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THE ANALYSIS OF BUSINESS BEHAVIOUR IN AUSTRALIA

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At the 9th meeting of the Voorburg Group, New Zealand suggested that it would be useful to include an item on the agenda for the 10th meeting about the derivation of statistics on business behaviour in various countries. The ABS agreed to provide a paper on its plans and aspirations. As business behaviour is a topic relevant to all industry sectors, not just the Services sector, the approach taken in the paper has not focused on any particular industry.

2.   Governments, policy advisors and researchers in Australia have long been interested in the factors which affect growth and performance of businesses and what makes them behave in the way they do. What makes them grow? What makes them profitable? What makes them change? It is the answers to these questions which determine business behaviour.

3.   To investigate these phenomena in Australia, users have had a a great variety of information available to them. However all of this information has basically related to snapshots of the business population (or parts thereof) at various points in time - some data are from regular annual collections, others from less frequent and less regular sources. These collections have been designed to provide aggregate statistics for national accounting or other purposes. Hence issues of the type mentioned could be addressed in only a partial way, by looking at various classifications of snapshot data and in some cases measuring how these data have changed over time.

4.   Such data sets are not designed for looking at the types of relationships that are relevant for answering the questions espoused above. To analyse these, the user requires data linked in a temporal sense, for individual business units and preferably over a long period of time. In addition the issues require in some cases different data items to be collected and analysed. The OECD and member countries recognised the different data requirements at the last G7 Jobs Summit and endorsed the idea of conducting a Conference to look at the various analyses that have been or could be conducted in member countries with the existing data sets available to them. This resulted in the joint US Department of Commerce/OECD Conference on "The Effects of Technology and Innovation on Firm Performance and Employment" held in Washington on 1and 2 May 1995.

5.   One conclusion drawn from that Conference was that an enormous amount of data existed which could be used in a longitudinal sense and that the task now facing policy makers and statisticians alike was how best to use those data.

6.   As well as those data sources, there is the the Panels Project of the European Union, which is trying to develop a linked data set of unit record information for members of the EU. The results of this project are now being analysed, and it is expected that they will become available in the next year or so.

7.   The purpose of this paper is to describe the work being done in Australia to develop a linked data set of information; this information is to be used to analyse the determinants of growth and performance within the Australian business economy.

This project, called AUSSMED (standing for the AUStralian Small and Medium Enterprise Database), is an initiative announced by the Australian Government in May 1994. In the Australian Government's Budget which followed that announcement an amount of $A 7 m was set aside, over a 5 year period, to develop and conduct a longitudinal collection of (mainly) business performance data, to set up a database and to encourage the use of the database for policy and research purposes.

8.   In Australia, as in many other countries, there has been a special policy interest in the small and medium sized enterprise sector of the economy. The major interest to date has been in the employment generation by SMEs. Some research has claimed that small firms generate up to 80 per cent of all new jobs. This finding is consistent with those from other countries; a study of this issue was reported in OECD's Employment Outlook, issued in July 1994.

9.   The Australian statistics have been based on snapshot data of employment in Australia at different points in time. One major problem with these data is that they overlook the significance of firms which are crossing the numerical boundary distinguishing small firms from larger firms. The longitudinal survey being set up as part of AUSSMED will enable individual firms to be linked over time, and hence their employment generation capacity can be assessed.

10.   The Australian survey is not being set up solely for the purpose of measuring job generation. Its main aim is to measure those characteristics which appear to be related to growth (both employment and financial) and performance. The initial characteristics being considered are:

a)   innovation
b)   export capabillity
c)   type of legal ownership
d)   foreign ownership
e)   union membership
f)   managerial practices
g)   use of Government programs
h)   business expectations, and
i)   training.

These characteristics are additional to the normal classificatory variables used in the analysis of economic statistics, namely industry and size.

11.   The sampling strategy being used in the longitudinal survey is, in the first year, to conduct a "recruitment survey" of some 13,000 firms. This survey will then be used in subsequent years to restratify the sample in terms of some of the characteristics listed above as reported in the recruitment survey. The sample used in subsequent annual surveys will be a subset of the initial sample and is expected to contain about 5,000 firms. Each year there will be a sample of new firms being "birthed" onto the ABS Business Register; this sample is expected to have about 500 businesses and will be sufficient for us to study the characteristics of firms being born in that year. It is not intended that there will be any replacement selection for firms which were born in earlier periods and which subsequently cease operations.

12.   This strategy means that, in the first year, estimates relating to the whole population can be obtained with a reasonable degree of accuracy. In subsequent years similar estimates can be compiled with the results benchmarked back to the larger sample selected in the first year. In those years it will be possible to study panels, or cohorts, based on the characteristics discussed earlier. For these cohorts, it is expected that a much larger sample of innovators and exporters will be selected than for non-innovators or non-exporters, as these are the characteristics of most interest. Regression and similar techniques will be used to ascertain whether there are any significant differences between the cohorts and whether firms of different age are behaving differently. It is also expected that there will be subsequent analyses of growing firms to see if they have different characteristics to those of non-growing firms.

13.   The initial survey has been stratified by industry and size, based on employment. The stratification boundaries are:

Industry

Manufacturing:	sub-Divisions of ANZSIC
Finance and Insurance:	" " " "
Property and Business Services: "	" " "
Other Divisions:	" " "

14.   In addition to these there are a few Classes for which data are being sought, mainly to enable the derivation of the Information Technology industry as defined in the Australian paper for last year's Voorburg group meeting.

Size

1 - 4   employees
5 - 19   "
20 - 49   "
50 - 99   "
100 - 499   "
500 +   "

15.   One of the major difficulties with a longitudinal survey is that it will not provide results for a number of years. This is generally not acceptable to users, in particular Government policy makers. Hence the ABS strategy has a number of other strands, which will enable the user to see some results at the earliest time possible. The types of additional analysis being undertaken relate to:

a)   the estimation of exits, exit rates and reasons for exit;
b)   the analysis of innovation data collected in the ABS's 1994 surveys of Innovation in Australian business;
c)   linking of past manufacturing census data to obtain a linked data set for earlier years; and
d)   the estimation of job generation and destruction statistics from an existing ABS survey.

Exits

16.   This issue is being addressed using sample survey data obtained in some of the ABS's existing quarterly business surveys, in particular the surveys of Capital Expenditure and Stocks. Where necessary, exits detected in those surveys will be followed up to ascertain the type of exit, and population estimates of the exit rates will be made. Similar data will be obtained from the Longitudinal Survey, but that will be some time later. In the meantime we hope to produce a set of reasonably good indicators on the exits of firms. These have not previously been available in Australia, as the sources of information used for our Business Register are deficient in ascertaining exit information.

Innovation Data

17.   One of the indicators thought to most influence growth and performance is the innovative activity of firms. Hence it will be a key characteristic in the analysis of the results from the Longitudinal Survey. However, the ABS has also conducted a detailed survey of innovation in the the manufacturing sector, and a fairly simple survey for other sectors, in respect of 1993-94. The combined sample sizes of these surveys is nearly 12,000 firms. From these surveys there is a considerable amount of data already available to start analyses even if they are not linked over time. For a subset of the sample it will be possible to link the innovation data with variables collected in the ABS' collections of economic performance data. This will enhance the database significantly; it may also be possible to link the unit record data backwards in time, to enable analyses of changes in performance to be measured.

18.   This part of the project is seen as potentially the most important of the subsidiary parts of the AUSSMED development.

Linked Manufacturing Census Data

19.　A number of countries, most notably USA and Canada, have developed large linked datasets from their equivalent data collections over the past decade. They have found them to be very useful for analytical purposes. In some cases other countries, notably France, have linked this type of data with adminstrative data to form even more powerful data sets.

20.　In Australia there have been no previous attempts to link these records longitudinally. It is hoped that the work done on this part of the Strategy will enable researchers to undertake some of the sorts of analyses that a number of overseas agencies have done. The situation has been complicated in Australia in more recent times by significant changes in the the annual manufacturing collections. On some occasions they have been censuses, in others, sample surveys. In some cases there have been collection of data about establishments, in others, about higher level producing units ('management units') or enterprises. For a number of the kinds of analyses that users wish to make, data would be best if they related to the establishment unit. However this cannot be done in Australia, and linking will generally be undertaken at the management unit level.

21.　Initially the linking is being done for the years 1988-89 and 1992-93. Should this produce worthwhile data, the matching exercise will be continued backwards in time for as long as proves to be practicable, and continued forward as more data become available.

Job Generation and Destruction

22.　The ABS cannot set up a series of data of this type from administrative sources, or from its Business Register, as in many other countries. It therefore has had to consider other options such as using the surveys measuring the ABS' employment and unemployment statistics,namely the business based Survey of Employment and Earnings (quarterly) and the household based Labour Force Survey. The former supports the measurement of changes in the employment of employing businesses, while the latter supports the measurement of self-employed persons.

23.　As a first step the ABS has developed a set of statistics for the calendar year 1988 (from the Survey of Employment and Earnings), and for changes in the employment status of the self employed sector (from the Labour Forve Survey) for two quarters, one in 1990 and one in 1994.

24.　Now that the methodology has been implemented and is producing results that appear credible, it is proposed to bring the former up to date and to compile results for other quarters from the Labour Force Survey.

25.　Linking unit record data from previous surveys is a difficult operation, for two main reasons. The first is that it becomes difficult to link businesses reliably over time, as day to day decisions about normal survey operations tend not to be concerned with the ramifications for longitudinal analysis. The second is that the

ability of the ABS to link its unit record data over time is limited by its policies about rotation of units (both businesses and households) in and out of its samples. In particular the Survey of Employment and Earnings fully rotates the sampled part of its collection every two years, while the monthly Labour Force Survey rotates households out of its collection after 8 months. Hence it is only possible to develop short term linked sets of data; the further apart (in time) the observations, the smaller will be the overlapped sample and hence the greater likelihood of obtaining results incompatible with the aggregates obtained from the complete samples. In the case of the Survey of Employment and Earnings, this means that the matched sample is more heavily biased towards the larger businesses, which are included in all surveys. We have attempted to overcome this bias by changing the sample weighting factors to take account of the smaller number of sampled respondents for which linked data are available.

Outputs

26.   There will be a number of outputs from the ABS's work, and a number of different ways in which the data can be accessed by users. The initial outputs are expected to be:

a)   a detailed Strategy Paper - already released;
b)   a detailed sampling and methodology paper for the BLS;
c)   a paper on the development of the final BLS questionnaire;
d)   a paper on the Exits survey;
e)   a paper on the results of the Innovation surveys;
f)   one or more papers from the linked Manufacturing Census data analysis;
g)   a paper on the results from the Job Generation and Destruction study.

Papers from (b) through to (g) are expected to be released during the course of 1995-96.

27.   The first results from the Business Longitudinal Survey are expected to be published towards the end of 1995-96. This will only have snapshot data available at the time; the first set of longitudinal data will not be available until twelve months later.

28.   Apart from the publication of results in standard publication form, it is proposed that a set of unidentifiable unit record data be made available (in electronic form) for access by researchers into small and medium enterprises. We expect that this will prove feasible within the constraints of the Statistics legislation operating in Australia, provided all unique identifiers are deleted from the records and the lowest geographic indicator available is the State of operations.

29.   The BLS will contain a subset of larger units, which will have to be excluded from the publicly accessible datbase. Other ways of making these data available for analysis will be explored. It is most likely that these larger units will be held in a separate non-confidentialised database held in the ABS, which can only be accessed by users through the ABS as an intermediary performing the access and regression etc manipulations to the users' specifications.

Conclusion

30.   The above outlines the work being done by the ABS in a project aimed at looking at a range of issues associated with firms' behaviour and performance. The project is in its early days and ABS looks forward to reporting to future meetings on the progress achieved and the methodologies used in the collection process.

31.   The results will be very important for the Services sector as there is a paucity of other information available for this sector on the factors affecting firms' behaviour and performance in this sector, particularly when compared with the data of this kind available for the Manufacturing sector.

31.   Voorburg Group members are invited to comment on the design of the Australian business longitudinal survey and the applicability of such a survey to their countries. Any experience that members have in the analysis of such data would be much appreciated, as the ABS's experience in this field is very limited.

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