Chapter 4

Wage Differentials by Sex

4.1 Introduction

In chapter 3, we gained some insights into the respondents' characteristics and gender differences among production workers in Alor Gajah Town. The discussion thus far only provides a backdrop to our indepth analysis of the relationships between education, experience, specific training programmes and earnings in this chapter.

In this chapter, the human capital model is used to evaluate the relationships between earnings and a set of independent or explanatory variables. Section 4.2 begins with a discussion of earnings differentials between the male and female respondents. Section 4.3 discusses the naive version of the human capital model where earnings is a function of schooling and experience. In section 4.4, the model is expanded to examine in greater detail earnings differentials between males and females based on the Mincerian earnings function. In section 4.5, the earnings differentials between males and females respondents are decomposed into two principal components, i.e. the portion due to endowments or worker characteristics and the portion due to differences in earnings structure. Finally we summarise and present our concluding remarks in section 4.6.

4.2 Gender Differences in Earnings

Table 4.1 shows the percentage distribution of respondents by income levels and gender. Income, as defined, covers basic pay, overtime earnings, and food allowance. It can be seen that a large proportion of females are in the low income groups. About 80 percent of the women were earning less than RM500 per month. In fact, 20 percent of the females earned an income of RM300 and below per month. As for the males, their monthly earnings are better spread across different income intervals. None of the male respondents were earning RM300 or less. Thirty-four percent of men earn between RM301-500, 40 percent earning between RM501-700, and 15 percent received between RM701-900 per month. At the end of the earnings ladder, the percentage of males earning more than RM900 per month is almost triple that of females; i.e., 11 percent for male and 4 percent for female. The mean monthly earnings of the men (RM647.6) exceeds that of the women (RM433.5). Despite the fact that male respondents are generally younger, they still earn more than their female counterparts.

Table 4.1 Percentage Distribution of Employees by Income Levels

Income interval (RM)	Male	Female
up to 300	0	20
301-500	34	59
501-700	40	14
701-900	15	3
901-1100	8	3
more than 1100	3	1
Number of cases	100	100

Table 4.2 shows gender earnings differences by educational attainment. The average earnings of women were much lower than the earnings of males at every educational level. There is a wide difference in mean monthly earnings between those who have completed upper secondary education and those who have had only primary education. The biggest disparity is found among those with lower secondary education Males earned about 50 percent more than females. The gap is equally wide for those with primary or less and upper secondary qualification. Among these groups, mean monthly earnings of women stood at 70 percent of the mean monthly earnings of men. A closer look at Table 4.2, however, shows that there is greater variation in the monthly earnings of male workers within each educational level.

Table 4.2 Gender Earnings Differentials by Educational Attainment

Educational level			No. of Observations	
	Male	Female	Male	Female
Primary or less	572.9 (188.4)	389.2 (134.7)	26	49
Lower secondary	664.6 (245.4)	426.9 (157.2)	55	27
Upper secondary and above	700.5 (253.5)	531.3 (242.5)	19	24
Overall	647.6 (235.9)	433.5 (179.6)	100	100

Note: Figures in parentheses are standard deviations.

Table 4.3 **Gender Earnings Differentials by Work Experience**

Experience (Year)	Male Respondents	Female Respondents
1-4	557.14	389.87
	(189.14)	(121.90)
5-9	644.72	446.92
	(204.43)	(218.59)
10 and above	674.9	475.49
	(264.56)	(195.78)

Note: Figures in parentheses are standard deviations.

Table 4.3 provides information about the earnings of respondents by experience cohorts. The results show that, generally, men earn more than women across all the experience cohorts. As can be seen from Table 4.3, for those who had less than 5 years of experience, the mean monthly earnings of female respondents is only about 70 per cent that of their male counterparts. This may be due to the fact that the women respondents started off with a lower wage than men.

Table 4.4 shows the mean monthly earnings of male and female production workers in Alor Gajah by skill categories. As can be seen from Table 4.4, women tend to be bunched-up in the unskilled category (79%). On the other hand, there is a lower concentration of males in this category (57%). At the semi-skilled and skilled levels the sample sizes for females are rather small (less than 30). In terms of earnings, the average monthly earnings of female have been found to be markedly lower than that of the male employees across all skill levels. A closer examination of the female-male earnings ratios show that, the ratios ranging from a low of 0.73 in the unskilled category to a high of 0.82 in the case of skilled workers.

Table 4.4 Mean Monthly Earnings of Employees by Skill Category

Skill level			No. of respondents	
	Male	Female	Male	Female
Skilled	937.83	765.00	23	10
Semi-skilled	671.50	515.45	20	11
Unskilled	522.02	380.06	57	79

4.3 The Basic Human Capital Model

To better account for the above earnings differentials between males and females, we turn to the Mincerian earnings function:

$$\ln Y_i = a + bS_i + cX_i + dX_i^2 + u \text{ (error term)}$$

where

$\ln Y_i$ is the natural logarithm of monthly earnings (basic salary plus overtime earnings and food allowance) of individual i,

S_i is the duration/length of schooling of individual i,

X_i is the number of years of actual working experience (past and present) after deducting for periods of unemployment, and

X_i^2 is the square of the number of years of working experience.

Given the *a priori* arguments we expect the coefficient of schooling [b] to b positive and significant, the coefficients of experience [c] and its square [d] to be positiv

and negative, respectively. Both the coefficients of experience are expected to be significant. Table 4.5 below presents our empirical estimates.

Table 4.5 Estimated Coefficients of Schooling and Experience from Earnings Functions for Production Workers

Variable	Equation 1	Equation 2
Constant	5.7770[a]	5.3934[a]
	(70.25)	(56.57)
Years of Schooling (b)	0.0523[a]	0.0669[a]
	(5.59)	(7.56)
Actual Working Experience (X)		0.0280[a]
		(4.04)
X^2		-0.0002
		(-1.07)
$\bar{R}^2$	0.13	0.29
F	31.20	27.91
Number of Cases	200	200

Note: [a] indicates coefficient significant at 1 % level.

( ) figures in parentheses are t-statistics.

The results show that the number of years of education (S) explains only 13 per cent of the variance in monthly earnings. However, the regression indicates that an additional year of schooling is associated with a significant positive increment to earnings. This is consistent with human capital theory. The adjusted coefficient of determination ($\bar{R}^2$) of 0.13 implies the omission of other factors which may affect earnings. Experience is clearly one important factor.

Adding actual working experience (X) and its square to equation (1) yields results reported in regression equation (2). Regression equation (2) indicates that actual working experience is an important variable. With the inclusion of actual working experience, the value of $\bar{R}^2$ improves to 29 per cent. The coefficient of X is significant at one per cent level. Each year of experience adds about 3 per cent to monthly earnings. However, the coefficient of experience square is of the expected sign but is not significant. This would be due to the fact that most of the respondents (60%) have had less than 10 years of experience.

The basic Mincerian model relates log of earnings of an individual to his/her schooling and experience. We now proposed an expanded earnings model to include a dummy variable 'Male' which takes unit value when the respondent is a man and zero otherwise. The results of the expanded model are reported in Table 4.6.

From the results of regression equation depicted in Table 4.6, the coefficients for human capital variables, i.e. years of schooling and experience are again found to be very significant. The coefficient of the variable 'Male' is found to be positive and highly significant. The inclusion of the dummy variable 'Male' further improved the value of $\bar{R}^2$ to 41 per cent.

Table 4.6 Expanded Earnings Functions

Variable	
Constant	5.4595[a]
	(62.31)
Years of Schooling (S)	0.0516[a]
	(6.08)
Actual Working Experience (X)	0.0194[b]
	(3.00)
X^2	-0.0001
	(-0.87)
Male	0.2903[a]
	(6.30)
$\bar{R}^2$	0.41
F	34.99
Number of Cases	200

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

( ) figures in parentheses are t-statistics.

To test whether the earnings structures of the sexes are significantly different, separate regression equations for males and females are estimated using only years of schooling and actual working experience. The regression results for males and females are presented in Table 4.7. Chow-test of equality between the coefficients yielded a computed F-ratio of 5.2992 which is significant at one per cent level. Therefore we reject the null hypothesis and conclude that the two earnings structure are significantly different.

Table 4.7 Gender Earnings Functions

Variable	Male	Female
Constant	5.4613[a]	5.4924 [a]
	(27.25)	(50.75)
Years of Schooling (S)	0.0818[a]	0.0433[a]
	(4.64)	(4.19)
Experience (X)	0.0244[b]	0.0332[c]
	(2.25)	(1.83)
Experience-squared (X^2)	-0.00007	-0.0006
	(-0.361)	(-0.871)
$\bar{R}^2$	0.18	0.19
F	8.00	8.89
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

The coefficient of S (years of schooling) can be interpreted as the average private rate of return to schooling (see Psacharapoulos, 1987: 221). Comparing differences in the payoff to a year of education using the continuous variable, we see that men received a return of 8 per cent for each extra year of education. On the other hand, the corresponding percentage for women is only 4 per cent, which is only one-half that for the men. In equilibrium, *ceteris paribus*, we would expect the rate of return to human investment to be similar for all groups. Nevertheless, it must be mentioned that other factors which have not taken into account may also have contributed to the lower rate of return among the female respondents.

Looking at the experience variables, we see that the return to each year of experience is higher for women than for men. The negative sign of the experience squared variable in both the regression equations suggests diminishing returns to work experience. However, both coefficients are insignificant. The relatively low adjusted coefficients of determination ($\bar{R}^2$) of 0.18 and 0.16 for men and women, respectively, imply the possible omission of other factors which may affect earnings. The higher return to experience among the female respondents reflects the fact that women tend to have much lower starting pay than the male respondents.

In order to examine the effects of educational attainment on earnings, we replace years of schooling (S) with dummy variables for educational qualifications (LCE/SRP, and MCE/SPM and above). On the assumption that education enhances productivity and given the empirical findings on rates of return to education in Malaysia (see for instance, Chua (1984) , and Lee and Nagaraj (1995)), we expect those with LCE/SRP to be earning more than those with no more than primary education, and those with MCE/SPM and above to earn relatively more than those with LCE/SRP.

The marginal rates of return to different levels of education for both males and females separately are presented in Table 4.8. The regression coefficients show that there is premium for educational attainment for both men and women. However, it must be pointed out that the premium is found to be higher for men than women. Among men, the Lower

Certificate of Education (LCE), for instance, brings a premium of 25 per cent over primary education or less. Among women, the corresponding figure is only 11 per cent.

Table 4.8 Rates of Return to Education by Educational Attainment and Sex

Variable	Male Regression	Female Regression
Constant	5.9911[a]	5.7214[a]
	(49.17)	(66.49
LCE	0.2537[a]	0.1126[a]
	(3.03)	(3.94)
MCE and above	0.3725[a]	0.2844[a]
	(3.40)	(3.58)
X	0.0203[b]	0.0334[c]
	(2.11)	(1.77)
X^2	-0.0002	-0.00007
	(-0.83)	(-0.89)
$\bar{R}^2$	0.18	0.15
F	3.79	5.37
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

However, the premium for females with Malaysian Certificate of Education (MCE)[1] over those with LCE is five percentage points higher, i.e. 17 per cent compared with 12 per cent for men. In terms of experience, it is found that women realise a higher return to each additional year of experience than their male counterparts. As found in basic human capital model, the coefficients of experience square are consistent with *a priori* arguments, but insignificant. The insignificant sign could be explained by the fact that more than ninety per cent of the respondents are less than forty-five years old. Perhaps for this group of people, their earnings profile has yet to decline significantly.

4.4 An Expanded Earnings Model

The narrow human capital model relates log of earnings of an individual to his/her schooling and experience. The basic model explained very little of the variances in monthly earnings. We, therefore, propose an expanded earnings model to include the influence of other work related factors and personal background factors. The earnings equation is estimated separately for males and females.

The number of hours worked (HW), a discrete variable, is now included in the estimation. This variable is defined as the number of hours worked in the survey month inclusive of overtime. This variable is important because we expect overtime work to have

[1] Higher Certificate of Education (HSC) holders for both males and females are grouped together with MCE holders as the number of cases is rather small (refer to Table 3.5).

a strong positive correlation with earnings as overtime work is paid up to two-times the regular standard wage.

Table 4.9 Estimated Coefficients for Education, Experience and Total Hour Worked

Variable	Male Regression	Female Regression
Constant	5.5914[a]	5.2728[a]
	(20.31)	(20.13)
LCE	0.2542[a]	0.1005[b]
	(3.04)	(2.15)
MCE and above	0.3741[a]	0.2727[a]
	(3.43)	(3.51)
X	0.0234[b]	0.0303[c]
	(2.12)	(1.80)
X^2	-0.0002	-0.00007
	(-0.75)	(-0.93)
HW	0.0020[c]	0.0020[c]
	(1.65)	(1.84)
$\bar{R}^2$	0.26	0.18
F	3.62	5.08
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

From Table 4.9, it can be seen that the regression coefficients of education and experience variables remain the same for the men even after controlling for hours worked. For women, the return to LCE and MCE decrease marginally by 1 percentage point, while the return to experience remains the same. In terms of total hours worked, the coefficients do not reflect the existence of discrimination as both men and women received the same returns. This finding is consistent with that of Chauvin and Ash (1994) and Lee and Nagaraj (1995). Total hours worked is found to be significant at 10 per cent level. The inclusion of HW adds significantly to the explanatory power of the earnings function (F-ratios from the analyses of variances for males and females are 4.8 and 6.6, and also they are significant at 5 and 1 per cent level respectively). The computed F-ratio of the Chow-test is 3.1969 which is significant at one per cent level. This implies that the earnings structure of the two sexes are significantly different.

However, as discussed in chapter 3, experience is measured by the sum of previous years of work experience before current employer (PX), and years of experience with current employer (TENURE). Given the *a priori* arguments, we expect the coefficients of past experience (PX) to be positive if it is of a general nature, and therefore useful to the present employer. Becker (1975: 80) argued that past experience can be specific or general in nature. If past experience is specific in nature, then it is not expected to have any impact on earnings with the current firm. On the other hand, if past experience is general in nature and useful to other firms, then past experience will have a significant positive impact on earnings. As for tenure (TENURE) with current firm, it is expected to have a positive

impact on earnings. On the other hand, we would expect past experience square and tenure square to be negative.

Table 4.10 shows that after the distinction between TENURE and PX, $\bar{R}^2$ has increased from 0.26 to 0.39, and from 0.18 to 0.20 for male and female, respectively. This shows that refined measures of work history add significantly to the explanatory power of the earnings functions (F-ratios from the analyses of variances for males and females are 3.6 and 5.8, and they are significant at 5 and 1% level respectively).

Table 4.10 Male and Female Earnings Function

Variable	Male Regression	Female Regression
Constant	5.7200[a]	5.5024[a]
	(25.09)	(67.86)
LCE	0.1203[c]	0.0856[c]
	(1.71)	(1.79)
MCE and above	0.2826[a]	0.2693[a]
	(3.11)	(3.51)
PX.	0.0069	0.0250[b]
	(0.71)	(2.12)
PX^2	0.0002	-0.0009
	(-0.68)	(-0.95)
TENURE	0.0536[a]	0.0427[b]
	(3.54)	(2.22)
$TENURE^2$	-0.0007	-0.0009
	(-1.04)	(-0.51)
HW	0.0021[c]	0.0020[c]
	(1.87)	(1.63)
$\bar{R}^2$	0.39	0.20
F	10.01	7.37
Number of Cases	100	100

Note: a indicates coefficient significant at 1 % level.

b indicates coefficient significant at 5 % level.

c indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

From Table 4.10, several things worth noting. First, female production workers realised higher returns than their male counterparts in terms of experience before current employer. Each year of experience prior to current employer adds about 3 per cent to monthly earnings for females. However, it must be noted that the coefficients on PX and its square for males are statistically insignificant. This suggests that previous experience has no significant impact on earnings. This may be explained by the fact that most women remain in similar line of work where past experience can be used. So, while women tend to stay in the same line even when they change employers, men do not. Perhaps men have more opportunities to change jobs than women. On the other hand, each year of experience with current employer (TENURE) has a positive effect on earnings in both the male and female equation. As indicated in Table 4.10, men received a higher return (5 per cent) than women (4 per cent) to tenure. As for TENURE squared, the coefficients do have the expected negative sign. However, these coefficients are insignificant. Looking at the total hours worked (HW) variable, we see that the coefficients are positive and significant at 10 per cent level for both men and women, with men receiving slightly higher returns than women.

In addition to education, experience and hours worked, training is another important human capital. On-the-job training is commonly associated with the creation of general or firm-specific human capital. Higher levels of on-the-job training are associated with greater productivity in the firm, and hence higher wages at some stages of the life cycle (Hersch and Reagan, 1990: 495). Given the importance of on-the-job training, we therefore take into account its effect on earnings. The regression results (see Table 4.11) show that the coefficients for duration of training (DTRAIN) are not significant and do not add

significantly to the explanatory power of the model (F-ratios for the analyses of variances for males and females are 0.72 and 0.91 respectively).

Table 4.11 Male and Female Earnings Functions after Controlling for Duration of Training

Variable	Male Regression	Female Regression
Constant	5.9745[a]	5.6795[a]
	(55.09)	(65.59)
LCE	0.1141[c]	0.0778
	(1.72)	(1.04)
MCE and above	0.2846[a]	0.2600[a]
	(3.13)	(3.31)
PX	0.0088	0.0208[c]
	(0.89)	(1.83)
PX^2	-0.0002	-0.0008
	(-0.87)	(-0.83)
TENURE	0.0564[a]	0.0412[c]
	(3.75)	(1.88)
$TENURE^2$	-0.0008	-0.0012
	(-1.28)	(-0.67)
HW	0.0016[c]	0.0012[c]
	(1.77)	(1.63)
DTRAIN	0.1353	0.1123
	(1.09)	(1.14)
$\bar{R}^2$	0.39	0.19
F	9.88	4.21
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 %.

( ) figures in parentheses are t-statistics.

Table 4.12 Male and Female Earnings Functions after Controlling for Instances of Training

Variable	Male Regression	Female Regression
Constant	5.6690[a]	5.3022[a]
	(25.24)	(20.19)
LCE	0.0950[c]	0.0815[c]
	(1.84)	(1.76)
MCE and above	0.2391[a]	0.2665[a]
	(2.62)	(3.40)
PX	0.0050	0.0242[c]
	(0.53)	(1.81)
PX^2	-0.0015	-0.0009
	(-0.48)	(-0.99)
TENURE	0.0490[a]	0.0427[c]
	(3.28)	(1.83)
$TENURE^2$	-0.0007	-0.0009
	(-0.97)	(-0.50)
HW	0.0025[c]	0.0020[c]
	(1.75)	(1.62)
TRAIN	0.1326[b]	0.0400[b]
	(2.20)	(2.13)
$\bar{R}^2$	0.40	0.23
F	9.73	6.86
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 %.

( ) figures in parentheses are t-statistics.

Another alternative is to consider the instances of training. Training (TRAIN) is a dummy variable taking unit value if the respondent has had at least one occasion of establishment-based training. Table 4.12 shows the results of our estimates after controlling for instances of training. Comparing the results in Table 4.10, it can be seen that the variable, training, has increased the explanatory power of earnings functions for both male and female (F-ratios for the analyses of variances for males and females are 5.28 and 3.12, which are significant at 1 per cent and 10 per cent level respectively). The coefficients for TRAIN - the dummy for establishment - based training is positive and significant, this is in line with *a priori* expectation. However, it must be noted that the premium for training for men is three times higher than that for women. This finding is consistent with that found by Lee and Nagaraj (1995), whereby men received higher returns to establishment-based training than women. However, it must be noted that the returns to current experience and hours worked remained higher for men than for women.

Studies incorporating occupational structure into the estimated earnings functions have shown that the distribution of men and women across occupations can explain much of the male-female earnings differentials. The reason these studies find it important to take occupational structure into account is that women are frequently concentrated (crowded) in a smaller number of occupations than men. Perhaps because of crowding, the occupations with large numbers of women are often the lower-paid ones (Terrell, 1992: 396). Even within each occupation men still have better advancement opportunities than women (Tenjo, 1991: 17). To take this into account and given the present sample, a dummy

variable SKILLED[2] taking unit value when the respondents are skilled or semiskilled and zero otherwise is included into the earnings functions. Unskilled workers therefore serve as the reference group.

Table 4.13 Earnings Function for Male and Female after Controlling for Skill Level

Variable	Male Regression	Female Regression
Constant	5.7987[a]	5.5778[a]
	(30.08)	(23.53)
LCE	0.0230[c]	0.0213[c]
	(1.81)	(1.97)
MCE and above	0.0817[c]	0.0614[c]
	(1.73)	(1.88)
PX	0.0014	0.0300[b]
	(0.96)	(2.12)
PX^2	-0.0002	-0.0001
	(-0.08)	(-0.12)
TENURE	0.0256[b]	0.0515[b]
	(1.92)	(2.13)
$TENURE^2$	-0.0016	-0.0023
	(-0.19)	(-1.44)
HW	0.0013[c]	0.0007
	(1.922)	(0.68)
TRAIN	0.0763[b]	0.0397[b]
	(2.47)	(2.42)
SKILLED	0.3252[a]	0.4475[a]
	(5.92)	(5.29)
$\bar{R}^2$	0.57	0.37
F	15.78	12.74
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 %.

( ) figures in parentheses are t-statistics.

[2] Skilled workers for both males and females are grouped together with semi-skilled workers as the number of cases is rather small (refer to Table 3.10).

The coefficients obtain from the regressions for both male and female workers after taking into consideration the effects of skill levels on earnings are presented in Table 4.13. The dummy variable, SKILLED, adds significantly to the explanatory power of the earnings function for both males and females workers (F-ratios from the analyses of variances are 60.85 and 53.15 for males and females respectively, which are significant at 1 per cent level). The inclusion of SKILLED improved the value of $\bar{R}^2$ for male to 0.57, from 0.40. For female, the value of $\bar{R}^2$ increased from 0.23 to 0.37. As expected, the results show that skill level is significantly correlated with earnings. The earnings of semiskilled and skilled workers are significantly higher than the earnings of unskilled workers. The dummy variable for skill level is significant at one per cent level. The returns to skill level appear to be higher for females than for males because unskilled females earn far less than unskilled males (see Table 4.4). In terms of educational variables, it can be seen that, for all education levels, males received higher rates of return than their female counterparts.

Looking at the experience variable, we see that women received higher returns for experience prior to current establishment. However, previous experience prior to current establishment is insignificant for men. The lower returns for men could be due to the fact that women started off with very low pay (see Table 4.3). As for service with the current employer, the coefficients on TENURE are 0.03 and 0.05 for men and women respectively. These coefficients are also significant for both men and women. This seems to suggest that service in the current establishment pay-off for both men and women. It should, however,

be noted that men receive a higher return on training than women. By looking at the standardised coefficients, it appears that training and the skills developed in training are more important determinants of earnings than experience or seniority in the case of production workers. The coefficients on PX^2 and $TENURE^2$ remain insignificant. This is consistent with the earlier argument that the respondents' earnings profiles have yet to decline significantly. As for the returns to training, men again receive a higher premium than women. The returns for men is two-times higher than that for women.

Job turnover (TURNOVER), defined as the number of times the respondents changed employers may also affect earnings. One strand of the literature on discrimination against women relates their relatively low pay to their greater separation rates. Siebert and Young (1983: 22) argued that employers might 'label' married men who move more often as enterprising, but married women who do so as unstable. Thus, we have included TURNOVER in the earnings functions. We expect a positive correlation between TURNOVER and earnings for men, but a negative one for women.

Table 4.14 shows that job turnover for men is associated with higher earnings - each job changed led to a 3 percentage increase in earnings. Among women job turnover, as expected, has a negative effect on earnings which is significant at the 10 per cent level. This finding is consistent with that found by Dolton and Makepeace (1986: 325). For women job changes are often associated with changes in family circumstances, such as the husband moving from one job to another (Dolton and Makepeace, 1986: 326).

Table 4.14 Earnings Function Including Job Turnover

Variable	Male Regression	Female Regression
Constant	5.7104[a]	5.5775[a]
	(28.63)	(23.41)
LCE	0.0314[c]	0.0203[c]
	(1.74)	(1.82)
MCE and above	0.1401[b]	0.0613[b]
	(2.64)	(2.12)
PX	0.0033	0.0212[c]
	(0.32)	(1.79)
PX^2	-0.0001	-0.0010
	(-0.35)	(-1.06)
TENURE	0.0265[b]	0.0514[b]
	(2.00)	(2.12)
$TENURE^2$	-0.0008	-0.0011
	(-1.16)	(-0.60)
HW	0.0018[b]	0.0007
	(1.89)	(0.49)
TURNOVER	0.0247[c]	-0.0059[c]
	(1.77)	(1.72)
TRAIN	0.0614[c]	0.0394[c]
	(1.64)	(1.83)
SKILLED	0.3238[a]	0.4450[a]
	(5.95)	(5.20)
$\bar{R}^2$	0.58	0.39
F	14.68	8.96
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

Turning to training, we find that men received a higher return than women. This is consistent with that found by Lee and Nagaraj (1995: 474). As for each hour worked (HW), men's return is marginally higher than women's.

In order to examine whether aspects of labour force attachment are detrimental to workers' earnings, some indicators of labour force attachment are included in the model. To investigate the effect of absenteeism on earnings, we included two variables, ABSO and ABSW, in the earnings equation. ABSO and ABSW are discrete variables reflecting the number of days of work missed due to illness of others in 1994 and days of work missed due to own illness in 1994 respectively[3]. These variables are included because we expect a negative relation between the number of days absent from work and earnings. In addition, we also controlled for restricted work location and hours. These items were controlled because men as well as women may restrict job location or work hour either because of family responsibilities or because of personal preferences (Corcoran and Duncan, 1979: 6). According to Polachek (1975), when women work, they must balance the demands of work and family and may be forced to accept lower paying jobs that are closer to home to have compatible work schedules. These factors may lower women's productivity and wages relative to men. In this study, restriction on job location and hours are denoted by RL and

[3] The two absenteeism questions were, 'Did you miss any work in 1994 because some one in your family was sick?' and 'Did you miss any work in 1994 because you were sick?'

RS[4] respectively. Last but not least, we also take into account the effect of plans to stop work on earnings. This is represented by the dummy variable SW[5] in the earnings equations. Having discussed the regression variables individually, we now analyse the significance of each and every variable.

The results (see Table 4.15) show that absenteeism due to own illness and illness of others in the family, had virtually no significant effect on the earnings of the two gender groups of workers. This might perhaps be explained by the fact that the number of days missed does not exceed the allowance under labour law. In terms of self-imposed limits on job choice or location, it can be seen that these variables also have no significant detrimental effects on earnings for both males and females. The results do not support the hypotheses put forward in chapter 2. In addition, the results also indicate that intentions to stop working in the next five years did not have any significant effect on earnings. This may be due to the fact that their intentions to quit were not revealed to the employer, or perhaps these intentions do not matter to the employer. In general, attachment measures did not explain earnings differentials very well. This finding is consistent with that found by Corcoran and Duncan (1979).

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[4] The restriction on job location and hours measures were formed from responses to questions 'Thinking back to when you started your present job, were there some limitations on where you work or what hours you could work that were factors in taking this job?' Those who answered otherwise were scored zero on this, others were given a score of one.

[5] The plans to stop measure was formed from responses to questions "Do you think you will keep on working for the next few years, or do you plan to quit?" Those not planning to quit were score zero on this, others were given a score of one.

Table 4.15 Male and Female Earnings Function

Variable	Male Regression	Female Regression
Constant	5.6416[a]	5.6864[a]
	(28.37)	(19.02)
LCE	0.0277[c]	0.0311
	(1.82)	(0.05)
MCE and above	0.1116[b]	0.0713[c]
	(2.40)	(1.76)
PX	0.0003	0.0230[c]
	(0.03)	(1.94)
PX^2	0.0004	-0.0009
	(-0.11)	(-0.91)
TENURE	0.0270[b]	0.0438[a]
	(1.96)	(3.74)
$TENURE^2$	0.0006	-0.0011
	(-0.75)	(-0.55)
TURNOVER	0.0215[c]	-0.0050[c]
	(1.86)	(-1.79)
HW	0.0026[b]	0.0015
	(2.68)	(0.18)
TRAIN	0.0362[c]	0.0201[c]
	(1.64)	(1.89)
ABSO	-0.0470	-0.0015
	(-1.21)	(-0.18)
ABSW	-0.0008	0.0013
	(-0.07)	(0.82)
RL	-0.0182	-0.0382
	(-0.14)	(-0.20)
RS	-0.0743	0.0316
	(-0.51)	(0.32)
SW	-0.0591	-0.0592
	(-0.03)	(-0.811)
SKILLED	0.2893[a]	0.4837[a]
	(5.19)	(5.31)
$\bar{R}^2$	0.59	0.33
F	10.60	5.74
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

Second, the rate of returns to lower secondary education is rather low for males and females. The marginal rates of returns for LCE holder over those with primary or less are only 3 and 2 per cent for males and females respectively. The finding here indicates that there is a low premium for lower-secondary education. This finding is consistent with that found by Lee and Nagaraj (1995: 474). Third, the coefficients on the dummy variables for educational attainment are higher for men than those for women at upper-secondary level, where the return to education for men with MCE is about 4 percentage points higher than that for women.

Fourth, looking at the experience variables, we see that experience prior to current establishment is significant for women only. Each year of past experience raised earnings by only 2 per cent. This seems to suggest that perhaps women remained in the same line of work where past experience is useful in performing the present job. On the other hand, experience in the present establishment is highly significant for both men and women. The coefficient for TENURE is higher among females than that among males.

As for training, the return for male workers is two times more than that for the female workers. On the other hand, as shown in Table 4.15, the number of TURNOVER is associated with a 2 per cent increase in earnings for men. For women, the number of TURNOVER is detrimental to their earnings.

In terms of explanatory power of the model, it can seen that the inclusion of some indicators of labour force attachment only slightly improve the value of $\bar{R}^2$ to 0.59 for male workers. As for the females, the value of $\bar{R}^2$ decreased from 0.38 to 0.36. In addition, the computed F-statistical value, i.e. 0.85 indicates that the earnings structures of male and female workers are not significantly different.

Having examined the impact of indicators of labour force attachment on earnings, we will now assess the impact of spouse occupational attainment on earnings. The importance of incorporating spouse work status is to examine the impact of spouse work on earnings. Becker (1976) argues that the impact of spouse work status on productivity dependent on income or substitution effect. If the income effect is stronger than the substitution effect, then there will be a negative effect on earnings of husbands. To investigate the effect of spouse occupational status on earnings, we have included two dummy variables, BLUE-COLLARED (production worker) and WHITE-COLLARED[6] into the earnings functions, with non-working spouse (retired and unemployed) serving as the reference group.

The coefficients obtain from the regressions for both men and women after taking into consideration the effect of spouse occupational status on earnings are presented in Table 4.16. From the results shown in Table 4.16, it can be seen that, for both male and female workers, spouse occupational status has a negative effect on their earnings.

[6] As the number of cases for other occupational categories is rather small, we therefore, grouped them under white-collared worker.

However, it must be mentioned that all the coefficients of spouse work status are not significant..

Table 4.16 Male and Female Earnings Function

Variable	Male Regression	Female Regression
Constant	5.7032[a]	5.5122[a]
	(28.31)	(21.42)
LCE	0.0359[c]	0.0214
	(1.92)	(1.42)
MCE and above	0.1498[c]	0.0578[c]
	(1.86)	(1.87)
PX	0.0064	0.0212[c]
	(0.68)	(1.88)
PX^2	-0.0002	-0.0001
	(-0.55)	(-0.78)
TENURE	0.0289[b]	0.0520[b]
	(2.01)	(2.12)
$TENURE^2$	-0.0009	-0.0024
	(-0.15)	(-1.42)
TURNOVER	0.0216[c]	-0.0024[c]
	(1.79)	(-1.82)
HW	0.0020[b]	0.0017
	(2.12)	(0.18)
TRAIN	0.0372[c]	0.0211[c]
	(2.13)	(1.92)
SKILLED	0.3311[a]	0.4238[a]
	(5.61)	(4.72)
WHITE-COLLARED	-0.0174	-0.0649
	(-0.31)	(-0.62)
BLUE-COLLARED	-0.0719	-0.0208
	(-1.08)	(-0.21)
$\bar{R}^2$	0.57	0.36
F	11.18	5.56
Number of Cases	100	100

Note: [a] indicates coefficient significant at 1 % level.

[b] indicates coefficient significant at 5 % level.

[c] indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

Comparing the results in Table 4.14, it can be seen that the inclusion of the variables WHITE-COLLARED and BLUE-COLLARED, has reduced the explanatory power of earnings functions. For the males, the value of $\bar{R}^2$ decreased from 0.58 to 0.57, while the value of $\bar{R}^2$ for females dropped from 0.39 to 0.36. As the inclusion of the variables, WHITE-COLLARED and BLUE-COLLARED, did not add significantly to the explanatory power of the earnings functions (F-ratios from the analyses of variances for males and females are 0.09 and 0.05 respectively), they will be excluded from subsequent regression model.

Traditionally, the number-of-children variable is included in the analyses of the gender wage-gap. The number-of-children variable serves as a proxy for individual differences in labour force attachment, work history and training. However, previous literature on the effect of children on wages have been mixed for both men and women. For instance, Mincer and Polachek (1974) find that the number of children has negative but insignificant effects on women's wages. Blau and Beller (1988) find that the number of children has significant negative effects on women's wages and positive effects on the earnings of white men. Filer (1985) in a specification allowing for compensating differentials, finds no wage effect of the number of dependents for men, but positive wage effects for women. Therefore, in this study, we propose to include the number of children[7] in the estimation.

[7] By number-of-children, we refer to number of non-schooling and school-going children (dependant) in the family unit

Table 4.17 **Male and Female Earnings Function After Controlling For Number of Children**

Variable	Male Regression	Female Regression
Constant	5.7094[a]	5.5771[a]
	(28.47)	(23.01)
LCE	0.0335[c]	0.0205
	(1.74)	(0.77)
MCE	0.1425[c]	0.0813[c]
	(1.78)	(1.97)
PX	0.0073	0.0210[c]
	(0.79)	(1.77)
PX^2	-0.0018	-0.0010
	(-0.61)	(-1.05)
TENURE	0.0256[c]	0.0514[b]
	(1.86)	(2.06)
$TENURE^2$	-0.0006	-0.0023
	-(0.79)	(-0.61)
HW	0.0019[b]	0.0016
	(2.20)	(1.63)
TURNOVER	0.0209[c]	-0.0020[c]
	(1.87)	(-1.78)
TRAIN	0.0321[c]	0.0200[c]
	(1.71)	(1.83)
SKILLED	0.3208[a]	0.4450[a]
	(5.75)	(5.17)
CHILD	0.0250[c]	-0.0022[c]
	(1.91)	(1.88)
$\bar{R}^2$	0.60	0.42
F	13.21	8.81
Number of Cases	100	100

Note: a indicates coefficient significant at 1 % level.

b indicates coefficient significant at 5 % level.

c indicates coefficient significant at 10 % level.

( ) figures in parentheses are t-statistics.

The coefficients obtained from the regressions for both male and female workers after taking into consideration the effects of children on earnings are presented in Table 4.17. Comparing the results obtained from Table 4.17 and 4.14, it can be observed that the inclusion of number-of-children item does add to the explanatory power of the model. The $\bar{R}^2$ for male workers increased from 0.58 to 0.60. As for female workers, the $\bar{R}^2$ increased from 0.39 to 0.42. This shows that the variable CHILD, adds significantly to the explanatory power of the earnings functions for both men and women (F-ratios from the analyses of variances for men and women are 3.8 and 5.9, and they are significant at 5% and 1% level respectively). Indeed, our result shows that the inclusion of this item contributes some significant positive effects on male workers' earnings. It raised male workers earnings by 3 per cent. Among female workers, the number-of-children has a significant negative effect on their earnings. Here each additional child reduced women's earnings by less than half a per cent. The findings that children are associated with higher earnings for men but lower earnings for women is consistent with that of Greehalgh (1980).

The value of F-statistics for the joint test of significance for the differences between the coefficients; i.e. 2.08 which is significant at 5 per cent level, reveals that the earnings structures for males and females are significantly different with respect to the regressors common to both groups.

4.5 Decomposition of Male-female Earnings Differential

Having estimated the earnings function, we can now separate the observed earnings differentials between males and females into several components. These differentials are decomposed into two principal components:

i. that due to differences in endowments or average characteristics of workers, and,

ii. that due to the differences in earnings structure.

Table 4.18 presents the complete decomposition of earnings differentials between gender groups based on the estimates from Table 4.17. As can be seen from Table 4.18, the computed logarithms of average monthly earnings for the male and female production workers in Alor Gajah are 6.3950 and 6.2206 respectively. This yields an overall differential of 0.1744. The extent of discrimination is obtained by subtracting the effects of differences in individual characteristics or productivity endowments from the overall differentials. The results reveals that 88 per cent of the difference in earning between the male and female respondents is attributable to discrimination, while human capital variables account for only 12 percent of the earnings differentials.

However, if the female earnings structure were to apply, then the differential which is attributed to 'superior' endowment is 0.1356 (78 per cent), and leaving 0.0388 (22 per cent) to discrimination. A simple average of the estimates implies that discrimination accounts for a very great proportion, i.e., 55 per cent of the monthly earnings differentials between male and female production workers in Alor Gajah.

Table 4.18 Decomposition of Monthly Earnings Differentials by Gender

	Component	Equation	Logarithm	Malaysian Ringgit
(1)	Males, average earnings	$\Sigma bm\ \bar{X}m$	6.3950	598.84
(2)	Females average earnings	$\Sigma bf\ \bar{X}f$	6.2206	503.00
Payment According to Male Monthly Earnings Structure				
(3)	Females, no discrimination	$\Sigma bm\ \bar{X}f$	6.3734	586.05
(4)	Overall differential	$\Sigma bm\ \bar{X}m-\Sigma bf\ \bar{X}f$	0.1744	94.58
(5)	Endowment differences	$\Sigma bm(\ \bar{X}m-\ \bar{X}f)$	0.0216	12.62
(6)	Residual (discrimination)	$\Sigma(bm-bf)\ \bar{X}f$	0.1528	81.96
Payment According to Female Monthly Earnings Structure				
(7)	Males, no discrimination	$\Sigma bf\ \bar{X}m$	6.3562	576.05
(8)	Overall differential	$\Sigma bf\ \bar{X}m-\Sigma bf\ \bar{X}f$	0.1744	94.58
(9)	Endowment differences	$\Sigma bf(\ \bar{X}m-\ \bar{X}f)$	0.1356	71.79
(10)	Residual (discrimination)	$\Sigma(bm-bf)\ \bar{X}m$	0.0388	22.79

Note: For equations (1), (2), (3) and (7) Malaysian Ringgits figures are the antilogs of the natural logarithm. The remaining Malaysian Ringgit figures are derived as (5) = (1)-(3); (6) = (3)-(2); (4) = (5) + (6) ; (9) = (7)-(2); (10) = (1-7); and (8) = (9) + (10).

After decomposing the earnings differentials into differences in endowments and differences in earnings structure, we now set out to determine which sets of items did a better job of accounting for the female-male earnings gap. Table 4.19 shows the contribution of each of the independent variables to the overall monthly earnings differentials of 0.1744. A positive entry indicates an advantage in favour of males (and hence a positive contribution to the overall differential); a negative entry indicates an advantage in favour of females.

Table 4.19 **Contribution of Each Variable to Overall Monthly Earnings Differentials**

Variable	Due to Endowments bm(Xm - Xf)	Due to Wage Discrimination (bm-bf)Xf	Due to Both bmXm - bfXf
Constant	0	0.1323	0.1323
Education	0.0023	0.0182	0.0205
Experience	-0.0455	-0.1486	-0.1941
Training	0.0042	0.0017	0.0059
Total hours worked	0.0155	0.0637	0.0792
Turnover	0.0010	0.0428	0.0438
Children	-0.0268	0.0702	0.0434
Skill level	0.0706	-0.0261	0.0445
Total	0.0216	0.1528	0.1744
Percentage	12	88	100

A substantial portion of the overall earnings advantage of males can be explained by their more fovaourable skilled levels and longer work hours. Three other factors, namely training, education and job mobility also confer some advantage to the males. On the other hand, assuming that the male earnings structure applies, females have an advantage in terms of job experience.

The sources of discrimination are shown in column (2). The main variables through which wage discrimination takes place are number of children, total hours worked, rate of job turnover, education and training. In essence, for the same number of hours worked, educational attainment and the same rate of job turnover, females receive substantially

lower earnings than males. With regards to the number of dependants, it can be seen that women were significantly discriminated against for the same number of dependants. However, it must be pointed out that women did experience a very substantial positive discrimination in terms of experience and skill levels.

4.6 Conclusions

The main concern of this study has been the wage differential that exists between married men and married women, as measured with data from a survey of production workers in Alor Gajah District. Together with education, labour market experience is one of the most important determinants of earnings capacity, and has therefore figured prominently in the study of wage structure.

Following the narrow human capital framework, we estimated an earnings function for all workers in the sample. For this particular sample, our results seem to suggest that men, *ceteris paribus,* earn more than women. The returns to additional education are higher for men. In terms of experience, we found that women receive a higher return than men. It should, however, be noted that women start off with far lower monthly earnings than men.

In the expanded earnings function, where a distinction was made between tenure and past experience, we find that women received higher return for past experience, and past experience did contribute significantly to women's earnings. This may be due to the

fact women remain in similar line of work where past experience can be used. As for the returns to tenure, we find that women again receive higher returns than men.

Formal training, however, adds significantly to the earnings of the male respondents; more so than that for their female counterparts. On the question of turnover, our findings show that job turnovers contributed positively to men's earnings, whereby each job changed led to a 3 percentage increase in earnings. On the other hand, job turnovers as expected, has a negative effect on women's earnings. Turning to the labour force attachment variables, our findings indicate attachment, as proxied in this study, has no significant impact on men's and women's earnings.

Another significant finding here relates to the importance of children in the determination of earnings. Our results show that there is a significant difference between earnings functions for men and women. The inclusion of this variable has a positive effect on men's earnings. Among the women, the number-of-children has a negative significant effect on their earnings. This seems to suggest that family size has a motivational effects on men's earnings. As for women, the result indicates that number-of-children is a good proxy variable for differential work history and labour force attachment. The negative effects of children on women may be explained by the fact that women bear most household responsibilities which may distract them from focusing too much on work.

A decomposition of monthly earnings differentials on the basis of the estimated earnings structures shows that sex discrimination existed among the sample of workers

taken from Alor Gajah. Our estimate reveals that discrimination accounted for an average of 55 per cent of the monthly earnings differentials between males and females sample taken from Alor Gajah. The main variables through which wage discrimination take place are number of children, total hours worked, rate of job turnover, education and training. This analysis rests on the assumption that we have controlled for most of the key variables that influence earnings of men and women. However, given that the adjusted coefficient of determination is lower for the women (0.42 compared with 0.60) implies not all factors have been accounted for.