

OFFICIAL STATISTICS:
ABOVE AND BELOW
THE
PUBLIC DEBATE

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Official Statistics: Above and Below the Public Debate

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1. Introduction

Roy Geary was a person of great distinction, recognised for a wide range of achievements. He was a first class mathematician who made significant contributions to statistical theory. He was an Official Statistician of distinction and he made great contributions to the development of economic statistics and to the use of statistics for policy purposes in fields as diverse as demography and economic statistics. He was the first Director of the Central Statistics Office when it was created in 1949 and I am delighted to be asked to present this lecture in the CSO's 50th birthday year.

Geary's working life spanned a time of great development in almost every area of his wide interests. He of course continued to work beyond his retirement in 1966 but even between the 1920s and the 1960s statistical theory underwent enormous developments. The work of Fisher, Yates, Neyman and many others created a framework that was built on by many others to provide the range of statistical and econometric theory that is available to us today. In the 1920s there was no accepted theory to support the selection of samples for data collection and analysis. Bowley, with whom Geary worked, had been involved but the question of how to draw representative samples, which is a cornerstone of Official Statistics, was unresolved. Not until Neyman (1934) set out in one magnificent paper the basis of statistical inference using randomisation for selection did Official Statisticians have a basic tool for their work. Indeed this one paper provided the basic randomisation theory, the theory for stratification and for optimal allocation to strata.

If this period was a formative one for statistical theory it was no less so for economic statistics and macro-economic analysis. Estimates of National Income had been of growing interest between the two World Wars and this led to the first development of a System of National Accounts in which Stone and Meade played such an important role. It is astonishing to me how quickly these developments were taken up, with the first estimates of National Accounts being produced in the immediate post-war years, and within a short time these being produced in a wide and diverse range of countries. In the international arena, the Marshall Plan

provided the impetus for these developments to be adopted speedily and the first UN System of National Accounts was formulated in 1952. Geary was involved throughout this period, the first estimates of National Accounts for Ireland having been produced in 1946.

The other development that the UK and Ireland shared was the creation of a Central Statistical Office at about the same time. Geary was the first Director of the CSO when it was founded here in Dublin in 1949. In the UK the decision was taken a little earlier, in 1940. I do not know what factors led to the creation in Ireland, but in the United Kingdom dissatisfaction with the organisational arrangements went back at least 100 years and had been considered periodically throughout that period. The decision was finally taken when Churchill sent his famous minute to the War Cabinet secretary in 1940:

...it is essential to consolidate and ensure that agreed figures only are used.

The utmost confusion is caused when people argue on different statistical data.

I wish all statistics to be concentrated on my own branch as Prime Minister and Minister of Defence, from which alone the final authoritative statistics will issue.

However, the issue of further centralisation has continued to be pursued since, and especially in the last 15 years or so. The organisation of statistics in the United Kingdom has continued to evolve and there is no evidence that this process has finished.

If there is a link between the strands of Geary's work, it is perhaps his commitment to work of practical relevance. His interest in statistical theory was generally driven by practical need or underpinned by empirical analysis. Similarly, his concern in Official Statistics was in making the statistics relevant to the needs of policy development and in getting statistical analyses used to underpin policies.

2. Statistics Matter

My theme will draw on Geary's basic belief: that Official Statistics are vital to public policy, to the well-being of our people and indeed to the democratic process itself. If that was true through Geary's working life it is no less true today. Indeed the range of statistics and the ways in which they are used have become increasingly important to us all.

Statistics are used to identify and track changes in society and to develop and monitor public policies in response. The changes taking place have enormous consequences. For example, the changes to fertility and mortality and the consequential changes to the age structure of our populations have enormous consequences for the economy, for health and education services, for public expenditure, for future housing needs and so on. The changes taking place in

family formation and dissolution, the number of births outside marriage and the growth of the number of single parent families have significant effects for social and educational policies. The health of the population and in particular the incidence and survival rates from cancer are of ongoing concern. The changes in the labour market, the increased levels of female participation, the increase of part-time and multi-job employees has contributed to structural changes in the labour market. Environmental change is of increasing concern. The globalisation of the economy, the movement of capital and the growth of inward and outward investment across national boundaries has been significant. The use of information technology, the development of e-commerce in its widest sense will lead to profound changes in the economy and society more generally that as yet we can only glimpse. In all these fields, and in many others the importance of the role of statistics to measure and monitor change and to underpin informed policies and decisions cannot be overstated.

But statistics are used in other ways too, to trigger administrative actions or to drive resource allocation in a semi-automatic way. Indeed it is arguable that in some areas of potential controversy, decision makers have preferred to rely on the automatic consequence of a statistical mechanism, rather than the decision making process becoming a controversial issue each year. Statistics, in this context are seen to be equitable in some sense. The sums that are related to statistical outputs can be very large indeed. Consumer Price Indexes are used to upgrade a range of pension and benefit payments in many countries. In the UK, an increase of 0.5 per cent in the Retail Prices Index (RPI) leads to an increase of about £700 million per year in public expenditure. Very much larger sums depend on the RPI in connection with index linked bonds. The Census is very expensive (in the UK a total 10 year cost of about £200 million). But the population estimates that are derived from the Census are used to allocate resources to Local and Health Authorities. Considering this use alone, the £200 million cost of the Census needs to be set alongside the allocation of about £450 billion over a ten-year period. If the Census leads to just a 1 per cent gain in efficiency for the allocation of such huge amounts then the beneficial impact of £200 million expenditure is very great. Of course this is not the only use of the Census.

The need for internationally comparable statistics has long been recognised. The use of estimates of National Accounts in conjunction with the Marshall Plan is one example and since then the role of statistics in decision making for institutions such as the IMF and the World Bank has increased enormously. Internationally comparable statistics are an important goal and of increasing importance to national issues. Nations exist and thrive in an increasingly global world, economically, environmentally and socially. But, in the context of the European Union there is a parallel with the national use of statistics for

administrative purposes. Just as the increase in the price index has a direct consequence for public expenditure so too national statistics can have direct consequences for contributions and resource allocations between the European Commission and Member States. The total EU Budget is about £55 billion, of which the UK contribution in 1998 was £7.8 billion. Almost half of this was contributed through the fourth resource which is based on GNP estimates for the UK and all other Member States. The corresponding figures for Ireland are £0.5 billion total contributed of which 35 per cent is due to the fourth resource and hence is based on GNP. Each country contributes a little less than 1 per cent of its GDP in total. Additionally, the use of statistics at the heart of the Maastricht Treaty for membership of the EMU and in future to monitor the Stability and Growth Pact implies that the need for internationally comparable statistics has never been greater.

Rather than take any one of the social or economic issues that I have referred to above and present an appropriate statistical analysis, I shall instead develop a more general theme. To support good public policy and to underpin the democratic process, statistics must be of demonstrable high quality. They must be trusted by users and this has implications for the processes within which Official Statistics are produced and, finally we must disseminate the statistics so that they are understood and as a consequence used. This is the essential theme of my title: *Above and Below the Public Debate*. Statistics are above the public debate in that they must be seen to be produced impartially, free from political interference and commanding trust. Statistics are also below the public debate in that they underpin decision making, policy development and good public administration. In a nutshell the challenge for Official Statisticians is:

- Get them right
- Get them trusted and
- Get them used.

3. Getting Them Right: Quality and Authority

There is a very strong connection between quality of statistics and the trust that users place in them and much of this section is essential underpinning to building trust and public confidence in Official Statistics.

The cornerstones of quality are as clear a conceptual framework as possible so that what we attempt to measure statistically is unambiguous. We need to use the best methodology and keep abreast of the best international standards and practices through a continuous process of research and development. Also we need to have processes of measuring and reporting quality and a culture of evaluation and critical review.

Clear Concepts

The requirement for accuracy often implies that the quantity being measured is well defined. But in many cases there are conceptual issues that can be minor or sometimes major in terms of the impact on the quality of the final measurement. The number of human live births in a given country and period is a simple, relatively uncontested concept, although there may be classification problems about what constitutes a live birth. But whether someone is “unemployed” or not is a much less well defined concept. For this and most other elements in our statistical systems we have to rely on definitions and conventions that are to some degree arbitrary and open to interpretation at the boundaries. Some constructs (for example index numbers of price or quantity changes) are not observable even in principle.

These conceptual problems are at the heart of the classification and estimation problems that official statisticians face. It is rare for the concepts that we strive to measure to be driven by a well defined theoretical construct. Often there is a degree of arbitrariness in the choice and the ideal concept will vary from one use to another. For example, the definition of unemployment best suited to a labour economist analysing the downward pressure of unemployment on wage settlements will be different to that required by the sociologist investigating the impact of unemployment on family life. There is no perfect solution to this problem although we strive to present data as flexibly as possible to support different uses. Internationally agreed standards are essential – both as a means of striving for international comparability and as a source of guidance for national statisticians when faced with conflicting pressures. Good international standards provide a framework within which national statisticians can respond more confidently and authoritatively to national pressures for alternative definitions and measures.

The question of how to record student loans illustrates the point. In the UK the question has raised three quite separate issues. The first is how government lending to students should affect key measures of public finances in national accounts. The answer to this question depends on a straightforward application of international standards for national accounts, but has led to misunderstandings. It is not the case, for example, that the Office for National Statistics (ONS) chooses, uniquely among national statistical offices, to record student loans in such a way that government lending to students makes the government deficit worse. Also, the way that statisticians measure public expenditure does not affect the monies that Government Departments have to spend. The measurement rules have no impact on the amount that Governments actually need to tax and borrow to finance their activities.

The second issue is how to record the sale of student debt by government. In the UK, government has been lending to students for some years. The lending increases general government expenditure in national accounts in line with international practice. Suppose government sells the loan book and receives a large sum up-front. The students now owe the purchaser of the loan book. At first sight, it seems that the sale of the loan book should have the reverse effect of the initial lending: a reduction in general government expenditure. This would certainly be the case if the loan book had been sold with no strings attached. But in practice there are too many risks for prospective purchasers for the sale to be as straightforward as this. Various subsidy packages and options for debt collection may be designed to reduce the risks faced by purchasers. In some options, although government would have sold the loan book in legal terms, it could be left with most of the risks and rewards of ownership. In economic terms, the student debt would remain an asset of government, and government would in effect be selling securities linked to the performance of the loan book. Official statisticians need to apply professional accountancy guidelines to determine whether the asset should be on the balance sheet of the purchaser or government. These standards are applied for two reasons: to help ensure that the recording of transactions for the national accounts is consistent with how the financial sector would record the transaction in their statistical returns; and to provide a firm foundation for making these difficult judgements. Without such underpinning, it would be more difficult to resist any pressure for national accounts to measure activities in ways that suit political objectives rather than statistical integrity.

The third issue is the future financing of student loans. It has been argued that the expansion of higher education can only be afforded by using students' future incomes. To make this possible, loans have to be bigger and have secure income-related repayments administered through, say, the income tax system. To avoid the initial lending hitting public finances it is argued that the loans should be financed directly by the private sector rather than by government. This mix of public and private activity raises many new and complex issues of statistical classification. Such mixtures are not addressed explicitly in the international statistical standards nor in the accountancy guidance. The Office for National Statistics has to apply the spirit of the standards so that national accounts record the economic substance of the transactions. If government designs the loan scheme, administers the granting of loans, collects the repayments, and provides various subsidies, then it would be difficult to see how the lending could be regarded as private lending even if private funds were financing the operation. Most of the risk and control would still be with government. In this case, the private finance is best seen, not as buying the loan but as a financial derivative that underpins government expenditure. Similar issues arise with some other government/private sector partnerships.

The Best Methodology

There have, and continue to be major developments in statistical methodology and the ways in which this is used to support Official Statistics. These include the design and analysis of sample surveys, questionnaire design, survey methods, the use of auxiliary information to improve the quality of estimates, and significant improvements to the editing and imputation of data. There have been enormous advances in information technology also. These developments have improved the design, collection and primary processing of data. More recently there have been corresponding advances in analytic methods applied to survey data. These include the development of methods for small area estimation, hierarchical modelling techniques to take account of contextual variables, methods to analyse longitudinal data including the use of survival models, and continuing developments in the use of advanced methods for time series analysis, seasonal adjustment, trend estimation and the like.

Many of these developments have been based on a positive interaction between university researchers and centres of methodological expertise in some of the stronger national statistics offices. This interaction has been creative and beneficial. Methodological development cannot be left to universities alone. Having an in-house capability for sample and statistical methodology is an essential part of the infrastructure that guarantees quality of statistical outputs for Official Statistics. Also the rate of take-up of new methods developed elsewhere is, in my view, closely related to the in-house capability of an office. In the UK we have been trying to strengthen this capability for a number of years but it is necessarily a slow evolutionary process. However, we have benefited significantly from a range of contractual relationships with academics, not least a major contract with statistical methodologists at the University of Southampton who have been involved in a wide range of developments within the Office for National Statistics. The quality of our business statistics, our labour market statistics and the next Census will all have benefited significantly from this link.

Methodological improvements can be driven by the need to develop new statistics or because we are anxious to ensure that those already produced are of the highest quality.

An example of the first approach is the One Number Census project. This is aimed at adjusting the Census outputs from the next Census in 2001 to allow for under-enumeration. This is a major programme of work with many strands: demographic modelling to estimate the total population in 2001; a very large Census Coverage Survey of special design to identify missed people and households; a statistical modelling process involving multi-level models; a computer matching process of high accuracy between the Census returns and the

Census Coverage Survey and finally an imputation process to allow for undercoverage. Each stage has been the subject of extensive research and testing that is still ongoing.

An example of the second approach, a research programme aimed at improving the quality of an existing output, is the work in hand in relation to measuring inflation. Consumers' inflation is traditionally defined as the annual change in the Retail Prices Index (RPI). However, largely in the wake of criticism of the US Consumer Price Index (CPI), it has been claimed that this definition overstates true inflation. This is an important issue. Because of the political decision to link various benefit payments to the RPI, a change of just 0.1 per cent on the RPI annual inflation rate alters government expenditure by £140m per annum and affects many other financial transactions. There are therefore many different groups with a vested interest in the RPI figures – from the government to pensioners.

Claims that the RPI is overstated have been based on various arguments. These overlap to some extent, but the main ones are:

- Conceptual
- Quality change
- Formula effects.

Conceptual Issues

The RPI is used for several purposes, although it is well recognised that no single inflation measure can meet all users' needs. The RPI Advisory Committee has recommended that, in view of its main uses, it should be seen as an index of price change. Despite this recommendation, some of the criticism of the RPI is based on the view that it should be a cost of living index. The difference between a price index and a cost of living index can be illustrated by the example of the out-of-town supermarket. Prices there tend to be lower than those at a small local shop. People switching between corner stores and the out-of-town supermarket would lead to a lower cost of living index but not a lower price index. Of course such stores can raise the cost of living for some people, through the extra travel costs and time incurred and the tendency for people to buy more than they otherwise would. We need to consider very carefully the conceptual basis that most meets our users' needs.

Quality Change Issues

A price index depends on comparing prices of the same product over time. But if goods change in quality and this is not allowed for, price movements will be distorted. The RPI procedures do make adjustments for quality change in some

circumstances, and some critics argue that more allowance is needed. However, it has also been suggested that adjustments over-compensate, producing a bias in the opposite direction to the one expected. It is important for the accuracy of the RPI to continue investigating this issue.

Formula Effects

For each item in the RPI, a sample of prices is collected from shops around the country. The average price changes for many items is calculated as the simple average, or arithmetic mean, of the price changes from this sample. An alternative, more complex, method of calculation is known as the geometric mean. It can be shown that this formula will always yield a lower price rise than the simple average, or a larger fall if prices are falling, so use of this formula would reduce inflation as measured by the RPI. It has been suggested that the geometric mean has theoretical advantages over the simple average. This issue is being investigated.

Evaluation and Critical Review

A good conceptual and methodological basis is essential but even so, quality cannot be taken for granted. A culture of systematically measuring the quality of what we produce and using this to inform users and to provide feedback and improvement to the underlying statistical process is very important. It is helpful to identify four strands:

First, for outputs based on survey returns there are the usual set of quality measures (sampling variance, response rates etc.) that usefully monitor some aspects of the quality of key outputs. In the UK we have been increasing the range of outputs for which we produce such measures and reporting these as an integral part of the statistical output.

However, frequently statistics are based on administrative sources rather than sample surveys, and the nature of evaluation is different. This leads to the second strand which is based on systematically evaluating the differences between the concept that we seek to measure and the measure that is based on an administrative process.

Survey and Register Measures of Unemployment

A good example of this is the “measure” of unemployment based upon the count of people who claim unemployment related benefits. Such a measure is used in many countries, often in parallel with internationally recognised measures such as the ILO measures of unemployment, employment and economic inactivity. This approach has the fundamental difficulty that the claimant count does not relate to

any clearly or consistently defined concept. Changes in the benefit regime have directly impacted on the measure leading to distortions in comparisons over time, and accusations of the official statistics being “fiddled”.

How should statisticians deal with this? First, by using an internationally defined measure based on the International Labour Organisation (ILO) definitions (ILO, 1983). This is already available through the Labour Force Survey and is published within a coherent and integrated presentation of Labour Market Statistics that is produced monthly.

However, administrative systems – even though they yield statistics that do not coincide with a generally accepted concept – do have value. They are relatively inexpensive and can provide information at a level of detail that survey-based measures can not.

What professional statisticians should do in this case, and what GSS statisticians have done for a number of years, is to provide as clear guidance as possible on the differences between an accepted standard measure and statistics derived from an administrative source. The Royal Statistical Society (Bartholomew *et al.*, 1995) commended the Office for National Statistics (ONS) for their comparative analysis of the Labour Force Survey and the claimant count.

Cause of Death

A second example of this issue and one that illustrates the difficulty of achieving internationally comparable statistics, even in what might appear to be a relatively straightforward situation, is the measure of cause of death. The general concept of cause of death is well established and there are international standards of classification – the International Classification of Diseases (ICD). This is periodically revised and published by the World Health Organisation (WHO, 1994). But the way that some causes of death interact with national cultural norms and administrative procedures can cause problems.

One cause of death of specific interest is suicide. There is considerable variation in Europe in the suicide rate – for example in Scandinavia rates tend to be high with Sweden and Denmark recording rates of around 40 per 100,000 men compared with about 10 per 100,000 in Southern Europe, e.g. Spain and Italy. The rate for men in the UK is under 12 per 100,000 and is about 23 per 100,000 in Ireland.

Part of this variation may arise because in many countries there has to be a legal process that decides whether or not a death was due to suicide, homicide, was accidental or whether there remains uncertainty – an open verdict. In England and Wales there is a system of coroners who examine the evidence and decide on the verdict. There is bound to be variation in these decisions within and between

countries. Between countries there are likely to be large cultural and religious differences that influence verdicts – they may also influence the true suicide rate in the same direction. For example, the low rates seen in Southern Europe may in part be attributable to the Catholic Religion which regards suicide as a sin.

Within England and Wales it would be difficult with the current system to ensure absolute consistency and comparability in judgements made by coroners. They may be influenced by religion or by the views of the family. Suicide is of course seen as a stigmatising cause of death. Coroners will only bring a verdict of suicide if there is evidence of intentional self injury. We therefore see likely suicides attracting different verdicts depending on the method of suicide. For example, an active method like hanging is more likely to attract a suicide verdict than a passive method like being found drowned. If there is any doubt about the intentions of the deceased then either an accidental or open verdict should be recorded.

These sources of variation have led to a different way of measuring and monitoring suicide in England and Wales. For many purposes we use recorded suicides and open verdicts together as the best estimate of this cause of death.

Extensive investigation of the epidemiology of open verdicts shows great similarity to that of suicide, much less similarity to that of accidents. This involved looking at the patterns by time, geography and age and sex of those who died. The main difference is in the method used – active versus passive as explained above. The addition of open verdicts is not numerically trivial. For men there are around a third as many open verdicts as proven suicides and for women there are half as many.

Suicide is a major public health issue in England. It is regarded as an avoidable cause of death and features as a key area for improvement in national health strategies. Therefore an estimate of the likely true size of the problem is more useful than one that is known to undercount. In the resulting statistics about cause of death it avoids a significant cause “open verdict” appearing as of uncertain cause. The estimate and related statistics help to inform policy about possible prevention strategies. For example the distribution of methods used will point to particular agents as important targets. If we include “open verdicts” the suicide rate for UK men rises from under 12 to over 16 per 100,000 and is felt to be a better measure for many purposes.

The third strand of quality evaluation is to confront different data sources that purport to measure the same, or very closely related concepts, and to investigate the coherence – or lack of it – in the related outputs. Similarly, time series of estimates that should be closely correlated can be confronted to explore apparent differences. This is a powerful approach in the field of economic statistics where a range of economic indicators are available and, indeed the whole process of balancing to create consistent estimates for National Accounts is an example.

Differences, for example, between GDP(O), GDP(I) and GDP(E) can indicate a lack of coherence in sources. As new methods are introduced, for example the use of constant price input-output analysis and the introduction of annual chain-linking for National Accounts, we expect these developments to identify new evidence of lack of coherence and in due course will lead to further quality improvements. The same approach has been very effective in producing quality improvements in the UK labour market statistics – in particular the reconciliation of ILO and Claimant Count unemployment and the reconciliation of measures of employment based on employer surveys and the labour force survey.

The fourth strand, to which we shall give greater attention in the future is to conduct periodic reviews of areas of work, involving independent experts, methodological specialists and user consultation. Our intention is to do this more systematically than we have done in the past to obtain an independent assessment of quality and the scope for quality improvement.

Involving Others

It is, of course, not enough to develop and use the best methods available. An essential element in the process is quality assurance. This means that we try to be as open as possible about the methods we use and the quality that is achieved so that we can engage expert users and external analysts who have much to offer to help us improve quality further.

4. Getting Them Trusted

The Governance Framework

Producing high quality statistics is an essential precondition for having statistics trusted and commanding public confidence. But it is not enough. It is important that users have confidence in the governance arrangements that are in place. These are designed to ensure that those matters that should properly be under the control of professional statisticians are seen to be so and are free from political interference. The importance of trustworthy statistics to the good governance of a country and their role in underpinning the democratic process is so important that this issue has received much attention.

This became an important issue when a large number of countries in Central and Eastern Europe and the former Soviet Union chose to adopt market economies and, in the process, needed to radically reshape their statistical systems. A set of ethical principles governing official statistics, were drawn up by statisticians from the leading countries, working with United Nations bodies. The statement of the Fundamental Principles of Official Statistics was formally adopted

by the United Nations Statistical Commission (UNSC, 1994), in recognition of the universal importance of reliable official statistics to good public management and to the democratic process. The statement was designed to guide governments and statisticians in establishing and maintaining credible national statistical systems, free from improper political interference, and has helped to create a common international culture for statistics. There is now a worldwide moral obligation on governments to act with integrity when producing official statistics.

In the years following the adoption of the Fundamental Principles, the stress has been on positive achievement through mutual support. Countries, including the United Kingdom, have enthusiastically exchanged information about their legal and ethical frameworks as regards statistics, indicating a common wish to critically examine their own situation and to learn from the experiences of others. The Fundamental Principles have inspired and influenced new statistical laws and public declarations of support, particularly in the former centrally-planned economies and others aspiring to membership of organisations such as the European Union and the OECD. Also, they have morally supported all countries as they have reviewed and modernised their statistical systems. European legislation is now in place reflecting the same principles.

Some of the new systems that are emerging in Eastern and Central Europe are arguably more robust than those in the west, which have undergone a more gradual development. There are valuable lessons for all of us in the changes that have taken place in some of these countries: at the very least they serve to dispel any feelings of complacency.

Overall, the adoption of the Fundamental Principles has spawned a positive culture of improvement in which most countries have participated in some form.

In the United Kingdom, the Government has recently published a White Paper “Building Trust in Statistics” (CM 4412, 1999) that has set out new governance arrangements for statistics and re-affirmed the importance that the Government attaches to Official Statistics of the highest quality and integrity. The new framework for National Statistics is intended to:

- Strengthen statistical priority setting and responsiveness to all users;
- Ensure professional freedom in the operational production of statistical outputs;
- Ensure statistics are produced to high professional standards; and
- Provide greater transparency and accountability than current arrangements.

The key proposals are:

- To set up a Statistics Commission;
- To appoint a National Statistician;

- To set out clearly the roles and responsibilities of the Commission, the National Statistician, Heads of Profession and Ministers.

The Statistics Commission will be a small non-executive body that will be independent, both from Government and from the producers of National Statistics. Its main responsibility will be to take account of the public interest by:

- Considering and commenting to Ministers on the programme for National Statistics;
- Advising on the scope of National Statistics;
- Commenting on the quality assurance processes of National Statistics, also able to carry out spot checks or carry out or commission its own audits in areas of concern;
- Commenting on the application of the Code of Practice for Official Statistics; and
- Reporting annually to Parliament.

The National Statistician will have overall professional responsibility for the outputs comprising National Statistics and in particular:

- Will be the government's chief professional adviser on statistical matters;
- Have professional responsibility for those outputs comprising National Statistics – including the duty to maintain and demonstrate their integrity, and to promote their coherence and comparability;
- Set professional standards for National Statistics, including
 - standards for release arrangements and quality assessment, and
 - determine whether or not a statistical output meets National Statistics requirements;
- Present a coherent high-level programme for National Statistics to the Commission;
- Have responsibility for the professional integrity of National Statistics, including:
 - Timing of release;
 - Content and format of the release.

There will be a Minister for Statistics (the Chancellor of the Exchequer) and Ministers collectively will:

- Respond to views expressed by the Commission;
- Produce a public co-ordinated response to the Commission's views;
- Decide departmental statistical programmes and the resources to be given to them in the light of the Commission's views;
- Require the National Statistician, Heads of Profession and their staff to make a full professional contribution to National Statistics activities; and
- Authorise access to all data within their control for National Statistics purposes, subject to confidentiality considerations.

In the White Paper, the Government acknowledges the arguments for legislation and will consider a case for legislation if necessary and appropriate. The Statistics Commission is asked to review the need after its first two years and to report to the Government.

Underpinning these proposals is a recognition of four issues in particular that are crucial to the question of public confidence in Official Statistics. These are priority setting, release practices, professional independence and transparency.

Priority Setting

The demand for statistics is insatiable. Drivers include the need for ever more detailed local area statistics, for more international comparisons, for statistics which keep track with changes in the economy and society, both in the UK, Europe and the world at large. Exercises to identify gaps in statistics always identify more gaps than resources can fill. Hard choices need to be made. In coming to these choices, people require reassurance that the views of all interested parties – Parliament, government and the wider community – are taken account of, in an even-handed and transparent way. This is not always easy to do. Despite significant improvements in efficiency, where evolving user needs demand an expansion in one area, it may only be possible to release resources by curtailing other areas of work. If, for example, a widespread need for more poverty statistics could best be funded by stopping an existing business survey for which demand was relatively low, and for which reasonable alternative sources existed, it needs to be demonstrated that this choice has been properly made. In the extreme, a decision not to allocate funds to a particular activity could be construed as political interference in the availability of statistics for public use.

The presentation to the Commission by the National Statistician of a high-level statistical programme on which it may comment and to which Ministers will respond publicly is designed to make the resource allocation process as transparent as possible.

The National Statistician will have another important influence through this planning process. The co-ordination of National Statistics will be greatly improved, hopefully leading to greater consistency and coherence and more harmonisation of classifications and standards across the wide range of producers.

Release Practices

It is essential that release practices are transparently free from political interference. Statistical releases should be made available without undue delay to all users simultaneously (with exceptions kept to a minimum). Also the release date and time should be pre-announced and decided by the statistician. The statistics and

any professional commentary from the statistical staff concerned should be released quite separately from any Ministerial comment. This emphasises the separation between the statistical process and the policy responsibility. In the case of very high profile, market moving outputs we go to great lengths to ensure very precise and orderly release into the financial markets where very large sums can turn on the statistics.

Of equal importance is that the form, and content of the statistical release are also under the control of the statistical staff. Within ONS this is emphasised by publishing the contact numbers of the staff responsible for any output so that journalists, analysts and other users may have direct contact to elicit further clarification and explanation. In the case of high profile statistics, press conferences are held with journalists and with staff from economic information agencies so that the statisticians responsible for the work can provide direct responses to questions.

The National Statistician will have responsibility for these matters so as to demonstrate that they are under professional control.

Professional Responsibility

The thrust of the White Paper and the emphasis on quality issues in the previous section are designed to reinforce the professional responsibility of staff engaged in producing National Statistics. They must be accompanied by an openness and willingness to describe statistical methods and quality and are a cornerstone of the mechanisms for building trust in the statistics produced. They demonstrate the professionalism of the staff and it is this professionalism that is crucial. “Confidence in the producer [of statistics] is the only route to confidence in the statistical product” (Smith, 1993). Equally important, openness demonstrates that the statistical decisions, on classifications, analyses and methods are the professional responsibility of the statistical staff and are not subject to political influence.

Many people have offered definitions of professionalism. At its simplest, it is about a commitment to quality. Jowell (1986) has written of professionalism in terms of “skill, efficiency, a commitment to high standards, probity, and, above all perhaps, a sense of pride in the work itself and in the occupation group”. In more practical terms, it means using best methodological practices and being willing to publish, discuss and defend those methods. It means conforming, as far as appropriate, with international standards and best practice. It means publishing statistics with the analysis and contextual information needed for users to make sense of them. Above all, it means being open and transparent with users of statistics, and being available to discuss issues on a professional basis.

Professionalism must also underpin our relationships with data suppliers. We must minimise the burdens our statistical inquiries place on them, and maintain the confidentiality of their information. Not only is this a moral duty, it is also essential to the quality of responses and so to the quality of the statistics themselves.

As Head of the Government Statistical Service (GSS), one of my key roles is to promote professionalism. Maintenance of the *Official Statistics Code of Practice* (CSO, 1995) plays an important part in this. It sets down professional standards for all stages of the statistical process, from planning, through data collection and analysis, to release. Also critical is the maintenance of clear standards for staff recruitment, induction, training and development and promotion. In a somewhat decentralised system such as exists in the UK, none of this could be achieved without the support of Heads of Profession for statistics in government departments and agencies, and the network of interdepartmental GSS committees. All these strands come together to help create a common culture for quality, integrity and professionalism.

One of the most important things we must do as professionals is to promote public confidence and improve the image of statistics – top quality statistics which are not trusted are worthless. All the themes of professionalism that I mentioned above contribute to this. In my experience, however, I would single out seven activities that make the most significant contribution.

- First, being open and available to the wider user community.
- Second, building solid relationships with the media, by being open and accessible.
- Third, publishing our methods and being willing to discuss them.
- Fourth, producing better data more quickly.
- Fifth, consulting widely over priorities and being transparent in decision making.
- Sixth, pre-announcing publications and sticking to the schedules, so that there can be no question of the timing of release being subject to political interference.
- And last, but by no means least, providing impartial and authoritative commentary on outputs, so that users can understand and interpret the statistics appropriately.

But the image of statistics is not about the professionalism of statistical staff alone. Politicians too, must also play their part. They have a responsibility to provide reasonable resources, so that the statistical base for decision making and against which government's performance can be judged is sound in scope and quality. Politicians must themselves demonstrate their trust in statistics, resisting the temptation to comment inappropriately for short-term political gain. In the long term, trusted statistics are in all politicians' interests, for many of the facts

they use to underpin their political analyses and decisions are official statistics. If there is no confidence in the facts, there can be no confidence in the decisions.

Transparency

I have argued that a clear conceptual basis is a key requirement for developing high quality statistics but we recognised that there are many situations where this is necessarily unclear. In these cases the role of international standards and guidelines is an important framework. However, these cannot cover every possible situation and there are many cases where professional judgement is needed. In high profile situations, when the statistics depend on professional judgement, how can we as Official Statisticians demonstrate that decisions are well made?

The European Dimension

This question has been thrown into sharper relief by the growing use of statistics for European Union purposes. These include government contributions to the EU, eligibility for regional and structural funds and monetary policy in the euro area. The use of statistics to monitor the Stability and Growth Pact is another example.

The new twist is that it is not just the national statistics in a country that determine the decisions. The statistics produced by another country affect the outcome (the share of contributions or receipts for example) of all Member States. It is becoming increasingly important to demonstrate that international standards are adhered to and, in cases where a professional judgement is required, that this is consistent with a developing body of international case law or is subject to independent professional ratification.

Convergence Criteria for EMU

Judging which Member States were eligible to join monetary union is a good example of this issue. Eligibility depended critically on achievement against targets for government deficit and debt in 1997. To ensure comparable statistics all Member States were required to record their deficit and debt according to the definitions of the European System of Integrated Economic Accounts 1979 (ESA79). This is an example where international standards cannot be framed in such a way as to deal with every eventuality. The international standard gives a framework, but one in which professional judgements still need to be made. In such circumstances, and when the stakes are very high, how can the professional statistician demonstrate that judgements have been guided by the conceptual framework and not the political outcome of the decision? For the Maastricht

convergence criteria these procedures were strengthened. After concern had been expressed over the treatment of transactions in connection with France Telecom, specific issues within the general framework of the European System of National Accounts were referred for adjudication to a panel of statistical experts in Member States' statistical offices and central banks. This arrangement sought to ensure that statistical judgements took precedence over the political outcome – i.e. that member states could not fiddle their figures. Technically, however, the adjudication was not binding and the Commission had the power to rule as it wished. In fact decisions were always consistent with the technical assessment and it is perhaps, worth reflecting on what the impact would have been had the Commission rejected the expert panel's adjudication.

One such grey area is whether to classify payments between central government and public corporations, such as the BBC, as a financial or non-financial transaction. This border is important as financial transactions do not affect government deficit, but non-financial ones do. Suppose, for example, that a public corporation sells its shares in a subsidiary – effectively privatising it – and gives the proceeds to government. This could be viewed either as government reducing its equity in the corporation, and hence a financial transaction with no affect on the deficit; or as a dividend to government, and as such a non-financial transaction that reduces the deficit. Experts decided that such government receipts should be recorded as financial transactions and so should not contribute towards achieving the convergence criteria. In essence, this decision to record such government receipts as financial transactions prevents Member States reducing their government deficit through privatisation proceeds: such activity is not sustainable in the longer term and so is not a good guide to government's underlying financial strength. The decision has also been extended to cover central bank payments to government arising from say gold revaluation or the liquidation of foreign exchange reserves.

Stability and Growth Pact – Tax Accrual

Similar issues are going to prevail for the Member States who have now joined monetary union under the terms of the Stability and Growth Pact which requires the continued convergence of their economies. One of the criteria specifies that the government deficit should not be more than 3 per cent of GDP and provides for penalties if this limit is exceeded. However, these penalties are excused if there is a serious economic downturn, defined as an annual reduction in “real GDP” of at least 2 per cent.

However the tax regime in different countries could lead to important differences. ESA95 requires taxes on income to be recorded when they become

payable – or in the jargon of the manual when they accrue. These tax accruals are government income and reduce the deficit.

This apparently simple concept is being interpreted differently in different Member States. One superficially reasonable approach to measuring accrued taxes is to take the total of tax assessments issued in the period. However, a proportion of these tax assessments will never be paid. This can be because the entity cannot pay because of insolvency, bankruptcy or death. It can also be because the assessment practice is different in different countries. Some countries for example routinely issue inflated assessments to encourage the submission of late tax returns and the full payment of taxes. Others may use self assessment methods that lead to a much higher proportion of the tax assessed being paid.

Under ESA95 the writing-off of debts counts as a financial transaction and does not affect the government deficit. Thus a country which routinely issued inflated tax assessments and used the total of these to estimate tax accruals for calculating its deficit would record smaller deficits than an equivalent country which administered its taxes in a different way. This inconsistency is clearly unfair and at its most extreme makes it possible to manipulate the measure of government deficit. The importance of common practices that reflect as closely as possible the economic reality is very clear.

5. Getting Them Used

High quality statistics that are trusted and command public confidence is not enough. If the statistics are not used, and used effectively then the impact of the statistics is not what society deserves and needs. We need to recognise that the user community is very diverse. Different segments have very different needs and very different levels of skill and understanding from which to make use of our outputs. This is a very significant challenge.

The user community can be classified in a variety of ways but it is useful to think of at least three dimensions:

Experts and Novices

Some parts of the user community are extremely knowledgeable. They know a great deal about the statistics we produce – within their field of interest, whether this be economic indicators, the labour market, health statistics or whatever. Such users, and this includes key users in Government Departments, and the Bank of England, need to understand the detail and will interpret the statistical outputs within a knowledge framework that has often been developed over years. In London it is particularly true that the range of knowledgeable users, economic analysts and specialist journalists, social policy experts and the like is very strong

and demanding. In contrast, members of the public often have less knowledge and need both the statistics and the interpretation in a readily understandable form. Most members of the public learn of our outputs through intermediaries – journalists and broadcasters – and these intermediaries require special attention

The response to this diversity must be to provide outputs for very different purposes. Outputs to experts will often contain very detailed series of statistics with detailed meta-data containing important aspects of the conceptual and methodological base. Frequently such users will want detailed statistical series in electronic form for inclusion in analysis software or economic models. In each of our theme areas for statistics (e.g. Economy, Business and Commerce, Labour Market, Health) we provide a range of outputs to serve this user need.

Very often these outputs are linked with key statistics that are important for the wider public and need to be made widely available. For example, the monthly release of a very detailed set of Labour Market Statistics is in association with the release of the key measures of employment and unemployment. These are produced in a press release that is designed to present the key findings in as clear a way as possible. Journalists and agency staff are briefed so that the wire services and news reports carry the key results to the wider public.

Outputs designed for a wider audience need to be designed with much greater use of graphical presentations and diagrams, and a much higher level of interpretative text. The outputs need to be readily accessible and the key messages readily understood. These outputs include compendium publications such as *Social Trends* which has a long and distinguished history. More recently we have designed and published a “Social Focus” series (e.g. Social Focus on Women, Social Focus on the Elderly) and a “Regional Focus” series (e.g. Regional Focus on the South West). These are intended to draw on available information to present an attractive, readable presentation of statistics to give as rounded a picture as we can of the subject of the publication.

Beyond the realm of outputs designed for specific user communities we have made considerable investment in creating a publicly available database – STATBASE – that contains a comprehensive description of all statistical outputs. This allows users to find out what is available, select what they need, call the statistics to their screen and if required download across the internet for their personal use. Access to this database is linked to the ONS Website and will be an important facility on the National Statistics Website that will be launched in the coming months.

The role of electronic dissemination, and in particular the use of the internet, provides a means of dramatically improving the public’s access to statistics and will reduce to some extent our dependence on intermediaries to reaching the whole of society. As we increase the availability of statistics via our website for example, we

see that a growing number of members of the public are making use of this. This gives an exciting prospect of direct dissemination which may prove much more effective than through paper publications. It also gives the prospect of improving the availability of statistics to schools and libraries and other important sections of the community.

Aggregates and Micro-Data

Many users depend upon the statistical estimates prepared and published by the Statistics Office. They use the published series, often in sophisticated ways such as in macro-economic models, to draw conclusions, make decisions and take actions. If the statistical outputs are not suitable for their purpose then they will press for new or additional outputs to meet their needs. These users look to the Official Statisticians as intermediaries between them and the raw data, using their knowledge of the data sources to analyse the data in the most effective way. In some cases this is because the users recognise a body of skills that are not core to their interests and look to the Official Statisticians to fill this void. In other cases it may be issues of confidentiality that prevent the users having direct access to data at the level of disaggregation that would permit them to use the results to serve their needs.

However there is a wide body of users, particularly with interests in health and social policy, including labour market analysis, for whom access to micro-data can be supported without any danger of breaking confidentiality. In the UK all of the household surveys are made available to analysts as well as a sample of anonymised records of people and households from the Census. The user community spans policy analysts in departments, academics and analysts working in social and economic policy research centres. The range of uses to which these data are put is enormous, far exceeding the original purposes for which the data were collected. When we have conducted reviews of the major surveys we have seen that very large numbers of papers, a valuable proportion of which have direct policy relevance, depend upon access to these data sources.

The other obvious point is that these data increase in value as the surveys are repeated over time and there are very important analyses using survey data that spans a period of 10 or 20 years.

Maintaining a quality service to this user community over time is not easy – not least because of the cost and effort of maintaining access to a growing volume of data sets produced at different times and using different computer technologies. We have made extensive use of the ESRC Data Archive to support this user community and aim to release new surveys to the Data Archive within days of releasing the primary analyses.

In reviewing the future of ONS's multi-purpose surveys during 1997, a clear picture was obtained of the very wide ranging use – made by both central government and the wider research community – of the anonymised survey data sets which ONS release for public access through the Data Archive and other channels.

For example, ONS received contributions to the review from fourteen government departments and from seventy-four outside users (some such as the Royal Statistical Society and the Data Archive representing a much greater number of individual researchers) citing uses of the General Household Survey (GHS). In particular, the need for GHS data was emphasised for the analysis of: family building and demographic patterns, family health characteristics and the take up of health and other services. For outside users the cross-topic analytical power of the GHS – only available because of the access to individual microdata that ONS provides – was valued especially highly. The ESRC Data Archive provides sets of GHS data to over 100 academic users each year.

The future potential of anonymised microdata release – for facilitating flexible analysis by both government and research users – has also been a key factor in enabling ONS to build a funding consortium for the UK's first official full diary-based Time Use Survey (TUS). This survey will go into the field in 2000 and the data will become available in 2001.

The Economic and Social Research Council (ESRC) – which is a principal funding partner on behalf of the research community – anticipates that researchers will use the TUS for analysis of topics as diverse as: the extent of unpaid work in the home; how people combine leisure activities with caring responsibilities; the extent of involvement in voluntary sector activities in combination with paid work; and the nature of travel patterns for getting to work, going shopping, visiting friends and for other purposes.

The ONS Longitudinal Study (LS) provides a dynamic record of the social fabric of England and Wales. It is a powerful and flexible database that fulfils a unique position in providing a range of social and demographic information through the lives of individuals. This enables many research questions to be addressed, particularly those orientated to change over time. The main areas of analysis have been health inequalities; population distribution and migration; fertility analysis; household change; housing; ethnicity; employment and qualifications; transport and international comparisons.

Though confidentiality restrictions for the LS data are comprehensive, they are necessary to meet legislative requirements and maintain public trust. In recent years, advances in computer technology have facilitated establishing a secure environment for the LS to be used at individual record level on PCs. This has enabled researchers to take advantage of hands-on analysis of the dataset in a

secure environment to provide an effective means for both the research community and policy makers to benefit from the strengths of the study.

Through these access arrangements, a wide range of organisations have made extensive use of the data. Around three-quarters of LS projects over the last 10 years were undertaken by academics, funded mainly by the Economic and Social Research Council (ESRC), Higher Education Funding Council (HEFC) and Medical Research Council (MRC). Academics are among the best equipped to analyse complex data such as the LS, while other organisations (particularly local and central government) have been quick to recognise the indirect value they obtain from LS research. Our review (ONS, 1998) identified over 300 published papers and reports based on the LS.

Regular Series or *Ad Hoc* Analyses

Any National Statistical Office will produce a very large number of regular statistical series that are an essential requirement for a wide range of users. These support the continuous monitoring of almost every aspect of society and are essential to maintaining and developing social and economic policies for the nation. These regular outputs are also used for decision making (e.g. the Bank of England) and resource allocation. Such series provide an important set of benchmarks that, by their very continuity, give an invaluable baseline against which to measure economic and social change. However, these series tend to take time to establish (especially if time series need to be seasonally adjusted) and reflect a somewhat unchanging set of needs. This description is something of a caricature since society and the economy are ever changing and regular series need to be kept under review and adapted if they are to remain relevant.

Nonetheless, there are many issues that emerge, and on which statistical information is needed in a much shorter time scale than is usual for the development of regular statistical series. Indeed if Official Statistics are to be relevant to the issues of the day, and to help shape policies and decision making as they should, then a much more flexible and responsive approach is needed. In many circumstances it would be better to produce the best statistics available, even if these were less than ideal, when the issue is emerging, than to delay and produce better statistics at some later date. Indeed it is arguable that timely statistics, however imperfect will help users and decision makers frame their longer term statistical needs so that emerging policies can be monitored effectively.

Demand for this kind of statistical support is growing strongly, fuelled in part in the UK by the Government's strong commitment to evidence-based policy and a determination to set measurable targets against which the success of policies and government more generally can be judged. There is also a growing emphasis on

policy issues that cut across departmental responsibilities and demand a more flexible and responsive statistical service. Cross-cutting policy areas include welfare, social exclusion, illegal use of drugs, the elderly, pre-school children and the transition from education to work.

Meeting the statistical needs for such an agenda calls for technical, organisational and cultural responses. We need to work existing data sets harder, recognising them as one of our greatest assets and using them in new ways to address emerging issues quickly and responsively. We need stronger analytic skills, a better feel for the uses and related quality of information and the ability to analyse and interpret statistics and communicate the results effectively. We need to recognise that this calls for more highly developed skills for the staff concerned and we need to support their development. In organisational terms we need to hold data in a much more flexible and accessible way to support more flexible uses. This is a non-trivial issue. However the greatest challenge may be in terms of culture, since we need to become much more flexible and responsive to emerging issues. We need to be more aware of what these issues are and to greatly improve the links to the policy process. We need to anticipate emerging needs and to plan ahead accordingly, recognising that this will involve an element of risk and uncertainty.

This agenda is a major challenge to any statistical service, but one which, in my view, we have to rise to. Failure to do so will fail the “Geary” test of getting statistics used in public policy and public administration, to the benefit of society.

6. Conclusion

My theme has stressed the importance of quality, of using best methods, of producing statistics using the highest professional standards, of protecting the integrity of the process, of building trust and public confidence in them and finally of getting them used for the benefit of society. These are not separate objectives, competing with each other for priority. They are a seamless whole if statistics are to be used fully and effectively.

This agenda calls for many skills. It requires technical excellence, analytic skills, ability to communicate and ability to influence. It calls for personal and professional integrity too. That description sets out our needs. But it describes the blend of talents that Roy Geary had in abundance. The rather diverse blend of talents and interests that Roy Geary displayed are no less needed today than they were during his long and illustrious career.

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