



STATUS REPORT - DEVELOPMENT OF PRICE AND VOLUME STATISTICS FOR SERVICES IN AUSTRALIA

National Accounts and Prices Branch
Australian Bureau of Statistics

September 1994

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INTRODUCTION

1. The means used to estimate the constant price output of the various services sectors in the Australian national accounts has changed little over the past twenty five years. For most service sector industries, output indicators - mostly derived by deflation - are used to extrapolate base year estimates of gross value added at as detailed a level as practicable. However, input indicators are used in three industries: public administration and defence; community services; and finance, property and business services. The sum of real wages, salaries and supplements and constant price estimates of consumption of fixed capital are used for the two public sector-dominated sectors and hours worked for the last. The main reason for this approach has been the difficulty involved in obtaining reasonable indicators of constant price output for these industries (or, in some cases, even in defining their output).

2. At present, the Australian national income, expenditure and product (NIEP) accounts are not compiled in an input-output (I-O) framework. The ABS does produce current price I-O tables every three years, but these are compiled independently of the NIEP accounts. A recent review of I-O statistics in Australia has recommended that this should change. The key recommendations are:

- . the NIEP accounts should be based on annual I-O tables;
- . fully compiled current and constant price I-O tables should be compiled with a lag no greater than two years and three months (down from the three and half years at present); and
- . preliminary current and constant price I-O tables should be produced, with the first preliminary tables available with a lag of about nine months.

3. These recommendations and an associated development plan have been accepted by the ABS, and development work is about to commence. Implementation of the plan is scheduled for completion by the end of 1997.

4. This initiative has major implications for the estimation of constant price estimates of industry gross value added. For a start, it will mean that all of the annual estimates will be derived by double deflation rather than by extrapolation using output or input indicators for most industries, as at present. Constant price estimates of output and intermediate input will have to be derived. The current and constant price estimates will be subject to confrontation and balancing simultaneously, and they and their associated implicit price deflators will be subject to temporal analysis and, in the case of implicit price deflators, consistency checks across the uses of each commodity group.

5. An issue the ABS will shortly have to address is whether to compile the constant price I-O tables in terms of five-yearly base years (the practice for the existing constant price estimates) or whether to rebase annually and compile the tables in terms of the prices of the previous year. The latter would readily render Laspeyres chain volume indexes.

6. Independently of the review and its recommendations, it had already been decided to begin the development of output indicators at constant prices to replace to the greatest extent possible the input indicators currently used. The review has served to give greater impetus to this goal.

7. Two of the issues being considered in developing new methods for deriving constant price estimates of gross value added are:

- the availability and suitability of output and input indicators; and
- the availability of price indexes for revaluing current price input and output indicators.

8. The I-O review recommended that the ABS's annual Economic Activity Survey (EAS) should provide more detailed data in order to support good quality I-O tables. The survey is relatively new, its first reference year being 1989-90. It is run annually and covers all large businesses, but has a relatively small sample of small businesses and relatively large sampling errors at the detailed industry level at which the I-O tables are compiled. However, work is proceeding to integrate the survey data with tax data which, when accomplished, will provide virtually an annual census of the whole economy, excluding general government. The enhanced EAS will provide the major data source for the compilation of the I-O tables. In particular, it will provide detailed current price estimates of outputs and inputs for service industries.

9. As pointed out in the report of the I-O review, the data requirements for deriving industry estimates in an I-O framework highlight the paucity of price indexes currently available for service industries. While this is true across the whole range of services, in the Australian context it is most keenly felt on business services and freight transport.

10. In recent years, the development of price indexes for services has been given considerable priority by international organisations and national statistical agencies and so there is a significant body of material on which to draw in approaching the issue in the Australian case.

11. Research into developing price indexes for various services commenced only a few months ago in the ABS. The task is a large one and the needs of the Australian national accounts have had a major influence on the choice of the appropriate areas in which to commence investigations. The initial areas chosen are rail freight, international sea freight and real estate agents.

12. The current situation in Australia with respect to developments in price and volume statistics of services is set out below.

VOLUME STATISTICS

Finance, property and business services

Current method

13. Estimates of constant price gross value added are derived by extrapolating an income-based current price, base period estimate by an index of hours worked. The hours worked estimates are derived as the product of employment estimates derived from the Survey of Employment and Earnings (a survey of employers), and smoothed average hours worked estimates derived from the Labour Force Survey.

Problems in the measurement of constant price estimates of gross value added in this sector

14. The limitations of this approach are readily apparent, as they rely on an assumption of no change in labour productivity. If productivity growth in this industry were equal to that in the non-farm market sector between 1989-90 and 1993-94, then the constant price estimates of gross value added for the industry would now be about \$4 billion (8.9%) higher in 1993-94 than currently estimated. However, the impact on GDP would be somewhat lower as a significant component would be the intermediate input of financial intermediation services to other industries, and would thus represent a redistribution of value added toward the finance industry rather than an increase in GDP.

Possible revised method

15. The ABS has been examining two alternative approaches to obtaining constant price estimates of output for this industry. The first is based on developing a price index which could be used to deflate a measure of output in the industry, while the second is based on quantity revaluation. The new output estimates would feed into the annual constant price I-O tables and also serve as quarterly indicators to interpolate and extrapolate the annual constant price estimates of gross value added from the I-O tables.

16. At the Voorburg conference two years ago, a paper was presented by Fixler and Zieschang of the US Bureau of Labor Statistics entitled *Output Price Measures in Commercial Banks: Evidence from FDIC Data*. It described a method for deriving a price index for banking output. The data requirements of their approach are substantial and require identifying asset and liability holdings for a range of loan and deposit products, and the interest charges associated with them as well as a reference rate of interest. This reference rate of interest is a measure of the cost of funds excluding the cost associated with the intermediation service provided by banks. The intermediation service involves bringing together funds from a diverse range of fund owners in order to package the funds and facilitate the provision of loans to borrowers. It is this intermediation service component of interest income earned by banks which forms the major component of the output of the financial institutions industry. Any price index relating to total financial institution output or revenue needs to measure changes in the cost of this intermediation component of output as well as in the price of services for which a direct charge is made.

17. Fixler and Zieschang worked through two alternative approaches in deriving their price index for bank output. One involved using nominal values of deposits and

loans, the other involved using volume indicators of loans and deposits. Their final paper described the use of current value weights in generating their price index relating to bank output.

18. Quantity revaluation, using volumes of asset and liability holdings and base period interest rate margins, appears to be the most commonly used method by national statistical agencies. These margins reflect the difference between interest paid or charged and a reference rate of interest, as described above.

19. The method to be used to calculate the constant price output of this industry has not yet been decided. The choice of methodology will be affected by the decision which has to be made on how to revalue the financial intermediation service charge indirectly measured (FISIM), which is one of the new items recommended in the 1993 System of National Accounts (SNA).

Transport - road freight

Current method

20. The current method of deriving constant price estimates of gross value added for the road freight sector relies on an output indicator in the form of tonnes of freight carried. The source of the data has been a quarterly survey with very low coverage and representing a very specific component of the market - interstate road freight.

21. Quarterly estimates of tonnes of freight carried are benchmarked to annual estimates of output based on tonne-kilometres of road freight services, obtained from a triennial survey of motor vehicle usage.

New method

22. A quarterly activity indicator has been formed by combining constant price estimates of wholesale sales and estimates of transport margins in the base year. In other words, we are adopting the same general approach to compiling the quarterly indicator as we are likely to in compiling the output estimates in the yet to be developed constant price I-O tables.

23. The quarterly Wholesale Sales Survey provides estimates of total wholesale sales for nine industries - there is no commodity data collected. The transport margins per commodity in each of the nine industries are combined on the basis of a fixed relationship as per the constant price base year for the reference period in question.

24. Over the period from the nadir of the last recession, June quarter 1991, to June quarter 1994, the existing estimates of constant price gross value added - based on the interstate road freight survey - show a decline of -0.8%, while the new estimates show growth of 7.5%. Given that GDP is estimated to have grown by 10% over the period, the new estimates are much more plausible.

25. A new survey has just been established which will provide estimates of tonnes of freight carried, by commodity, by all truckers other than within urban areas and over short distances in rural areas. While the new survey is a great improvement on its predecessor,

it still falls short of the ideal from a national accounts perspective, as there is no measure of the distance freight is transported nor of the quality of the service being provided. Nevertheless, we plan to evaluate the estimates from the new survey with respect to the estimates based on wholesale sales, and, depending on the outcome, we may switch over to the new survey at some time in the future.

Timing of introduction

26. It is not intended to wait for the constant price I-O tables before introducing the new quarterly indicators. The transport margins are already available on data classified to the newly introduced Australia-New Zealand Standard Industrial Classification (ANZSIC) and will be combined with wholesale sale estimates with the move to ANZSIC based estimates at the time of compiling the September quarter 1994 estimates.

Communication - telecommunication

Method of compilation

27. Output indicators are collected from the major operators relating to their principal sources of revenue. They are classified to seven categories for each of the operators, with the major category being 'telephone calls revenue'. Some of the indicators are volume measures and some are revenue data. The revenue data require deflation and the volume measures require quantity revaluation, before aggregation to produce a total industry output indicator.

Possible problems in the ongoing measurement of constant price estimates of gross value added in this industry

28. Two developments are of significance in measuring the output of this industry:

- the accelerating convergence of the telecommunications and 'broadcasting' sectors; and
- the increasing importance of private sector operators, in both telecommunications and postal services.

29. With respect to the first issue, typically the transmission of existing television services has been via transmission facilities which were owned and operated by broadcasters and narrowcasters.

30. To the extent that there is increased transmission of television signals via cable and satellite facilities owned by telecommunications operators (dominated by the government owned Telecom, but the importance of private operators is growing) there will be a significant increase in the non-telephone revenue of these operators. The non-telephone revenue component is currently revalued using the deflator relating to the telephone component. It will be necessary to separately identify and revalue the revenue items in this component, otherwise the existing indicators and their deflators will become increasingly unsatisfactory. This is also true with regard to the use of telephone lines for data transmission. Revenue earned from dedicated lines related to data transmissions

appear in the miscellaneous category 'other revenue', and movements in the unit prices of this item may not be well correlated with the other items in this category.

31. There is also the issue of the increasing importance of own-network services as large organisations operate their own complex telecommunications and computer networks. A good deal of this telecommunications activity will fall within industries other than telecommunications and will be difficult to measure. This is more significant in the case of countries where such operations are more common than in Australia.

32. With respect to the second issue, it will be important to ensure good coverage in our indicators of the private sector component. Growth in that sector is likely to be to some degree at the expense of existing operators and hence public sector indicators will not be indicative of total industry trends. The number of operators in the telecommunications sector will be influenced by the convergence issue since broadcasters and narrowcasters will be responsible for large transmission networks which will overlap with the telecommunications sector, especially once two way flows become a characteristic of such services.

Monitoring developments

33. We will need to monitor the changes in the industry with regard to new entrants and the changing nature of the operations of existing operators. There has been considerable media discussion of the strong growth apparent in the communication industry in recent times and of the upward revisions made recently by the ABS to the growth estimates subsequent to the first published estimates. Given that these revisions stemmed from a change in reporting policy by one respondent, it is critical to ensure that the full range of such operations are reflected in the output indicator and that changes in the structure of operations are identified while reporting consistency is maintained.

PRICE STATISTICS

PRODUCER PRICE INDEXES FOR THE OUTPUT OF SERVICE INDUSTRIES

Background

34. Australia's suite of Producer Price Indexes (PPIs) relate only to materials used and/or articles produced by goods producing sectors of the economy, and foreign trade in merchandise. In other words, there are currently no producer price measures relating either to the service industries or to service commodities.

35. Whilst the Producer Prices Indexes Section of the Australian Bureau of Statistics (ABS) has historically had no experience with service industry price indexes, the Consumer Price Indexes Section has long established collections in such service areas as consumer credit charges, urban transport fares, health services, holiday travel and accommodation, recreational services and education and child care.

36. As new PPI service indexes are developed, there will be close consultation and liaison between staff of the two sections, which are organisationally co-located.

Objectives

37. Australia has a long-term vision of progressively extending coverage of its PPI output measures into the major service industries. In terms of Australia's GDP, over 60% can be attributed to service industries. This proportion is continuing to grow.

38. The main reasons Australia has commenced this development program are:

- (i) to meet identified current needs for deflators for components of the national accounts;
- (ii) to help facilitate the development of annual constant price input-output tables to form benchmarks for the annual national income, expenditure and product estimates;
- (iii) to support the development of broadly based, economy-wide PPI measures (eg, classified by stage-of-production or final expenditure categories); and
- (iv) to meet the needs of analysts and commercial applications.

Approach

39. From the beginning of 1994-95, resources have been allocated for the development of PPI measures for the output of a cross section of ANZSIC service industries. This development work will be undertaken in parallel with the ongoing compilation, review and maintenance of samples and periodic rebasing of the existing set of PPIs.

40. Australia's service industries are highly diverse and range over about 250 different ANZSIC industry classes. The complexity of achieving high coverage of market economy service industries is well recognised and the ABS's short-term aspirations are necessarily very limited. The ABS does not believe that, even if overall statistical priorities warranted it, the dedication of large amounts of resources and a "big push" approach would be appropriate for Australia at this early stage.

41. Rather, the ABS sees a need to gain first-hand experience and develop expertise in both conceptual and practical matters for a cross section of diverse industries. After a reasonable amount of experience (say one to two years), a longer-term strategy will be developed including an assessment of resource requirements.

42. Because of the rapidly changing characteristics of many of the service industries, an important planning consideration is the need to provide resources not only for the establishment of new data collections, but also for their ongoing compilation, sample review and maintenance and for periodic rebasing of the service industry indexes.

43. As foreshadowed in paragraph 11 above, Australia has commenced development work in relation to the measurement of monthly price movements in the output of three industries, namely:

ANZSIC class 6200 (part), Rail Transport (freight)

- ANZSIC class 6301 (part), International Sea Transport (freight)
- ANZSIC class 7720, Real Estate Agents.

44. These industries were selected in consultation with ABS national accountants. Criteria for selection of the industries included the relative importance of the industry, the expected cost of developing and maintaining the index(es) and the expected superiority of the price index(es) compared with the best alternative currently available to the national accountants.

45. The aim is to establish monthly collections, consistent with the existing PPIs. However, in the light of detailed discussions with industry associations and businesses, issues such as data availability and respondent load may lead to a compromise such as obtaining only quarterly data for some industries. As the new collections bed down, their frequency may be converted to monthly.

Strategy

46. A methodology paper has been prepared outlining the broad steps to be followed in developing a price index measure for a selected industry. Particular emphasis will be placed on striving to ensure that a broadly consistent, and logical, methodological approach is adopted for different industries, regardless of the characteristics. It is hoped that this common methodology will allow for:

- (a) staff working in parallel on different industries to be able to share experiences and exchange ideas on conceptual and practical aspects of their respective industries;
- (b) outcomes to be broadly compatible; and
- (c) the final documentation to have a common "look and feel"; it is hoped that such documentation will be suitable for sharing with other countries on an exchange basis.

47. The methodology paper will be progressively modified and expanded as experience is accumulated.

48. Each of the development officers allocated to the selected industries is working closely with an experienced senior prices statistician. Further, frequent meetings of the combined group of development officers and their senior officers are held to monitor progress, share experiences and pool ideas.

49. It is hoped that a reasonable compromise can be achieved between the need to have a commonality of approach across industries and the desire to encourage creativity and flexibility, and implement procedures tailored to each industry.

50. Consultation with stakeholders such as users (internal and external), information suppliers and sponsors such as industry and professional associations is seen as a key activity. Emphasis will be placed on such consultation and the subsequent provision of feedback. Check points have been built into the initial methodology paper to ensure consultation is comprehensive.

59. Because of its structure, the sea freight industry covers a number of ANZSIC classes. The approach being adopted is to construct price indexes for one component at a time, with the initial one being international sea freight. The basis is the cost of transporting freight once it is on the ship (FOB) at the port of export to the port of import and vice versa. The ultimate objective is to construct an index that embodies all the components for the transportation of freight to and from overseas ports.

Real estate

60. Real estate agents' fees for residential property are in the process of being deregulated following an investigation by the Prices Surveillance Authority in 1992. Prior to deregulation, fees were based on a scale basis, with the maximum fee usually being charged. Negotiations between agents and buyers and sellers are expected to lead to a less regulated market.

61. Changes in the manner in which conveyancing is presently conducted are underway. Non-legal firms are undertaking this activity in some States and they are charging less than legal firms to perform similar conveyancing. The increased competition is naturally having an impact on the costs of conveyancing.

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