

Beyond the Unemployment Rate: Building a Set of Indices to Measure the Health of the Labour Market*

Ian Watson

*Australian Centre for Industrial Relations Research & Training
University of Sydney*

Introduction

In an article for CEDA's *Political and Economic Newsletter*, Watson and Callus (1999) suggested that the unemployment rate is a misleading indicator of the health of the labour market. It fails to provide a useful indication of the quantity of employment available nor does it reveal anything about the quality of that employment. Moreover, it disregards the time dimension (such as labour market flows) and the space dimension (such as State and regional variations) of the labour market. That article concluded with the suggestion that a set of alternative indices were required to capture the health of the labour market and that these indices should encompass both quantity and quality measures. The time and space dimensions are beyond the scope of the current article. Instead, this article is concerned with how one could build a set of Health of the Labour Market (HLM) indices based on the quantity and quality dimensions.

The Problem with the Unemployment Rate

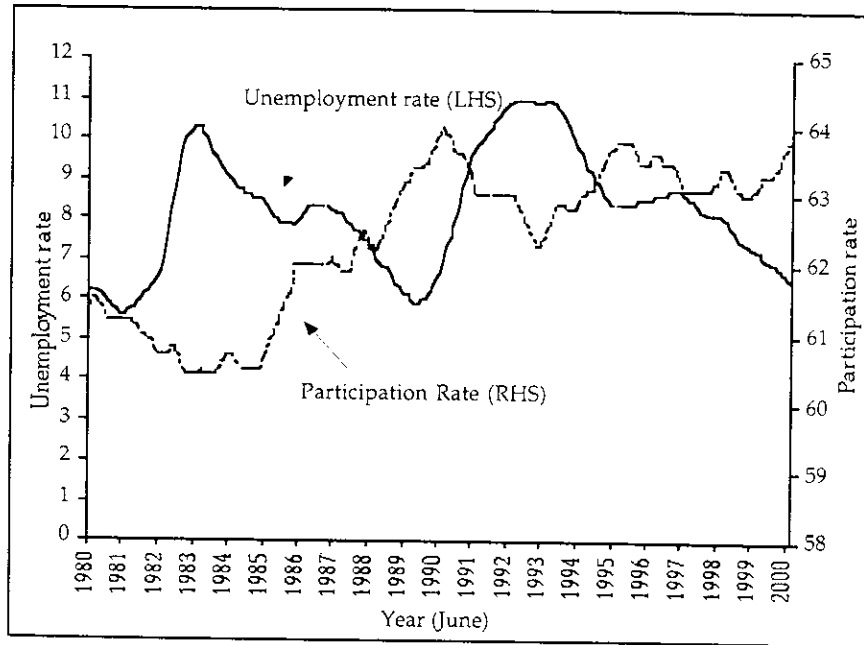
After hovering above 8 per cent for much of the 1990s, the unemployment rate dropped to the mid-6 per cent range during 2000. Some commentators have viewed this as a dramatic turnaround in the problem of unemployment. This optimism is misplaced. There is no doubt that employment growth has been much stronger in recent times, but this development should be placed in its proper context. Figure 1 shows that the steady fall in unemployment since

* This is an expanded and updated version of a paper originally published in the July 2000 edition of the *CEDA Bulletin*.

early 1997 has been matched by a fluctuating participation rate (which measures the proportion of the population in the labour force). Consequently, the improved unemployment rate does not reflect a straightforward improvement in the employment situation, because a fluctuating participation rate suggests considerable movement of discouraged jobseekers in and out of the labour market. Only a stable participation rate allows us to draw unambiguous conclusions from a falling unemployment rate.

There is also an ominous side to the changes in the labour force participation rate during the 1990s. As a general rule, the participation rate rises during periods of economic recovery. The reason is simple: people outside the labour force become more confident about finding work once the economy picks up, and they enter the labour market to search for work. This pattern was present during the 1980s and is clearly evident in Figure 1. However, during the 1990s this pattern began to break down. The participation rate initially recovered after the 1991 recession, but in the period since 1995 the participation rate has begun to fall, albeit in a fluctuating fashion. One interpretation of this

Figure 1: Unemployment and Participation Rates, 1978 to 1999



Source: Derived from ABS (1978-1999), *Labour Force Australia*, Cat. No. 6203.0

departure from the general pattern is that large numbers of unemployed people, particularly those who had been adversely affected by economic restructuring (such as mature-age workers, blue-collar workers and workers from a non-English speaking background) have given up hope of working again and have been withdrawing from the labour market (O'Loughlin and Watson 1997). In other words, the 'jobs boom' of recent years is only a boom for certain kinds of workers.

A more useful indication of the quantity of employment in the economy is provided by employment population ratios. These remove the confounding influence of the participation rate and give a more accurate indication of the amount of employment available to the population. Consequently, an important part of the quantity dimension of the HLM indices draws on the employment population ratio. This ratio expresses how many people are in employment as a proportion of the civilian population aged 15 and over. The employment population ratio can also be calculated for different age groups (for example teenagers or mature-age workers).

The quality dimension of the HLM indices attempts to capture the social values attached to work. For example, people have a reasonable expectation that work should be adequately compensated, that it should not injure them nor continually exhaust them, and that, through working, their skills and capacities are enhanced and not diminished. Converting these values into neat numerical measures is a very difficult task. Not only are there conceptual difficulties in operationalising such values, but there are simple data problems as well – some of this information is not collected often enough, or at all. At a pragmatic level, indices which aim to be readily understood and easily updated should work with simple ratios based on regular Australian Bureau of Statistics (ABS) data. For these reasons the quality dimension has been restricted to a few simple issues: skills, long hours of work, earnings inequality, employment security and job turnover.

Before turning to the details of the HLM indices, it is worth briefly reviewing two recent approaches which have aimed to move beyond the limitations of the unemployment rate.

Other indices

Overseas researchers have also grappled with the shortcomings of the unemployment rate and have sought to move beyond its limitations. The Bureau of Labor Statistics in the United States, for example, has developed a range of alternative measures for capturing labour underutilisation. These are shown in Table 1, with the definitions of each measure and its associated data

for June 2000. The spread of data values is quite large: from a low 0.8 per cent (a very tight definition of unemployment) to a high of 7.3 per cent (a much looser definition which includes the marginally attached and the under-employed).

Researchers in Germany have also developed indices for measuring labour market performance using 'radar charts' (Mosley and Mayer 1998). These charts have four (or more) axes which form a single radial figure, with an image somewhat similar to a radar screen. On each of the axes, data for a particular measure can be mapped. In this way labour market performance on multiple dimensions can be compared simultaneously. A composite picture of the labour market can also be derived by examining the surface area formed by the radial figure. This 'surface measure of overall performance' (SMOP) can then be used to compare different national economies. Mosley and Mayer have adopted aspects of the European employment strategy as the criteria for 'benchmarking' national economies and have mapped a number of quantitative measures (such as employment growth, gender gaps in employment and unemployment rates) onto these axes. They have not yet devised suitable qualitative measures of labour market performance but view these as worthwhile goals. Their article discusses in detail many of the technical issues entailed in developing indices for measuring labour market performance.

The HLM Approach

As mentioned earlier, pragmatic realities guide the building of a set of HLM indices. For this reason the following guidelines have been adopted:

- The data should be available on a regular basis from published ABS sources. Intermittent surveys or unpublished data, no matter how illuminating, are not appropriate for the indices. Where possible, ABS trend series data should be used rather than original or seasonally-adjusted.
- It is important that the indices be easily computed using simple ratios, such as proportions and that time series problems – such as changes to coding schemes – be avoided.
- A set of indices is more appropriate than a single composite index. The latter would be misleading because an improvement in one domain might easily be offset by a decline in another and, therefore, interpreting a movement in the composite index would be difficult. Different domains would also need to be weighted to reflect their importance and the criterion for this could be quite contentious. Consequently, a set of indices is more appropriate.

Table 1: Range of alternative measures of labour underutilisation, United States (percentages for June 2000)

<i>Measure</i>	<i>Not seasonally adjusted</i>	<i>Seasonally adjusted</i>
U-1 Persons unemployed 15 weeks or longer, as a per cent of the civilian labour force	0.8	0.9
U-2 Job losers and persons who completed temporary jobs, as a per cent of the civilian labour force	1.6	1.7
J-3 Total unemployed, as a per cent of the civilian labour force (official unemployment rate)	4.2	4.0
J-4 Total unemployed plus discouraged workers, as a per cent of the civilian labour force plus discouraged workers	4.4	-
J-5 Total unemployed, plus discouraged workers, plus all other marginally attached workers, as a per cent of the civilian labour force plus all marginally attached workers	4.9	-
J-6 Total unemployed, plus all marginally attached workers, plus total employed part-time for economic reasons, as a per cent of the civilian labour force plus all marginally attached workers	7.3	-

Source: US Bureau of Labor Statistics (2000)

- To make such a set of indices readily comprehensible and easily comparable over time, all the index numbers should be measured on a scale with a maximum value of 10. This does not mean that 10 is always the optimum number for measuring the health of the labour market. The appropriate number might well be a matter for debate. Many of the simple ratios can be converted to this scale by multiplying proportions by ten. Occasionally, they need to be further modified, such as subtracting from 10.
- While 10 may not always be the optimum, it should always indicate a positive direction. In other words, a score of 8 should always be better than a score of 7. This will sometimes mean rewording conventional definitions. For example, instead of reporting the proportion of employees who are casuals (26 per cent in 1999), the index calculates instead the proportion of employees who are not casuals (7.4 on the scale). While this might seem counter-intuitive at times, it is nevertheless, a consistent approach whereby 10 always indicates the positive direction in a score.
- The scale for the different indices is not uniform. It would be ideal if all these indicators could be scaled in an identical fashion, for example, an 8 on one scale meant exactly the same as an 8 on another scale. Apart from arithmetic difficulties,¹ such an identity is conceptually challenging. In what sense can one compare a vacancy index with an earnings dispersion index? At what point on a 10 point scale do they both indicate a similar situation in the labour market?
- The construction of the indices should be transparent so that other researchers can reproduce the results with different data, or even modify the measures to improve their validity.

Before proceeding to the details of constructing the HLM indices, it is worth making the general point that such indices are never neutral. The unemployment rate, for example, is for most people a measure of social hardship and distress and they welcome its rapid fall. For economists in the finance sector, however, a falling unemployment rate can indicate a tightening labour market and fuel fears of inflation and potential interest rate rises. Amongst this group of observers, a rapidly falling unemployment rate may cause great concern. In the case of the HLM indices, many of the measures can be interpreted in different ways. For example, the measure of earnings dispersions makes a score near 10 an indication of a labour market in which differentials in earnings relativities are very low. This can be seen as a good thing from the point of view of social equality. On the other hand, for some economists who favour a more 'flexible' labour market, relativities should be quite wide and scores near 10 would cause them concern. They would probably see this as an

equity/efficiency trade-off and view this HLM item as one which too strongly favoured an equity criterion. For other economists an efficient labour market is one which produces enough quality job opportunities for all who want them.

Items in the HLM Indices

The Quantity Dimension

Employment

One of the most fundamental measures of the health of labour market is whether it has the capacity to generate enough employment for the population. Of course, not all members of the population are able or willing to be employed. Some may be studying, some may be retired and some may be engaged in important non-paid work. Nevertheless, as a general rule, a high proportion of the civilian population (aged 15 and over) should have the opportunity to find employment. To measure this opportunity there is a traditional measure available – the employment population ratio. This ratio is multiplied by 10 and thereby fitted to the 0 to 10 scale (see Table 2). This is the general approach taken to most ratios (generally, proportions) in the HLM indices below (and unless noted otherwise, it should be assumed that all proportions are multiplied by 10).

Full-time Employment

An important aspect of the quantity dimension is how much of the available work is full-time. One of the disappointing aspects of the 1990s, compared to the 1980s, is that much of the jobs growth has been in part-time employment and a shortage of full-time work has been apparent for much of that decade. The exact balance between the amount of full-time employment and part-time employment is an issue for wider social debate, as is the issue of what proportion of the population should be engaged in paid employment. As shown in Table 2, the full-time index expresses the proportion of full-time employment to the civilian population (aged 15 and over). As such, it measures the full-time employment to population ratio.

Underemployment

In itself, part-time employment is not a problem. Indeed, it offers job opportunities for a wide range of people – such as parents with childcare responsibilities and students – and a certain amount of part-time employment in the labour market is desirable. The problem occurs when there are large numbers of people wanting full-time jobs and most of the jobs on offer are

Table 2: Items making up the HLM Indices

Item	How calculated	Optimum	Index numbers
Quantity measures			
Employment/population index (ABS 6203.0)	Traditional employment-population ratio (multiplied by 10)	Open to debate	July 1990 6.0 July 2000 6.0
Full-time index (ABS 6203.0)	Full-time employment-population ratio (multiplied by 10)	Open to debate	July 1990 4.7 July 2000 4.5
Under-employment index (ABS 6265.0)	Ratio of part-time workers not wanting more hours to all part-time workers (multiplied by 10)**	10	Sept. 1988 8.1 May 1990 7.5
Vacancy index (ABS 6354.0)*	Ratio of unemployed persons to job vacancies (multiplied by 10)	10 indicates one-to-one ratio Optimum is open to debate	July 1990 1.2 July 2000 1.8
LTU index (ABS 6203.0)	Proportion of unemployed persons who are not long-term unemployed (multiplied by 10)	10	July 1990 7.8 July 2000 7.2
Quality measures			
Skills index (ABS 6203.0)	Proportion of occupations which are coded Advanced clerical and service workers or above in ASCO 2 nd Edition (multiplied by 10).	Not 10 since less skilled jobs are still essential	Aug. 1996 5.3 Aug. 1999 5.4
Long hours of work index (ABS 6203.0)	Ratio of those not working 49 or more hours per week to total (for full-time workforce) (multiplied by 10)	10	July 1990 7.9 July 2000 7.5

Table 2 (Cont'd.)

Item	How calculated	Optimum	Index numbers	
			Aug. 1989	Aug. 1999
Casualisation index (ABS 6310.0)	Proportion of employees who are not casuals (multiplied by 10)	10	8.0	7.4
Turnover index (ABS 6209.0)	Proportion of persons in their current job for more than one year (multiplied by 10)	Not 10 since a certain degree of labour mobility is essential for economic growth	7.4	7.8
Industry earnings dispersion index (ABS 6302.0)	Inter-industry earnings – based on (ft adult AWOTE) industry coefficient of variation (multiplied by 10 then subtracted from 10)	Open to debate (equity would favour 10)	8.9	8.1
General earnings dispersion index (ABS 6306.0)	Ratio of the 25 th percentile to the 75 th percentile (weekly total earnings for f-t adult non-managerial employees) (multiplied by 10)	Open to debate (equity would favour 10)	6.5	6.2
Gender earnings index (ABS 6302.0)*	Female earnings (f-t adult AWOTE) as proportion male earnings (multiplied by 10)	10 (complete equality)	8.3	8.4

Notes:

* Indicates trend series.

** Part-time workers include those who usually work full-time but were working part-time for economic reasons.

The general principle of interpretation is that the higher the number the more positive the value (see 'Building an Index in the text'). AWOTE stands for average weekly ordinary time earnings.

Source: Australian Bureau of Statistics (details shown beneath each item).

only available on a part-time basis. This can be directly measured with underemployment – the proportion of part-timers who want to work more hours² – and is captured in the underemployment index, shown in Table 2. This item uses the term ‘not wanting more hours’ so that a score of 10 remains at the positive end of the scale. A score of 7.5 in September 1998 simply means that 25 per cent of part-timers do want more work.

Vacancies

One of the key indicators of labour demand in the economy is the number of unfilled job vacancies reported by employers. This can be expressed as a ratio of vacancies to unemployed people, or unemployed people to vacancies. The former approach is used here and this ratio is multiplied by 10. In May 2000 there was 0.18 of a vacancy for each unemployed person and this became a score of 1.8 on the scale. This is one of the examples where the comparability between items on the 0 to 10 scale breaks down severely. At a time when vacancies are at a decade-long high, this item scores only 1.8. To avoid such anomalies, an earlier version of the HLM indices used the unemployed to vacancy ratio and subtracted that from 10 (after multiplying by 10). This gave a much higher score (5.6 for May 2000) but its method of calculation was liable to other problems (such as negative scores). Given that the current approach leaves most scores at the bottom of the scale, this item remains problematic.

Whether 10 is the optimum value rests on one’s view as to whether a tight labour market, in which there were sufficient vacancies for all unemployed persons, is a good thing. To some extent it is misleading to think of a single labour market. There are numerous occupational and regional labour markets and some may be very tight at the same time that others are still plagued by chronic long-term unemployment. Thus, even if a one-to-one ratio between vacancies and unemployed people occurred at an aggregate level, this would not necessarily signal the end of unemployment. Indeed, one might argue on efficiency grounds that a labour market which is too tight can slow economic growth and in the long-run produce higher levels of unemployment. On the other hand, equity arguments in favour of a one-to-one ratio are also compelling. Not only does a tight labour market offer unemployed workers greater opportunities and choices, but it also enhances their bargaining position in the labour market. This stronger bargaining position could be one of the key determinants of the quality of the jobs provided by employers.

In terms of skilled vacancies, the Commonwealth Government has conducted a regular Skilled Vacancy Survey (SVS) for many years. The SVS index is useful for highlighting labour shortages which might create skills bottlenecks in the economy. During mid-2000 the SVS reached its highest level in a decade,

though by August 2000 it had begun to drop and was 3.5 per cent lower than for the same period in 1999. (The SVS can be found at: <http://www.dewrsb.gov.au/employment/publications/skilledvacancysurvey>.)

Long-term Unemployment

The final quantity index is the long-term unemployment index, which measures the proportion of the unemployed who are not long-term unemployed. Long-term unemployment (LTU) is defined as being unemployed for more than 12 months. Amongst the unemployed, the greatest social and economic hardship is experienced by this group. Clearly, the greater the level of LTU, the more unhealthy is the labour market from an equity point of view. In efficiency terms, the level of LTU can also indicate a poorly performing labour market which is plagued by structural unemployment.

What Kind of Work — The Quality Dimension

Skills

The quality dimension of the HLM indices is more difficult to construct. For example, one can measure job quality partly by the skill level embedded in the job. The occupational coding scheme called ASCO³ can be used to map skills (Cully 1999) but some critics contend that many of the higher level ASCO jobs are increasingly subject to 'credentials creep'. Consequently, the accuracy of this measure in capturing skills will be unreliable to the extent that some jobs do not require new skills, simply new credentials. In other cases, changes to classification schemes (such as moving from ASCO First Edition to ASCO Second Edition) result in some occupations being revalued to higher skill levels because new educational philosophies have become fashionable (such as 'competencies').

Nevertheless, in the spirit of pragmatism, an ASCO-based measure of skill is used in the HLM indices below. It measures the proportion of persons employed in ASCO major groups 1 through to 5.⁴ The skill standard for these jobs is, at a minimum, equivalent to that needed for an AQF Certificate III. If increasing numbers of new jobs are more highly skilled, this implies that there is a higher proportion of quality jobs in the labour market. It is important to note, however, that 10 may not be an optimum number on this item because there always needs to be a reasonable proportion of less skilled work in the economy so that a diverse range of people can participate in paid work.

Hours of work, earnings and job security are also staple items of interest in any analysis of the labour market. The quality dimension for these items involves asking:

- are people working very long hours per week?
- is earnings inequality increasing?
- are insecure forms of employment on the increase?

Hours of Work

The issue of long working hours is inevitably subjective, but a social norm based on working a 35 to 40 hour week has evolved over the last 30 years. This social norm reflects broad community values which emphasise the importance of recreation, community activity and family life. Working 49 hours or more per week moves beyond this norm and that becomes the basis for the definition of long hours of work, used in the HLM indices. (Specifically, it is the proportion of the full-time workforce not working 49 or more hours per week.)

Earnings Inequality

One of the best measures of earnings inequality is the dispersion of earnings between different categories, for example, between different industry groups. This item makes use of a traditional statistical measure of dispersion called the coefficient of variation (which expresses the ratio of the standard deviation to the mean). To map this measure onto a scale of 0 to 10, the coefficient of variation is multiplied by 10 and that product is subtracted from 10. A distribution that had no dispersion would score 10 on the scale.

Another useful measure of dispersion is the inter-quartile range. In terms of earnings, this shows the dollar difference between a person sitting on the 25th percentile and one sitting on the 75th percentile. This can be turned into a ratio by dividing the 25th percentile by the 75th percentile. As the gap which makes up the inter-quartile range closes, so this ratio approaches one (or 10 on the HLM scale).

Gender equity in the labour market can also be easily measured by simply expressing the ratio of female earnings to male earnings. As that ratio approaches one (or 10 on the HLM scale), an overall gender equity outcome is approached. (Of course, even with a score of 10, at a more disaggregated level gender inequality might still prevail.) It is hard to conceive of an efficiency objection to making 10 the optimum number in this index.

All of the earnings measures make use of data for full-time adult non-managerial employees. Without this restriction, many earnings measures would be unreliable (because of the confounding influence of junior rates, managerial salaries, and so forth).

Security of Employment

Security of employment is one of the most contentious areas in labour market analysis. Claims made by ACIRRT in *Australia at Work* (ACIRRT 1999, ch.6) that job insecurity has been increasing over the last decade have been challenged on the basis that ABS measures of labour turnover show less movement between jobs, not more (Wooden 2000, pp.126-135). The HLM turnover index below confirms this. Yet other data do suggest that the world of work has become more insecure. In a Newspoll survey conducted in June 2000, people were asked if they thought Australian workers were more or less secure in keeping their jobs compared to ten years previously. Seventy-nine per cent of respondents replied that they thought jobs were less secure and only ten per cent thought they were more secure (Steketee 2000, p.22). There are also other symptoms of insecurity within the labour market itself. For example, growth in casual employment has been dramatic over the last decade, and this has not just been because part-time jobs amongst women – the traditional area of casual work – are also growing. Growth has also been pronounced amongst male workers, and within the full-time workforce as well. The HLM casualisation index below reflects the strength of this growth.

One possible reason for the apparent contradiction between heightened job insecurity and stability in the turnover statistics, is that the turnover data do not distinguish between tenure in the current job and the 'mode of engagement'. A person may be re-engaged on a casual or temporary basis in the same job for many years, a situation which is quite common in higher education and the community sector. The labour turnover approach would regard such people as long-term job holders, and yet their employment security is, in reality, quite precarious. This is particularly so once job insecurity is linked to lifestyle insecurity (for example, getting a home loan or planning a family).

For many years the ABS had measured casualisation by examining employee entitlements, specifically access to paid sick leave and paid holiday leave. Those employees who are entitled to neither are deemed to be casuals. In recent years the ABS has developed two new surveys (Forms of Employment Survey and Survey of Employment Arrangements and Superannuation), which re-evaluate some of the traditional labour force definitions, particularly those concerned with non-standard employment. This has allowed researchers to examine whether employees 'self-identify' as casuals, and whether their relationship to their employer is an ongoing one. In a recent review of the Forms of Employment Survey data, Murtough and Waite (2000) argue that the 'true' proportion of casuals is about half of the proportion commonly measured using the entitlements approach. They use this analysis to question the general assumption that increasing levels of casualisation (as

conventionally measured), represent an increased level of precarious employment in the labour market.

Despite the complexity around this issue of casualisation, for the moment the HLM indices retain two simple measures for capturing job insecurity: job turnover and casualisation. The former measures the proportion of persons in their current job for more than one year and the latter measures the proportion of employees who are not casuals (as conventionally defined).

Assessing the Health of the Labour Market

The main focus of this article has been on the pragmatic details of building a set of HLM indices. Nevertheless, it is possible to offer an overall assessment of the health of the labour market using the HLM indices. Wherever possible, the items in the HLM indices have been measured ten years apart and span the decade of the 1990s. Ideally, these items should all use the same time span and be based on the same month (for seasonal comparability), but this has not been possible because of differing release dates for ABS data. Table 2 provides the details. Fortunately, comparing the period 1988-1990 to 1998-2000 is a reasonably sound approach because both periods are at similar stages in their business cycles, representing years of strong economic growth. Month to month volatility in the non-trend data must be kept in mind, since the figures which represent decade-apart differences can 'jump around' depending on the month chosen. Ideally year-long averages (where available), should be used and this might be a useful modification during the next calculation of the HLM indices.

In summary, looking back over the last decade the HLM indices suggest:

- On the quantity side, all indices except vacancies are either stagnant or in decline. Despite the improvement in jobs growth over the last few years, the quantity dimension of the labour market compares poorly with the comparable period during the 1980s. In particular, full-time employment remains very stagnant and the underemployment index has worsened. Long-term unemployment remains a serious problem in the labour market.
- On the quality side, most items show deterioration. Only the turnover index shows significant improvement. The casualisation index shows considerable deterioration, as does the long hours of work index. Except for the gender earnings index, the other earnings measures suggest growing inequality in the labour market. The skills index shows a slight improvement, but the time frame is quite short (only three years).

Conclusion

The picture just sketched is a bleak one. The kind of labour market emerging from the HLM indices contrasts starkly with some of the more conventional macro-economic measures which suggest that we live in prosperous times (solid GDP growth and a falling unemployment rate). Is such a contrast warranted? Do the HLM indices 'get behind' the real story of the labour market, or do they simply reflect a one-sided interpretation of what is going on in the labour market?

As mentioned earlier, many of the items in the HLM indices are subject to differing interpretation. Growing earnings dispersion, for example, signals inequality to some people, flexibility to others. This kind of debate does not hinge on how the HLM indices are constructed, but on what story the reader takes away from perusing their results. On a more fundamental level, the HLM indices might themselves be 'biased' by virtue of the items included and those excluded. This would be a serious problem if one wanted to weight the items in the HLM indices and produce a single summary index number. As it is, because the HLM indices are a collection of items, it is a simple matter to just add more items as the debate moves on. For example, critics of the earlier version of the HLM indices suggested that measures of real wage growth and productivity growth should also be included. These are certainly worthwhile suggestions and future versions of the HLM indices could examine their inclusion.

While adding and subtracting items is a simple matter on a pragmatic level, what does it mean conceptually? Indeed, does a pragmatic approach, which excludes considerations of weighting or attempts at a single summary measure, mean that the HLM indices are really just a collection of ABS labour market statistics conveniently rolled into a single table? Should the model for the HLM indices aim for something like the 'radar charts' approach and its SMOP summary measure, or should it try to develop innovative definitions of its items by combining different measures? These questions are all worth pursuing as further debates ensue around the changing nature of the Australian labour market.

Endnotes

- 1 Even with the present approach, the arithmetic has not been consistent. Ideally the arithmetic should have stayed on a geometric scale. For example, most proportions can be expressed on a scale of 0 to 10 by simple multiplication, and wherever this has been possible, and meaningful, this convention has been

followed. However, at times an arithmetic scale has been used (for example, subtracting from 10) in order to stay with the main principles for constructing the indices.

- 2 This includes people who usually work full-time but are currently working part-time for economic reasons (being stood down, short time or insufficient work).
- 3 See *Australian Standard Classification of Occupations*, 2nd Edition. ABS Catalogues number 1220.0.
- 4 These are: managers and administrators; professionals; associate professionals; tradespersons and related workers; and advanced clerical and service workers.

References

- ABS (1997), *Australian Standard Classification of Occupations*, 2nd Edition. Cat. No. 1220.0.
- ABS (2000) *Forms of Employment: Australia*, August 1998, Cat. no. 6359.0, Canberra.
- ACIRRT (1999) *Australia At Work: Just Managing*, Prentice Hall, Sydney.
- Cully, M. (1999), 'A More or Less Skilled Workforce? Changes in the Occupational Composition of Employment, 1993 to 1999', *Australian Bulletin of Labour*, 25, June, 98-104.
- Mosley, H. & Mayer, A. (1998), 'Benchmarking National Labour Market Performance: A Radar Chart Approach', *Wissenschaftszentrum Berlin für Sozialforschung*, Berlin. Report prepared for the European Commission, Directorate-General V, Employment Industrial Relations and Social Affairs.
- Murtough, G. & Waite, M. (2000), *The Growth of Non-Traditional Employment: Are Jobs Becoming More Precarious?*, Productivity Commission Staff Research Paper, AusInfo, Canberra.
- O'Loughlin, T. and Watson, I. (1997), *Loyalty is a One way Street: NESB Immigrants and Long-Term Unemployment*, ACIRRT Monograph.
- Steketee, M. (2000), 'Unhappy Days are Here Again', *Weekend Australian*, June 17-18, 2000, 22.
- US Bureau of Labor Statistics (2000), 'Alternative Measures of Labour Underutilization', at <http://www.bls.gov/webapps/legacy/cpsatab8.htm>.
- Watson, I. & Callus, R. (1999) 'What Does the Unemployment Rate Measure?' *CEDA Political and Economic Newsletter*, No. 42, March, 4-7.
- Wooden, M. (2000), *The Transformation of Australian Industrial Relations*, The Federation Press, Sydney.