ireland.
11. Initially it seemed that the Group had simply increased its Irish production. The lead in time for establishing a production facility for pharmaceuticals tends to last a minimum of seven years. This is explained by the standards that these production processes must meet and the various domestic and international agencies who license the production as being acceptable for use or sale in their countries.
12. The initial profiling of the various data in relation to the Group's trading activities did not entirely agree with the survey data. Accordingly, a visit to the Group headquarters in Ireland was required and at this meeting many of our questions were answered regarding their activities. This is standard procedure. Face to face meetings are often required to clarify complex trading activities and also to understand how they are recorded in the MNE's accounting statements.
13. At the meeting it transpired that this MNE was engaged in the standard activities that would have been expected in advance i.e. importing the raw materials and producing bulk pharmaceutical products. However, in addition to these activities the MNE was engaged in a series of "Goods for Processing" activities together with "Merchanting" activities.
 - a. Goods for Processing² is a facet of globalised production within international groups where an affiliate provides production services to a related company which involve some of the stages of production. The affiliate providing these services never takes ownership of the goods being produced. Instead the affiliate that purchases the services retains ownership of the product through the whole production process.

² For a more detailed discussion on both Merchanting and Goods for Processing see IMF, Balance of Payments and International Investment Position Manual (BPM6) 2009, Chapter 10, Box 10.1 **and** Impact of Globalization on National Accounts (2011)

- b. Merchanting occurs in an MNE context where one affiliate purchases goods from another affiliate in another jurisdiction and sells this product to another affiliate or third party in another country. The proceeds or margin earned on Merchanting transactions accrues to the country where the merchant is resident.
14. The Goods for Processing arose where the raw materials are shipped from Ireland to Netherlands to be manufactured. This is a process commonly called “tolling” in the pharmaceutical industry. The company in Netherlands never takes ownership of the product and is supplying a (manufacturing) service to Ireland.
15. Once the process in Netherlands is completed the product is shipped to France for tableting and blister packaging. This activity is another tolling or Goods for Processing activity. The ownership of the products again remains with Ireland and the French plant provides a service to Ireland.
16. The products are sold to third parties outside France. The statistical requirement is that Ireland records these shipments from France to third countries as exports from Ireland because the goods were still owned by the Irish company.
17. Although this MNE produces a number of products, this process only relates to one of them. In this particular case no production occurs in Ireland and instead it is a case of Global Production across borders between Ireland, Netherlands and France. All of this activity was between affiliates of the MNE group. The diagram Figure 1 describes the process

Figure 1: Global Manufacturing - Product A

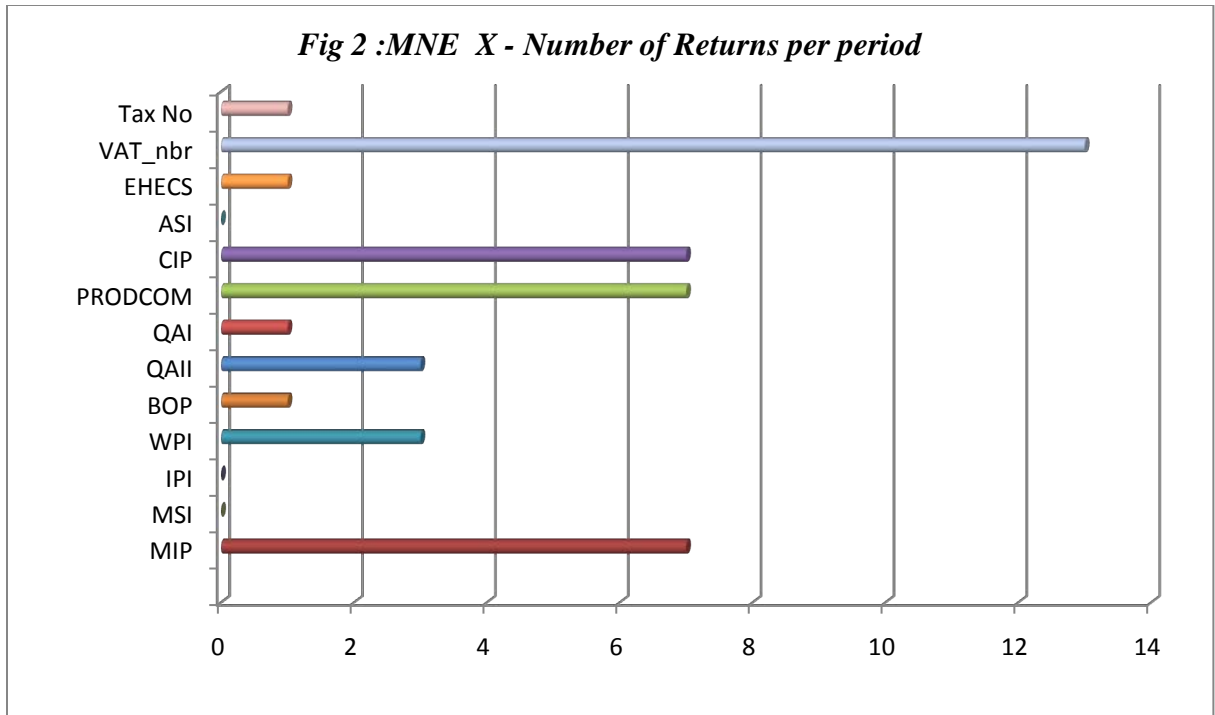


18. In the chart above the production process is illustrated with the movement of raw materials from US to Ireland, the global manufacturer. Ireland send the raw materials to Netherlands for processing and from there on to France for further processing. The finished products are then shipped from France to third countries. The payments by Ireland reflect the payments to France and Netherlands for manufacturing and distribution services.
19. However, for the LCU the challenge, once the process was fully understood, was to implement a statistical recording of this process in line with International Standards. These activities impact principally on three areas of statistics: Balance of Payments, Monthly Production and Turnover and International Trade.
20. The solution in this case was to modify the data collection approach where additional data was collected via a customized form that is linked to generic monthly and quarterly templates. This customization enabled, for example, the collection of data for the final export of these goods, following processing abroad, to third countries.
21. As outlined earlier the LCU issues XML tagged electronic survey forms to client companies covering all the data requirements at a particular frequency e.g. all monthly data. In this way the LCU is able to avoid duplication in data being requested from MNEs across a series of separate surveys covering business statistics. This approach also facilitates a highly automated data collection and data capture system and can accommodate some customization of these forms as required in this case study.
22. The case study also illustrates how critical the LCU interface with the MNE can be in terms of identification of data in relation to global production where the products owned by the resident MNE do not necessarily cross the national border at each stage of the production process but remain in the ownership of the resident company.

Case 2: Identification of MNE Statistical Units

23. In addition to collecting and editing the survey data from MNEs the function of the LCU is to align this survey data with the administrative data used in the compilation of Balance of Payments and National Accounts. The main administrative sources are:
 - a. The Single Administrative Document (SAD) for extra EU exports and imports of goods and the Intrastat survey data for intra EU exports and imports both conducted by the Tax Authorities. These data are used in compiling International Trade statistics.
 - b. The Corporate and Self Employed taxation records. These data are used to estimate *Operating Surplus* and *Mixed Income* for the Income measure of GDP.
24. However, in addition to their use in the compilation of these statistics, these administrative data give another perspective on data already received from enterprise surveys. These surveys include Short Term Statistics (STS), Structural Business Statistics (SBS) and Balance of Payments (BOP) surveys.

25. The efficient functioning of the LCU is made possible by linking up these diverse data sources and building a coherent picture of the activities of the MNE both domestically and internationally i.e. between Ireland and the rest of the world.
26. Ideally all the data in relation company structure, subsidiaries, affiliates and ownership would reside on the Central Business Register (CBR) which is the central repository for this type of data. However, in the case of CSO the CBR does not necessarily provide a comprehensive profile of all these complex structured MNEs. This is a common problem across National Statistical Institutes dealing with these entities. In some cases the picture presented can be incomplete and the LCU needs to explore other approaches in completing the profile of particular large enterprise groups. Indeed the LCU significantly supplements its knowledge of MNE Group structures at face to face meetings with these companies. In this way feedback is given to the CBR to improve its MNE profiles.
27. In Ireland there is not a single or unique numbering system (Unique Business Identifier) for companies that could be used to link all of the data relating to an MNE Group. The LCU, in order to operate efficiently had to arrive at a means of profiling the activities of each Enterprise Group. Accordingly, a series of indicators across different data sources were identified to enable the linkage of data related to any given MNE covered by the LCU:
 - a. VAT number for trade in goods;
 - b. Company Records Office (CRO) number for new companies or unidentified existing ones;
 - c. Revenue Customer Number for corporation tax;
 - d. PREM number for Self employed and employee data;
 - e. CBR number for CSO enterprise surveys;
 - f. BOP survey number for MNEs covered by Balance of Payments surveys.
28. In order to appreciate the complexity of a given MNE, Fig 2 below illustrates these linkages between survey and administrative data for one Group. There are 7 monthly reports on Industrial Production from each of the production plants operated by this entity. However, for Balance of Payments reporting only one return covering the entire Group is completed. For administrative data, the Group has 13 different VAT numbers and one Corporation Tax return.
29. This chart therefore illustrates the difficulties in trying to capture the entire activities of any LCU company. A one-to-one relationship rarely exists across the various data sources. Instead we find a many-to-one or one-to-many relationship.



30. This case demonstrates the difficulties for an LCU in developing a system to profile complex group structures. Establishing a comprehensive profile of an MNE is the first step in analyzing the statistical data relating to these groups.

Case 3: Deflation - LCU Analysis of Deflators for Goods Exports and Industrial Production

31. Transforming current price data into constant price data is an critical part of the overall compilation of the National Accounts. The choice and measurement of the deflators used to make these calculations is critical. The deflators applied to the data from LCU companies' trade in goods and industrial production are Price indexes used in compiling the Wholesale Price Index (WPI) and Unit Value indexes compiled from the International Trade Data covering exports and imports of goods. One of the very positive outcomes of the establishment of the LCU is that it is now possible to review price trends at company level and even to compare these same trends against Unit Values by company. These comparisons have been made possible through linking VAT numbers to CBR numbers for these MNEs as outlined in the previous section.

32. Price deflators based on Unit Values are generated by dividing the value of goods by the quantity of goods in one period, which is divided by value over quantity for the prior period at the level of individual commodity codes. The use of quantities in these indexes is thought to cause an

upward bias. This conclusion is explained in a United Nations (1981) paper³. Moreover, it is recommended by the UN that the use of these Unit Value indexes should be discouraged. However, for many countries Unit Value indexes represent a cost effective means of estimating deflators for International Trade and are still widely used. The approach to Unit Value calculation is set out below:

A unit value index, P_U , for period 1 relative to a reference period 0 is given for comparison over $m=1, \dots, M$ prices, p_m^1 , and quantities, q_m^1 , in period 1 and over $n=1, \dots, N$ prices, p_n^0 , and quantities, q_n^0 , in period 0 by:

$$P_U(p^0, p^1, q^0, q^1) \equiv \left(\frac{\sum_{m=1}^M p_m^1 q_m^1}{\sum_{m=1}^M q_m^1} \right) / \left(\frac{\sum_{n=1}^N p_n^0 q_n^0}{\sum_{n=1}^N q_n^0} \right).$$

33. In CSO, in order to mitigate the impact of this bias, the Unit Value index is used in conjunction with the WPI and the average of the two measures is used for deflation of Exports and Imports.
34. In the case of the deflation of Industrial production the use of the Wholesale Price Index/ Producer Price Index at the level of individual MNE has also clarified the deflation process for the LCU companies. The formula⁴ used to calculate the index is as follows:

$$\left(\frac{\sum Q_0 P_{m-1} \left(\frac{P_m}{P_{m-1}} \right)}{\sum Q_0 P_0} \right) \times 100 = \left(\frac{\sum V_{m-1} \left(\frac{P_m}{P_{m-1}} \right)}{\sum V_0} \right) \times 100$$

where:

Q_0 and P_0 : the quantity and price respectively of a commodity in the base period;
 P_m : the price of the commodity in the current month;
 Σ : represents summation over all commodities.

In practice the method of compilation of the means that base year commodity weights (i.e. $v_0 = q_0 p_0$) are progressively updated each month and the price are

³ For a detailed discussion on the use of Unit Value indexes for trade deflation see: Silver, June 2009.

⁴ For a detailed explanation of the WPI/PPI compilation in CSO see:

<http://www.cso.ie/releasespublications/documents/prices/2010/wpiintro05.pdf>

derived by dividing the aggregate current monthly value by the corresponding base year value. The calculations are done in a number of stages reflecting the weighting structure of the WPI.

35. Recently, when the second quarter compilation of the National Accounts (Q22010) was in progress, an interesting inconsistency emerged when the LCU was trying to reconcile the deflated exports and the deflated value added/production for the MNEs that the Unit covers. This is a standard quarterly process in the LCU.
36. The products (together with the related prices) reported for the MNEs in the WPI/PPI were compared to the products reported on the Monthly Industrial Production inquiry. The review revealed that the same products were not being reported on both returns. In other words there was a discrepancy between what products were actually being produced and what products were being priced and included in the calculation of the WPI.
37. This scenario had an obvious impact on deflation and the challenge was to measure the extent of the mismatch between what was being deflated and the composition of the deflator.
38. This situation can occur where products being manufactured, particularly in the pharmaceutical sector, can change from one period to the next. At the same time the Price survey will cover the products produced in the base year and any subsequent additions. In addition, on account of the relatively short product life cycles for some items, the weights relating to 2005 for particular products had changed resulting in different estimates for deflators.
39. In the end, following LCU analysis of this case, it transpired that price differences were explained by changes in pricing for the same product in different markets i.e. UK and Far East. This resulted in changes in the price index for the product group in question. The difficulty had to be resolved by a recalculation of the deflator for this production on the Output side i.e. the deflator used to deflate the industrial production of this product group was changed as part of the production index calculation.
40. Aside from the specifics of this case, in general, for Ireland, goods exported account for the majority of industrial production, in particular in the Pharmaceutical and Electrical Engineering sectors. When deflating exports of goods it is therefore critical that the deflators used in deflating production are taken into account. In this way the balancing of the constant price Output and Expenditure estimates of GDP is assured for the LCU companies at least. Indeed the overall consistency between production on the Output side and Exports and Inventory Changes on the Expenditure side has to be constantly monitored to ensure this balance in GDP estimation is maintained.
41. As outlined earlier, LCU companies account for 70% of total goods exports and 20% of total goods imports so it is vital that these deflators are as accurate as possible. In the LCU using VAT numbers it has been possible to review Unit Value estimates by broad category at the company level. This comparison can be repeated for the price index (WPI) which is based on enterprise survey data submitted directly to CSO. In this way comparison between these two sources of

deflators can be examined and anomalies that might impact on the measurement can be dealt with.

42. This case study has revealed that Price indexes can be used by a LCU for analysis of deflation of both production and export data for MNEs. The benefits of this analysis is clear in this example where an MNE sets different prices for the same product in different markets.

Conclusions

43. The case studies outlined in this paper highlight the challenges for National Statistical Institutes (NSIs) in dealing with MNE Groups resident in their economies. There is no single answer to dealing with these challenges. However, the establishment in CSO of the LCU is one solution where the MNE micro data can be directly related to macro economic statistics. The case studies in this paper have illustrated how this approach can be applied in relation to:
 - a. Industrial Production and Balance of Payments statistics - Global Production,
 - b. Wholesale price/Producer Price survey data and Unit Value data sourced from Administrative data sources in the deflation of Exports and Value Added for Industry
44. The case study relating to the identification of Statistical Units illustrates another key challenge of identification of all the activities of an MNE in the NSI's economy.
45. The principal feature is that the Unit is charged with dealing with all the economic data relating to the enterprises or supplied by these enterprises. In effect the Unit is a combination of data collection and analysis for these large enterprises across all macro economic series published by the Office.

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