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TRAINING IN THE YOUTH LABOUR MARKET
IN AUSTRALIA*

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TRAINING IN THE YOUTH LABOUR MARKET IN AUSTRALIA*

by

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ABSTRACT

Data from the Australian Longitudinal Survey indicate that about 70 per cent of the youth labour force received some form of training during 1985. Indirect evidence on the per capita expenditure on job training derived from human capital models of wage determination suggest, however, that the annual outlay on training is quite small. This evidence is consistent with employer-sourced information presented in the Williams Report. Because industrial training is generally presumed to be a major determinant of a country's international competitiveness, the apparent lack of training in the Australian labour market is of major importance to manpower program planning.

TRAINING IN THE YOUTH LABOUR MARKET IN AUSTRALIA

I INTRODUCTION

The Australian labour market has been characterised by shortages of some categories of skilled labour throughout most of the post-war period. During the 1950s and 1960s the main response to these shortages was the immigration program, described by Niland (1984, p.534) as "the most visible element in what might be called Australia's manpower posture during this period". Recently, however, the main response has been the development of skills through post-school training. The switch in focus is clearly evident from data presented in Kirby (1981, p.4.11) on the contribution of immigration and completed indentures to the stock of tradesmen in Australia. During the early 1960s, immigration and apprenticeship training were equally important sources of additions to the stock of tradesmen. By the late 1970s, however, the ratio of indentures completed to 'immigration net skilled gain' was almost 6 to 1.

Apprenticeship training has been examined in a number of recent contributions [e.g., Scherer (1982), Merrilees (1983), Krbavac (1983), Murphy (1986)]. These studies have examined a range of issues, including the economic determinants of apprenticeship intake and wastage rates among persons with trade qualifications. A range of factors appear to influence apprenticeship intake. Both the product market (expected output) and labour market conditions affect apprentice recruitment in the expected direction. The majority of studies report that Commonwealth subsidies and rebates have been effective, though their total impact on apprenticeship intake is small. Wage costs appear to be of marginal importance.

Another form of training which has been studied extensively is that obtained under government sponsored employment and training programs. Analysis by Stretton (1982) suggests that training obtained under the Education Program for Unemployed Youth enhances later labour market performance. However, the informal training provided under many job-based programs appears to have little impact on the recipient's employability in other firms.¹

Apprenticeships and government programs represent only a fraction of all training opportunities in the Australian labour market. Unfortunately, the extent of other private sector training is not known with any certainty. Neither the Committee of Inquiry into Training (1974) nor the Committee of Inquiry into Education and Training (1979) [The Williams Report] was able to quantify this dimension of industrial training.

The Committee of Inquiry into Training (1979) saw a clear role for private sector training (p.71), but the majority of its discussion focussed on apprenticeship and government sponsored programs. Within the former, there was a clear preference for formal over informal methods (p.33). The incidence of training under the auspices of government programs was considered low compared to other developed industrial nations (p.16). The report also discussed the distribution of training opportunities. Training for older workers was seen as a means of redressing imbalances in the distribution of human capital. The less-well educated were suggested as having difficulty obtaining training because they were unable to qualify for "other than low-skilled unstable employment".

Similar themes underly the Williams Report. Employer-sourced data were used (pp. 379-385) to provide an indication of the incidence of, and expenditure on, training. On both counts the evidence varied considerably. 25 per cent of employees in one sample of large firms received training,

while 75 per cent of the employees of a financial institution were involved in group training sessions averaging one hour per week. The estimated average amount spent per employee per year ranged from about \$150 to \$200 (1986 prices). An important feature of these cost data is that they do not take account of the opportunity cost of the employee's time during periods of training. Compared to the indirect evidence presented by Mincer (1962) which suggests that investment in post-school training is as important as investment in formal schooling, these expenditure data on training appear low. This could reflect either deficiencies in the data (such as the lack of information on informal sources of training, the failure to take account of the opportunity cost of the employee's time during training), or a lack of training in the Australian labour market.

Embedding industrial training as an integral part of manpower programs policy is difficult without data on the incidence and magnitude of training. Such data are necessary for a number of reasons. Individuals with labour market experience, a proxy for job training, earn more than labour market entrants. They are also less likely to be unemployed. Data on the incidence of training are therefore important to understanding patterns of success and failure in the labour market. Moreover, such data will indicate whether the market is supplying training to groups identified as in need of training by the various committees of inquiry. This information will be valuable if the provision of training opportunities for disadvantaged groups is considered.

The distribution of training in the Australian labour market is reviewed in Section II. Multivariate analyses of the incidence of training are presented in Section III. In Section IV the effect of training on the hourly rate of pay is considered. This part of the paper is based on models proposed by Becker (1975) and Mincer (1974). Estimates from these

models provide indirect evidence on the magnitude of per-capita investment in job training. Section V offers a summary and conclusion.

II TRAINING: THE STYLISED FACTS

Reliable quantitative data on training are generally unavailable. Overseas research has attempted to provide direct measures of the costs of training through a case-studies approach [see, for example, Ryan (1980)]. This approach, however, has generally been unsuccessful, and the lack of success can be attributed to a focus on local labour markets dominated by peculiar characteristics. An alternative is to survey firms. But this approach usually experiences considerable difficulty with measurement of the costs of informal training (the costs of such training being extremely difficult to separate from other operating costs), and the general reluctance on the part of firms to provide information on their cost structure. A more promising line of research is provided by Lillard and Tan (1986). They have adopted the less ambitious but more practical approach of analysing the incidence of training. Potential shortcomings of this type of study include the lack of quantitative appeal, and the use of employee-reported data. It is generally thought that self-reported information on training will be unreliable. In this instance, however, the consistency of the responses was checked by using measures from a number of independent data sets. Lillard and Tan's finding that training is a pervasive feature of the U.S. labour market appears, therefore, to have a sound empirical basis.

Assessment of the extent of training in the Australian labour market has been difficult to date because of the absence of appropriate data. Fortunately, it is now possible to redress this situation using information from the Australian Longitudinal Survey (ALS). The ALS is a large annual

probability survey of Australian youth which was initiated in 1984. It contains information on both the incidence and perceived benefits of training and is therefore suitable for analysis using techniques similar to those employed by Lillard and Tan (1986).

The stylised facts on training in the Australian youth labour market are documented in Miller and Volker (1987). Table 1 contains the relevant information. These data relate only to jobs held in the year prior to the survey.

In total, around 70 per cent of the relevant workforce reported receiving some form of training. On the basis of evidence for the U.S. labour market [Lillard and Tan (1986)], this figure seems rather high. In part this may derive from the design of the survey instrument. The questions in the ALS relating to the incidence of training were used primarily as screening devices for questions relating to the perceived benefits of training. As such they were designed to maximise the number of individuals who would report having received training. The higher incidence of training in the Australian survey could also be attributable to the age of the population sampled: there is evidence from a number of studies [e.g., Lillard and Tan (1986)] that the likelihood of receiving training diminishes with age. Comparisons with the evidence presented in the Williams Report suggests, however, that the extent of over-reporting may be minimal. Thus, the Williams Report indicates that 25 per cent of employees of a sample of large firms received training and that informal sources are more likely than formal training schemes. The Table 1 information can be interpreted as being broadly consistent with the employer-sourced information cited in the Williams Report.

TABLE 1

PERCENT DISTRIBUTION OF WORKFORCE ACROSS TRAINING CATEGORIES
 AUSTRALIAN LONGITUDINAL SURVEY, 19-26 YEAR OLDS

	Males	Females
ANY TRAINING	70.4	67.2
<u>Type of Training:</u>		
FORMAL TRAINING		
- on-the-job	29.0	32.2
- off-the-job	27.5	14.6
INFORMAL TRAINING		
- from supervisors	58.3	53.2
- from other workers	49.4	46.7
TRAINING GENERAL OR SPECIFIC		
- could help get same job elsewhere	74.3	72.6
- could help get different job elsewhere	64.3	63.5
GOVERNMENT SUBSIDISED	4.3	3.2
<u>Self-assessment of Benefits:</u>		
- training helped to get present job	35.5	48.3
- has helped improve present job	45.7	36.9
- could help improve present job	50.2	37.1
- generated new skills	87.6	85.0
- augmented existing skills	85.7	82.1
<u>Reason for Training:</u>		
- changes in equipment	25.1	26.6
- changes in work content	23.3	22.9
<u>Degree of Satisfaction with Level of Training:</u>		
- too little	27.5	21.1
- about right	69.9	76.8
- too much	2.6	2.1

Source: Australian Longitudinal Survey: 1985 Area File

Informal instruction appears to be more prevalent than formal training programs. Thus, over half the workforce report that they received informal training (e.g., instruction from supervisors and other workers). Compared to this, 30 per cent of respondents received formal on-the-job training (e.g., training classes at work), and 28 per cent of males and 15 per cent of females received formal off-the-job training (e.g., technical colleges). Training programs run or subsidised by the government (e.g., Skills in Demand, transition courses) are apparently of minor importance.²

An overwhelming proportion of workers felt that they had either learned new skills or augmented existing skills by undergoing training. Moreover, the instruction provided appears to be general rather than simply learning the idiosyncracies of the various jobs. This is consistent with the fact that about two-thirds felt that training improved their inter-enterprise mobility, while 35 per cent of males and 48 per cent of females indicated that training had helped them to secure their current job. Many employed workers perceived direct pecuniary benefits from their training: about 50 per cent of male workers and 40 per cent of female workers who received training were of the opinion that the training had helped them achieve either a promotion, a pay increase, or a better job with their present employer.

The relationship between training and the work environment is difficult to discern using the ALS data. Only one-quarter suggested that the training was needed because of changes in the type of equipment being used. A similar fraction thought that training was associated with changes in work content. Thus, residual explanations need to be offered for the provision of training. Obvious candidates in this regard include that training is simply a learning of skills utilised in typical work processes and that training represents the development of skills required in the next

job on the career path. Both explanations are common in the literature.

Finally, youth appear, on the whole, to be reasonably happy with the amount of training they receive. 70 per cent of males and 77 per cent of females thought that they had received about the right amount of training, while 28 per cent of males and 21 per cent of females thought that too little training had been provided. A negligible proportion of respondents suggested that their job entailed too much training.

The incidence of training would be expected to vary across socioeconomic groups in the labour market. The evidence presented by Lillard and Tan (1986), for example, suggests that educational attainment, race, locality, potential work experience and current job tenure affect, to varying degrees, the incidence of training. Evidence cited in the Williams Report indicates that training varies across occupational groups. The influence of these factors on the incidence of training in the Australian youth labour market is examined in the next section. These analyses will establish whether the distribution of training opportunities accords with that outlined by the various committees of inquiry. Groups which appear to be disadvantaged in terms of their access to training are identified.

III WHO GETS TRAINING?

Answers to this question are provided through a multivariate analysis of the probability of receiving training from various sources in the present job. Five equations are estimated for both males and females. In the first equation, a binary dependent variable is created and defined equal to one if the individual had received any training, zero otherwise. The other four equations are similar and examine, respectively, the incidence of formal on-the-job training, formal off-the-job training, informal training from supervisors, and informal training from other

workers. The explanatory variables in each instance comprise educational attainment, age, locality, birthplace, current job tenure, and characteristics of the current job (occupation, industry, and whether the employment is full or part-time).

The sub-sample of the ALS used in the estimation includes 19-26 year olds who had one, and only one, job during the ALS reference period. The latter restriction is necessary if the measures of training are to be related to the appropriate job tenure variables. The sample selection on the basis of age represents an attempt to minimise potential problems of sample selection bias associated with differences in schooling behaviour between socioeconomic groups.³

Attempts were also made to accommodate possible over-reporting of the incidence of training. This involved using information on the perceived benefits of training in the definition of the dependent variable. Thus, where the respondent stated that the training had neither added to his skills nor generated new skills, it was assumed that the amount of training was likely to be negligible and therefore should be ignored in the analysis. This re-categorisation of the training data had only a minor impact on the estimates, however.

Estimates of the training models are presented in Appendix Tables 1 and 2. Computations based on these estimates are presented in Tables 2 to 6. These form the basis of the following discussion.⁴

Training and Formal Education are Complements:

The better educated tend to have a higher probability of receiving each type of training than their less-well educated counterparts. These differences are more apparent in the case of formal training. Thus, the differences between the probabilities of male degree holders and early

TABLE 2: PART A

PREDICTED INCIDENCE OF TRAINING BY EDUCATIONAL ATTAINMENT, MALES

		-----FORMAL-----		-----INFORMAL-----	
	Any Training	On-the Job	Off-the Job	From Supervisors	From Workers
Degree	89.50	54.52	70.93	73.75	70.32
Diploma	88.29	46.04	72.21	67.33	61.22
Year 12	89.76	43.17	48.12	75.01	69.98
Year 11	85.46	33.81	40.08	67.48	61.74
Year 10	82.67	31.72	33.84	64.88	56.37
< Year 10	77.68	22.83	15.92	60.92	48.78

Predictions computed at means of all other variables in the model.

TABLE 2: PART B

PREDICTED INCIDENCE OF TRAINING BY EDUCATIONAL ATTAINMENT, FEMALES

		-----FORMAL-----		-----INFORMAL-----	
	Any Training	On-the Job	Off-the Job	From Supervisors	From Workers
Degree	83.12	62.29	16.24	71.04	56.55
Diploma	78.11	59.07	21.02	59.08	45.92
Year 12	84.92	66.11	12.01	75.55	66.14
Year 11	82.26	57.52	13.84	69.96	58.12
Year 10	79.75	50.45	9.71	58.57	55.96
< Year 10	70.56	31.97	6.36	49.96	45.00

Predictions computed at means of all other variables in the model.

TABLE 3: PART A

PREDICTED INCIDENCE OF TRAINING BY AGE, MALES

		-----FORMAL-----		-----INFORMAL-----	
	Any Training	On-the Job	Off-the Job	From Supervisors	From Workers
Age 19	85.67	30.64	33.28	68.71	57.49
Age 20,21	77.38	21.81	19.35	63.03	55.43
Age 22,23	64.77	17.28	9.32	47.41	48.52
Age 24+	56.59	15.83	5.31	44.63	36.40

Predictions computed at means of all other variables in the model.

TABLE 3: PART B

PREDICTED INCIDENCE OF TRAINING BY AGE, FEMALES

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Age 19	77.77	41.16	8.71	58.63	51.95
Age 20,21	66.45	32.98	4.63	46.95	47.00
Age 22,23	63.51	30.38	3.85	45.66	38.91
Age 24+	60.62	28.13	4.42	36.86	39.10

Predictions computed at means of all other variables in the model.

TABLE 4: PART A

PREDICTED INCIDENCE OF TRAINING BY INDUSTRY, MALES

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Recreation	79.03	24.77	20.48	62.23	51.24
Agriculture	83.21	31.63	41.50	62.46	44.88
Manufacturing	79.73	19.93	24.95	60.69	56.20
Utilities/Const.	72.08	17.89	22.45	60.23	50.26
Wholesale	75.98	20.77	23.57	59.37	49.01
Transport/Commun.	83.03	43.76	24.91	59.56	62.98
Finance	90.08	54.91	34.47	76.68	67.16
Public Admin.	88.78	41.08	20.91	70.00	66.78
Community Service	86.41	43.54	34.81	64.20	55.37

Predictions computed at means of all other variables in the model.

TABLE 4: PART B

PREDICTED INCIDENCE OF TRAINING BY INDUSTRY, FEMALES

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Recreation	71.84	36.09	6.68	51.52	45.54
Agriculture	68.98	20.71	14.50	43.70	48.93
Manufacturing	80.24	19.01	3.50	59.91	58.06
Utilities/Const.	67.49	29.60	10.45	50.62	45.14
Wholesale	70.07	25.42	2.90	50.52	44.38
Transport/Commun.	71.47	27.58	0.00	54.48	41.46
Finance	83.26	46.32	7.37	66.41	64.91
Public Admin.	75.44	36.97	6.99	50.54	53.02
Community Service	79.11	41.77	9.56	56.38	57.86

Predictions computed at means of all other variables in the model.

TABLE 5: PART A

PREDICTED INCIDENCE OF TRAINING BY PART-TIME/FULL-TIME STATUS, MALES

	Any	-----FORMAL-----		-----INFORMAL-----	
	Training	On-the	Off-the	From	From
		Job	Job	Supervisors	Workers
Full-time	80.27	26.40	22.43	63.52	52.41
Part-time	65.93	17.26	8.17	42.65	37.29

Predictions computed at means of all other variables in the model.

TABLE 5: PART B

PREDICTED INCIDENCE OF TRAINING BY PART-TIME/FULL-TIME STATUS, FEMALES

	Any	-----FORMAL-----		-----INFORMAL-----	
	Training	On-the	Off-the	From	From
		Job	Job	Supervisors	Workers
Full-time	75.26	38.61	8.01	53.43	50.31
Part-time	65.78	32.13	4.68	49.16	40.02

Predictions computed at means of all other variables in the model.

TABLE 6: PART A

PREDICTED INCIDENCE OF TRAINING BY OCCUPATION, MALES

	Any	-----FORMAL-----		-----INFORMAL-----	
	Training	On-the	Off-the	From	From
		Job	Job	Supervisors	Workers
Professional	80.18	26.53	21.85	62.87	52.32
Clerical	78.11	21.38	9.65	53.70	54.89
Sales	74.44	22.23	8.87	55.26	44.13
Services	84.72	42.59	14.46	65.91	70.16
Trades	83.34	21.08	49.08	58.52	56.39
Transport	60.44	14.95	3.91	40.64	31.58
Processing	82.49	10.89	10.11	60.18	65.30
Basic Manual	67.91	7.15	6.16	50.88	44.10
Other Occupations	51.55	8.55	7.30	44.30	25.71

Predictions computed at means of all other variables in the model.

TABLE 6: PART B

PREDICTED INCIDENCE OF TRAINING BY OCCUPATION, FEMALES

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Professional	73.77	37.79	7.28	52.76	48.32
Clerical	71.14	22.18	4.88	45.62	46.27
Sales	67.33	22.84	4.48	51.96	45.40
Services	67.92	12.58	6.54	47.66	38.95
Trades	81.49	18.79	22.33	67.25	46.20
Transport	82.94	27.00	0.00	59.98	100.00
Processing	61.94	11.10	0.80	52.73	35.61
Basic Manual	48.88	91.94	0.43	37.37	30.27
Other Occupations	64.27	15.73	6.07	45.20	52.89

Predictions computed at means of all other variables in the model.

school leavers receiving formal on-the-job training and formal off-the-job training are 32 and 55 percentage points respectively. The difference in the probability of receiving informal training from supervisors is 13 percentage points, while in the case of informal training from other workers the difference is 22 percentage points. The variation in training opportunities by education level in the female labour market is similar to that in the male market.

To the extent that a lack of training can be argued to be important in affecting the probability of being laid off and earnings capacity, the strong positive association between education and access to training suggests that any initial labour market disadvantage experienced by early school leavers will tend to be reinforced with years in the labour market. The complementarity between educational attainment and post-school training is consistent with the results reported by Lillard and Tan for the U.S. labour market. The finding contrasts, however, with the discussion in the Committee of Inquiry into Training (1974) which noted that training might be used to redress imbalances in the distribution of human capital. It appears that the market is not treating training in this manner, and if equality in the distribution of human capital is viewed as having desirable (egalitarian) properties, then suitable means of intervention need to be considered.

The Incidence of Training Declines with Age:

A prominent pattern in the Table 1 data relates to the incidence of training across the various age groups. Younger workers are more likely to receive training than older workers, ceteris paribus. This finding is consistent with predictions of theoretical models of human capital accumulation which suggest that investment in training will tend to occur early in the career because of the incentives provided by a finite time

horizon and increasing opportunity cost of time. The inverse relationship between age and the likelihood of receiving training is strongest in the case of formal training, particularly that received off-the-job.

It is noted that Lillard and Tan also report that training is concentrated early in the work career. However, the relationship between age and the probability of getting training contrasts with one potential role envisaged for post-school training by the Committee of Inquiry into Training (1974). They suggested training as a means of augmenting the skills of older workers who, in general, have lower levels of formal schooling and possess vintages of capital which are generally less appropriate to current labour market conditions. The ALS data indicate that this process of equalising human capital stocks is unlikely to be undertaken by the market.

Type of Work Influences the Probability of Training:

The higher probability of receiving training in full-time jobs than in part-time jobs accords with expectations. Variations in the predicted incidence of training across industries are also generally consistent with expectations. Formal on-the-job training is more likely to be provided in finance, public administration and community service industries than in other industry divisions. The probability of receiving formal training off-the-job is relatively high in the agricultural, finance and community service industries. Informal sources of training appear to be more prevalent in the finance and public administration industries than in other industry groups. These results differ from evidence in the Williams Report (1979) in one important detail. The Williams Report indicated that firms in finance industries spend less than average on training, whereas the ALS data suggest a relatively high incidence of training in this industry. The different conclusions could reflect the absence of

quantitative data in the ALS, differences on an age basis (youth versus the total workforce) or an advantage of using a more representative sample such as the ALS.

Examination of the variation in the probability of receiving training across occupations reveals a number of interesting patterns. Formal training on-the-job is more prevalent in the professional, service (males only) and basic manual (females only) occupations. The difference on the basis of sex in the probability of persons employed in the basic manual occupations getting training may derive from occupational segregation within the broad occupational groups considered. There is marked variation in the likelihood of receiving formal training off-the-job, this being highest in the trades occupations, particularly among males. Male workers employed in professional, service or trade occupations are more likely than other groups to receive training from supervisors. Amongst female workers, the one significant difference is the lower probability of receiving informal training in the basic manual occupations. These results are broadly consistent with evidence cited in the Williams Report where professional/management and trades occupations were suggested as spending above average amounts on training.

The Probability of Receiving Training Rises with Job Tenure:

Job tenure is entered in the model in quadratic form.⁵ The estimates suggest that the probability of getting training increases with job tenure, albeit at a decreasing rate. After 10 weeks in the current job, the likelihood of receiving formal training on-the-job is about 13 per cent for males. After 2 years continuous employment, this figure has increased to 22 per cent. A similar pattern of growth with tenure characterises the distribution of formal training off-the-job. The incidence of informal

training is also higher at longer job tenures, although the growth rates with tenure are much smaller than in the case of formal sources of training.

The effects of job tenure on the chances of females receiving training differ in several respects from those described for males. First, recent hires are more likely to receive formal training on-the-job than comparable males workers. Second, increases in tenure are associated with only minor changes in the probability of receiving formal training off-the-job.

The finding of a positive relationship between the incidence of training and tenure (over the range of tenures represented in the sample) suggest that the training recorded in the ALS is more than orientation-type programs during the initial periods of employment. As suggested earlier, it would appear that the training may represent a learning of skills utilised in typical work processes and the development of skills required in the next job on the career path.

Locality and Birthplace factors are relatively unimportant:

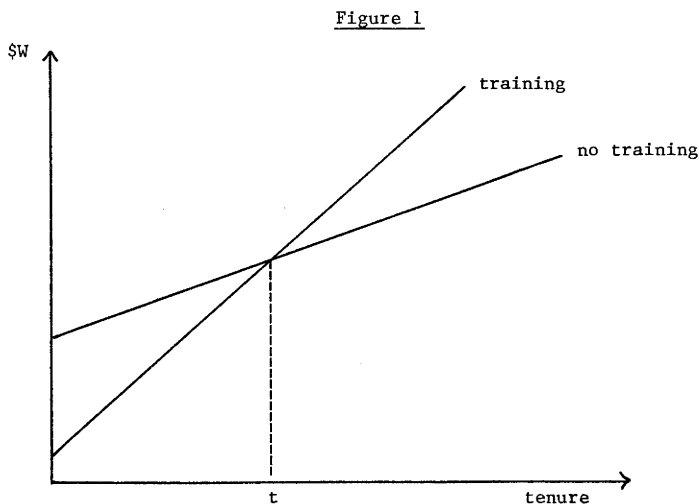
After controlling for educational attainment, type of work, age and tenure of job, variations in birthplace and region of residence are relatively unimportant to understanding the incidence of training in the youth labour market. The explicit variable recording job history during the year prior to the survey is also insignificant. However, the interpretation of the job tenure variables is consistent with the finding by Miller and Volker (1987) of a scarring effect associated with a history of joblessness.⁶

The analyses outlined above show that access to training opportunities varies with educational attainment, age, job tenure and type of work. The most important findings would appear to be the complementarity between educational attainment and training, and the finding that the incidence of training is inversely related to age. Both findings contrast with themes underlying earlier committees of inquiry into the provision of training in the Australian labour market. To the extent that training is associated with net economic advantage, these results imply that the labour market disadvantage of labour market entrants with minimal education will be reinforced throughout the labour market career. The association between training and labour market performance is examined in the following section.

IV THE EFFECTS OF TRAINING

Job training is assumed to increase the individuals productivity and should therefore be associated with higher hourly rates of pay. This causal process may be examined using Mincer's (1974) schooling and experience model of wage determination. In this model the natural logarithm of earnings is related to measures of educational attainment and labour market experience. This core specification of the earnings function is usually augmented with other variables that are likely to influence the wage outcome, including birthplace and location. In the following analyses, the natural logarithm of the hourly rate of pay is assumed to be related to educational attainment, general labour market experience, birthplace, region of residence and training variables (described below).⁷ The experience variables (general or firm specific) are entered in the equation in exponential form. This functional form is commonly used when the sample comprises short experience levels [Griliches (1976)].⁸

It should be noted that the impact of the provision of training on the hourly wage will be difficult to discern in the youth labour market. This is because part of the cost of training may be paid for by the worker in the form of receipt of a wage lower than that which could be gained in alternative employment [see Becker (1975), Williams Report (1979)]. Consequently, the starting wage of individuals who receive training is assumed to be lower than that received by other groups. As the returns on the investment in training accrue, however, the wage growth for these groups will exceed that for their counterparts who do not undertake training. Hypothetical wage-job tenure profiles for various groups are presented in Figure 1.



The flatter profile is for groups who do not undertake training, and the second profile is for groups who undertake training. The positive slope of the wage profile for individuals who did not undertake training reflects the wage effect of 'learning by doing'. The steeper slope for the group who train reflects the wage premium on training. The earnings

profiles cross at year 't', the overtaking year.⁹ Thus, this genre of model suggests that training variables, entered linearly in the semi-logarithmic model of wages, would have negative coefficients in regression analyses of observed wages when the sample comprises short job tenures.

The model of wage determination outlined above provides a method for assessing indirectly the dollar value of investment in job training [see Mincer (1962) for the first attempt to utilise observed earnings data in this manner]. Thus, the initial wage difference in Figure 1 is assumed to represent the worker's share of training costs. This share is a matter of bargaining, and will depend of the degree of specificity of the training and other factors such as worker turnover and attitudes towards risk [see Becker (1975), p.30]. Using stepwise procedures, the lifetime investments in job training may be computed. The short job tenures represented in the ALS data, together with the absence of reliable information on the rate of return to job training, suggest that the computation of investment in job training should be restricted to the first year of job training. If time spent investing in skill acquisition declines with age [Becker (1975), p.64] this estimate will generally provide an upper bound on the annual per capita expenditure on training in the Australian labour market.

Based on the above discussion, a number of specifications of the earnings equation are considered. In the first training is proxied by a variable reflecting tenure in the current job. This representation of training is that which is usually adopted when actual training data are unavailable. The second specification includes a single training variable. This is coded as one if the individual received any training, otherwise it is defined to equal zero. The third equation nests the first two specifications. In the fourth equation, the variable recording whether the individual has received any training is interacted with current job tenure.

The presumption is that the earnings - current job tenure profile will be steeper for individuals receiving training than for other groups (see Figure 1). This particular specification will permit assessment of the magnitude of investment in training using the methodology proposed by Mincer (1974). In the fifth equation, separate dummy variables are included for groups who report receiving (i) only formal on-the-job training, (ii) only formal off-the-job training, (iii) only informal training from supervisors, (iv) only informal training from other workers, and (v) combinations of these types of training. The practical usefulness of this specification is limited, however, by the small number of individuals who report having received only a single type of training.

Separate analyses of the determination of wages were carried out for males and females.¹⁰ The statistical results accord with those presented in Miller and Volker (1987). For both males and females, the various human capital and demographic variables generally exercised influences in the expected direction.

Table 7 presents the results for males. As noted earlier, these results accord with expectation and parallel findings reported in Miller and Volker (1987). Thus, additional years of education are, in general, associated with higher earnings. Year 11 constitutes an exception to this finding, and this apparent anomaly is discussed in Miller and Volker (1987). Tertiary-level study is indicated as being particularly rewarding financially. Degree holders, for example, are predicted to have earnings more than one-third higher than high school graduates, other things the same. Acquisition of other post-secondary qualifications (Trades qualifications and Certificates) are associated with more modest increase in wages, however (about 10 per cent). The hourly rate of pay also increases sharply with general labour market experience, with the rate

TABLE 7

REGRESSION ANALYSIS OF HOURLY EARNINGS OF MALE WAGE AND SALARY EARNERS
AGED 19-25 YEARS, AUSTRALIAN LONGITUDINAL SURVEY: 1985 AREA SAMPLE

Variable	(1)	(2)	(3)	(4)	(5)
Constant	2.408 (38.98)	2.321 (40.73)	2.411 (38.34)	2.254 (22.48)	2.329 (41.55)
Degree	0.524 (9.29)	0.532 (9.38)	0.524 (9.29)	0.518 (9.16)	0.514 (9.91)
Diploma	0.418 (6.95)	0.438 (7.29)	0.418 (6.95)	0.411 (6.81)	0.429 (7.19)
Year 12	0.223 (5.35)	0.233 (5.52)	0.224 (5.37)	0.220 (5.25)	0.216 (5.16)
Year 11	0.102 (2.61)	0.112 (2.83)	0.102 (2.62)	0.097 (2.47)	0.106 (2.66)
Year 10	0.109 (3.05)	0.118 (3.23)	0.110 (3.06)	0.105 (2.90)	0.109 (2.97)
Trade Qualification	0.098 (5.16)	0.101 (5.26)	0.098 (5.15)	0.093 (4.78)	0.097 (5.08)
Other Post-Secondary Qualification	0.077 (2.67)	0.078 (2.68)	0.077 (2.67)	0.075 (2.58)	0.084 (2.87)
General Experience	-0.778 (8.28)	-0.861 (9.64)	-0.774 (8.04)	-0.764 (7.93)	-0.858 (10.00)
Small Urban	0.020 (0.97)	0.021 (1.03)	0.020 (0.97)	0.020 (0.96)	0.019 (0.96)
Rural	-0.065 (2.77)	-0.064 (2.70)	-0.065 (2.77)	-0.063 (2.65)	-0.062 (2.70)
Born England	-0.014 (0.39)	-0.020 (0.54)	-0.014 (0.39)	-0.011 (0.31)	-0.022 (0.60)
Born N. Europe	0.035 (0.40)	0.036 (0.40)	0.036 (0.41)	0.033 (0.38)	0.034 (0.38)
Born Mediterranean	-0.034 (0.83)	-0.034 (0.84)	-0.034 (0.84)	-0.031 (0.76)	-0.036 (0.88)
Born Asia	-0.131 (1.42)	-0.138 (1.49)	-0.131 (1.43)	-0.129 (1.40)	-0.139 (1.49)
Other Overseas Born	-0.064 (0.64)	-0.063 (0.63)	-0.064 (0.64)	-0.065 (0.66)	-0.067 (0.67)
Poor English	-0.095 (1.52)	-0.093 (1.48)	-0.094 (1.51)	-0.092 (1.48)	-0.096 (1.45)
Duration of Residence	-0.013 (0.08)	-0.061 (0.36)	-0.014 (0.09)	-0.029 (0.18)	-0.051 (0.32)

TABLE 7 (continued)

REGRESSION ANALYSIS OF HOURLY EARNINGS OF MALE WAGE AND SALARY EARNERS
AGED 19-25 YEARS, AUSTRALIAN LONGITUDINAL SURVEY: 1985 AREA SAMPLE

Variable	(1)	(2)	(3)	(4)	(5)
Unemployed Long-Term During 1984	0.034 (0.70)	-0.004 (0.12)	0.024 (0.70)	0.023 (0.67)	-0.001 (0.04)
Current Tenure	-0.164 (2.71)	(a)	-0.168 (2.68)	0.025 (0.22)	(a)
Any Training	(a)	0.009 (0.45)	-0.005 (0.25)	0.189 (1.80)	(a)
Training*Current Tenure	(a)	(a)	(a)	-0.244 (1.85)	(a)
Formal Training On-the-Job	(a)	(a)	(a)	(a)	0.164 (0.87)
Formal Training Off-the-Job	(a)	(a)	(a)	(a)	-0.049 (1.02)
Informal Training from Supervisors	(a)	(a)	(a)	(a)	-0.123 (3.53)
Informal Training from fellow workers	(a)	(a)	(a)	(a)	0.047 (1.24)
More than one type of training	(a)	(a)	(a)	(a)	0.025 (1.22)
-2					
R	.133	.128	.132	.134	.143
SEE	.322	.323	.322	.322	.320
F	13.342	12.869	12.869	12.242	12.098
Sample Size	1533	1533	1533	1533	1533

(a) variable not entered

't' statistics in parentheses

of increase being greatest over the initial period of labour market involvement. Thus, the wage rate is predicted to rise by 6.2 per cent during the first year of labour market activity, and by 2.5 per cent during the tenth year in the labour market. Wages also increase with time spent with particular firms, although the additional growth in wages associated with current job tenure is only one quarter of that associated with general labour market experience.¹¹

The training variable included in the column (2) specification is, however, statistically insignificant. Moreover, as indicated by column (3), the column (1) specification is statistically superior to the column (2) specification. The information on the receipt of training in the youth labour market contained in the data set does, however, add to the understanding of wage determination in the youth labour market. Thus, in column (4), the training information is interacted with current job tenure. These results suggest that the wage-job tenure profiles are broadly in line with those portrayed in Figure 1. In other words, the profiles for individuals who undertake training are steeper than the profiles for other groups. The initial wage difference between groups who do and who do not undertake training is about 5.5 percent, but this is reduced to zero after just 2.5 years. Accepting the proposition underlying Becker's model that on-the-job training opportunities must be purchased by accepting a wage lower than that which might be received in jobs with little training, these wage-tenure profiles suggest, under a reasonable set of assumptions, annual investment in job training ranging from about \$600 to \$1200.¹² The Table 1 information on the probable low degree of specificity of the training suggest a figure towards the lower end of this range. These indirect data, which include the opportunity cost of the trainee's time, are broadly consistent with the cost data cited in the Williams Report.

These results suggest that the average amount of training in the Australian youth labour market is small. This prompts one important conjecture. Part of the reason for the lack of training in the youth labour market may be wage rigidities. If the lower wage which trainees must accept during the training period falls below the minimum imposed on the market, low-wage earners will be prevented from paying for the training they might (otherwise) receive. This possibility was canvassed in the Williams Report (1979, p.413). It noted that "Some firms are reluctant to give general training of a kind that the mobility of trained workers might enable other firms to profit from as readily as the firm that did the training - unless in the absence of subsidies, the wages of the trainees are low enough to offset the costs of the training and the lower productivity during training". Other authors have also been critical of the minimum wage impediment to the voluntary acquisition of training. Feldstein (1973), for example, states: "It is unfortunate and ironic that we encourage and subsidise expenditure on formal education while blocking the opportunity for individuals to 'buy' on-the-job training". Minimum wages, therefore, may reduce the average quality of jobs. The lack of valuable training opportunities and the possibility that minimum wages have curtailed the amount of job training provided in the youth labour market are issues of grave concern. Further research is required to establish with greater certainty the magnitude of industry-financed training and also of the curtailment effects on training of institutionally determined wages in the youth labour market.

It is noted that birthplace, location in small urban areas, duration of residence in Australia among the overseas born, and a recent history of joblessness, do not appear to be important determinants of wages in the youth labour market. These results differ from those established in the adult labour market [see, for example, Chiswick and Miller (1985)], but are

consistent with those reported by Miller and Volker (1987).

The relationship between the human capital and personal characteristics variables and wages in the female youth labour market is similar to that discussed for males. The relevant regression results are presented in Appendix Table 3. On the basis of these results, therefore, it appears that while training opportunities in the youth labour market are numerous [Section II], these represent only small per capita investments. The indirect evidence on the intensive margin of training is consistent with the employer-sourced cost data presented in the Williams Report. Both sets of evidence therefore raise issues of major concern to labour market administrators.

V CONCLUSION

Formal education and job training are two means of increasing a workers productivity. Both types of skill acquisition are currently sources of concern in the Australian labour market. Whilst there has been considerable research into both the determinants and effects of formal education, the analysis of training is still in its infancy. Neither the incidence of training nor the annual expenditure outlay on training has, for example, been documented.

The analyses presented in this paper have three main points to contribute to the training debate. First, the distribution of training opportunities in the youth labour market are analysed. These analyses indicate that the groups receiving training are not those commonly placed in the 'disadvantaged' category. This is contrary to the role envisaged for industrial training by some committees of inquiry. The Committee of Inquiry into Training (1974), for example, viewed training for early school leavers and for older workers possessing vintages of human capital less

suited to current work technologies as a means of redressing imbalances in labour market outcomes. The ALS data reveal, however, that formal schooling and training are strongly complementary, and that the incidence of training declines with age. Second, the association between hourly rates of pay and job tenure for groups who do and who do not receive training is consistent with theoretical human capital models of investment in job training. These models provide a means of ascertaining, indirectly, the annual per capita expenditure on training. The estimates derived vary considerably, but under a reasonable set of assumptions, provide the third and probably most important finding of the paper: the annual per capita expenditure on training in the youth labour market is quite small. One figure derived indicates that the combined annual amount for direct expenditure and the opportunity cost of the trainee's time is about \$600. This estimate is broadly consistent with the figure on direct training expenditure of \$150-\$200 cited in the Williams Report (1979). Both sets of evidence raise issues of major concern to labour market administrators.

FOOTNOTES

1. The empirical analyses undertaken by Stretton (1982) are limited by the absence of a suitable control group.
2. Data collected in the ALS show that among individuals with non-trade qualifications, around one-third received some assistance (mainly paid study leave) from an employer.
3. The variables used in the analysis are defined in Miller and Volker (1987).
4. Individuals undertaking apprenticeships are included in the sample. The similarity of the results for males and females (who have a low propensity to undertake apprenticeships) suggests that this sample selection does not have a major impact on the results.
5. Job tenure is measured in weeks in the training model. The squared term is scaled by 1000. The coefficients imply that the incidence of training rises with tenure until 10 years of tenure. However, because of the short average tenure of the sample (2 years), little emphasis is placed on this statistic.
6. Under this interpretation, the scar of unemployment derives from the failure to accumulate marketable skills during periods of unemployment.
7. Occupation and industry dummies might also be included in the specification on the grounds that they reflect compensating differentials or scarcity rents. The material findings of this paper carry over when work type variables are included in the estimating equation.
8. The particular form used is $\text{experience} = \exp(-0.1 \cdot t)$, where t measures years of experience. Thus, the partial derivative of the dependent variable with respect to experience is $-0.1 \cdot B \cdot \exp(-0.1 \cdot t)$, where B is the coefficient on the experience variable. This functional form is used for both general labour market experience and current job tenure. In this section, job tenure is measured in years.
9. Evidence on the overtaking year varies. Mincer (1974) suggests it will occur after about 10 years of (general) labour market experience. Psacharopoulos and Layard (1975) suggest it occurs much earlier, however.
10. The sample used in this section is the subset of the data analysed in section III with information on the hourly rate of pay.
11. This result is not unexpected, however, as Lazear (1976) reported that the wage effect of aging for youth exceeds that of labour market experience.
12. These calculations assume (i) a starting wage of \$11,000 and (ii) employee cost shares of between 0.5 and 1.0.

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APPENDIX TABLE 1

ESTIMATES OF LOGIT MODELS OF INCIDENCE OF TRAINING
1985 AUSTRALIAN LONGITUDINAL SURVEY, MALES

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Constant	0.765 (1.91)	-1.716 (4.09)	-2.939 (5.86)	0.111 (0.32)	-0.799 (2.36)
Degree	0.895 (2.43)	1.399 (3.53)	2.556 (5.40)	0.589 (1.80)	0.911 (2.81)
Diploma	0.773 (1.98)	1.059 (2.64)	2.619 (5.70)	0.279 (0.84)	0.505 (1.53)
Year 12	0.923 (3.89)	0.943 (3.09)	1.589 (4.28)	0.655 (3.05)	0.895 (4.13)
Year 11	0.524 (2.28)	0.546 (1.78)	1.262 (3.42)	0.286 (1.35)	0.527 (2.46)
Year 10	0.315 (1.50)	0.451 (1.52)	0.994 (2.77)	0.170 (0.86)	0.305 (1.51)
Trade qualification	-0.071 (0.44)	0.269 (1.68)	0.843 (4.76)	0.032 (0.22)	-0.108 (0.78)
Other post-secondary Qualifications	0.523 (1.82)	0.255 (1.10)	1.057 (4.28)	0.352 (1.56)	0.078 (0.38)
Age 20,21	-0.558 (2.49)	-0.460 (2.45)	-0.732 (3.61)	-0.253 (1.45)	-0.084 (0.51)
Age 22,23	-1.179 (5.29)	-0.749 (3.82)	-1.579 (7.24)	-0.890 (5.02)	-0.361 (2.13)
Age 24+	-1.523 (6.65)	-0.854 (4.11)	-2.185 (9.07)	-1.002 (5.40)	-0.860 (4.79)
Small Urban	0.061 (0.38)	0.327 (2.21)	0.059 (0.35)	0.120 (0.87)	0.084 (0.63)
Rural	0.121 (0.75)	-0.134 (0.83)	0.281 (1.62)	0.069 (0.50)	0.183 (1.34)
Born England	-0.049 (0.19)	0.335 (1.14)	0.232 (0.56)	-0.051 (0.22)	0.074 (0.32)
Born N. Europe	0.789 (0.93)	0.721 (1.09)	0.841 (0.97)	-0.052 (0.08)	1.000 (1.50)
Born Mediterranean	-0.304 (0.90)	-0.236 (0.55)	0.771 (1.64)	-0.443 (1.40)	-0.234 (0.75)
Born Asia	-0.734 (1.09)	0.119 (0.14)	1.137 (1.10)	-0.917 (1.42)	0.031 (0.05)
Other Overseas Born	-0.243 (0.43)	-0.989 (1.17)	0.636 (0.88)	-0.691 (1.37)	-0.055 (0.11)
Poor English	0.818 (1.49)	-0.533 (0.70)	0.530 (0.74)	1.343 (2.63)	0.531 (1.10)
Duration of Residence	-1.266 (1.13)	-1.449 (0.73)	-7.642 (2.07)	-1.222 (1.04)	-1.180 (1.00)
Unemployed Long-term during 1984	0.135 (0.63)	-0.026 (0.09)	-0.472 (1.30)	0.309 (1.54)	0.085 (0.42)

APPENDIX TABLE 1 (continued)
ESTIMATES OF LOGIT MODELS OF INCIDENCE OF TRAINING

	Any Training	----- FORMAL -----		----- INFORMAL -----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Job Tenure	0.008 (5.07)	0.008 (4.73)	0.013 (7.27)	0.008 (5.61)	0.004 (3.22)
Job Tenure Squared	-0.008 (2.14)	-0.008 (2.20)	-0.016 (4.11)	-0.009 (2.70)	-0.032 (1.03)
Agriculture	0.274 (0.77)	0.340 (0.94)	1.013 (2.52)	0.010 (0.03)	-0.255 (0.84)
Manufacturing	0.043 (0.17)	-0.280 (1.15)	0.255 (0.92)	-0.065 (0.30)	0.200 (0.95)
Utilities/Construction	-0.378 (1.38)	-0.413 (1.45)	0.117 (0.38)	-0.084 (0.34)	-0.039 (0.16)
Wholesale and Retail	-0.175 (0.69)	-0.228 (0.92)	0.180 (0.63)	-0.120 (0.54)	-0.089 (0.41)
Transport/Communication	0.261 (0.75)	0.860 (2.77)	0.253 (0.64)	-0.112 (0.38)	0.482 (1.66)
Finance	0.880 (2.54)	1.308 (4.73)	0.714 (2.20)	0.691 (2.48)	0.666 (2.56)
Public Administration	0.742 (2.30)	0.750 (2.80)	0.026 (0.08)	0.348 (1.33)	0.649 (2.58)
Community Services	0.523 (1.53)	0.851 (2.91)	0.729 (2.11)	0.085 (0.30)	0.166 (0.61)
Part-time	-0.743 (3.12)	-0.542 (1.73)	-1.178 (2.58)	-0.851 (3.64)	-0.616 (2.58)
Clerical	-0.126 (0.52)	-0.284 (1.39)	-0.962 (3.92)	-0.378 (1.86)	0.103 (0.54)
Sales	-0.329 (1.11)	-0.234 (0.82)	-1.056 (2.94)	-0.315 (1.18)	-0.329 (1.27)
Service	0.315 (0.79)	0.720 (2.30)	-0.503 (1.38)	0.133 (0.43)	0.762 (2.48)
Trades	0.212 (0.94)	-0.259 (1.32)	1.158 (5.50)	-0.182 (0.95)	0.164 (0.91)
Transport	-0.974 (2.97)	-0.720 (2.11)	-1.927 (3.57)	-0.905 (3.01)	-0.866 (2.82)
Processing	0.152 (0.49)	-1.084 (3.14)	-0.911 (2.48)	-0.113 (0.43)	0.539 (2.09)
Basic Manual	-0.648 (2.68)	-1.546 (5.44)	-1.450 (4.50)	-0.491 (2.28)	-0.330 (1.58)
Other Occupations	-1.336 (3.07)	-1.351 (2.82)	-1.267 (2.62)	-0.755 (1.93)	-1.154 (2.78)
Sample Size	1844	1844	1844	1844	1844
Chi squared	317.60	416.51	733.05	247.39	233.97

Asymptotic 't' statistics in parentheses

APPENDIX TABLE 2
ESTIMATES OF LOGIT MODELS OF INCIDENCE OF TRAINING
1985 AUSTRALIAN LONGITUDINAL SURVEY, FEMALES

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Constant	0.637 (1.49)	-0.922 (1.72)	-2.377 (3.52)	-0.350 (0.88)	-0.608 (1.50)
Degree	0.720 (1.80)	1.257 (2.40)	1.049 (1.63)	0.899 (2.41)	0.464 (1.22)
Diploma	0.398 (1.11)	1.122 (2.23)	1.366 (2.23)	0.369 (1.07)	0.037 (0.10)
Year 12	0.854 (2.98)	1.423 (3.14)	0.698 (1.25)	1.130 (4.01)	0.870 (2.98)
Year 11	0.660 (2.28)	1.058 (2.30)	0.861 (1.54)	0.847 (2.98)	0.528 (1.79)
Year 10	0.497 (1.81)	0.773 (1.71)	0.460 (0.82)	0.348 (1.27)	0.440 (1.54)
Trade qualification	0.012 (0.04)	0.632 (1.94)	0.885 (2.37)	0.158 (0.52)	-0.100 (0.33)
Other post-secondary Qualifications	-0.521 (3.38)	-0.315 (2.02)	0.197 (0.99)	-0.428 (3.09)	-0.303 (2.18)
Age 20,21	-0.569 (2.70)	-0.352 (1.76)	-0.676 (2.62)	-0.471 (2.60)	-0.198 (1.11)
Age 22,23	-0.698 (3.32)	-0.472 (2.33)	-0.869 (3.29)	-0.523 (2.86)	-0.529 (2.93)
Age 24+	-0.821 (3.72)	-0.581 (2.61)	-0.724 (2.52)	-0.887 (4.51)	-0.521 (2.68)
Small Urban	-0.109 (0.67)	-0.140 (0.86)	-0.186 (0.86)	0.060 (0.41)	0.116 (0.79)
Rural	-0.124 (0.78)	-0.205 (1.29)	0.054 (0.27)	0.113 (0.80)	-0.163 (1.15)
Born England	-0.002 (0.01)	0.334 (1.21)	-0.036 (0.09)	-0.299 (1.28)	0.085 (0.36)
Born N. Europe	-0.775 (0.95)	-16.296 (0.01)	0.539 (0.45)	0.131 (0.17)	-0.685 (0.74)
Born Mediterranean	-0.688 (1.70)	-0.501 (1.08)	-0.014 (0.02)	-0.777 (2.02)	-0.526 (1.34)
Born Asia	0.147 (0.25)	0.337 (0.54)	1.119 (1.46)	-0.160 (0.31)	-0.189 (0.35)
Other Overseas Born	-0.106 (0.22)	-0.194 (0.36)	1.012 (1.70)	-0.342 (0.76)	-0.225 (0.49)
Poor English	-1.011 (1.52)	-0.250 (0.28)	-0.841 (0.70)	-0.617 (0.98)	-0.637 (0.90)
Duration of Residence	-0.440 (0.41)	2.484 (1.58)	-2.257 (0.86)	1.263 (1.21)	-0.171 (0.16)
Unemployed Long-term during 1984	0.059 (0.24)	-0.513 (1.51)	0.156 (0.37)	-0.072 (0.30)	0.270 (1.12)

APPENDIX TABLE 2 (continued)
ESTIMATES OF LOGIT MODELS OF INCIDENCE OF TRAINING

	Any Training	-----FORMAL-----		-----INFORMAL-----	
		On-the Job	Off-the Job	From Supervisors	From Workers
Job Tenure	0.005 (2.90)	0.004 (2.20)	0.009 (3.76)	0.003 (1.80)	0.001 (0.79)
Job Tenure Squared	-0.003 (0.61)	0.001 (0.05)	-0.012 (2.11)	0.001 (0.26)	0.004 (1.02)
Agriculture	-0.137 (0.33)	-0.771 (1.23)	0.863 (1.43)	-0.314 (0.76)	0.136 (0.32)
Manufacturing	0.465 (1.59)	-0.878 (2.66)	-0.678 (1.59)	0.341 (1.29)	0.504 (1.92)
Utilities/Construction	-0.206 (0.45)	-0.295 (0.61)	0.489 (0.92)	-0.036 (0.08)	-0.016 (0.04)
Wholesale and Retail	-0.086 (0.33)	-0.505 (1.83)	-0.874 (2.24)	-0.040 (0.17)	-0.047 (0.19)
Transport/Communication	-0.018 (0.04)	-0.394 (0.70)	-16.399 (0.01)	0.119 (0.24)	-0.166 (0.32)
Finance	0.668 (2.48)	0.424 (1.66)	0.107 (0.33)	0.621 (2.64)	0.794 (3.37)
Public Administration	0.186 (0.65)	0.038 (0.13)	0.050 (0.14)	-0.039 (0.15)	0.300 (1.17)
Community Services	0.395 (1.67)	0.239 (0.96)	0.390 (1.29)	0.196 (0.90)	0.496 (2.25)
Part-time	-0.459 (2.86)	-0.284 (1.54)	-0.573 (2.18)	-0.171 (1.11)	-0.417 (2.65)
Clerical	-0.132 (0.66)	-0.757 (4.15)	-0.515 (2.19)	-0.286 (1.63)	-0.082 (0.47)
Sales	-0.311 (1.12)	-0.719 (2.58)	-0.425 (0.98)	-0.032 (0.13)	-0.117 (0.46)
Service	-0.284 (1.06)	-1.440 (4.97)	-0.115 (0.35)	-0.204 (0.82)	-0.382 (1.53)
Trades	0.448 (1.00)	-0.965 (2.29)	1.298 (2.98)	0.609 (1.59)	-0.085 (0.23)
Transport	0.547 (0.62)	-0.496 (0.55)	-16.406 (0.01)	0.294 (0.39)	16.921 (0.01)
Processing	-0.547 (1.49)	-1.582 (3.30)	-2.277 (2.13)	-0.001 (0.01)	-0.525 (1.59)
Basic Manual	-1.079 (3.78)	2.932 (4.74)	-2.909 (2.76)	-0.627 (2.27)	-0.767 (2.69)
Other Occupations	-0.447 (0.88)	-1.180 (1.83)	-0.194 (0.29)	-0.303 (0.60)	0.183 (0.37)
Sample Size	1519	1519	1519	1519	1519
Chi square	204.98	326.31	206.46	169.39	172.30

Asymptotic 't' statistics in parentheses

APPENDIX TABLE 3

REGRESSION ANALYSIS OF HOURLY EARNINGS OF FEMALE WAGE AND SALARY EARNERS
AGED 19-25 YEARS, AUSTRALIAN LONGITUDINAL SURVEY: 1985 AREA SAMPLE

Variable	(1)	(2)	(3)	(4)	(5)
Constant	2.550 (40.36)	2.482 (41.52)	2.547 (40.14)	2.370 (25.66)	2.495 (41.70)
Degree	0.502 (11.09)	0.500 (11.00)	0.501 (11.05)	0.498 (11.09)	0.491 (10.85)
Diploma	0.455 (9.51)	0.460 (9.54)	0.454 (9.48)	0.448 (9.41)	0.453 (9.44)
Year 12	0.184 (5.27)	0.186 (5.32)	0.183 (5.21)	0.178 (5.15)	0.180 (5.17)
Year 11	0.125 (3.76)	0.130 (3.89)	0.125 (3.74)	0.121 (3.68)	0.126 (3.81)
Year 10	0.083 (2.38)	0.086 (2.47)	0.083 (2.37)	0.081 (2.34)	0.086 (2.48)
Trade Qualification	-0.022 (0.47)	-0.031 (0.66)	-0.023 (0.48)	-0.025 (0.53)	-0.036 (0.78)
Other Post-Secondary Qualifications	0.050 (2.84)	0.046 (2.59)	0.051 (2.87)	0.050 (2.81)	0.045 (2.56)
General Experience	-0.911 (10.44)	-1.015 (11.84)	-0.913 (10.33)	-0.900 (10.21)	-1.029 (12.02)
Small Urban	-0.002 (0.12)	0.002 (0.10)	-0.002 (0.11)	-0.004 (0.22)	0.007 (0.04)
Rural	-0.023 (0.96)	-0.018 (0.75)	-0.022 (0.96)	-0.022 (0.97)	-0.017 (0.70)
Born England	0.021 (0.72)	0.020 (0.67)	0.021 (0.72)	0.022 (0.74)	0.023 (0.75)
Born N. Europe	0.029 (0.19)	0.036 (0.24)	0.029 (0.20)	0.039 (0.26)	0.038 (0.25)
Born Mediterranean	0.068 (1.14)	0.076 (1.31)	0.068 (1.15)	0.073 (1.23)	0.072 (1.26)
Born Asia	-0.034 (0.78)	-0.038 (0.86)	-0.035 (0.79)	-0.032 (0.79)	-0.039 (0.86)
Other Overseas Born	-0.040 (1.06)	-0.040 (1.01)	-0.039 (1.06)	-0.035 (0.97)	-0.031 (0.78)
Poor English	0.013 (0.27)	0.016 (0.33)	0.014 (0.29)	0.006 (0.13)	0.011 (0.23)
Duration of Residence	-0.036 (0.23)	-0.086 (0.53)	-0.036 (0.22)	-0.049 (0.32)	-0.084 (0.52)

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REGRESSION ANALYSIS OF HOURLY EARNINGS OF FEMALE WAGE AND SALARY EARNERS
AGED 19-25 YEARS, AUSTRALIAN LONGITUDINAL SURVEY: 1985 AREA SAMPLE

Variable	(1)	(2)	(3)	(4)	(5)
Unemployed Long-Term During 1984	-0.023 (0.50)	-0.049 (1.13)	-0.022 (0.49)	-0.029 (0.64)	-0.039 (0.90)
Current Tenure	-0.167 (3.08)	(a)	-0.165 (3.00)	0.043 (0.44)	(a)
Any Training	(a)	0.015 (0.79)	0.004 (0.22)	0.221 (2.42)	(a)
Training*Current Tenure	(a)	(a)	(a)	-0.267 (2.39)	(a)
Formal Training On-the-Job	(a)	(a)	(a)	(a)	0.062 (1.91)
Formal Training Off-the-Job	(a)	(a)	(a)	(a)	-0.043 (1.14)
Informal Training from Supervisors	(a)	(a)	(a)	(a)	0.003 (0.09)
Informal Training from fellow workers	(a)	(a)	(a)	(a)	-0.076 (2.89)
More than one type of training	(a)	(a)	(a)	(a)	0.031 (1.53)
-2					
R	.159	.154	.158	.161	.162
SEE	.274	.275	.274	.273	.273
F	13.773	13.282	13.077	12.715	11.762
Sample Size	1285	1285	1285	1285	1285

(a) = variable not entered
't' statistics in parentheses

