

Capital Stock Conference  
March 1997  
Agenda Item VI

**An Account of the UK's Research into Direct  
Collection as an Alternative to the Perpetual  
Inventory Method.**

OFFICE FOR  
NATIONAL STATISTICS  
(UNITED KINGDOM)

## **Background**

1. Another paper submitted to this conference entitled "The use of the Perpetual Inventory Method in the UK: Practices and problems" explained the reasons why the UK has found problems with PIM. In the report by the National Institute of Economic and Social Research (NIESR) referred to in that paper one of the key recommendations was that the Office for National Statistics (ONS) should conduct a feasibility study into the possibility of direct collection. This paper describes that feasibility study and reports on the subsequent research.

## **The Feasibility Study - Objectives**

2. The study was carried out in the full knowledge that we were exploring new ground, and that the conduct of the survey and the questions asked would be likely to evolve as the study continued. The purpose of the study was defined as follows:

a) To determine whether company asset registers contained the following information in readily accessible form:

A description of each asset sufficiently detailed to enable it to be placed into its broad asset category.

The Historic cost (at acquisition) of each asset.

The date of capitalisation.

b) To establish whether industry would be prepared to supply this information on a voluntary basis, or whether a full inquiry would need to be compulsory.

c) To estimate the likely compliance cost for respondents.

d) To judge whether direct collection would be cost effective, and to estimate the resources which the ONS would need to employ.

e) To gain an insight into industry's policy on capitalisation -ie what was included and what excluded from its asset registers.

f) To see whether there was any information available to enable new estimates of true asset lives to be made.

## **The Feasibility Study - Results**

3. Our approach to businesses was on a voluntary basis, and took the form of an initial phone call to establish the correct contact point, followed by a visit. The response rate was approximately 75%, and in the event 212 companies were visited over a period of six months. The main findings of the study were as follows:

a) There is sufficient information available from enough businesses to make a full sample survey possible. This information is usually available in the form of a computerised asset register, which shows each current asset held, the date of acquisition, and the historic cost.

b) There is a direct relationship between the size of a business, measured by the number of employees, and the availability of information. As a result of this finding, businesses consisting of a single unit with fewer than 100 employees would need to be excluded from any full survey undertaken; businesses with between 101 and 300 employees would be sampled separately and less intensively. It follows that certain industries which consist mainly of large numbers of small businesses would also be excluded. This last consideration applies mainly to industries in the service sector such as advertising.

c) There was a general willingness to co-operate, and only 10 companies refused to receive a visit without explanation. Other refusals - 29 - were either on the grounds that records were being reorganised, or that the company was too busy at present but would be prepared to see us later.

d) Only 15 companies retained information on disposed assets for any length of time. This means that it is not possible to obtain sufficient information directly from industry, other than anecdotal information, to judge the true service lives of assets. The period over which businesses depreciate assets fully is not a useful indicator because it is tax related rather than a true pointer to the expected life of an asset.

### **The Feasibility Study - Problems Uncovered**

4. The main problem that the study revealed was not that there was too little information available, but that there was too much. On average the registers inspected contained between 7000 and 10000 separate records, but many were much larger. Registers of over 20000 records were not uncommon, and the largest we encountered contained 1.6 million records with a total value of £26 billion. It was obvious that the task of personally inspecting such a huge bulk of material, extracting a sample, and processing the results would be prohibitively expensive, and that unless some way could be found to solve this problem little further progress could be made.

5. Other problems found were relatively minor:

a) The quality of record maintenance varied. It was often freely admitted that the asset register was the poor relation of the accounting system, and that accountants were not always told when assets were disposed of; records of newly acquired assets were, however, more accurately recorded. This factor is likely to lead to a bias in any directly collected data, and to an overestimation of capital stock.

b) There were inconsistencies between businesses as to the level below which expenditure was not capitalised. Sometimes this was set at £500, but often it was higher. Indeed, the largest company visited did not capitalise office furniture at all.

There was also the problem that when a purchase was made in bulk it tended to be capitalised if it was in excess of the capitalisation threshold, or was part of a major project; if the same purchases were made individually, and fell below the capitalisation boundary, they were not capitalised. This leads to a randomness in the reliability of data - particularly for office equipment - and would probably mean that direct collection would underestimate.

c) Many businesses revalue their buildings from time to time. This would not constitute a problem if they did not also change the asset register to show the date of revaluation as the date of acquisition, with a consequential loss of the original historic cost and date of acquisition. In such cases there seems little alternative to accepting the revaluation, and using the new date as the date of capitalisation. This does however, create new difficulties for companies that lease properties. If value is added to a rented property by the tenant, this expenditure will normally be capitalised by the tenant; if it is subsequently revalued by the owner, then there is a risk of double-counting.

d) In the case of property portfolios held as investments, companies keep these records in a different way, separately from their asset registers. Although the records normally exist, it could be less easy to trace the historic details of acquisition. This problem applies to companies in the financial services sector, as well as pure property development companies.

e) Airlines keep large stocks of spares for servicing aircraft. These are capitalised, and removed from asset registers when fitted to the plane. They need to be excluded from capital stock.

### **The Decision to Consider a Postal Survey**

6. In some cases the feasibility study found that businesses, particularly those with very large numbers of assets, stored their records in summary form. These summaries showed, by year of acquisition, the total historic cost of each class of asset. This fact led us to a possible solution to the problem of too much data. If businesses were able to supply us with information in this form on disk, it would provide all the information necessary to produce estimates of capital stock at historic cost. Price indices could then be used to convert to current replacement cost, or replacement cost at any base year.

7. This procedure would avoid the costly process of selecting and processing a sample from a complete asset register, and the information could be sought postally, without involving visits to respondents. In addition, should a business be unable to supply the information in the desired form, they might be willing to supply their complete asset register on disk which could be processed to produce the information in the summary form.

8. Before taking any further action we confirmed with the companies who produce the most commonly used computer packages of asset register software that their systems were able to produce the required report. This was confirmed both by the

software companies, and by a number of their users. It was therefore decided to design a questionnaire, and conduct a small pilot survey to test it.

### **The Pilot**

9. The aims of the pilot, which took place from September to December 1995, were:

- a) To confirm the feasibility study findings.
- b) To test the form design, and its acceptability across relevant industries.
- c) To assess resource needs and compliance costs.
- d) To assess response rate.
- e) To compare results from a specified industry with results obtained by PIM.
- f) To identify problems.

10. The total sample of 65 companies included 45 from the electrical and electronic engineering industries; this was to enable a comparison to be made with a corresponding PIM estimate. The remainder of the sample covered retailing, insurance, banking, insurance, transport and telecommunications; this was to identify any problems specific to service industries and utilities.

11. The survey was voluntary, and achieved a 45% response. A copy of the survey form, and covering letter is attached as an annex.

12. The conclusions from the pilot were:

- a) That the findings of the feasibility study were confirmed.
- b) That companies are able to aggregate costs of asset types by year and download the information into a usable computerised format.
- c) That the questionnaire has worked quite well, but will need minor amendments.
- d) The average time taken by companies was around 3 ½ hours, but with wide variations.
- e) The comparison showed the expected comparability with PIM.

## **Grossing of the data**

13. Since only a sample of larger businesses would be included in the sample, a method of grossing had to be found. Two main possibilities were considered:

a) The use of capital expenditure figures seems logical, but is more problematic than it would appear. Capital expenditure by individual companies is "lumpy" and use of a single year's figures as a variable for grossing purposes would therefore not be sound. To use a run of years would also not be sound because businesses are not static; they merge, demerge, expand, and contract.

b) The other possibility is to use the number of employees. What tests we have been able to perform, and also experience in the Netherlands, have shown a strong correlation between employee numbers and capital stock. A regression analysis has been undertaken which shows correlation coefficients of between 0.82 and 0.87. Further research in this area, is, however required.

## **Further Action**

14. The report of the pilot concluded that a postal survey of capital stock is feasible, and that a full survey would be relatively cheap to administer; compliance costs would, however be comparatively high. It also recommended that a full survey would need to be statutory if the response rate was to be improved.

15. We had originally considered that a single benchmark survey to "correct" PIM would be the way forward, but as a result of our researches we now consider that a rolling survey to cover a full sample over a number of years is likely to be a better solution to the problem. In the UK, however, as in many countries, there is an ever increasing difficulty in being able to find the resources to develop and improve our methodology in an ideal fashion, and it appears that other projects may well have to take precedence over this for the time being.

## **Conclusions**

16. Before the use of computers was widespread in industry's accounts departments there was perhaps little choice but to use PIM; direct collection of capital stock data from manual asset registers would have been prohibitively expensive. Our research, described above has shown that there now appears to be an alternative, reliable, method of direct collection which does not need large resources to operate. Inevitably there is some burden on industry, but we do not believe that it will be great. Dialogues that we have had with the statistical offices of other countries have shown that there is a wide interest in improving these important statistics, and we hope that this research will be an advance in this direction.

January 1997

UK, OFFICE FOR NATIONAL STATISTICS



ANNEX

A voluntary inquiry conducted by  
the Government Statistical Service  
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Telephone 01633 813130  
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Mr John Goodfellow  
Responder Ltd  
Data House  
Statistics Road  
Statsford ST8 4ST

20 October 1995

**CAPITAL STOCK (FIXED ASSETS) PILOT SURVEY**

Dear Mr Goodfellow

Following a recent feasibility study the CSO are conducting a pilot survey into the direct collection of data on capital stock from businesses' fixed asset registers. The Government has relied for many years on a model-based method of estimating the total capital stock of the UK. This approach is now regarded as producing unsatisfactory estimates of this important economic data.

We hope you feel able to provide us with the information requested on the attached pro forma. The information given by you will be held in strict confidence and will not be revealed in published statistics in any way which would enable your company to be identified, nor will it be disclosed to any person without your consent.

Please supply the information requested by 20<sup>th</sup> November 1995. We have enclosed a diskette for you to use to transfer the data to us. If you find it difficult to supply the data in the form requested, please telephone the number shown on the pro forma.

Thank you for your co-operation.

Yours sincerely

O. P. A. BLACK  
Head of Production Sector Division

12345678910

### Capital Stock (Fixed Assets) Pilot Survey

We require you to provide us with details of your capital stock (fixed assets). These details will be contained in your fixed asset register. If you have any problems in dealing with this request please telephone 01633 813130.

#### How the Information Should Be Provided to Us

It will depend on the type of asset register system you have and its report writing facilities as to how the information on your fixed assets can be provided to us.

#### What We Need to Know

1. whether the assets are land, buildings, capital plant & equipment or vehicles
  2. their date of purchase or revaluation
  3. their original cost or cost at revaluation.
- (Note: We do not need any information on your asset depreciation)

#### Method of Transfer

Please choose one of the two options below. We prefer Option one.

##### Option one

By 3.5" diskette. If you are able to do this then please use the diskette enclosed. Data should be downloaded into ASCII format.

##### Option two

By Paper.

#### Format of Asset Register to Be Sent

Your response should conform to one of the following options. Please note that Option one is the preferred option.

##### Option one

Your return should be arranged by acquisition year within asset class, each asset class having a subtotal showing the original cost of each year's fixed assets. You do not need to send us a report showing each individual entry, if your asset register system has the appropriate report facility you can send us just the subtotals for each year. Please see the illustration below.

E.g.

BUILDINGS	SUBTOTAL FOR 1982	£400000
	SUBTOTAL FOR 1983	£600000
	etc.	
PLANT & MACHINERY	SUBTOTAL FOR 1982	£80000
	SUBTOTAL FOR 1983	£60000
	etc.	
VEHICLES	SUBTOTAL FOR 1991	£3000
	SUBTOTAL FOR 1992	£4000
	etc.	

Option two

As Option one, but with each entry printed. Please see the illustration below.

E.g.

BUILDINGS	DESCRIPTION	DATE PURCHASED	PURCHASE COST
	BUILDING 1	1/1/82	£100000
	BUILDING 2	1/7/82	£200000
	BUILDING 3	1/10/82	£100000
	SUBTOTAL FOR 1982 etc.		£400000

Option three

If your asset register system cannot define either above option the register should be sorted by asset class and if feasible sent to us in its entirety.

#### Have All Your Fixed Assets Been Accounted for in Your Asset Register?

1. Are assets bought on hire purchase/lease purchase accounted for in your asset register?

Yes

No

If not can details of these also be provided with date of purchase and amounts being amortised.

2. If you have property investments not accounted for in your asset register can you give an estimate of their current market value.

What is the name of your asset register computer software system?

How long did it take to complete this request?

Please estimate any costs other than staff costs incurred in providing this information.



## CAPITAL STOCK - COMPANY ASSET REGISTER ANALYSIS

PERSON DEALING WITH THIS COMPANY:  
DATE:

### 1. COMPANY DETAILS

NAME AND ADDRESS OF ESTABLISHMENT:

CONTACT:

TEL NO:

ESTAB NO:

ACTIVITY HEADING:

### 2. ASSET REGISTER DETAILS

WHERE IS THE ASSET REGISTER KEPT?:

ARE ALL TYPES OF FIXED ASSET COVERED BY THE ASSET REGISTER?:

WHAT SITES ARE COVERED?:

### 3. ISSUES BASED

### 4. DETAILS OF RETURN

DATE OF RETURN:

OPTION OF RETURNED ASSET REGISTER:

NAME OF ASSET REGISTER SYSTEM:

HOW LONG DID THE RETURN TAKE TO DO?:

CAN ANY OTHER COSTS BE ESTIMATED?:

COMMENTS:

### 5. BUILDINGS

DESCRIPTION	ASSET CODE	YEAR PURCHASED	HISTORIC COST	TOTAL COST FOR YEAR	PRICE INDICES	1990 PRICE INDICES	1990 REPLACEMENT COST
Total Hist Cost				Total 1990 Cost			

Total Hist Cost

Total 1990 Cost

### 6. PLANT & MACHINERY

DESCRIPTION	ASSET CODE	YEAR PURCHASED	HISTORIC COST	TOTAL COST FOR YEAR	PRICE INDICES	1990 PRICE INDICES	1990 REPLACEMENT COST
Total Hist Cost				Total 1990 Cost			

Total Hist Cost

Total 1990 Cost

### 7. VEHICLES

DESCRIPTION	ASSET CODE	YEAR PURCHASED	HISTORIC COST	TOTAL COST FOR YEAR	PRICE INDICES	1990 PRICE INDICES	1990 REPLACEMENT COST
Total Hist Cost				Total 1990 Cost			

Total Hist Cost

Total 1990 Cost