AN INVESTIGATION OF VARIABLES
AFFECTING MALE/FEMALE WAGE
DIFFERENTIALS IN THE RETAIL
FOOD INDUSTRY IN WINNIPEG

A dissertation submitted in partial fulfillment
of the requirements for the degree of Master
of Arts in Economics

by

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I. INTRODUCTION

Male-female wage differentials occur in all industries and occupations. This is despite the assurance of purely competitive wage theory that tells us they should only exist momentarily, as a transitory phase before long run equilibrium takes place. Therefore, for their continuing occurence over time, anomolies in market structure or industrial conduct must be present which aid in the development and prolong the persistence of these differentials. This thesis is an intensive look at one industry, the retail food industry in Winnipeg, in an attempt to account for the determinants of male-female differentials within the industry.

Wage rates are influenced by a multi-faceted array of factors. These range from supply and demand imbalances, labour productivity, market structure forces, to the institutional considerations of historical wage relationships and the impact of unionization. Chapter two of the thesis is an investigation into the impact of these variables on wage rates to determine their relative importance and to isolate those that will be used in the analysis of wage differentials in this study.

The third chapter of the thesis investigates the theoretical foundations of sex discrimination since male-female wage differentials are often the result of discrimination. Mechanisms for discrimination and their underlying influences are discussed so that their manifestation as wage differentials can be identified in the empirical section of the study.

The retail food industry was chosen for analysis since it contains within it three sectors of differing structures, conduct and performance. Therefore the impact of market structure on wages can be examined within the context of similar occupations. This enables the effect of different human capital requirements that can be associated with dissimilar occupations, on the wage rate to be minimized. These three sectors are the chain stores, the affiliated independent stores, and the corner stores. Chapter four of this thesis is an industry study of the retail food industry, examining the structure, conduct and performance of each sector to isolate factors that will have an impact on the wage rate and on male-female wage differentials.

Chapter five of the thesis analyses cross sectional wage data from the industry, testing the relative strengths of the pertinent variable in explaining the wage structure and also examining the occurence and magnitude of male-female wage differentials within the industry.

II. AN INVESTIGATION OF VARIABLES AFFECTING WAGE DIFFERENTIALS

A. Introduction

This chapter of the thesis reviews the literature dealing with concentration, unionism and other variables as they affect wage differentials. The main theories studied here are those proposed by Dunlop; Ross; Garbarino; Schwartzman; Segal; Weiss; Levinson; Masters; Bailey, King and Schwenk; and Reder.[1]

The literature in this field has centered around which of the factors affecting wages are the main determinants, either singly or in combination of industrial wage differentials. Included here are such factors as industrial concentration, degree of unionization, labour productivity and the product market environment. Studies investigating the effects of these variables come up with significantly different results and many are inconclusive. The divergencies in conclusions derived from the major studies in this area revolve around the following factors:

1. The choice of industries under study.
2. The development of the industry, whether it is increasing employment or cutting back on employment at the time of the study.
3. Business cycle behavior and how it affects the industry under study.

Overall, there are two hypothesis concerning the effects of concentration on wages; the high wage theory and the low wage theory.

B. High Wage Theory

The high wage theory postulates that firms in concentrated industries will pay higher wages than firms in less concentrated and compe-

titive industries. This follows from the theory that they have higher
long-run profits and are in a better ability-to-pay situation; they may
follow a long-run profit maximization policy and use part of their high-
er profits to pay higher wages in order to forestall industrial unrest;
they have a need for a skilled, dependable work force; and they are
more susceptible to union organization.

Firms in concentrated industries have higher long-run profits, de-
rived from their monopoly or oligopoly position and the type of product
produced. There have been a number of studies relating industry con-
centration with high profit rates.[2] Scheerer[3] sums this discussion on
profitability by saying;

> "It is not easy to obtain appropriate measures of
> profitability and concentration, and different
> analysts have used widely divergent measures and
> statistical techniques. Yet with only one signif-
> icant exception, they have reached the same con-
> clusion; that profitability rises with concentra-
> tion."[4]

With high profits, the firm does not have to adhere strictly to wage
and production policies geared for short run profit maximization. In-
stead they can follow policies such as paying high wages to gain pub-
lic approval, to either forestall or placate unions and avoid costly
labour disputes or to lower labour turnover. That is, they may follow
long run profit maximization policies.

Firms in concentrated industries are often capital intensive and
need skilled, dependable workers for efficient operation. Such work-
ers are more likely to be paid higher wages because of their human
capital characteristics. In addition, these firms are likely to pay
higher wages as a vehicle to reduce labour turnover which, in such
industries, adds significantly to production costs.

Finally, firms in concentrated industries may pay higher wages because of union organization of their workers and the pressure such organization can place on the employer for wage increases.

The fact that concentrated industries are more susceptible to strong union organization and control than less concentrated industries is seldom disputed. Unions are more likely to concentrate their organizational ability where there is the chance of organizing the greatest number of workers for the amount of effort and expense expended. Since firms in concentrated industries are usually large, with a larger labour force than firms in a less concentrated industry, a union concentrating its organizational ability on such firms is likely to succeed in unionizing a large number of workers at one time.

In addition, unions are more likely to succeed in a large firm operating in a concentrated industry since labour-management relations are more impersonal in large plants. One result of impersonal labour relations is the need for formalized grievance procedures which would be provided by a union. This additional benefit provided by the union is a positive factor in making an organizational drive succeed.

The consideration of a need for a skilled and dependable work force is also an advantage for union organization. Such workers are generally easier to organize than unskilled workers because they have lower turnover rates.

The fact that the workers are skilled has another advantage for the union in that they have a stronger bargaining position within the production process. This stems from the fact that they are less easily replaceable and the costs to the firm associated with labour turnover are high.[5] Management is more likely to grant wage gains to such skilled workers because of their high replacement costs and also because of

their need for a stable work force.[6]

It has been argued that firms in a concentrated industry could use their high profit rate to fight union organization rather than to pay high wages or to give in to union's demands and avoid labour disputes. There is evidence to support this proposition for the time period prior to 1935 since union organization was then more successful in competitive industries. However, the passage of the U.S. Wagner Act in 1935, restricting anti-union practises, diminished this advantage held by concentrated industries and facilitated strong union organization in U.S. oligopolistic industries.[7]

C. Low Wage Theory

The low wage theory hinges on the fact that a monopolist may also be a monopsonist or a wage leader in the labour market, and will therefore pay lower wages than a firm in a less concentrated industry.

In a perfectly competitive industry, neoclassical theory says that an employer will employ labour up to the point where the marginal net revenue product of labour (MNRPL) equals the wage rate as determined by the industry as a whole.

GRAPH 1
Wages and Employment in a Competitive Industry
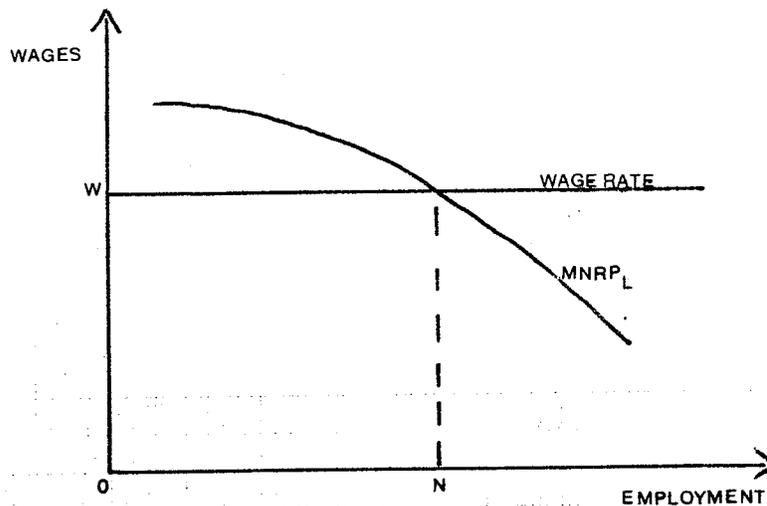
In the case of graph 1, the wage rate as set for the industry is OW and the number of people employed would be ON. At this point the number of labour units employed corresponds to the point where the wage rate (marginal cost of labour and average cost of labour) equals the marginal net revenue product of labour. Employing more labour would be adding more to the cost of production than the labour would be returning, on the margin. Employing fewer labour units would mean there was potential for increasing revenue in relation to cost, and the incentive would be for the employer to increase employment.

The employer in a concentrated industry will also employ labour to the point where the marginal cost of that last worker equals the marginal net revenue product of labour. The only difference in the analysis hinges on the fact that the shape and slope of the cost and revenue curves facing the firm will be different.

Since the employer may either be a oligopsonist, or will employ a significant percentage of the labour force in a given area; employing additional workers will necessitate raising the wage rate. The supply of labour curve faced by a firm in a highly concentrated industry (if you are assuming such a firm to be a monopsonist or an oligopsonist) is upward sloping, similar to the supply of labour curve facing the entire industry in a competitive model.

Employing more labour and raising the wage rate will also mean that the marginal cost of labour will be greater than the wage increment, since all workers, and not just the last worker hired, will have to be paid at the new rate. The marginal cost of labour curve will be above and have a steeper slope than the supply of labour curve.

GRAPH 2
Wages and Employment in a Monopsony
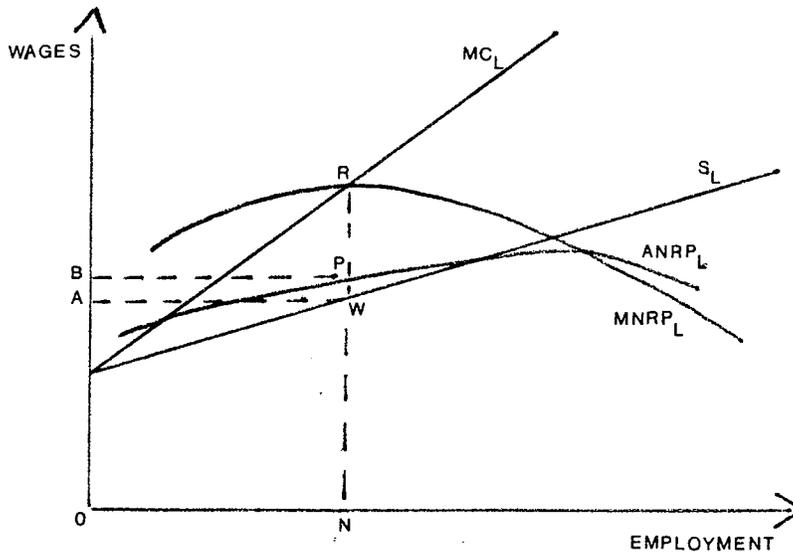
The monopsonist will still hire the number of workers correspond-
ing to where their marginal cost of labour equals their marginal net
revenue product of labour. With reference to graph 2, the firm will
hire ON workers, corresponding to point R. However, the wage rate will
be determined by the supply of labour curve, simarly to the competitive
example, but with the difference that the supply of labour curve lies
below the marginal cost of labour curve. Therefore, the wage rate for
ON workers will be OA, with the monopsonist capturing AB in excess pro-
fits.

Schwartzman[8] states (without citing back-up evidence) that the
monopolists' marginal net revenue product of labour will be lower than
a competitive firm's for any specified quantity of labour. Therefore,
it would follow that the wages paid by the monopolist would be signi-
ficantly lower.

This argument will only hold for cases where the monopolist or
oligopolist is also a monopsonist or oligopsonist. More usually such
firms are located in large labour markets and are competing for labour
with firms producing in other industries. If they are in reality com-

peting in the labour market they will face a relatively elastic supply
of labour curve, at least not as inelastic as was assumed in the pre-
vious analysis.

If the firm in the concentrated industry employs highly skilled
labour, it will in all probability be organized and subject to strong
union pressure on the wage rate. In this situation, a monopsonist may
be facing a monopolist (a case of bilateral monopoly). The resulting
wage rate will reflect the relative bargaining position of each. In
any case the final wage rate will probably not be as low as determined
by the monopsonist alone. However, a priori the final outcome of the
interaction will be indeterminate.

The low wage theory is not given much credance since the assumption
that a firm in a concentrated industry is likely to be in a monopsonis-
tic position has limited validity. Even if monopsonistic tendencies
are noted, the fact that the firm will probably be facing a strong union
on the question of wage rates will tend to wipe out any liklihood of
such a firm paying low wages.

The theory that firms in highly concentrated industries are likely
to pay relatively high wages would seem to be more plausible considering
their ability to pay, their need for skilled, dependable workers and
their liklihood of facing a labour union.

D. Previous Studies
Concentration's Effect on Wage Differentials

There have been an abundance of studies undertaken to measure the
impact of concentration, unionism and other selected variables on wage
differentials. The main ones are summarized here:

Schwartzman's study[9] was designed to test the theory that mono-

polies either raised or lowered wages in comparison to more competitive industries. He compared similar Canadian and U.S. industries that differed only with respect to their concentration ratios. He concluded that concentration was an inadequate determinant of wage differentials since such differences in wages paid by monopolists and those paid by more competitive industries were not significant.

Schwartzman's study started with the basic hypothesis that there is a significant difference between the wages paid by a monopolist and a competitive firm. The study was designed to test the statistical significance of wage differentials emanating from a difference in industrial concentration within the same industry group.[10] Schwartzman concluded that the differences in wages paid by oligopolists compared with competitive or less oligopolistic industries were not significant. Therefore, there was no evidence to back up the assertion that either the monopolists pay high wages or that they pay low wages. The study results showed that the dispersion within each group was greater than the dispersion of the group averages. This fact alone would tend to show that factors other than concentration were the primary factors creating wage differentials.

However, this conclusion of Schwartzman's was challenged by Weiss[11] who claimed that the result was due to the fact that Schwartzman's study rested on nine, relatively minor, industries and that a study using different, more significant industries in terms of their share of the economy's product would show different results.

Weiss designed his own test of the monopoly/wage hypothesis.[12] He tested for two hypotheses; first, that concentrated industries pay high annual rates for labour, and secondly, that these high earnings are higher than can be accounted for by the personal characteristics of the

labour involved.

The results of his study showed that concentrated industries do pay high wages for certain occupations, with the relationship being strongest for male production workers.

However, when Weiss introduces additional variables of personal labour characteristics into his analysis, the relationship between concentration and earnings was no longer   significant (ie. it was negative as often as it was positive); although the relationship between unionism and earnings was not significantly affected. Since this relationship between concentration and earnings was strongest for male production workers where the threat of unionization is greatest, this would seem to suggest that employers in concentrated industries pay high wages and receive superior labour in return, the initially high wages prompted by actual (or threatened) unionism.

Therefore, Weiss' first hypothesis that concentrated industries pay high wages holds up although the second one, that these high wages are higher than can be accounted for by the personal characteristics of the workers, should be rejected. Weiss makes the following comments:

> "All of the conclusions of this paper are necessarily tentative because the indexes of concentration used are imperfect, because industry definitions are arbitrary, because weights used in combining markets to match Census industries are arbitrary, and because the Census places some persons in the wrong industries. It might be argued that the nonsignificance of concentration as a factor in income determination once personal variables are introduced is due merely to measurement errors. On the other hand, the significant results before personal characteristics are introduced suggest that much of the effect of monopoly power has in fact been identified, and that at least this identified portion is almost entirely accounted for by personal characteristics."13

Other studies made on this point, most notable S. Slichter's[14],
have argued that not all of the variation in wages attributed to con-
centration can be explained by personal characteristics of the la-
bour involved. Slichter made the point that, if personal characteris-
tics were the explanatory variable in the payment of high wages, then
employers under the greatest competitive pressure would pay high
wages. In such a case, paying high wages would assure them superior
labour and they would, in fact, be paying less per productivity unit
for labour.

Despite the many studies casting doubt on Weiss' final results,
Weiss made an important point by including such variables. He under-
lined the necessity for considering variables that could act in com-
bination with those usually considered; concentration and unionism.
He tested the hypothesis that concentration might be a proxy for other
factors, and that accepting a positive correlation between concentra-
tion and earnings might be masking other important correlations. The
fact that his results were not conclusive evidence that personal char-
acteristics explain the concentration/earnings hypothesis is not to
deny the possibility that the productivity of labour is also an impor-
tant variable to consider.

Segal's[15] non-quantitative study centered around the need for var-
iables, in addition to concentration, to explain and predict wage dif-
ferentials. Specifically, his paper investigated;

> "The question of the mechanism through which mar-
> ket structure exerts its impact on union wage-
> gaining ability."16

The additional variables Segal singles out as having an important
impact on wages were;

1. The geographical area of production.
2. The characteristics of demand, (ie. the elasticity of the product's demand, whether the product is a producer's or consumer's good, etc.).
3. The number and size distribution of sellers and buyers.
4. The conditions of entry into production.
5. The nature and degree of product differentiation.

> "Accordingly, insofar as the market structure proposition has any validity, each particular feature and any combination of them must be viewed also as factors influencing union ability to make wage gains."17

In order to simplify his study and to investigate polar cases, he limited his analysis to three of the five variables, these being;

1. The geographical boundaries of markets in which the industry's firms operate.
2. The number and size distribution of sellers and buyers.
3. The conditions of entry for new firms.

He then saw the necessity for separating industries by their geographical market size and market structure for the purpose of comparing polar cases. This subdivided the industries into;

1. A non-competitive industry in a national market.
2. A competitive industry in a national market.
3. A non-competitive industry in a local market.
4. A competitive industry in a local market.

which took account of the three variables he considered most important to the analysis.

The conclusion he reached was that, the ease with which unions can negotiate wage increases is positively correlated with the degree of concentration and the size of the product market.

A union can more easily organize and maintain its strength if the industry is concentrated than if it is competitive. Segal explained this with reference to the uniformity of the firm's pricing policies and their ability to pass increases in costs (wages) on to the consumer in the form of increased price. This turned on the fact that the firm

in a concentrated industry is in a better 'ability to pay' situation,

and does not have to worry about losing its market to new entrants.

> "...in the noncompetitive industry union negotia-
> ted wage levels can be instituted without any dan-
> ger of being eroded by departures from the pattern,
> locational shifts to lower wage areas, or a rela-
> tive rise in the nonunion sector. This implies
> that in many cases the union can negotiate wage
> increases without any obvious impact on the em-
> ployment of its members even though, at the time,
> there are no over-all demand pressures or short-
> ages in the relevant labour markets."18

With respect to geographic factors, one could expect, ceteris pari-

bus, that a union in a local industry would have better wage gaining

ability than a national industry of the same concentration. Local union

leaders are in a better position to determine a wage policy that will

be relatively free of intra-industry competition. In addition, a local

market union would be in a relatively better position to organize com-

peting firms in contrast to its national counterpart.

However, regional differences in a union's ability to organize and

maintain its position are also important. The following variables will

influence such regional differences; the degree of industrialization

and urbanization, the region's industrial composition, and the region's

legal framework. An additional point to note here is that, if the union

has only organized a small percentage of the labour in a particular in-

dustry, the nonunion sector will be more important in determining wage

policies than would market structure.

Segal's conclusion was that unions organizing firms in a non-com-

petitive local industry would be in the best wage gaining position, while

a union organizing in a competitive, national industry would be in the

most disadvantaged position.

Segal's argument never dealt with the theory of the market structure's impact on wage differentials independent of a union's influence. The manner in which he presented his arguments suggest that the industry's competitiveness or noncompetitiveness will only affect wages insofar as it acts to facilitate and maintain union strength. This presentation implies, (without explicitly stating) that there is no inherent tendency for a concentrated industry to pay either higher or lower wages in relation to a less concentrated industry. Such tendencies only become manifest through the medium of union organization.

Later in this chapter, arguments will be presented to counteract this implied assumption. However, the influence of union organization is an important factor in determining wage differentials. Many studies (Garbarino[19], and Levinson[20]) give credance to the theory that it is the combination of unionism and concentration that has a strong impact on wage differentials; more than the unionism and concentration variables viewed separately.

Unionism's Effect on Wage Differentials

Major studies investigating the effects of union organization on earnings have been; Douglas , Ross , Dunlop , and Lewis.[21]

Douglas argued that unions are instrumental in raising the wages of unionized workers relative to non-unionized workers only in the early stages of unionization. However, once the union/nonunion wage differentials are established they tend to be stable, and unions meet with little success in further widening them. Extrapolating then, this means that the union's development during the specific time of the study is the important variable to consider, rather than simply the fact of whether or not the industry is unionized.

Ross's[22] study came to the conclusion that union organization ex-
plains much of the variation in wages. However, he divided the in-
dustries under study into three groups according to their degree of
unionism, and his results showed greater diversity in wage increases
within each group than between groups. In addition, none of the indus-
tries with the greatest increase in earnings fell within the bounds of
the most strongly unionized group. If the existence or non-existence
of unionization (and its strength) were a decisive factor in wage de-
termination, these wide divergencies should not exist. Therefore, al-
though Ross's study claimed to demonstrate that unions were the explan-
atory factor when investigating wage differentials, his findings are to
be doubted.

Lewis' study began with a review of the previous studies dealing
with unions and wage differentials. See appendix I for his aggregation
of these studies showing their estimations of unions' relative wage
effects.[23]

His conclusions were that unions' effects have varied throughout
time:

> "The evidence is strongest for the period beginning
> in the late 1930's and ending at the end of the
> war or shortly thereafter. Five of the seven stu-
> dies...that provided data for that period show de-
> clines in the relative wage effects of unionism
> from the beginning to the end of the period."[24]

He also observed that, in the short-run, unionism has tended to
make the money wages of labour somewhat rigid against general price
level movements. His own study showed a negative partial correlation
between   wages and the rate of inflation.

> "Throughout the last twenty-five years and very
> likely also in earlier years (except those of
> rapid deflation), the average relative wage ef-

> fect of unionism, as measured ... in per cent per
> percentage point difference in extent of unionism,
> probably at no time exceeded 0.25 and may have
> been 0.05 or less at the end of and just follow-
> ing World War II."25

From his own study, Lewis estimated the average relative wage ef-
fect of unionism to be from 0.10 to 0.20 percent per percentage point
difference in the extent of unionism. Looking at the effect in a dif-
ferent way; unionism changed the amount of relative wage differential
between industries by no more than two to four percentage points in
the late 1920's and by no more than four to eight percentage points up
to 1958 (the time of his study). Thus, Lewis seemed to be saying that
unionization accounted for very little of the observed wage differen-
tials between industries. However, he failed to expand on this and pos-
tulate alternate variables to account for the variation.

John Dunlop, commenting on Lewis' article, claimed that Lewis
failed to acknowledge unionism's most important effect; not on the wage
differential _per se_; but rather on the fundamental changes it effects
on a firm and its surrounding product and labour markets.

> "All we know about collective bargaining suggests
> that the most important effects involve funda-
> mental changes in an enterprise and its sur-
> rounding product and labour markets. It is
> really not possible to leave the enterprise and
> its markets alone, introduce a union, and then
> see what happens to the wage structure. The in-
> troduction of unionism typically involves a
> wholesale transformation."26

He then cited the important changes unionism introduces as being;

1. A change in the quality of the labour force.
2. A change in the content of jobs.
3. A change in the division of labour.
4. A change in the method of wage payment.
5. A change in the division of compensation between wages and fringe
   benefits.