CHAPTER 3

DETERMINANTS OF WAGES

3.1 INTRODUCTION

Wages is defined as "payment of services to a workman; usually, remuneration on an hourly, daily, or weekly basis or by the piece" (The Grolier International Dictionery, 1981). In general, wages is determined by the interaction of the forces of demand and supply. The demand of workers by an employer would entail the payment of wages as remuneration for the worker's supply of labour. The demand for labour by an employer stems from the demand for the products that the labour produce, after taking into account costs of production and profitability for the firm. Supply of labour would be based on the wage rate offered and thereafter subjected to whether the worker values leisure or work more. The skill level would determine the elasticity of the labour supply. Efficiency wages would successfully determine the allocation of labour to its optimum use. Wages can only be efficient if it is flexible enough to reflect market changes, and there is free movement of labour.

For employees in Malaysia in general, full-time employed workers' wages are determined on a monthly basis whilst contractual workers' wages are normally determined on a daily basis or by piece rate.

REGRESSION ANALYSIS

This study employs cross-sectional regression runs for the years 1990 – 1994 and 1996 ing a simplified version of the equation used by Soon (1991) in her study of determinants of er-industry manufacturing wages,

$$\text{Log } W_t = a + bUNION_t + cPROD_t + d(K/L)_t + eSEX_t \text{ where}$$

W is the average earnings of workers at time t;

UNION is measured by the fraction of the number of other directly employed workers in e unionized firms (up to a 3-digit level);

PROD is the value added per worker;

K/L is the capital intensity measured by the ratio of the book value of fixed assets to the umber of workers in the industry;

SEX is the proportion of female workers in the industry

The equation above was estimated using the ordinary least squares method on directly mployed workers wages (as defined in the Manufacturing Survey Form - Peninsular Malaysia f the Department of Statistics) only as we want to eliminate the impact of other workers which re not directly related to the production line. The results are presented in Table 8.

Table 8 : Regression Estimates of Food Manufacturing Wages 1990 – 1994 and 1996

Variables	Coefficient
CONSTANT	6.5865 [103.0636]
UNION	8.1020 [17.4357]
PROD	0.0005 [16.9214]
K/L RATIO	-0.0269 [-13.2555]
SEX	-1.8789 [-16.0346]

Note : Figures in brackets are the t-statistics

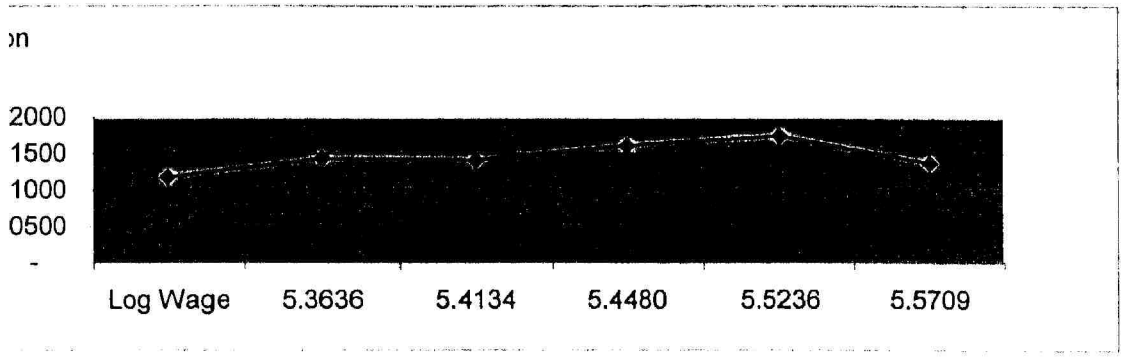
R^2 = 0.999933

Adjusted R^2 = 0.999666

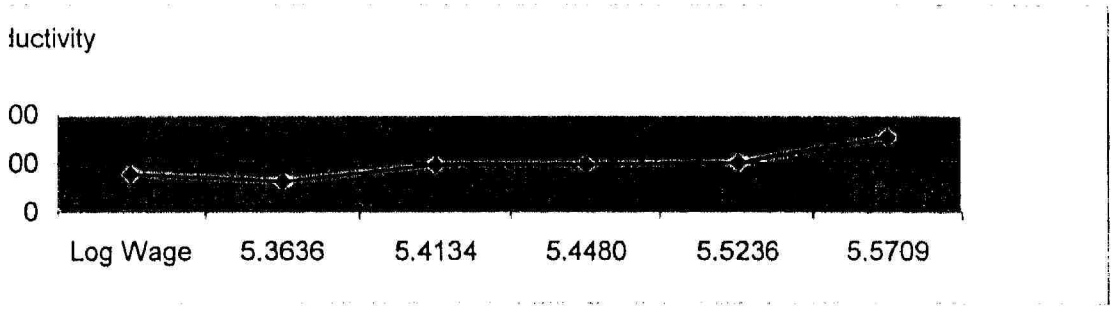
F-statistic = 3,742.839

Durbin-Watson *d* statistic = 3.578339

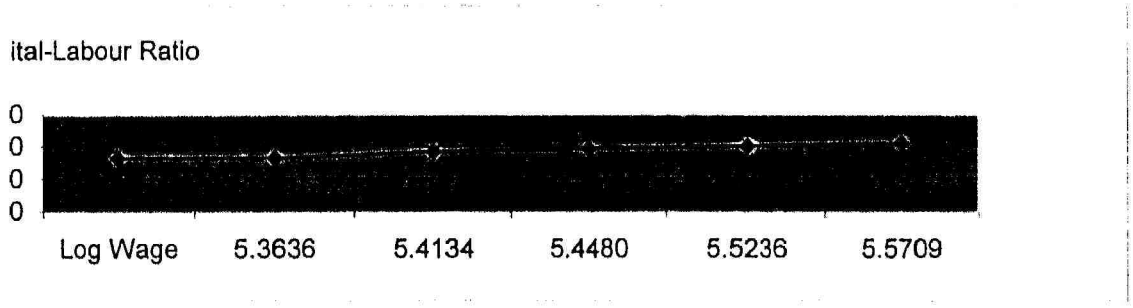
're 1 : Relationship between union and log wage, 1990 - 1994 and 1996



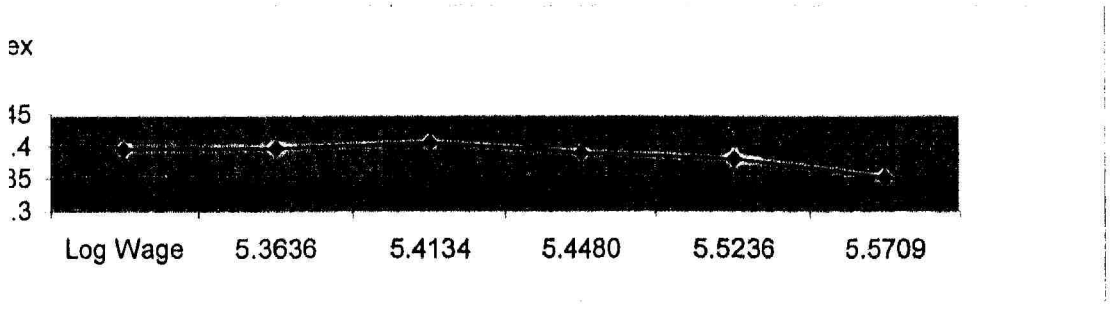
're 2 : Relationship between productivity and log wage, 1990 - 1994 and 1996



're 3 : Relationship between capital-labour ratio and log wage, 1990 - 1994 and 1996



're 4 : Relationship between sex and log wage, 1990 - 1994 and 1996



All coefficients are significant at the $\alpha = 0.05$ level using the two-tail t test. The Durbin-Watson *d* statistic has a value of 3.578 which suggests that negative serial correlation may be present in the data. However, these are secondary data obtained from the Department of Statistics which are not within our control. We would still be relying on the results of this regression as a guide for our study. We also acknowledge the fact that non wage benefits for example paid leave, pension, retirement benefits or loan benefits have not been considered in this study.

The R^2 value of 0.999933 shows that the four explanatory variables namely UNION, PROD, K/L and SEX explain about 99.9 per cent of the variation in wages of the food manufacturing industry in Malaysia over the period 1990 to 1996. The adjusted R^2 value shows that after taking into account the degrees of freedom (one in our study), the four explanatory variables still explain about 99.9 per cent of the variation in wages.

The coefficient for UNION has the hypothesized positive effect on wages. The spillover effect is taken into account as all firms with union workers are considered, irrespective of the union status of a worker because once a collective agreement has been negotiated and agreed upon by both employer and union representatives, it would cover all workers in a firm, irrespective of their union status. Our coefficient of UNION may have been overstated because we did not control for variables such as skill and size of the establishment. Soon's (1991) regression estimates of interindustry wages for 1979 and 1985 indicate a union effect of 0.985 and 0.320 respectively, which is very much lower than our estimate of 8.102. The major portion of the difference may be due to variables which we did not control in this study, and in part due

to the period of study by Soon, 1979 being a period where Malaysia have just started its export-led growth industry and 1985 being a severe recessionary period. The pre-1997 is a robust economic period associated with full employment to the extent that foreign workers need to be "imported" to alleviate the labour shortage problem plaguing the Malaysian industry.

The regression results also confirm the notion that firms pay higher wages with improved productivity. This is not surprising as productivity is seen as the most important factor in shifting the labour demand curve to the right, thus increasing the wages of workers. What is puzzling, however, is the impact of productivity on wages being a mere 0.0005 as compared to the union effect of 8.10. This indicates that firms in the food manufacturing industry have only linked wages to productivity by a small factor. The survey by World Bank (1995) have indicated that Malaysian firms in the manufacturing sector have answered negatively to the introduction of flexi-wage system because of the fear of disapproval from national unions.

The regression results indicate that capital intensity has a negative effect on wages, that is, a firm which is more capital intensive in the food manufacturing industry pays lower wages. The results differ from our expectation but could be explained by the fact that labour intensive firms have more to lose when workers dispute on wages and go on strike as it is more difficult to find replacement. The management is therefore more willing to give in to demands by trade unions. Firms which rely more on technology could afford to let its workers go on strike as they could have easily replaced labour which go on strike with capital. The food manufacturing industry however, is labour intensive, as indicated by the National Productivity Reports for the

years 1992 and 1993, where "the food processing industry is experiencing high growth in added value but low growth in capital intensity..... The lower capital intensity reflected the reliance of the food manufacturing processes on labour intensive methods". The demand equations by the World Bank in 1995 indicate that investment in fixed assets of a firm is found to increase the demand for unskilled workers relative to skilled workers. Thus, when a firm in the food manufacturing industry increases its investment in capital, it can replace its skilled labour composition with unskilled workers, hence the reduction in wages. A labour intensive firm, however, may need to rely on skilled labour to carry out certain production function. The capital labour ratio as estimated by Soon's (1991) regression estimates of interindustry wages in 1979 and 1985 suggests only a small positive relationship, namely 0.001 and 0.0037 respectively, but her regression is based on the manufacturing sector as a whole, whilst this study is conducted on the food manufacturing industry alone.

The coefficient for SEX also has the expected negative effect on wages, indicating that firms in the food manufacturing industry do pay lower wages to women as compared to men. The effect from our analysis is also greater than that found by Soon (1991) of –0.872 (1979) and –0.855 (1985) respectively. Discrimination apart, the unwillingness of female workers in working overtime or shift work may also cause the lower wages earned. Employers may also have factored the maternity benefits into the wages of female workers (The Malaysian Employment Act, 1955 have stipulated a 60-day maternity leave benefit, which is approximately 2 months' pay).

The regression results suggest that in the Malaysian food manufacturing industry, a unionized worker would earn more than a non-union worker would. Productivity of a worker is only rather relevant in the determination of wages of a worker. A worker who is more productive would earn slightly more wages compared to a less productive worker. Both capital intensity and the female gender have a negative relationship with wages. A capital intensive firm in the food manufacturing industry in Malaysia generally pays its workers less than a labour intensive firm. Being a female worker in the Malaysian food manufacturing industry also imply that she would earn fewer wage compared to her male counterpart.

One implication from the regression results stem from the negative relationship shown by capital intensity on wages. Following Solow's growth model where the shift of the production frontier to a higher level is only possible through technological development, investment in research and development (which entails capital investments) is inevitable. The shortage of labour problem in the 1990s have also prompted the government to encourage investment in more capital intensive industries or be more mechanised. Does this mean that the food manufacturing industry workers would have to suffer diminution in their earnings? It is the author's opinion that this should not be the case. To counteract this possibility, it is imperative that training be provided to improve the skill level of these workers to counter the negative wage effect which may arise when all firms in the industry answer to the call of the government on increasing capital investment.