

**ASSESSING THE RELIABILITY OF THE *MONASH* LABOUR MARKET FORECASTS:
SOME COMMENTS ON A REPORT BY THE NATIONAL INSTITUTE OF LABOUR
STUDIES**

by

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1. Introduction

On 24 November 2006, the National Centre for Vocational Education Research (NCVER) hosted a one-day forum to “showcase” the findings of a suite of research by researchers from the National Institute of Labour Studies (NILS) and the Centre for Post-compulsory Education and Lifelong Learning (CPELL). At this event, Professor Sue Richardson of NILS cast doubt on the reliability of the labour market forecasts produced regularly by the Centre of Policy Studies (CoPS) at Monash University using its MONASH model of the Australian economy. In particular, she expressed the opinion that the MONASH forecasts for detailed occupations, for the States and sub-State regions, and for time horizons beyond about five years, are too unreliable to be used for VET planning. According to information distributed at the event, her remarks were based on a research report (hereafter referred to as the Report) entitled *Forecasting future demands: What we can and cannot know*, written by Professor Richardson and her NILS colleague Dr. Yan Tan. We do not believe that the views expressed by Professor Richardson are supported by the analysis in the Report for three reasons:

- the forecasts analysed are not actually MONASH forecasts,
- the sample chosen is not representative, and
- the recommendation regarding the restricted use of the MONASH forecasts is based on a misconception.

We shall consider each of these issues in turn.

2. Are the forecasts MONASH forecasts?

In December 1996, CoPS released employment forecasts for the eight year period 1994-95 to 2002-03. Subsequently, a selection of these forecasts, expressed as average annual growth rates, was published in Meagher (1997). More specifically, the published forecasts were derived by taking the

average annual growth rate between employment in the base year 1994-95 (obtained from ABS Labour Force Survey data) and employment in the terminal year 2002-03 (obtained from the MONASH forecasts). Hence Meagher (1997) contains no information about the MONASH forecasts for the intervening years 1995-96 to 2001-02, and no forecasts for any year expressed in terms of employment levels. In assessing the accuracy of the MONASH occupational forecasts, NILS has relied on just five forecasts taken from Meagher (1997). They are reproduced here as Table 1.

Table 1. Employment Growth, MONASH Forecasts, 1994-95 to 2002-03, persons, per cent per annum

ASCO code	Description	Growth rate
E1_4300	Electrical and electronic tradespersons	2.13
E1_5300	Numerical clerks	2.75
E1_6200	Sales representatives	4.19
E1_7100	Road and rail transport drivers	3.97
E1_8400	Construction and mining labourers	-1.18

Figures 7, 8 and 9 of the Report purport to compare MONASH employment forecasts for the five occupations with actual or observed outcomes. These forecasts appear to have been constructed by applying the growth rates from Table 1 to occupations of the same name for the seven year period from August 1996 to August 2003. As shown in Table 2, when the relevant growth rates are applied to Labour Force Survey data for the August quarter of 1996, the forecasts from Figure 9 of the Report are accurately reproduced for four of the five occupations¹. Note, however, that the occupations in Table 1 belong to the ASCO (First Edition) classification while those in Table 2 belong to the ASCO (Second Edition) classification.

Table 2. Employment Projections, NILS Report

ASCO code	Description	Employment August 1996 (‘000)	Growth Rate (% p.a.)	Employment August 2003 (‘000)
E2_4300	Electrical and electronic tradespersons	177.6	2.13	205.8
E2_6211	Sales representatives	97.1	4.19	129.4
E2_7310	Road and rail transport drivers	267.4	3.97	351.2
E1_9910	Construction and mining labourers	93.8	-1.18	86.3

There are a number of reasons why the NILS comparison is invalid.

- MONASH is an annual model which produces forecasts for financial years. No MONASH labour market forecast for the August quarter of any year has ever been released.

¹ The fifth occupation, *Numerical clerks*, is considered separately below.

- The MONASH model does not assume that employment growth is constant during the forecast period². No MONASH labour market forecast has ever been released which adopts this assumption, but NILS chooses to apply it in both Figures 8 and 9 when it constructs its so-called MONASH forecasts.
- While an occupation in Table 1 may have the same name as an occupation in Table 2, they are not the same occupation. For example, the ASCO First Edition occupation E1_6200 *Sales representatives* is the sum of two ASCO Second Edition occupations, namely, E2_2222 *Technical sales representatives* and E2_6211 *Sales representatives*³. Indeed, on the basis of the 4-digit ASCO Second Edition data used by NILS, no concordance exists for three of its five occupations, namely, E1_4300 *Electrical and electronic tradespersons*, E1_7100 *Road and rail transport drivers* and E1_8400 *Construction and mining labourers*. In other words, NILS has applied the MONASH growth rates from Table 1 to the wrong occupations in Table 2.

The ABS concordance for E1_5300 *Numerical clerks* is shown in Table 3. It indicates that employment in the occupation was 341.1 thousand in the August quarter of 2003. In Figure 9 of the Report, NILS gives this employment level as 361 thousand. It is not clear what concordance NILS used to construct the so-called MONASH forecast for *Numerical clerks*. However, it does not seem to have been the ABS concordance.

Table 3. Employment, E1_5300 Numerical Clerks, August Quarter 2003, Thousands

ASCO code	Description	Employment
E2_3211	Branch Accountants and Managers (Financial Institution)	20.1
E2_5911	Bookkeepers	118.9
E2_6141	Accounting Clerks	154.6
E2_6142	Payroll Clerks	24.7
E2_6144	Insurance Clerks	19.6
E2_6145	Money Market and Statistical Clerks	3.2
	Total	341.1

- Not only are the forecasts presented by NILS in Figures 8 and 9 not MONASH forecasts, the so-called actual outcomes are not actual outcomes. They are estimates of the actual outcomes taken from the Labour Force Survey (LFS) and come with a sampling error. For example, the LFS records the employment of E2_7310 *Road and rail transport drivers* in August 2003 as 289.7 thousand persons. However, what this actually means is there is a 95 per cent chance that actual employment was somewhere in the range 278.0 thousand to 301.4 thousand⁴. For many

² Indeed, footnote 3 of Meagher (1997) reads “Although MONASH generates forecasts on an annual basis, only averages over the eight year planning horizon are presented in this paper”.

³ The correct concordance is set out in *ASCO Australian Standard Classification of Occupations* (ABS Catalogue No. 1220.0).

⁴ See Labor Force Survey Standard Errors (ABS Catalogue No. 6289.0).

purposes, the LFS sampling error can safely be ignored. However, in the present analysis, the size of the sampling error is of the same order of magnitude as the differences between the so-called MONASH forecasts and the so-called actual outcomes. Hence, the sampling error is capable of seriously prejudicing any conclusions about the reliability of the forecasts. In footnote 8 of the Report (p.29), NILS asserts that it is aware of the problem but it makes no attempt to quantify its magnitude or include it in the analysis. Rather, in its commentary on Figures 7 and 8, it attributes all the observed differences to errors in the MONASH forecasts. This limitation of the NILS analysis is exacerbated by its choice of a quarterly, rather than an annual, comparison.

Clearly, the forecasts described by NILS in Figures 7 to 9 of the Report cannot reasonably be considered to be MONASH forecasts. As these figures contain all the direct evidence presented by NILS concerning the reliability of the MONASH occupational forecasts, its assessment is severely compromised.

3. Is the NILS sample representative?

Even if the NILS comparisons had been conducted in a rigorous manner, the question would still arise as to whether any meaningful conclusions can be drawn from the sample selected. NILS' position on this issue is as follows. "We do not claim .. to have provided a full or fully satisfying evaluation of the MONASH model and its capacity to project the demand for particular vocational skills. But we do argue that the evidence that we have presented supports a conclusion that it is not at present possible to project future skill needs with much accuracy. This is certainly the case where the projections are made at a detailed level, such as for a particular trade or diploma skill level" (Report p.30). Evidently, while not "full or fully satisfying", NILS believes its sample to be representative of the accuracy of MONASH forecasts.

Again, there are a number of reasons why the NILS position is untenable.

- The sample is very old, being produced in December 1996. Since then, the forecasts have been updated 18 times.
- The sample is very small. Meagher (1997) reports only average annual forecasts which contain information about only one actual forecast, namely, that for the terminal period. As far as occupational forecasts are concerned, then, the NILS sample consists of five observations. The number of national ASCO minor group forecasts that could have been checked against actual outcomes is more than thirty-five thousand. That is, the chosen sample constitutes less than 0.015

per cent of the relevant available forecasts⁵. Labour market forecasting is an uncertain activity and one has to expect a considerable range in the accuracy of the forecasts. In such circumstances, a large, rather than a small to miniscule, sample is required to form a view about reliability.

- As with all forecasts, the accuracy of the MONASH forecasts generally declines as the length of the forecast period increases. But, as we have already observed, the NILS sample is concerned only with the last year of the forecast period. In other words, the NILS sample is not only very old and very small, but is restricted to observations which are likely to be the least accurate.

Clearly, the NILS sample can make no reasonable claim to being representative. If the sample is not representative, it cannot provide the material for drawing useful conclusions about the reliability of the MONASH forecasts.

4. Coping with Uncertainty

Because of their supposed unreliability, NILS maintains that only a restricted subset of the MONASH occupational forecasts are suitable for VET planning. In particular, the forecasts should only be used “at a fairly broad level”, they should be confined to “around five years”, and they should retain “an Australia-wide focus” (Report, p.33). For other purposes (i.e., detailed occupational forecasts, planning horizons of more than five years and regional forecasts), other ways of looking forward are to be preferred. These “other ways” include

- using “local information from employers’ associations, graduate destination surveys and recruitment agencies”, and
- “undertaking separate, bottom up, high quality studies”. (Report, p.34)

The important feature of the “other ways” is that they are to be used *instead of*, rather than *in addition to*, the MONASH forecasts. Since the reason for excluding the MONASH forecasts is their perceived unreliability, this recommendation can only mean that NILS believes the “other ways” are more reliable than MONASH. NILS presents no evidence to support this contention. When it comes to the reliability or otherwise of the “other ways”, NILS is completely silent. NILS does provide some discussion about the usefulness of the information that can be obtained from the “other ways”, and rightly so. However, to be useful is not necessarily to be more reliable. Indeed, to judge from the

⁵ MONASH forecasts are available to the public by subscription. The Department of Education, Science and Training, which sponsored the NILS research via NCVER, is a subscriber and could have supplied NILS with current and previous MONASH forecasts under the terms of its agreement with CoPS. CoPS itself was not approached by NILS for forecasts on which to base its assessment.

NILS discussion, unreliability would appear to be a condition which is somehow peculiar to the MONASH forecasts.

In fact, there are several reasons for believing the MONASH forecasts may be more reliable than the “other ways”.

- The MONASH forecasts are coherent. Whatever their level of detail, all MONASH forecasts are consistent with each other, and with an articulated, defensible view about the future of the Australian economy.
- The MONASH forecasts embody very large amounts of relevant economic data and expert opinion. As a formal modelling system, MONASH provides a framework for incorporating data from a wide variety of sources in a consistent manner.
- The MONASH forecasts are updated regularly.
- The MONASH forecasts are subject to relatively good quality control. The forecasts and the models used in their derivation come under constant, and often intense, scrutiny from the numerous subscribers to the former and from the participants in regular training courses in the use of the latter.
- The MONASH forecasts are comprehensive and relatively cheap. As the forecasts cover the whole economy, the cost of producing them can be spread over a relatively large number of subscribers.
- The MONASH forecasts are progressive. The MONASH forecasting system is supported by an ongoing program of economic research which leads to improvements in the forecast methodology over time.

Few, if any, of these characteristics apply to the “other ways” recommended by NILS.

5. Concluding Remarks

NILS believes that, in assessing the worth of the MONASH forecasts for VET planning, “the key question is whether, at the level of disaggregation needed ... , the forecasts are robust enough to be better than no forecasts” (Report, p.27). This is a misconception. Of its nature, VET planning (or any planning, for that matter) requires the adoption of a view about the future. That is, it requires a forecast, be it formal or informal, quantitative or qualitative. If there is no forecast, there can be no planning. In that case, plans should be based on the best available forecast and the key question becomes whether the MONASH forecasts are better than the best available alternative. This question cannot be answered simply by comparing MONASH forecasts with actual outcomes, as NILS has attempted to

do. It can only be answered by comparing the performance of MONASH with the performance of the alternatives, the “other ways of looking forward”.

In any case, there seems to be no compelling reason why VET planners should be required to choose between MONASH and the “other ways”. The “best available forecast” may well be an amalgam of information obtained from a number of different sources, including MONASH.

The Centre of Policy Studies welcomes independent assessments of its modelling work, including its labour market forecasts. However, an independent assessment is not a good assessment simply by virtue of its being independent. The recommendation by the National Institute of Labour Studies that many of the MONASH forecasts should be eschewed by VET planners in favour of “other ways” is not supported by its analysis. The advice is unsound and should be disregarded.

References

Meagher, G.A. (1997), “Changes in the demand for labour in Australia”, in Changing Labour Markets: Prospects for Productivity Growth, Workshop Proceedings, Productivity Commission, Melbourne.

Richardson, Sue and Yan Tan (2007), “Forecasting Future Demands: What We Can and Cannot Know”, National Centre for Vocational Education Research, Adelaide.