WORKING PAPERS IN ECONOMICS

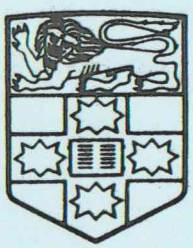
Measuring Underutilisation of Labour:
Beyond Unemployment Statistics

by

Russell T. Ross

No. 81 May 1985

DEPARTMENT OF ECONOMICS



The University of Sydney
Australia 2006

Measuring Underutilisation of Labour: Beyond Unemployment Statistics

by

Russell T. Ross

No. 81 May 1985

National Library of Australia Card Number and ISBN 0 949269 58 1

Earlier versions of this paper were presented to seminars at the Universities of Copenhagen, Lancaster, Warwick and Wollongong, and the Bureau of Labour Market Research. This version was written while I was a Visiting Research Fellow in the Social Welfare Research Centre at the University of New South Wales. I wish to thank Michael Blad, Peter Elias, Flora Gill, Bob Lindley, Rod Maddock, Dave Metcalf, Nick Oulton, Gunnar Persson, Margaret Patterson, Jim Taylor and Keith Whitfield for their constructive comments.

1. INTRODUCTION

In a recession the extent of the underutilisation of an economy's labour resources determines the size of a major constraint on the ability to expand once the recession is over. Even though important information is ignored, government issued official unemployment rates are usually used as the key measure of the state of the labour market; the standard interpretation of an unemployment rate of x% being that labour utilisation is x% below capacity. A new framework is proposed for evaluating labour market information that includes all aspects of underutilisation of available labour. The framework is based on a broader definition of the labour force consistent with the concept of the 'usually active population' recently adopted by the International Labour Organisation (ILO). In the next section, the unemployment rate approach and two existing alternative frameworks in the literature are critically reviewed, while in the final section the new framework is highlighted.

2. WHAT'S WRONG WITH EXISTING APPROACHES?

2.1 The Unemployment Rate Approach

The unemployment rate approach to measuring the state of the labour market has several weaknesses. It provides only a headcount measure and is based on the narrow definition of the labour force, thus ignoring discouraged workers and other forms of hidden unemployment[1]. It also measures only one aspect of underutilisation, ignoring other important aspects such as underemployment. Underemployment, both quantitatively and qualitatively, has been a problem in developing economies for some time but has only recently become prevalent in developed economies. Quantitative underemployment, or visible underemployment, occurs when workers are not working as many hours as they desire and includes part-time workers wanting to work longer hours, full-time workers seeking more overtime than is available, full-time workers temporarily on short hours for economic reasons[2] and seasonal workers who would prefer to work a larger fraction of the year.

Qualitative underemployment, or invisible underemployment, consists primarily of persons who are mismatched workers, i.e. workers who are over-qualified for their job and who would contribute more to the economy if their employment better matched their skills. Invisible underemployment also covers workers who are underemployed by either low productivity or low income[3]. This category addresses qualitative aspects of labour utilisation by

recognising that it is insufficient to merely consider the quantity of people employed. Consideration of the availability of job skills is important because an economy in which a lot of mismatching exists may be no better off relative to potential than an economy with a lot of unemployment. Indeed, as Myrdal (1968) and Hauser (1974) have previously argued, underemployment has been of greater magnitude than actual unemployment in developing countries for quite some time.

The weaknesses of the unemployment rate approach have become more acute in the last decade which has seen greater attention given to policies which reduce official unemployment without generating new job opportunities. For example, the Austrian Government successfully disguised that country's unemployment problem in the period 1976-1980 by offering subsidies to employers to retain staff they would otherwise have laid off[4].

2.2 Alternative Labour Market Frameworks in the Literature

Two frameworks are discussed[5]. Hauser's (1974, 1977) seeks to redress the weakness inherent in the unemployment rate approach when analysing developing countries by providing separate statistics for underutilisation by actual unemployment and each of the forms of underemployment. Table 1 illustrates Hauser's framework, which Sullivan (1978) and Clogg (1979) have applied with some success to the USA economy. Although this framework is an improvement on the unemployment rate approach, it has most of the drawbacks of that approach. In particular it provides only a headcount measure of underutilisation and it is based on the

standard, narrowly defined labour force[4]. No information on the extent of each individual's underutilisation is provided, and hidden unemployment is not included at all. However, the framework clearly demonstrates that in both developed and developing economies official unemployment is not the only important aspect of underutilisation, and that its relative importance varies from country to country.

The second approach, that of Maddison (1980), uses two sets of accounts. One monitors actual labour usage in the production of goods and services while the other produces an index of this usage against a series of 'normal' (full employment) levels of usage. Maddison's measure is also deficient as it does not take into account all aspects of hidden unemployment and it ignores qualitative aspects of underemployment. As can be seen from Table 2 this measure, like Hauser's, demonstrates the point that focussing solely on unemployment is misleading. For example, part (a) of that table indicates that the United Kingdom's unemployment experience over the period 1973-78 was worse than that of the two other economies. However, as part (b) shows, when one takes into account some other aspects of underutilisation, the situation is reversed with the United Kingdom actually faring better than either of the others. The main strength of Maddison's approach is that it moves away from the headcount approach, focussing instead on aggregate hours of work effort, and so is able to estimate the extent of the underutilisation more accurately than is possible with any headcount-based approach.

TABLE 1: Hauser's Labour Utilisation Framework

Country	Utilisation of the Labour Force				
	Inadequate by				Adequate
	Unemployment	Hours	Income	Mismatch	
Hong Kong (1976)	5.3	0.4	8.6	2.3	83.1
Malaysia (1974)	4.6	1.9	5.3	0.4	87.8
Philippines (1968)	2.4	10.6	24.6	9.5	52.9
Singapore (1975)	4.5	5.1	27.6	1.0	62.3
South Korea (1974)	6.0	2.5	8.1	13.0	70.5
Taiwan (1973)	2.4	4.2	8.5	1.5	83.4
Thailand (1975)	4.2	1.3	49.9	0.3	44.7
United States (1979)	5.4	2.5	7.4	11.7	73.0

Sources: For the US, Clogg (1979), Table 2.1. For all other countries, Hauser (1977), Table 5.

TABLE 2: Maddison's Use of Potential Index

	France	West Germany	United Kingdom
	(a) Ratio of Actual to Potential Employment		
1973	100.00	100.00	100.00
1974	99.90	98.79	100.00
1975	98.56	96.87	98.76
1976	98.15	96.87	97.22
1977	97.64	96.97	96.58
1978	97.43	97.17	96.67
	(b) Ratio of Actual to Potential Labour Input (measured in aggregate hours of supply)		
1973	100.00	100.00	100.00
1974	99.43	96.92	97.58
1975	96.96	91.87	95.96
1976	96.34	91.54	95.49
1977	95.53	90.86	95.71
1978	94.72	91.41	95.91

Source: Maddison (1980), Table 5.

Note: For all columns, 1973 was the base year, i.e. full employment was assumed to have been achieved in each economy in 1973.

3 A NEW FRAMEWORK FOR MEASURING UNDERUTILISATION

Although the Hauser and Maddison measures are improvements on the standard unemployment approach, they both have deficiencies which render them unsatisfactory. In particular, both are based on the narrow definition of the labour force. Additionally, Hauser's approach, like the unemployment rate approach, is a headcount measure, while Maddison's does not account for qualitatitive aspects of underutilisation. A superior approach to producing more comprehensive underutilisation related statistics is to develop an hours based measure of utilisation which takes into account all aspects of unemployment and underemployment based on a broader definition of the labour force. It is envisaged that the major underutilisation measure would be based on a twelve month period, although more frequent statistics should be produced. There are several reasons for advancing a twelve month period: many economic and social statistics are already produced on an annual basis, and annualised statistics are better able[7] to take account of factors such as the lengths of underutilisation spells, underutilisation turnover, seasonal variations in activity levels, and the division between part-time and full-time employment (part year as well as part week). Further, the choice of a twelve month period is in accord with the spirit of the recent International Labour Organisation's recommendation that countries produce statistics based on the concept of the "usually active population"[8]. This concept recognises that in any one week or month a significant number of people are only temporarily outside the labour force and over a longer period would have some labour force attachment. Seasonal

workers and people whose work effort is periodically constrained (e.g. some parents during school vacations, and some workers with health problems) are examples. In addition the usually active population concept is intended to capture visible and invisible underemployment, and all aspects of hidden unemployment[5].

The inadequacy of the headcount-based measures is apparent in this context. For example, as currently defined the unemployment rate is meaningless when applied to the usually active population since an individual who during a twelve month period has one or more spells of unemployment but also has some employment, underemployment and/or spends some time out of the labour force, could not be slotted into categories which are intended to be mutually exclusive.

In order to gauge the state of the labour market it is necessary to have a measure of utilisation which can be related to the ILO measure of the effective labour force. The centrepiece of the present proposal is a measure of the extent of annual underutilisation of the usually active population; hereafter the annual labour underutilisation rate, denoted ALUR. Although the annual statistic is highlighted here, more frequent monitoring of the labour market via monthly labour underutilisation rates (MLUR) is envisaged using the same methodology[6].

3.1 Annualised Labour Underutilisation Rate (ALUR)

ALUR is generically closer to Maddison's index as opposed to Hauser's headcount in that both are based on the annual availability of hours of labour supply. Distinguishing features

of the present proposal are a broader definition of the labour force and the ensuing importance given to people marginally attached to the labour force and greater attention to desired hours of effort.

Conceptually, ALUR is the ratio of 'aggregate available hours of effort less total hours of labour used' to 'aggregate available hours of effort', expressed as a percentage. A provisional operational formula for ALUR is[11]

$$ALUR = \frac{\sum_{i=1}^{M} (H_{a,i} - H_{s,i})}{H_{a,i}} \times 100\%$$

where H_a refers to annual hours of offered work effort and H_s to actual work effort undertaken; $i = 1,.....,M$ with M being the number of people in the usually active population[12].

Defining $P_i = H_{s,i}/H_{a,i}$

we see that person i's utilisation rate is P_i. For every person who is fully utilised, i.e. is working the number of hours they wish, P_i will have the value one, while for every underutilised person P_i will be less than one (but not less than zero).

The economy's aggregate rate of underutilisation is

$$ALUR = \left(1 - \frac{\sum_i P_i}{M} \right) \times 100\%$$

From the data collected for the ALUR statistics, a variety of other statistics could be derived including the unemployment rate, Hauser's statistics, and Maddison's use of potential indices; each of which would still be expected to have a role to play in labour market analysis. As with existing statistics, disaggregated ALUR statistics could be produced for targeted section of the labour force such as married women, teenagers, older workers, occupational categories, industries and geographic regions.

The monthly labour underutilisation statistic (MLUR) has the same conceptual framework and operational formula as ALUR. The main difference between the two statistics is the treatment of persons who want to work within the next twelve months but do not wish to start work within the next four weeks[13]. In the ALUR calculations, these people are regarded as being underutilised whereas for the MLUR calculations they are regarded as being fully utilised.

3.2 Practical issues of ALUR Calculations

In deriving ALUR statistics, several problems need to be recognised. Firstly, the calculation of potential available hours might be difficult. A prerequisite to this calculation is that suitable questions be added to labour force survey questionnaires currently in use. These questions would need to elicit precise information on desired hours as well as actual hours of work. In the present context, it would be conceptually

incorrect to use standard hours for preferred hours even for full-time workers. While the ALUR statistic would take on its minimum value at full employment, there is nothing in the framework which requires that this value be zero; it might well be a positive value, especially when qualitative aspects are properly accounted for[14].

While it is envisaged that the ALUR calculations are to be based on the existing set of institutional arrangements, it is not assumed that the aggregate supply of hours from the usually active population be fixed. In particular, the possibility that labour supply is responsive to real wage changes must be included. My own view is that the elasticity of supply is very low, at least in the short term. In any event, this criticism is equally applicable to all static labour market measures and it does not detract from the usefulness of these measures as indicators of the state of the labour market in either the short-term or the medium term.

Measuring the incidence of qualitative underemployment requires a greater degree of arbitrariness than any other other aspect of underutilisation[15]. One of the features of Hauser is his attempt to tackle this issue systematically. Maddison does not address this issue and the present proposal has thus far glossed over this particular measurement problem[16].

Accurate ALUR/MLUR statistics cannot be derived from existing labour force statistics for any country until statistics on the usually active population are collected and made available,

including more precise information on both desired and actual hours and information on qualitative aspects of underutilisation.

3.3 SMLUR - A Very Partial Example:

While there are several obvious practical problems in implementing the ALUR/MLUR proposal, there can be no doubt that a consistently applied measure such as is formulated here substantially improves on existing statistics. An interim, but second best, measure which could be adopted with minimal disruption to existing labour force surveys is an approximation to MLUR in which no weight is attached to qualitative underemployment. To produce this statistic, denoted SMLUR hereafter[17], the only additional information to be collected is precise figures for desired and actual hours of work for all members of the broadly defined labour force. While not including qualitative aspects of underutilisation, SMLUR statistics would still give a more accurate picture of the labour market than is currently presented.

SMLUR statistics can be estimated for Australia for September 1983, March 1984 and September 1984. An indication of the value of such statistics can be seen from Table 3, in which SMLUR statistics are compared with several other labour market statistics. It is apparent that concentrating only on the official labour force understates the extent of underutilisation even if underemployment is taken into account. The figures indicate that the extent of the understatement is considerable.

Table 3: SMLUR and other Labour Market Statistics; Australia, September 1983, March 1984, and September 1984

	Sept 1983	March 1984	Sept 1984
SMLUR	16.3%	16.4%	14.1%
Official unemployment rate	10.2	9.7	8.6
Hauser's statistic	14.5	13.4	12.4
"Maddison's" measure	11.3	10.4	10.2
Unemployment rate, including discouraged workers	11.7	11.6	9.8
Unemployment rate, including marginally attached persons	18.6	19.3	17.0

Sources: All figures are derived from ABS (1984a, 1984b, 1984c, 1984d and 1984e).

Note: Derivation of the SMLUR figures are given in Appendix A. The Hauser and Maddison measures are explained in the text. The Hauser measure presented here does not capture invisible underemployment and the "Maddison" measure is not expressed relative to a full employment level. For September 1984 the hours figures were unavailable and the hours distribution prevailing in March 1984 was assumed (although if the September 1983 distribution was used, the same figures resulted).

The table also indicates that all three measures based on the official labour force[18] imply an improvement in the state of the labour market whereas the SMLUR figures indicate a more mixed reality. For the six months to March 1984, the improvement was statistical rather than real, reflecting merely a redistribution of rather than a reduction in underutilisation. Importantly, the final row in Table 3 indicates that if hours of supply are not taken into account underutilisation will be overestimated by around 2.5 to 3 percentage points, at least for the period discussed.

Even though the SMLUR statistics presented are estimates, and incomplete, they indicate the real need for improved labour market statistics, a need which should be met by the collection and dissemination of ALUR and MLUR statistics.

Footnotes:

1. Recent figures from the ABS (ABS 1984b) indicate that there are around 750,000 hidden unemployed in Australia, implying that the size of the labour force is underestimated by 9.5% if these individuals are ignored. Discouraged workers comprise only 14-15% of all hidden unemployment.

2. This does not include workers on paid or unpaid leave.

3. See Hauser (1979), p 5 and Standing (1978), pp 43-44 for discussion of these points.

4. As a result the official unemployment rate did not rise above 2.5% until 1980; Pichelmann (1984).

5. Readers are urged to consult the primary sources for fuller discussion of these proposals and the derivations of the figures presented here. For a survey of other proposals, see Standing (1978), chapter 2. See, also MacMahon and Robinson (1984).

6. i.e. covering all employed persons, plus unpaid family enterprise workers, plus those unemployed persons who are actively looking for work.

7. Compared to weekly and monthly statistics.

8. ILO (1983), p.XI.

9. i.e. not only discouraged workers but all other categories of marginal attachment to the labour market.

10. Section 3.4 presents some preliminary estimates of the monthly statistic and compares them with the other measures outlined.

11. This is provisional as more work is required to refine this measure to account for qualitative aspects of underemployment.

12. The labour force categories used in this approach are given in Appendix B.

13. i.e. persons in labour force categories 11, 12, 13 and 14; see Appendix B.

14. The statistic could be negative if sufficient employed persons were working longer hours than they desired.

15. This is one explanation why estimates of this aspect of underutilisation have rarely been attempted.

16. A pragmatic approach has been adopted here. In the absence of data with which to experiment, there seems little value in going beyond the treatment of Hauser, Clogg, and Sullivan.

17. SMLUR is an acronym for Second best Monthly Labour Underutilisation Rate.

18. as shown in rows 2 to 4 of the table.

Appendix A: Background to the SMLUR calculations:

The SMLUR estimates presented here are based on figures taken from ABS (1984a, 1984b, 1984c, 1984d and 1984e). When using grouped data, as is the case here, the formula is rewritten as

$$SMLUR = \sum_j [(n_j (h_{j\bullet} - h_{j\bullet}))/(n_j h_{j\bullet})]$$

where n_j is the number of individuals in labour force status category j[1], and $h_{j\bullet}$ and $h_{j\bullet}$ are, respectively, average hours desired and worked in the jth category.

For SMLUR calculations, only in categories $j = 1, 2, 11, 12, 13, 14$ and 15 will there be no underutilisation[2]. For these categories, $h_{j\bullet} = h_{j\bullet}$. For all other categories, $h_{j\bullet} < h_{j\bullet}$, with $h_{j\bullet} = 0$ for $j = 5,\ldots,10$.

For the calculations presented here, information on the $h_{j\bullet}$'s is not directly available for $j = 3,\ldots, 10$. It has been assumed that in each of the underutilised categories, desired hours are on

average the same as the desired hours of the fully utilised category to which the underutilised person aspires. This means that the relationships among the h's can be written as

$$
\begin{array}{lllll}
0 < h_{1a} & = h_{1o} & & & \\
0 < h_{2a} & = h_{2o} & & & \\
0 < h_{3a} & < h_{3o} & = h_{1o} & & \\
0 < h_{4a} & < h_{4o} & = h_{2o} & & \\
0 = h_{5a} & < h_{5o} & = h_{1o} & & \\
0 = h_{6a} & < h_{6o} & = h_{2o} & & \\
0 = h_{7a} & < h_{7o} & = h_{1o} & & \\
0 = h_{8a} & < h_{8o} & = h_{2o} & & \\
0 = h_{9a} & < h_{9o} & = h_{1o} & & \\
0 = h_{10a} & < h_{10o} & = h_{2o} & & \\
0 = h_{11a} & = h_{11o} & & & \\
0 = h_{12a} & = h_{12o} & & & \\
0 = h_{13a} & = h_{13o} & & & \\
0 = h_{14a} & = h_{14o} & & & \\
0 = h_{15a} & = h_{15o}. & & &
\end{array}
$$

---

1. The categories are defined in Appendix B.

2. Note that for ALUR calculations, this statement is only true for categories 1, 2, and 15.

Appendix B: Labour Force Status Categories[1]:

j = 1. working full time, fully employed
2. working part time, fully employed
3. working full time, want more work
4. working part time, want more work
5. officially unemployed, want full time work
6. officially unemployed, want part time work
7. discouraged worker, want full time work
8. discouraged worker, want part time work
9. marginally attached (other than 7 or 8), and available to start work within four weeks, want full time work
10. marginally attached (other than 7 or 8), and available to start work within four weeks, want part time work
11. as for 9, except not wanting to start within four weeks
12. as for 10, except not wanting to start within four weeks
13. other persons wanting full time work, not actively seeking work and not available to start within four weeks
14. as for 13, but wanting part time work
15. not wanting to work at all.

---

1. These are the categories adopted by the ABS (1984a,1984b and 1984c) in response to the ILO recommendations discussed in the text. The ABS does not consider categories 13 and 14 in its calculations of marginally attached persons.

BIBLIOGRAPHY

Australian Bureau of Statistics [ABS] (1984a), *The Labour Force Australia March 1984*, Catalogue 6203.0.

———— (1984b), *Persons Not in the Labour Force (including Discouraged Jobseekers), March 1984*, Catalogue 6220.0.

———— (1984c) *Employment, Underemployment and Unemployment 1966-1983, Australia*, Catalogue 6246.0.

———— (1984d) *The Labour Force, Australia September 1984, Preliminary*, Catalogue 6202.0.

———— (1984e) *Persons Not in the Labour Force, Australia (including persons who wanted to work but were not defined as unemployed) September 1984 Preliminary*, Catalogue 6219.0.

Clogg C. C. (1979), *Measuring Under-employment*, Academic Press: New York.

Hauser P. (1974), "The Measurement of Labour Utilisation", *Malayan Economic Review*, Volume 19, 1-17.

———— (1977), "The Measurement of Labour Utilisation -- More Empirical Results", *Malayan Economic Review*, Volume 22, 10-25

International Labour Organisation [ILO] (1980), *Technical Guide, description of series published in the Bulletin of Labour Statistics, Volume II Employment, Unemployment, Hours of Work, Wages*, ILO: Geneva.

_____ (1983), *Bulletin of Labour Statistics, 1983-3*, ILO: Geneva.

Maddison A. (1980), "Monitoring the Labour Market: A Proposal for a Comprehensive Approach in Official Statistics", *Review of Income and Wealth*, June, 175-217.

MacMahon, P. and Robinson (1984), "Concepts, Definitions and Measures of Unemployment and the Labour Force: Are They Appropriate for Economic Policy Analysis in the 1980s?" Working Paper No.41, Bureau of Labour Market Research, April.

Myrdal G. (1968), *Asian Drama: An Inquiry into the Poverty of Nations, Volume II*, Pantheon: New York.

Pichelmann K. (1984), "Rising Unemployment: The Composition and Concentration of Unemployment in Austria, 1979-1982", seminar presented in the Centre for Labour Economics, London School of Economics and Political Science, February.

Standing G. (1978), *Labour Force Participation and Development*, ILO: Geneva.

Stricker, P. and Sheehan, P. (1981), *Hidden Unemployment: The Australian Experience*, Institute of Applied Economic and Social Research, University of Melbourne.

Sullivan T. A. (1978), *Marginal Workers, Marginal Jobs: The Underutilisation of American Workers*, University of Texas Press: Austin and New York.

United States National Commission on Employment and Unemployment Statistics (1980), *Counting the Labour Force, Appendix Volume 1*, U.S. Government Printing Office: Washington, D.C..

* 1	I.G. Sharpe	A Framework for Analysis of the Money Supply Process in Australia
* 2	I.G. Sharpe R.G. Walker	Asset Revaluation and Stock Market Prices
* 3	N.V. Lam	Incidence and Stabilization Impact of Tin Export Taxation in West Malaysia
* 4	V.B. Hall & M.L. King	Inflationary Expectations in New Zealand: A Preliminary Study
* 5	A.J. Phipps	Strike Activity and Inflation in Australia
6	N.V. Lam	Incidence of the Rice Export Premium in Thailand
* 7	I.G. Sharpe	Secondary Reserve Requirements, the Monetary Base and the Money Supply in Australia
8	P. Saunders	Labour Demand Functions and the Quasi-Fixity Hypothesis: Some Empirical Results for U.K. Manufacturing Industries, 1963-1974
9	W.P. Hogan	Economic Strategies for Recovery
10	T.P. Truong	Asset Revaluation and Share Prices: A Study using the M.S.A.E. Regression Technique
*11	S. Kim	Instability of Primary Exports, Income Stabilization Policies and Welfare
*12	I.G. Sharpe & P.A. Volker	Institutional Change, Specification Error, Inflation and the Stability of the Demand for Money Function in the United States, 1901-1974
*13	I.G. Sharpe & P.A. Volker	The Impact of Institutional Changes on the Australian Short-Run Money Demand Function
*14	W.P. Hogan	The Connections Between Foreign Trade and Economic Development: An Empirical Study
*15	F. Gill	The Case of the Black Exodus from the Southern U.S., 1910-1970: Some Lessons for Theory and Applied Theory
*16	A.J. Phipps	The Impact of Wage Indexation on Wage Inflation and Strike Activity in Australia
*17	V.B. Hall	Pricing Behaviour in Australia: A Data Evaluation Study
*18	I.G. Sharpe	Australian Money Supply Analysis: Direct Controls and the Relationship between the Monetary Base, Secondary Reserve and the Money Supply
*19	L. Haddad	Economic Systems: Towards a New Classification
20	G. Lewis	A Strategy for Winning at Roulette
21	R.L. Brown	A Test of the Black and Scholes Model of Option Valuation in Australia
*22	V.B. Hall	Pricing Behaviour in Australian Manufacturing Industry: Hypothesis Testing 1955-1956 to 1967-1968
*23	I.G. Sharpe & P.A. Volker	The Selection of Monetary Policy Instruments: Evidence from Reduced Form Estimates of the Demand and Supply of Money in Australia
*24	V.B. Hall	Excess Demand and Expectations Influences on Price Changes in Australian Manufacturing Industry
*25	I.G. Sharpe & P.A. Volker	The Tradeoff Between Improved Monetary Control and Market Interest Rate Variability in Australia: An Application of Optimal Control Techniques
*26	Evan Jones with the assistance of Mary MacDonald	An Examination of Earnings Differentials in Australian Manufacturing Industry
27	W.P. Hogan	Questions on Structural Adjustment Policies
*28	P. Saunders	Price and Cost Expectations in Australian Manufacturing Firms
*29	W.P. Hogan, I.G. Sharpe & P.A. Volker	Regulation, Risk and the Pricing of Australian Bank Shares 1957-1976
30	W.P. Hogan	Quicksands of Policy-Making
*31	C. Emerson	Taxing Natural Resources Projects
32	R.W. Bailey, V.B. Hall & P.C.B. Phillips	A Small Model of Output, Employment, Capital Formation and Inflation, applied to the New Zealand Economy
33	W.P. Hogan	Eurofinancing: Currencies, Loans and Bonds
34	S. Adei	The Growth of Foreign Investment and Economic Nationalism in Post Independence Ghana: 1957-1975

*35	W.P. Hogan	The 40 Per Cent Investment Allowance
*36	W.P. Hogan	Controlling Eurofinance Markets
37	R.T. Ross	Disaggregate Labour Supply Functions for Married Women: Preliminary Estimates in New Zealand
38	U.R. Kohli	Beginning and End-of-Period Specifications of Asset Market Equilibrium in Balance-of-Payments
39	G. Mills	Government Incentive Contracts with Private Companies: Some Lessons from the Channel Tunnel
40	C.G.F. Simkin	Closer Economic Relations Between Australia and New Zealand
41	U.R. Kohli	Relative Price Effects and the Demand for Imports
42	W.J. Merrilees	Alternative Models of Apprentice Recruitment: with Special Reference to the British Engineering Industry
*43	P. Saunders	Price Determination in Australian Manufacturing Firms: A Cross-Section Study
*44	W.P. Hogan	Immigration Policies and Issues
45	W.J. Merrilees	Labour Market Segmentation in Canada: A Translog Approach
46	W.J. Merrilees	Pricing Strategies in the Newspaper Industry
47	J.L. Whiteman	The Micro-Foundation of Layoffs and Labour-Hoarding
48	U.R. Kohli	On the Duality between Fixed and Flexible Exchange Rates
49	U.R. Kohli	Nonjoint Technologies
50	P. Saunders	Price Determination, Expectations Formations and some Tests of the Rationality of Australian Price Expectations
51	J.L. Whiteman	Rational Choice, Learning-by-Doing and the Personal Distribution of Income
52	J.L. Whiteman	Firm-Specific Human Capital, Experience and the Differential Incidence of Unemploymer
52	J. Yates	An Analysis of Asset Holdings in Australia by Income Class
54	J. Yates	An Analysis of the Distribution Impact of Imputed Rent Taxation
55	G. Mills	Investment in Airport Capacity - A Critical Review of the MANS Study
56	V.B. Hall & P. Saunders	Pricing Models in Australian Manufacturing - The Evidence from Survey Data
57	P. Saunders	How Rational are Australian Price Expectations?
58	F. Gill	The Costs of Adjustment and the Invisible Hand with Special Reference to the Labour
59	G. Mills & W. Coleman	Peak Load Pricing and the Channel Tunnel: A Re-Examination
60	J. Yates	Access to Housing Finance and the Campbell Report: the Implications of Implementing the Recommendations of Chapter 37
61	S.S. Joson	The Gatt Agreement on Government Procurements: Canada and Australia
*62	R.T. Ross	General Report of the 1980 Survey of Work Patterns of Married Women in the Sydney Metropolitan Region
63	W.J. Merrilees	Pension Benefits and the Decline in Elderly Male Labour Force Participation
*64	W.P. Hogan	Industry, Employment and Inflation
*65	A.J. Phipps	Australian Unemployment: Some Evidence from Industry Labour Demand Functions
*66	E.M.A. Gross & W.P. Hogan	Short Term Management of the Australian Exchange Rate, 1977-82
67	V.B. Hall	Industrial Sector Interfuel Substitution following the First Major Oil Shock
68	J. Yates	Access to Housing Finance and Alternative Forms of Housing Loans in the 1980's
69	V.B. Hall	Major OECD Country Industrial Sector Interfuel Substitution Estimates: 1960-79
70	F. Gill	Inequality and Arbitration of Wages in Australia; An Historical Perspective
*71	W.J. Merrilees	Do Wage Subsidies Stimulate Training? An Evaluation of the Craft Rebate Scheme
72	Michael C. Blad	Economic Policy and Catastrophe Theory

73	C.G.F. Simkin	Does Money Matter in Singapore?
74	J. Yates	Home Purchase Assistance for Low Income Earners
*75	C.G.F. Simkin	Long-Term Aspects of New Zealand's External Deficits
76	C.G.F. Simkin	Methodological Scepticism
77	V.B. Hall	Industrial Sector Fuel Price Elasticities of Demand Following the First and Second Major Oil Shocks
78	S.S. Joson	Substitutability of 'Buy Local' Policy for Tariff Protection in Small Economies
79	R.T. Ross	Analysis of the 1980 Sydney Survey of Work Patterns of Married Women: Further Resul
80	J. Yates	Discrimination in Lending
81	R.T. Ross	Measuring Underutilisation of Labour: Beyond Unemployment Statistics

Papers marked with an asterisk are out of stock. Copies of the others are available upon request from:

Department of Economics
The University of Sydney
N.S.W. 2006

Working Papers in Economics Published or Accepted for Publication Elsewhere

2	I.G. Sharpe & R.G. Walker	Journal of Accounting Research, Fall, 1975, 293-310
3	N.V. Lam	Journal of the Developing Economies, vol. 17, No. 1, March, 1979
4	V.B. Hall & M.L. King	New Zealand Economic Papers, 1976
5	A.J. Phipps	Economic Record, September 1977, 297-319
6	N.V. Lam	Journal of Development Studies, vol. 14, No. 1, October 1977
7	I.G. Sharpe	Australian Journal of Management, April 1976, 85-106
9	W.P. Hogan	Economic Papers, No. 55, The Economic Society of Australia and New Zealand, 29-57
12	I.G. Sharpe & P.A. Volker	Economics Letters, 2, 1979, pp.45-49
13	I.G. Sharpe & P.A Volker	Kredit und Kapital, vol. 12, No. 1, 1979
14	W.P. Hogan	Some Calculations in Stability and Inflation, A.R. Bergstrom et.al. (eds), John Wiley and Sons, 1978
15	F. Gill	Australian Economic Papers, vol. 19, No. 35, December 1980
18	I.G. Sharpe	Journal of Banking and Finance, 4, 1980, pp. 283-300
21	R.L. Brown	Australian Journal of Management, vol. 3, No. 1, April 1978, 17-36
23	I.G. Sharpe & P.A. Volker	The Australian Monetary System in the 1970s, M. Porter (ed.), Supplement to the Economic Record, 1978
24	V.B. Hall	Economic Record, vol. 56, No. 152, March 1980, 69-81
25	I.G. Sharpe & P.A. Volker	Australian Journal of Management, October 1979, pp. 119-134
27	W.P. Hogan	Malayan Economic Review, vol. 24, no. 1, April 1979
28	P. Saunders	Australian Economic Papers, vol. 19, No. 34, June 1980
29	W.P. Hogan, I.G. Sharpe & P.A. Volker	Economic Letters, 6, 1980, 373-379
29	W.P. Hogan, I.G. Sharpe & P.A. Volker	Economics Letters, 7, 1981, 69-74
30	W.P. Hogan	Australian Economic Papers, vol. 18, No. 33, December 1979
38	U.R. Kohli	Australian Economic Papers, vol. 21, No. 39, December 1982, 332-344
39	G. Mills	Journal of the Operational Research Society 33 (1982), 505-514
41	U.R. Kohli	Canadian Journal of Economics, vol. XV, No. 2, May 1982, 205-219
42	W. Merrilees	Applied Economics, vol. 15, February 1983, pp. 1-22
43	P. Saunders	Australian Economic Papers, vol. 19, No. 35, December 1981
45	W. Merrilees	Canadian Journal of Economics, vol. XV, August 1982, pp. 458-473
46	W. Merrilees	Journal of Industrial Economics, vol. XXXI, March 1983, pp. 291-311
49	U.R. Kohli	Review of Economic Studies, vol. L(1) No. 160, January 1983, 209-219
50	P. Saunders	Economic Record, vol. 57, December 1981, 368-378
55	G. Mills	Seventh Australian Transport Research Forum-Papers Hobart, 1982, pp. 171-210
56	V.B. Hall & P. Saunders	Economic Record, vol. 60, March 1984, 68-84
59	G. Mills & W. Coleman	Journal of Transport Economics and Policy, vol. XVI, No. 3, September 1982
65	A.J. Phipps	Australian Economic Papers, vol. 22, No. 41, December 1983
67	V.B. Hall	Economics Letters, 12, 1983, 377-382