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FROM A HISTORICAL DEVELOPMENT OF CANADIAN
TRADE UNION GROWTH TO RECENT THEORETICAL
AND EMPIRICAL CONTRIBUTIONS TO THE ANALYSIS
AND INTERPRETATION OF STRIKE ACTIVITY

by

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INTRODUCTION

From the end of the Second World War, the growth and impact of the Canadian organized labour movement has increasingly come to the forefront, changing the nature and scope of collective bargaining relations between management and the union. Although then, as now, labour unions continually strive to improve the working conditions of its membership. To achieve their ideological objectives, unions have employed a variety of pressure tactics that would hopefully induce the employer to concede to union demands. The most potent weapon the union has at its disposal is the strike. The threat of a strike is an important source to the union in terms of acquiring pecuniary and non-pecuniary gains. Even if revenue lost to the firm and wages to the union are minimal, it is the expected cost of strike activity that each party might incur that drives them to a negotiated settlement. The ability of management and the union to impose these potential costs if strike activity was to occur while maintaining the ability to absorb any losses, underpin the bargaining relationship. Hence, any discussion of the theories of strike activity should include participant costs as playing a major role.

The Thesis is organized as follows: Chapter I presents a historical development of Canada's trade union movement from its early nineteenth century beginnings culminating with the amalgamation of the Canadian Congress of Labor (CCL) and the Trades and Labor Congress of Canada (TLC) in 1956, forming

the Canadian Labor Congress (CLC).

Chapter II is focussed on the current union situation in Canada with respect to its rate of growth, membership and structure. Specifically, the prominent unions and central labor congresses that comprise a majority of Canada's labor movement are presented. The various strata of union organization that currently exist are also discussed.

Chapter III concerns itself with the development of trade union ideology that determines how the union will negotiate as the collective agent representing labour at the bargaining table. From the union perspective it is important to promote cohesive kinship that fosters solid membership backing in terms of acquiring concessions from management.

The perspective of management is also developed with reference to the often polarized ideologies that characterize the very nature of each party. Often these views are matters of deep-rooted conflicting beliefs through which each party adheres to in order to support the appropriate strategy as a means to a justifiable end.

From an economic perspective, the major objectives of the union are treated in a bilateral monopoly framework with the necessary implications focussed on the wage gain-unemployment trade-off.

In Chapter IV, the underlying assumptions of the Marshall-Hicks laws of derived demand are discussed with respect to how the union would wish to affect each factor in order to minimize the adverse consequences of a reduction in employment.

Chapter V develops the perspective of the trade union as an economic institution, in that, an early economic model of trade union behavior conceived by J.T. Dunlop and extended by A.M. Cartter, establishes the union's and employer's wage preference functions. From this point, the role of asymmetric information is incorporated into the analysis leading to the derivation of a contract zone.

Chapter VI examines with specific reference to the seminal contribution of John Hicks, the perspective of asymmetric information, in that faulty negotiations (accidents) may be interpreted as a result of divergent expectations that are based on a limited set of informational variables. Hence, the degree of asymmetric information may contribute to the formation of non-coincidental expectations, and higher rates of strike activity.

Extrapolating from the Hicksian foundation, a summary of the most recent major theoretical contributions to the analysis and interpretation of strike activity and their components is undertaken.

The theoretical and empirical models of strike activity may be grouped into four categories: (1) Political models that exhibit either non-maximizing behavior or divergence between the preferences of the union leadership and the union membership itself. (2) Pareto-optimal accident models, which assume rational maximizing behavior by each party. (3) Interactive bargaining models, which propose strategic interaction as the key element to a successfully negotiated outcome, and (4) Sociological-institutional-political models, however these models are not addressed by the Thesis for they are not grounded in economic theory, and as such, provide no economic interpretation of strike activity.

To a large extent, the theoretical and empirical investigations are very much in their embryonic stages of development and must be acknowledged not only for their 'results', but for their contributions to this expanding field of research.

Chapter VII is very similar in structure to Chapter VI; however an empirical investigation of the most recent major contributions to the analysis and interpretation of strike activity is undertaken. For the most part due to their significance, these investigations originate from the

authors of the theoretical models. Other relevant and important empirical contributions have been acknowledged where appropriate.

The Thesis provides no definitive answers. It does, however, provide a point of departure, a synthesis of past and present models of strike activity that have made a significant theoretical and empirical contribution and serve to a large extent, as the groundwork for future research in this field.

Glenn G.J. Brimacombe

Acknowledgements

Although this long process has come to a conclusion, it has not been without its proverbial trials and tribulations. This has been a journey in hindsight that has proved once again, that perserverance pays many more dividends than talent alone. I would like to take this opportunity to acknowledge the people who have contributed with their time, experience, and knowledge in the preparation of the Thesis, Professor Mario Seccareccia and Professor Gilles Grenier. Many thanks to Lois Callan for her vigilant proofreading skills. Finally, my most appreciative thanks to my supervisor, Professor Camilo Dagum for his genuine interest and concern, timely suggestions, experience and friendship. I take full responsibility for all errors that exist in the Thesis.

I. HISTORICAL DEVELOPMENT OF CANADA'S
TRADE UNION MOVEMENT

Throughout Canada's ever changing economy characterized by a process of evolving institutional and societal changes, there has been one relatively constant factor through modern times: labour organizations, trade unions and professional associations seeking to improve the collective protection and enhancement of their members' well-being (pecuniary and non-pecuniary alike). This Chapter deals with the growth of the Canadian labour movement from the early nineteenth century culminating with the amalgamation and birth of the Canadian Labour Congress (CLC) in 1956.

The expansion of Canada's labour movement has been characterized by intense factionalism and inter-union rivalry as many factors contributed to Canada's unequal rates of growth from east to west.

From the early stages of organized labour development, Canada displayed an international flavour of unionism influenced by the United States and Great Britain. With the high degree of accessibility to Canada's economy it was not surprising that a former colony would be subjected to to a more mature society that had previously incorporated unionism into its culture.

Elements such as geography, cultural and political differences, anti-American (nationalistic) sentiments, unequal market access, resource and climatic opportunities

contributed to unequal rates of economic growth and played a significant role in the development of Canada's labour movement.

1800 - 1886

With Canada's resource-oriented economy characterized by specialization in agriculture and associated primary industries, domestic production in many sectors, a small population base dispersed across a large territory, restricted urban and industrial development and limited transportation and communication services, it was not surprising to observe the slow growth of the labour movement in the early nineteenth century.

Through the early 1820s, unions were recognized as 'local circles' and were known to have existed in lower Canada. The first recorded union establishment was a boot and shoe worker's organization in Montreal (1827). However the printers were the first craft to maintain a permanent organization.¹ In 1827, a group of Quebec City printers also formed a trade union - mutual aid society that controlled wages in their trade, provided for the unhealthy, while establishing social and recreational activities for their membership. Similar printer's unions were formed in Toronto (1832), Hamilton and Montreal (1833). In later years local unions were organized in both Ontario and Quebec by such

¹ Reflecting a trend that had occurred in the United States and other western countries.

crafts as carpenters, coopers, stonemasons and shoemakers.² From 1800 to 1850, unionism was restricted in scope to the craftsmen minority with the creation of local unions, of which the membership was distinguished by immigrants from Great Britain settling in major urban areas.

The growth of the labour movement became more rapid through the period of the 1850s to the early 1870s as it was facilitated by the concomittant expansion in unionism in the United Kingdom and the United States. Leadership, direction and guidance emanated from the American unionists and British skilled workers who had benefitted from past union experience. Within this period, new organizations such as moulders, sailmakers, shipwrights and caulkers had been established as well as the Amalgamated Society of Carpenters and Joiners and the Amalgamated Society of Engineers (machinists), with the help of dedicated British immigrants.

3

In the last half of the century, many local unions on both sides of the border merged to form 'International' unions.⁴ These were precipitated by the increased mobility and competition amongst Canadian and American skilled workers. Hence, to maximize union membership and clout, while minimizing inter-union rivalry, the incentive to

² Stuart Jamieson, Industrial Relations in Canada. MacMillan Book Company of Canada Ltd., 1973), pp. 12.

³ Ibid, pp. 13.

⁴ In fact a misnomer, referring to Canadian chapters of American-based labour organizations.

amalgamate was stimulated. The first American international union branch to locate in Canada was the National Union of Iron Moulders (1859), establishing locals in Toronto, Hamilton, Brantford, London and Quebec. The National Typographical Union (1865) formed a liaison with local printer unions in Saint John, New Brunswick and later the same year in Toronto, while renaming itself the International Typographical Union (ITU).

The growth of international unions in railway transportation was assisted by the construction of Canada's 'National Dream'. Canadian locals of the International Brotherhoods of Engineers and Conductors were formed in the 1860s, of Firemen in the 1870s, and of Trainmen in the 1880s. These brotherhoods were known as 'running trades'.⁵

In addition to the rise of international union affiliation based upon industries and trades, there was also the beginnings of organizing local unions into 'local councils', with the intent being to pursue with greater intensity common labour objectives. The first significant step in this direction was the creation of the Toronto Trades Assembly in 1871, representing fifteen local unions. In 1872, the union leaders were jailed after co-ordinating a walkout in favour of nine-hour working days. This walkout served as a catalyst in terms of pressuring the Canadian

⁵ Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 13.

Government to pass new legislation that was similar to that of Great Britain.⁶ In 1872, the Canadian Government passed the Trade Unions Act and the Criminal Law Amendment Act, declaring trade unions as legal entities exempt from criminal conspiracy and strike damages.⁷ The institutional structure of trade unionism and collective bargaining had been laid down and was seen as a significant step to rapidly increase its growth in Canada, as the "removal of legislative barriers to the organization and activities of trade unions together with the short period of unprecedented prosperity in Canadian industry at about the same time, provided a stimulus for a further expansion and consolidation of unions".⁸ The government enacted legislation (1900: The Conciliation Act, 1903: The Railway Disputes Investigation Act, 1907: The Industrial Disputes Investigation Act) that would simplify and stress the role of collective bargaining.

With the decision to follow the United States' impetus of

⁶ This newfound social tolerance of collective labour action was an unorthodox departure from past traditional thinking. Throughout the eighteenth and nineteenth centuries, the government's political dogma had labelled trade union leaders as 'radicals' and 'outlaws' and therefore were subjected to limited action through legislation. People believed personal gain was a function of work effort, leisure was a vice, thus the poor were appropriately rewarded for they had deserved their fate by being lethargic, lacking personal initiative to improve their situation.

⁷ W. Marr and D. Paterson, Canada: An Economic History. (Gage Publishing Ltd., Canada, 1980), pp. 211.

⁸ J.T. Montague, "The Growth of Labour Organizations in Canada 1900 - 1950." (in Canadian Labour Economics, edited by A.E. Kovacs, McGraw-Hill Co. of Canada, 1961), pp. 18.

forming a national body (1866 to 1872), the Toronto Trades Assembly co-ordinated the unification of thirty local unions to form the Canadian Labor Union (1873), with its main objective to organize trade unions across Canada. Unfortunately the CLU was not able to survive the depression and accompanied unemployment of the mid 1870s, disbanding in 1877.

In 1869, The Noble Order of the Knights of Labor began to broaden their base within Canada by organizing the skilled and unskilled workers into trade and district assemblies, forming their first local assembly in 1881. By the end of the 1880s they had attracted a total union membership of sixteen thousand (including two hundred and fifty local and seven district assemblies).⁹ It seemed the Canadian surroundings were most agreeable to the Knights of Labor's organizational structure. In particular, the Knights of Labor made substantial progress in the province of Quebec, attributable to a degree, to the union's ability to heed the advice of the Roman Catholic clergy.

⁹ Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 14.

In 1883, a convention of trade unions and Knights of Labor assemblies was held in hopes of resurrecting a new Canadian Labor Federation (replacing the now defunct Toronto Trades Assembly). The new federation was named the Canadian Labour Congress (CLC). However in 1886 a new federation was formed,¹⁰ the Dominion Trades and Labor Congress. They met annually from 1887 to 1891 as they once again renamed themselves in 1892 the Trades and Labor Congress of Canada (TLC). The TLC in its early years was devoted to securing legislative reform as provincial executives were created to facilitate the appropriate changes. The Congress pursued the implementation of Federal legislation concerning industrial disputes and fair wage on Government contract work.¹¹

1886 -1920

Soon after it was established, the TLC wrestled with the issue of dual unionism.¹² This created difficulties for the TLC as it was composed of affiliates from the Knights of Labor as well as branches of the AFL. Given that friction had existed between the centralized organization of the Knights of Labor and the de-centralized structure of the AFL in the United States, the TLC was manoeuvred into a

¹⁰ The same year in which the American Federation of Labor (AFL) was founded under the leadership of Samuel Gompers.

¹¹ J.T. Montague, "The Growth of Labour Organizations in Canada 1900 - 1950". (in Canadian Labour Economics, edited by A.E. Kovacs, McGraw-Hill Co. of Canada, 1961), pp. 27.

¹² The AFL and its affiliated unions pressured the TLC to follow the AFL's principle of exclusive jurisdiction of its member unions over workers in specific trades or industries (i.e. the eradication of any competing union organizations).

position of making a choice.

. For many years the TLC had avoided any confrontation by adhering to a policy of strict neutrality. However with the Knights of Labor disbanding in the United States and the increasing power of the AFL, the TLC finally yielded to the demands of the latter in 1902 by amending its constitution on the issue of exclusive jurisdiction. Hence The Knights of Labor and several Canadian-based unions were expelled. ¹³

These expelled unions amalgamated in 1902 to form the National Trades and Labor Congress, the new nationalistic labour federation. Later re-naming themselves The Canadian Federation of Labour (CFL) in 1908. Soon after the Knights of Labor left the federation. The CFL was committed to organizing labour along national lines and supported policies that encouraged the development of Canadian industry and jobs, protested import competition from the United States, while endorsing the creation of an autonomous Canadian shipbuilding industry.¹⁴ In 1910 the CFL was joined by the Provincial Workmen's Association (PWA) of Nova Scotia.

In western Canada, similar feelings of discontent began to manifest themselves. The American Labor Union, the

¹³ It was this act, which explicitly confirmed the TLCs commitment to working with international unions affiliated with the AFL.

¹⁴ W. Marr and D. Paterson, Canada: An Economic History. (Gage Publishing Ltd., Canada, 1980), pp. 210.

Western Federation of Miners, and later, the Industrial Workers of the World (considered as left-wing radical organizations in opposition to the conservative craft union policies of the AFL) organized in the early 1900s branches of loggers, miners and railway workers in British Columbia and Alberta.¹⁵ For a short period, these organizations were successful in luring away several affiliates from the TLC. However, these gains were shortlived after several bitter and drawn out strikes.¹⁶

These losses of membership marginally affected the TLC from 1902 to 1920 as they continued to broaden their union base. The buoyant economy was favourable to union expansion. "The rapid industrial growth, labour shortages, inflation, and serious wage-price lags during World War I and the immediate postwar period were additional stimuli to the growth of Canadian trade unions, TLC and opposition alike. By 1921, the total membership of the TLC attained a peak that it was not to reach again until well into World War II."¹⁷

Unfortunately in 1920-21, the changing structure of the economy weakened the Canadian labour movement, signalling a decade of declining union membership. In effect, this

¹⁵ Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 18.

¹⁶ This is not to take away from the importance in which these radical groups laid down the foundation for the future direction of western Canada's labour movement.

¹⁷ Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 18.

decline was foreshadowed by events across the border as 'parent' organizations were suffering from the AFLs inability to adapt to the changing economy characterized by mass production techniques and labour organization along industrial lines.

Trade unions first appeared in factories and then grew among the skilled tradesmen who were often in short supply, thus occupying an enviable position in the workforce. The organization of labour along craft lines was more often the rule than the exception. This was in the best interests of the workers who wished to limit the amount of competition within their respective craft. Craft unions were opposed to the organization of labour along industrial lines for it would reduce any one craft to a minority position within the industrial union, resulting in a loss of influence.

The emergence of industrial unionism began to take root when the development of technology rendered many crafts obsolete, transforming the role of workers into semi-skilled employees. Thus the rise of the factory system, created a new pressure as demand for industrial unionism grew. As often was the case, this new void was filled by incoming organizations from the United States.

For both countries during this period, prosperity was coupled with price stability while wages rose due to significant increases in labour productivity. This fact in itself undermined one of the central reasons to join a

union, for workers who were employed in the new and unorganized mass production industries were experiencing the largest (in percentage terms) wage gains.¹⁸

The TLC began to experience rank and file dissatisfaction in western Canada for a number of reasons; the TLCs organizational structure was ill-suited to the growing primary industries in British Columbia, the Western Federation of Miners representing the radical wing of dissident American organizations and prominent socialist union leaders mainly from Britain had developed a strong base, post-war adjustments had irritated a majority of the workforce located in major urban areas, the TLC had been heavily criticized for its ineptitude in organizing unskilled and semi-skilled workers in the primary and manufacturing industries, the TLCs 'close' ties with the AFL in terms of policy and their official approval of military conscription. These factors all contributed in motivating the radical faction of the congress to press repeatedly for concessions in which they were consistently rejected. ¹⁹

In response to the TLCs inflexibility, dissident affiliates convened in Calgary (March, 1919) out of which One Big Union (OBU) was borne. The OBU constitution was one of 'revolutionary unionism', created to oppose the TLC while providing a firm commitment to organize labour on industrial

¹⁸ Ibid, pp. 19.

¹⁹ Ibid, pp. 19.

rather than trade lines.

Coincidentally the OBU immediately gained prominence as the Winnipeg general strike broke out during the Calgary conference, gaining substantial support from Western labour organizations, while convincing several TLC councils to defect.²⁰ However, shortly after the general strike, internal rifts and strong Federal and Provincial opposition contributed to OBUs long term decline.

1920 - 1940

The CFL experienced a brief revival as many unions felt betrayed by the TLC conservative craft union policies and feared the radical dogma of the OBU. The CFL represented a moderate medium, raising its membership to a inter-war peak in 1923.

One of the unique characteristics of Canada's trade union movement was the growth of Quebec's labour movement. In 1921 the Confédération des Travailleurs Catholiques du Canada (CTCC) was founded and was ruled over by the Roman Catholic clergy. Their goals were naturally to improve the socio-economic welfare of their members, but also to protect the rights of French-Canadian workers. The creation of the CTCC may be viewed as a reaction to the increasing presence of

²⁰ In December 1919, the OBU had a membership of forty-one thousand five hundred workers, in excess of one hundred locals and eight central labour congresses.

English-speaking Canada and American Influences.²¹

Quebec was composed of a population of more than eighty percent French speaking and greater than eighty-five percent of Roman Catholic faith. With tradition upholding, the role of the clergy "had been preoccupied with maintaining the identity of their people as a distinct culture in the midst of a predominately 'alien' and English speaking society."²² This policy of direct autonomous control might have been an overreaction, for Quebec had received certain guarantees under the British North America (BNA) act, namely, control over its educational system, natural resources and labour, as well as recognized legal status equivalent to that of English Canada,²³ although in practice, inequities were prevalent.

However, due to the social isolationist stance of the clergy, their agrarian economy had failed to progress and adapt efficiently to the structural changes taking place in the Canadian economy. Many Quebecers viewed industrialization as the prime force that would destroy the cultural fabric that had been protected so jealously. This 'industrial invasion' was primarily directed and funded by english capital flowing into Quebec, creating a division of labour in that the english occupied the more prestigious and

²¹ W. Marr and D. Paterson, Canada: An Economic History. (Gage Publishing Ltd., Canada, 1980), pp. 210.

²² Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 32.

²³ Ibid, pp. 32.

lucrative positions while the french held the majority of semi and unskilled jobs.

This new transformation of Quebec was feared most by the clergy, for the assimilation of the french might result in the loss of their ties to language and culture, not to mention the clergy's diminishing voice in how the province was to proceed.²⁴

The origins of the CTCC go back to a lockout in the Quebec boot and shoe industry, in Quebec City (1900). To resolve the conflict of union recognition and wage increases, the Archbishop of Quebec was appointed as mediator, recommending the unions ammend their constitution to bring them in line with Pope Leo's encyclical 'Rerum Novarum', published in 1891.²⁵

²⁴ Hence the clergy endorsed a policy of cultural separatism, in the hopes of decreasing the dependence of French-Canadians on an english speaking society.

²⁵ Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 35.

As a result members of the clergy began to actively participate in the organization of pulp and paper and asbestos workers, miners, building tradesmen, shipyard workers and longshoremen. These Catholic unions banned the use of strikes as a bargaining tactic, instead stressing cooperation and harmony when concluding negotiations.

The establishment of these 'syndicats' ran into stiff opposition from the TLC and CFL. Often they were criticized by rivals on charges of strikebreaking, undercutting union standards and giving in to the employers.²⁶

In 1918, several Catholic unions merged, forming the National Central Trades Council in Quebec City. In succeeding annual conventions, a framework was developed and put into place, facilitating the creation of a province wide federation of catholic unions, naming themselves the CTCC in 1921.

In the late twenties, the CFL, the Canadian Brotherhood of Railway Employees (CBRE),²⁷ OBU, and other unaffiliated organizations, amalgamated forming the All Canadian Congress of Canada (ACCL) in 1927. Stating their objectives; "to achieve the complete independence of the Canadian labour movement by removing every vestige of foreign control and by

²⁶ H.A. Logan, Trade Unions in Canada. (Toronto: MacMillan, 1948), pp. 571.

²⁷ The CBRE was expelled from the TLC in 1921 as its jurisdiction overlapped with the AFLs International Brotherhood of Railway and Steamship clerks.

organizing the workers in Canada in industrial unions covering every Canadian industry."²⁸ However, like the trend of its predecessors, the ACCL experienced a brief expansion followed by long-term decline.

In the early thirties, the TLC and ACCL absorbed pronounced declines in union membership due to the severity of the great depression and increasing discontent of the membership with respect to the leadership of both congresses. This problem was compounded by the rise of the Worker's Unity League, a new 'revolutionary' federation conceived by the Communist Party of Canada. The federation disbanded in 1934 to accommodate the Communist Party line.

Concurrently, new developments in the United States were to have repercussive effects on labour organizations in Canada. The Passage of the National Labor Relations Board (Wagner) Act in 1935, entrenched the unions legitimate right to organize and bargain collectively while rallying Canadian labour establishments to demand for equitable 'legal' treatment.²⁹

²⁸ H.A. Logan, N.J. Ware and H.A. Innis, Labour in Canadian-American Relations. (Toronto: Ryerson Press, 1937), pp. 38.

²⁹ In 1944, the Canadian Government issued an order-in-council guaranteeing employees the right to form a union, laid down criteria for determining a bargaining agent, established procedures for obligatory collective bargaining and created a Labour Relations Board to arbitrate over unfair labour practices.

The new formation of the Committee for Industrial Organization (CIO), within the AFL contributed to growth within their labour movement. The CIO rapidly experienced labour union additions in such fields as steel, automobiles, rubber and chemicals.³⁰ This factor alone affected enormously membership levels of the TLC. However, charges of dual unionism began to surface, with the end result being the expulsion of the CIO from the AFL in 1937.³¹ Given the ideological position of the AFL and its strong ties to the TLC, it was not surprising that CIO affiliates in Canada were likewise expelled from the TLC in 1939.

In the meantime, the ACCL was exposed to many of the same conflicts that resulted in substantial losses of its membership. In 1936, several dissident unions joined together, forming a new Canadian Federation of Labour that experienced a long downward decline to fewer than four thousand members by 1950.³²

In 1940, One Big Union withdrew from the ACCL, leaving them with a small number of 'purely Canadian unions'.³³ However, the CIO had emerged as the new focal point,

³⁰ Much of this organizational momentum was carried over into Canada, additionally fueled by 'independent' union growth that eventually joined the CIO.

³¹ As a result the Congress of Industrial Organization was formed in 1938.

³² Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 24.

³³ The dogma of anti-American domination and Canadian nationalism did not have the attraction to maintain a national federation outside of the TLC.

organizing dissident unions along industrial lines teamed with a more radical philosophy (at the time) of increased government intervention in economic matters. It was this foundation that led to seven Canadian branches of the CIO that had been expelled by the TLC, to join the ACCL in 1940, re-naming themselves the Canadian Congress of Labour (CCL).

1940 - 1950

The formation of two national federations in no way ignited jurisdictional disputes for they were both pre-occupied with the task of expanding their organizations and representing their membership at the negotiation table.

Nevertheless the TLC and most notably the CCL began to experience growing pains as the expanding membership began to alter the distribution of the congress. The Canadian affiliates of the CIO unions began to shift the balance of power. This new 'voting power' had far reaching effects in terms of influencing elections and created resentment among the older and more established unions.

Additionally, a new controversial issue created dissension and splits within the TLC and CCL. The domination of certain affiliated unions by communists began to raise fears over the direction of the congresses. The communist force had to be reckoned with for they "had proved to be the ablest labour organizers in Canada."³⁴ To deal with this

³⁴ Stuart Jamieson, Industrial Relations in Canada. (MacMillan

threat, the CCL waged a lengthy, bitter conflict between the executive and the pro-communists. In the end, the anti-communist movement prevailed within the congress, winning crucial resolutions at conventions that stemmed the flow of communism within the CCL.

Meanwhile the TLC had followed a policy of polite tolerance, for some communist members occupied leadership positions among affiliates. Only in the late 1940s did tensions erupt, as domestic disputes within the communist bloc of the congress began to divide and weaken its previous support of the TLCs policies.

The TLC was under severe pressure from the AFL, eventually capitulating to their demands in 1949, stating, "the evidence presented...discloses a shocking picture of the influence wielded by the communists in Canada in the affairs of the TLC, and calling on the offices of the TLC to exert vigorous action to eliminate completely every vestige of communist influence and control."³⁵

To conclude matters the TLC and CCL in late 1949 expelled other communist dominated affiliated unions while trying to re-organize them under non-communist leadership while providing assistance to international unions to deter the communist surge.

Book Company of Canada Ltd., 1973), pp. 26.

³⁵ P. H. Norgren, *The Labour Link Between Canada and the United States*. (Industrial and Labor Relations Review, October, 1950), pp. 49.

1950 - 1956

In the beginning of the post World War II era, the trade union movement appeared to have stagnated in terms of organizational increases. The TLC and CCL both addressed this threatening issue by deciding to merge together in April 1956 to form the Canadian Labor Congress (CLC),³⁶ recognizing the fact that "it had become clear that only if organized labour pooled its resources and personnel could it hope to organize the unorganized and extend unionism into new fields, particularly the large and growing field of white collar work."³⁷

Later in the same year the scaled down remains of OBU joined the CLC. Which until now, still remains Canada's largest voice on matters of labour policy and direction.

³⁶ In 1955 the merger of the AFL and CIO in the United States had virtually made the Canadian amalgamation a fait accompli.

³⁷ Stuart Jamieson, Industrial Relations in Canada. (MacMillan Book Company of Canada Ltd., 1973), pp. 31.

II. THE CURRENT UNION SITUATION IN CANADA

In Canada, the beginnings of the union movement are approximately one hundred and fifty years old. The growth of unionism in terms of numbers has been characterized by fluctuation. After the First World War there had been substantial growth through the 1920's until the great depression dissolved many organizations. Through the Second World War coupled with the rise of industrialization, the number of union members doubled during the war years, reaching one million in 1949, two million in 1968 , three million in 1976 and 3.4 million in 1980. In 1986, there were approximately 3.7 million union members forming twenty-nine point seven percent (29.7%) of the civilian labour force or thirty-seven point seven percent (37.7%) of the non-agricultural labour force. Table 1 displays the growing trend of Canadian union membership from 1960 to 1986.

The historical union objectives remain essentially unchanged: to organize workers and negotiate better working conditions. Initially, unions sought to achieve survivability and recognition of existence. Once unions had been legally and officially recognized, they have pushed for higher wages at the negotiating table. Today, union contracts are indeed cumbersome and exhaustive, covering the whole set of union demands.

Table 1
STATISTICS ON UNION MEMBERSHIP, 1986

Year	Union Mem. (000's)	Total Non- Agric. Workers (000's)	Union Mem. as a % of Civilian Labour Force	Union Mem. as a % of Non-Agric. Paid Workers
1960	1459	4522	23.5	32.3
1961	1447	4578	22.6	31.6
1962	1423	4705	22.2	30.2
1963	1449	4867	22.3	29.8
1964	1493	5074	22.3	29.4
1965	1589	5343	23.2	29.4
1966	1736	5658	24.5	30.7
1967	1921	5953	26.1	32.3
1968	2010	6068	26.6	33.1
1969	2075	6380	26.3	32.5
1970	2173	6465	27.2	33.6
1971	2231	6637	26.8	33.6
1972	2388	6893	27.8	34.6
1973	2591	7181	29.2	36.1
1974	2732	7637	29.4	35.8
1975	2884	7817	29.8	36.9
1976	3042	8158	30.6	37.3
1977	3149	8243	31.0	38.2
1978*	3278	8413	31.3	39.0
1980	3397	9027	30.5	37.6

1981	3487	9330	30.6	37.4
1982	3617	9264	31.4	39.0
1983	3563	8901	30.6	40.0
1984	3651	9220	30.6	39.6
1985	3666	9404	30.2	39.0
1986	3730	9893	29.7	37.7

* Note: No survey was conducted in 1979.

Source: Department of Labour, Directory of Labour Organizations in Canada. (Department of Supply and Services, Canada, 1986), pp. 15.

ii(a). Union Structure

To ensure long-term viability and prosperity of the organized labour movement, a successful structure must be established as to form a solid base from which to build upon. The current structure has evolved as the labour movement's perception by society and government has grown increasingly sympathetic to the plight of workers.

The size, strength and scope of a union can be determined by which level they operate upon (International, National, or Local). The so called International unions are labour organizations that represent Canadian and American workers, although the headquarters as well as a large majority of the membership are located in the U.S.. The International

unions (Canadian chapters) accounted for thirty-nine percent (39.0 %) of total union membership in 1986, with sixty-seven (67) international unions. ³⁸

National unions, representing Canada's largest component of the trade union movement, include many branches or locals that have been chartered only in Canada. For the most part, employees of federal, provincial and local governments, teachers, nurses, policemen and firefighters make up a large proportion of the National unions rank and file.³⁹ In 1986, the three largest unions in Canada were National unions of public employees.⁴⁰ There are two hundred and nineteen (219) National unions in Canada, accounting for fifty-seven point two percent (57.2 %) of total union membership.

The third and final type of labour organization is the independent local union. Being the smallest, local unions by themselves form the entire union. However, they may be chartered by a central organization or an unaffiliated body (in 1986, they accounted for three percent (3.0 %) of total union membership).⁴¹ Table 2, lists Canada's thirty (30) largest unions. It is noted that there are six (6) unions

³⁸ Including industrial type unions and traditional craft unions, representing blue and white collar workers.

³⁹ Pradeep Kumar, "Union Growth in Canada: Retrospect and Prospect", (in Canadian Labour Relations, by W. C. Riddell, Ministry of Supply and Services, 1986), pp. 101.

⁴⁰ Department of Labour, Directory of Labour Organizations in Canada. (Department of Supply and Services, Canada, 1986), pp. 15.

⁴¹ Ibid, pp. 20.

with membership totalling over one hundred thousand (100,000) members.

Table 2

UNIONS WITH THE LARGEST MEMBERSHIP
IN CANADA, 1986 (IN THOUSANDS)*

1. The Canadian Union of Public
Employees (CLC): 304.3 (296.0).
2. National Union of Provincial Government
Employees (CLC): 254.3 (245.0).
3. Public Service Alliance of
Canada (CLC): 182.0 (181.5).
4. United Steel Workers of America
(AFL-CIO/CLC): 160.0 (148.0).
5. United Food and Commercial Workers
International Union (AFL-CIO/CLC):
156.0 (146.0).

6. International Union, United Automobile,
Aerospace and Agricultural Implement
Workers of America (CLC): 140.0 (135.8).

7. Social Affairs Federation Inc.
(CNTU): 93.0 (93.0).

8. International Brotherhood of Teamsters,
Chauffeurs, Warehousemen and Helpers
of America (Ind.): 91.5 (91.5).

9. School Boards Teacher's Commission
(CEQ): 75.0 (--).

10. Service Employees International Union
(AFL-CIO/CLC): 70.0 (70.0).

11. International Brotherhood of Electrical
Workers (AFL-CIO/CLC): 68.6 (68.6).

12. United Brotherhood of Carpenters and
Joiners of America (AFL-CIO): 68.0 (73.0).

13. International Association of Machinists
and Aerospace Workers (AFL-CIO/CLC):
58.6 (58.6).

14. Canadian Paperworkers Union (CLC):
57.0 (63.0).

15. International Woodworkers of America
(AFL-CIO/CLC): 48.0 (51.2).

16. Labourers' International Union
of North America (AFL-CIO): 46.7 (51.4).
17. Quebec Government Employees' Union Inc.
(Ind.): 44.0 (55.2).
18. Ontario Nurses Association (Ind.):
42.5 (39.2).
19. United Association of Journeymen
and Apprentices of the Plumbing and
Pipe Fitting Industry of the United
States and Canada (AFL-CIO/CFL):
40.0 (40.3).
20. Communications and Electrical
Workers of Canada (CLC): 40.0 (35.5).
21. Canadian Brotherhood of Railway,
Transport and General Workers (CLC):
39.9 (38.2).
22. Alberta Teachers' Association (Ind.):
37.4 (37.4).
23. International Union of Operating
Engineers (AFL-CIO/CLC): 36.0 (37.4).
24. Ontario Secondary School Teachers'
Federation (Ind.): 35.7 (36.3).

25. Energy and Chemical Workers Union
(CLC): 35.0 (35.0).

26. Hotel Employees and Restaurant
Employees International Union
(AFL-CIO/CLC): 32.0 (32.0).

27. Federation of Women Teachers'
Association of Ontario (Ind.):
31.5 (31.4).

28. British Columbia Teachers'
Federation (Ind.): 30.2 (32.7).

29. Amalgamated Clothing and Textile
Workers Union (AFL-CIO/CLC): 30.0
(30.0).

30. American Federation of Musicians
of the United States and Canada
(AFL-CIO/CLC): 30.0 (30.0).

* Note: Numbers in brackets indicate 1985 union membership levels.

Source: Department of Labour, Directory of Labour Organizations in Canada. (Department of Supply and Services, Canada, 1986), pp. 14-17.

Table 3

UNION MEMBERSHIP BY CONGRESS AFFILIATION, 1986

Congress Affiliation	Membership	%
CLC	2164345	58.0
AFL-CIO/CLC	866070	23.2
CLC only	1298275	34.8
CSN	218865	5.9
CFL	208822	5.6
AFL-CIO/CFL	20664	5.5
CFL only	2180	0.1
AFL-CIO only	134915	3.6
CEQ	91215	2.4
CSD	35967	1.0
CCU	35683	1.0
Unaffiliated Unions	104725	2.8
Unaffiliated National Unions	621104	16.6
Independent Unions	114346	3.1
TOTAL	3729987	100.0

Source: Department of Labour, Directory of Labour Organizations in Canada. (Department of Supply and Services, Canada, 1986), pp. 19.

Along with the three levels of union organization there are Central Labour Congresses that serve as spokesmen for the unions on matters of policy. The largest central labour organization is the Canadian Labour Congress (CLC) with fifty-eight percent (58.0%) of total union membership, the second major central organization is the Confédération des Syndicats Nationaux (CSN) with five point nine percent (5.9%) of total union membership. There are also other smaller central congresses, the Canadian Federation of Labour (CFL), la Centrale de L'enseignement du Québec (CEQ), La Centrale des Syndicats Démocratiques (CSD), and la Confédération des Syndicats Canadiens (CSC). Combined, these six Central Labour Federations account for over seventy percent (70.0 %) of union membership. Table 3 lists the distribution of union membership among the Central Labour Congresses.

The major objectives of National Federations are to encourage the economic, political and organizational capabilities of their membership, while providing research, education and other services that promote union cohesion and collective bargaining strength,⁴² while seeking to "actively encourage the elimination of conflicting and duplicating organizations and jurisdictions through agreement, merger

⁴² Pradeep Kumar, "Union Growth in Canada: Retrospect and Prospect", (in Canadian Labour Relations, by W. C. Riddell, Minister of Supply and Services, 1986), pp. 103.

and other means."⁴³

In addition to the National Congresses there are local and provincial federations that are concerned with the issues of research, education, public relations, legislation, organization and inter-union rivalry. These federations financially depend upon the contribution of member unions and may try to discipline unions for corrupt and irresponsible behavior. Over time, these federations have acquired considerable political power and influence for they represent many unions on matters of policy (social security, wages, hours of work, education, and manpower uses). They have also lobbied for universal old age pensions, unemployment insurance, health insurance and subsidized housing.⁴⁴

With thirty seven point seven (37.7%) of Canada's non-agricultural labour force unionized (1986), the degree of unionization "understates the influence of unions. The effect of their lobbying is evident in government legislation and affects both non-unionized and unionized workers. Furthermore, the wage increases, working conditions, and fringe benefits that unions acquire through collective bargaining have an important (if indirect) effect on working conditions in non-unionized establishments".⁴⁵

⁴³ From the constitution of the CLC article II: "Purposes", pp. 6-8, and the Case of Union Citizenship, pp. 38-40.

⁴⁴ M. Armstrong, The Canadian Economy and its Problems. (Prentice-Hall Canada, Inc, 1982), pp. 319.

Labour's influence is most pervasive when it can speak as one unified voice. Unfortunately with the existence of several federations, there are bound to be opposing ideologies and policy stances, thus dividing labour's influence to a certain extent.

45 Ibid, pp. 320.

III. TRADE UNION INVOLVEMENT IN THE
DETERMINATION OF WAGE POLICY

Maintenance of a strong cohesive union organization is a high priority to ensure that union objectives can be obtained such that in absence of a union, gains by workers would not be accomplished. Unions are highly concerned with the control of job opportunities to avoid any labour competition that may have a downward pressure on wages. In a unionized industry, jobs are rationed according to the collective agreement for there may exist excess supply in the labour market.

In the absence of unionism, the employer would select at his discretion the workers he would wish to employ. The entrepreneur would have complete autonomy to promote, demote, hire or discharge any worker which he might deem in a nebulous manner as unproductive. Implicit in this situation is job insecurity. The entrepreneur can arbitrarily make decisions that may alter the composition of the workforce. Therefore a proportion of the workforce may not be justly rewarded for years of devoted service by receiving an undeserved lay-off.⁴⁶

⁴⁶ Unionism has changed the structure and operation of the selective mechanism. Organized labour seeks to establish sovereignty over a job territory.

The union is introduced as a unified voice of the workers seeking to develop appropriate demands that are consistent with the union membership. Unions have concluded that the task of assigning jobs is too critical to be left in the hands of the employer. Therefore, protocols are jointly developed by union and management.⁴⁷ The union as a collective group "assert its collective ownership over the whole amount of opportunity, and, having determined who are entitled to claim a share in that opportunity, undertakes to parcel it out fairly, directly or indirectly, among its recognized members....Free competition becomes a sin against one's fellows, anti-social, like a self-indulgent consumption of the stores of a beleaguered city, and obviously detrimental to the individual as well. A collective disposal of opportunity, including the power to keep out undesirables, and a 'common rule' in making bargains are as natural to the manual group as 'laissez-faire' is to the businessman".⁴⁸

Competition, from a union perspective, is unacceptable. Unions seek to insulate themselves through the ideological belief by equating job experience to ownership of property whereby both should be guaranteed adequate protection.

⁴⁷ William Stanley Jevons noted the employee in the absence of complete information and the aid of a trade union defines "the art of bargaining mainly consists in the buyer ascertaining the lowest price at which the seller is willing to part with his object, without disclosing, if possible, the highest price which he, the buyer, is willing to give...."

⁴⁸ Selig Perlman, A Theory of the Labour Movement. (New York: The MacMillan Company, 1928), pp. 242.

Exclusivity is a feature of property ownership with unions extending the analogy to job tenure, "it is evident it is our duty to protect, by all fair and legal means, the property by which we live, being always equally careful not to trespass on rights of others"⁴⁹ At the bargaining table, union demands may be considered flexible and pragmatic. However, at any particular time, the union may push for a reduction in working hours, increased benefits or wage rate increases. In all three cases the only principle is that unions must move in one direction - forward.⁵⁰

Through time, the role of unionism has brought about a shift in political power as they have become community leaders where workers have increasingly identified themselves with the labour movement. "One of the most important ways in which unionism tends to conserve and strengthen the social structure is by strengthening the worker's attachment to his job, his work group, and his employer. It provides him with a club, a fraternity, which helps to gratify the natural desire for social bonds with

⁴⁹ Sidney and Beatrice Webb, The History of Trade Unionism. (London: Workers Educational Association, 1919), pp. 564.

⁵⁰ L.G. Reynolds, Labour Economics and Labour Relations. (Prentice-Hall, Inc, United States, 1978), pp. 564. For the union, wage gains are often measured in nominal rather than real terms for workers would not initiate strike activity when their wage level remains constant and the rate of inflation rises moderately. However, unions would strongly fight a reduction in money wages even if they can fully anticipate a decrease in the level of prices. To some extent money illusion is prevalent. Often argued is that an accepted wage reduction worsens the unions' relative bargaining position, while an employment reduction is a short-term phenomenon that is self-correcting once demand increases.

one's fellows. It provides a channel through which he can seek redress of grievances against supervisors or others, so that he has the feeling of living in a self-governing society, rather than in a autocracy. It dramatizes the gradual improvement of wages and other conditions from year to year. It strengthens his security in his job and, through the influence of seniority rules, makes it more likely that he will stay with the same employer in the long-run. In all these ways unionism gives workers a 'stake in the system', a sense of belonging and participation, a feeling that the existing set up of industry is reasonably satisfactory, and an antipathy to proposals for radical change".⁵¹

The right to organize and bargain by groups is fundamental to employers and employees. Employers must bargain with legally certified agents that represent labour. The task of collective bargaining is increasingly complex and time-consuming, with the final objective of producing "a mutually acceptable agreement that will set out the terms and conditions to be enforced during the life of the contract....Moreover agreements must contain procedures for settling grievances. Throughout Canada, there is an almost universal requirement that the two parties must not engage in strike or lockout activities during the life of an agreement; instead disputes must be submitted to arbitration by an impartial third party".⁵²

⁵¹ Ibid, pp. 394.

⁵² Muriel Armstrong, The Canadian Economy and its Problems.

Within the realm of the collective bargaining process, trade unions may have some discretion and movement in arriving at a determinate wage. Trade unions will conceive of an appropriate strategy that seeks to maximize their objectives (i.e. justifiable means to achieve given ends), choosing complementary tactics to aid their bargaining position in negotiations.

Besides securing wage demands and employment conditions, unions are concurrently concerned with the set of union demands. The components of the wage contract can be broken down into two main sections:⁵³ (1) The pecuniary element: concerned with the wage settlement itself in monetary terms, and (2) The non-pecuniary element: in the context of unionism, our attention is focussed upon the impact of a system of industrial jurisprudence, including: (1) Form and character of union recognition; (2) Rationing of scarce job opportunities; (3) Working conditions (proper ventilation and sanitation, allotment for recreation, effective safety regulations, display of bulletin boards); (4) The development of a judicial system that presides over the infringement of worker right's (grievance procedure); (5) The security of union representatives and committeemen; (6) Seniority status of the rest of the workers; (7) Job security; (8) Training programs; (9) Hours and overtime;

(Prentice-Hall Canada Inc, 1982), pp. 321.

⁵³ These two components are often referred to as the 'wage bundle'.

(10) Company lay-off policy; (11) Benefit-plan provisions (pensions and health care); (12) Cost of living allowances (COLA); (13) Leaves of absence; (14) Vacations; (15) Strike stoppages, and (16) Duration of the collective agreement.

It is difficult to account for non-pecuniary factors in terms of wage-bill maximization, for the union objectives may be murky with respect to non-income benefits. The procedure of negotiating for these benefits by using wage concessions allows the union to gain control and/or have an influential participation in certain aspects in which the firm is run.⁵⁴ Often, the union organization of labour is based on the platform of direct increases in wage rates. Thus the promise of higher wages may entice and raise union membership. Within the early historical stages of union development, the relationship between wage increases and unionization extended to form an acknowledgement or legitimization of organized activity.

⁵⁴ Between these two components of the wage structure, there does not exist a mutually exclusive relationship. Combined, both have an effect upon the structure of wages within the collective agreement, hence: "the complex character of the labour bargain tends difficult statistical measurement of changes in the price of labour". (J.T. Dunlop, Wage Determination under Trade Unions. (New York: A.M. Kelley, 1966), pp. 18.

In summary, the collective bargain is divided into three major categories: (1) A means of contracting the sale of labour (marketing theory); (2) A form of industrial government (governmental theory), and (3) A method of management (managerial theory).⁵⁵

Unionism is then only in one sense an economic phenomenon that manifests itself in many ways throughout society. The trade union movement has shifted the political fulcrum in Canada to the left where every political party must now consider to some extent the interests of labour.

iii (a). The Perspective of Management

Within the economic perspective of pure competition, the price level of goods, services and labour are determined by market forces, restricting management's decision-making process to choose the inputs of production. Given that input prices may vary it seems natural that the output price may also fluctuate. Each industry has a distribution of high and low cost firms implying that many competing firms will incur differing levels of cost and profit. Thus the role of management is not one of an observer, rather its skill in maintaining efficiency can have a substantial impact.

⁵⁵ J.T. Montague, Labour Markets in Canada. (Prentice-Hall Canada Inc, 1970), pp. 162.

Management is quite aware that in a competitive atmosphere there exist trade-offs in negotiations. Unions calling for a wage increase realize management may trim costs in other areas. Total employment may be reduced, product prices raised, volume of sales expanded or costs on other non-labour items must be reduced. If wage gains cannot be offset, the company's profit margin will suffer. To remain competitive, firms must then continually search for improved or new products, better advertising techniques, improved technology and/or increased administrative efficiency to offset the rising proportion of labour cost to total cost.⁵⁶

By their representative nature, management and unions do not share mutual ideological beliefs.⁵⁷ Each party seeks to protect what the other wishes to gain. Firms can be categorized as profit maximizing economic units, with respect to a given level of cost (concerned also with the volume of sales and equity growth). To maintain efficient pursuit of these objectives it may require that management be given a substantial degree of flexibility in the production and decision-making process. Let us outline a

⁵⁶ L.G. Reynolds, Labour Economics and Labour Relations. (Prentice-Hall, United States, 1978), pp. 395.

⁵⁷ The rise of collective bargaining is often associated with the development of industrial democracy. However, it may be possible to observe nothing democratic in the collective bargaining process, for it is viewed as a power struggle arriving at a mutual agreement dependent upon each party's 'strike variable', rather than a joint consideration of common problems.

general view of management's ideology towards industrial relations: (A) Industrial relations are primarily and basically a matter of relations between management and employees, its own employees; (B) The first objective of industrial relations, like that of every function of management, is the economic welfare of the particular company; (C) Industrial relations arrangements must leave unimpaired management's prerogatives, with freedom essential to the meeting of management's responsibilities, and (D) All parties to industrial relations should be businesslike and responsible.⁵⁸

The beliefs espoused by management are often in direct contrast (opposition) to union ideology. In (A), the unions represent labour and fall within the two poles of labour and management. Trade unions seek to reduce the encroachment of management upon the rights of the worker by implementing a set of negotiated rules (i.e. a system of industrial jurisprudence). The union possesses 'unrealized values', and provides a formal expression for the membership's demands and a ranking according to their priority. The intended goal of the union is then, "to alter the labour market so as to transfer the pricing of services from an employer take-it-or-leave-it situation to a negotiated price market or a price quoted market of their own".⁵⁹ Unions may be

⁵⁸ E.W. Bakke, Mutual Survival. (New York, Harper Row Publishers, 1946), pp. 2.

⁵⁹ J.T. Dunlop, Wage Determination under Trade Unions. (New York: A.M. Kelley, 1966), pp. 12.

considered a third party by management, impeding the process of negotiation, while workers firmly recognize the union's legitimacy to preserve and enhance their demands.

With respect to (B) and (C), management perceives the existence of trade unionism as a threat to its economic viability for unionism has grown to such a large extent, that it is now involved in the decision-making process at all levels. Unionism has firmly lodged itself within the structure of the corporation, rendering it immovable with its compliance necessary for future growth. "Unionism increases the number of conflicting pressures that converge on management. Between the insistent demands of workers for more money, customers for lower prices, and the board of directors for larger profits, the manager may be ground to pieces. In all these ways, unionism increases the amount of frustration, personal insecurity, and nervous wear and tear to which management is subjected".⁶⁰ Management has suggested that the presence of unionism has reduced managerial initiative and discretion, limiting the extent of productivity and economic efficiency. In the long-run, unionism may retard rather than increase the overall real income of workers.

⁶⁰ L.G. Reynolds, Labour Economics and Labour Relations. (Prentice-Hall, Inc, United States, 1978), pp. 399.

In the case of (D), the backgrounds of managers and unionists are indeed very different. In the past, top management positions had been filled by qualified individuals with formal training while union positions were long on, on-the-job training but short on academic training. Although recently, an increased percentage of union membership has received higher education, with an increasing proportion of white collar jobs becoming unionized.

Another source of contention within the capitalist system is the concept of profit. Many corporations strongly believe that profits are not of the union's concern. If management and unions can negotiate fair wages for its employees and still make a significant profit, there should be no dissatisfaction within the union. On the other side, unions feel that profits should be shared with its employees in the form of higher wages, since workers have contributed to producing these profits they should also reap the rewards. However, when a firm is suffering losses, it is often the case that management (seeking wage reductions) and unions (seeking a fair wage) reverse negotiating positions.

Overall, differing views of the world and how each party fits within the capitalist network are observed. Management may view unionism as an immovable impediment that it must grudgingly accept and deal with, while unionism (created by managerial failure to faithfully and honestly deal with its employees)⁶¹ is constantly pursuing the issues of equality,

equity, and justice towards its membership.

iii(b). Trade Unionism and the Economic Perspective

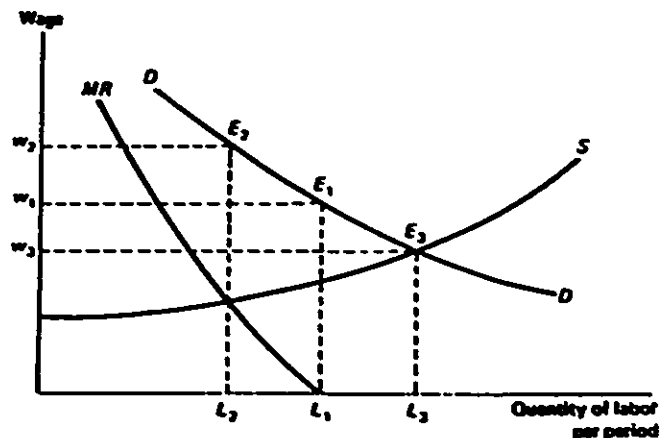
To develop the concept of unionism in economics, economists have utilized the applications of maximization and monopoly. Through negotiation no one economic unit has independently determined the prevailing wage rate; implied is that the trade union as well as management possess market power and influence the level of wages. Collective bargaining establishes a framework of rules from which the employer may negotiate the purchase of labour from the union.

The former concept is also crucial to illustrate the roles of management and the trade union. Firms seek to maximize profit, while workers and consumers maximize utility. Trade unions may wish to either maximize the wage rate, the total wage bill, the level of employment or its economic rent (depending upon which objective(s) reflect the utility preference of the membership). There are many other issues that are discussed and (dis)agreed upon in the

⁶¹ Alternative hypotheses have been proposed developing the causes of the rise of trade unionism. See J.R. Commons, "American Shoemakers: A Sketch of Industrial Evolution, 1648-1895". (Quarterly Journal of Economics, Vol. 24, 1910). Selig Perlman, A Theory of the Labor Movement. (New York: The MacMillan Company, 1949). Carleton Parker, The Casual Laborer. (New York: Harcourt, Brace & World, Inc, 1920). R.F. Hoxie, Trade Unionism in the United States. (New York: D. Appleton & Company, Inc, 1921). F. Tannenbaum, "The Social Function of Trade Unionism". (Political Science Quarterly, Vol. 62, 1947).

collective bargaining framework. Each major union alternative is examined in sequence (see Figure 1).

Figure 1



Source: W. Nicholson, Intermediate Microeconomics and its Applications. (New York: The Dryden Press, 1983), pp. 501.

To allow for quantitative measurement and statistical tests, it is assumed that all important aspects of the bargaining process may be reduced or transformed to empirical observation. Such an assumption is clearly a simplification of reality for many non-pecuniary benefits of negotiation are incommensurable, therefore, it is assumed that matters of principle have a price and thus the components of a collective bargaining agreement can be reduced to a numerical result.

In describing union alternatives, it is assumed that for each position they seek to obtain, it is reflected through the union membership by providing its negotiators with the necessary mandate. Hence, the union's position represents at minimum, a slim majority of aspirations and goals of its members.

The concept of a strong union is analogous to the concept of a business monopoly. Unions face a downward sloping demand schedule for labour (for they will control the supply of labour thus determining a wage-employment combination). The position along the demand curve that they choose to operate upon is a function of union objectives.

In the context of traditional economic theory, trade unions have been treated as an off-shoot of monopoly behavior in product markets. Through the collective bargaining process, observed (although imperfectly) are the wage-employment effects of a settlement. "That is to say, the union will normally be aware of the fact that it does not face a perfectly inelastic demand schedule for labour. If this is all we mean by the term monopoly, then its application is appropriate to trade unionism in the analysis of wage determination on the level of the individual firm".⁶²

⁶² A.M. Cartter, The Theory of Wages. (Homewood, Illinois: R.D. Irwin Inc, 1959), pp. 77.

There has been debate over the labour-monopoly issue for economists have argued trade unions should not be equated to the concept of a business monopoly on the grounds: (1) Human beings should not be classified as commodities; (2) Unions do not sell anything, but merely fix the terms of exchange of a forthcoming service over which they have little direct control; (3) Trade unions may not maximize income, and (4) Trade unions are essentially a political institution, subject to internal political pressures.⁶³

In case (A), the union may seek to maximize the total wage bill by offering a quantity of labour for which the marginal revenue from labour demand is equal to zero, at point E1, we have w_1 as our wage rate and L_1 as our total employment level. However at (w_1, L_1) there will exist an excess supply of labour, leading the union to establish or participate in a procedure that allocates the employment opportunities effectively. It is noted that there is little justification for this option by unions for the wage bill is appropriated to the workers.⁶⁴ Moreover, this objective could lead to unusual results for over any segment of a labour demand schedule which is elastic, a reduction in the wage rate would increase the total wage bill. Understandably, the union membership would probably not

⁶³ Differences from other economic institutions in terms of legal, social and political policies should not lead to a dismissal of the unions ability to exercise their monopoly power via wage distortion.

⁶⁴ Although workers do contribute to the union in the form of dues.

endorse such a proposal.

In case (B), the union's objective may be to raise the wage rate level to a maximum. This would occur by choosing a quantity of labour for which the additional total wages obtained by having one more employed union member (i.e. marginal revenue) is equivalent to the additional cost of employing one extra union employee. The result occurs at point E2, with a wage-employment combination of (w_2, L_2) .⁶⁵ The ramifications of such an objective may be detrimental by displacing productive union workers, leading to dissatisfaction amongst the unemployed workers while putting pressure on union leaders to alter their policy stance. The accomplishment of maximizing its wage rate is conditional upon maintaining unionization of the industry, or employers may choose to break away as wage rates climb and hire non-union labour. Unions seeking to curb and counteract the pressures of the displaced union members may attempt to tax the high wages of its working members so as to redistribute the income in an equitable manner.

In case (C), the union may pursue the goal of maximizing the total level of employment, requiring its union membership to accept in essence a competitive wage rate at point E3, with our wage-employment combination being

⁶⁵ The union conducts its operations in a manner that is different from that of a firm in the product market, for the overall supply of union labour (S) is equivalent in total or marginally (i.e. the union makes no marginal cost assessment).

(w3,L3). Such an objective may be construed as a conflict of interest from the union's leadership point of view for it may threaten the very justification of unionism. Point E3 in no way reflects the union's ability to visibly raise the wage level beyond the market rate. Thus "union officials have some interest in the size of their membership, there seems to be no reason why they should take this as their sole objective".⁶⁶

Finally, not shown, is that the union may prefer to maximize their economic rent, $(W - W_a)E$, where W is their real wage, W_a is the alternative real wage (i.e. what the union members could earn elsewhere, or the opportunity cost to each union member), and E is the level of employment. This objective is similar to profit maximization of a monopolist, in that the union seeks to maximize their total return given what they could earn elsewhere.⁶⁷

The ideological position in this Thesis is that the union possess' the exclusive economic privilege in collective bargaining, such that they may engage in wage distortion (i.e. make wages greater than they would have been in its absence) by exercising its monopoly power. However, with the trade union institution, it would be difficult and quite unrealistic to assume a 'supreme economic rationality',⁶⁸

⁶⁶ L.G. Reynolds, Labour Economics and Labour Relations. (Prentice-Hall, Inc, United States, 1978), pp. 388.

⁶⁷ M. Gunderson and W.C. Riddell, Labour Market Economics. (Toronto, McGraw-Hill Ryerson Ltd, 1988), pp. 265-266.

for the union may have additional 'survival instincts' through the utilization of ideological goals and/or being primarily concerned with the psychological satisfaction of their membership or a host of other motivations. Stressed, is that in applying economic analysis it is not a prerequisite that a motivation be purely or primarily economic, it is only required that the motives under scrutinization be reflected in economic terms (i.e. measurable by the price system).⁶⁹ Trade unions then, act as a catalyst for its membership by synthesizing their demands into a negotiable forum with management.

⁶⁸ Rational economic behavior for a union may be viewed as a delicate balance between increased wage rates, increased total employment, union membership and more leisure time for its members.

⁶⁹ A.M. Cartter, The Theory of Wages. (Homewood, Illinois: R.D. Irwin Inc, 1959), pp. 79.

IV. WAGE BARGAINING STRATEGIES OF INDUSTRIAL UNIONS

To achieve satisfactory results, unions must choose the appropriate tactical shrewdness and strategy. They must assess the situation as realistically as possible while acquiring the necessary information that might permit them to gain a bargaining advantage at the negotiation table. In this section we consider the Marshall-Hicks laws of derived demand, concentrating on the role of the union and how they would wish to affect each factor in order to minimize the adverse effects of reduced employment.

Wage rates of union workers may be artificially raised directly or indirectly through methods that lead to unnatural movements of the demand and supply schedules of union labour. Unions may choose to implement a policy designed to increase the demand for union labour and/or trying to make the demand for union labour increasingly inelastic. The ability of an industrial union to successfully negotiate for higher wages and salaries is dependent upon its strike threat and the industrialists ability to pay for labour above the competitive norm (the propensity of an industrialist to afford increased labour payments would be greater under a non-competitive product market situation and/or in sectors where labour is completely unionized where the possibility of competing with non-union labour is non-existent).

To counter the effects of reduced employment with higher

union wages, unions may seek to employ a strategy to increase the demand for union labour and make it more inelastic. Following the Marshall-Hicks laws of derived demand, the demand for union labour will be increasingly inelastic: (a) The smaller the share of union labour cost to total cost; (b) The more inelastic is demand for the product; (c) The more difficult is substitution in production between union labour, capital or non-union labour, and (d) The less elastic the supply of other factors of production.

iv(a). Reduce the Ratio of Union Labour Cost
to Total cost

Craft unions and professional associations may find it in their best interests to have high union wages coupled with a low number of union employees to keep the total union wage bill at a minimum and hence a small ratio of total cost. By minimizing union labour costs, the demand for union labour will remain inelastic as increases in wages marginally affecting the labour cost - total cost ratio, resulting in minimal price increases passed on to the consumer. Thus total revenues may be unaffected, while pursuing the union goals including higher wages.

Professional associations as well as craft unions share mutual interests in restricting labour through licensing and certification to maintain a high standard of living. Many associations claim this practice is necessary for it is in the best interests of the public to be provided with quality service. In many cases these professional associations are self-regulating for only members of the profession can astutely determine the qualifications necessary to retain public confidence (such as physicians and lawyers). It is noted that there exists a distinction between certification and licencing. In the former case, those with a professional certificate may use the accompanying professional designation or title (reserve-of-title-certification), while in the latter case the professional has access to the exclusive right-to-practice licence. It is this licence which is of greater value and hence is subject to stringent control.

Through licencing and certification the objective of the professional association has been achieved (higher wages and salaries, while finding it in their own interest to stay small and selective, rather than merge with larger units). Eventhough human capital costs associated with a higher standard of living may be higher than the average occupation, such as educational costs, practical training periods and opportunity costs.

iv(b). Making Product Demand Inelastic

If unions can alter the elasticity of demand for a good in the product market so that it becomes increasingly inelastic, higher union wages can then be passed on in the form of higher prices without significantly reducing the demand for that particular product (while raising total revenues), and hence the derived demand for union labour.⁷⁰ To accomplish this strategy, unions may lobby for protective tariffs or anti-dumping legislation to reduce the possibility of consumers substituting one good for another. To decrease product demand elasticity, the company may advertise its product with the union label (so that union members will purchase only union products) or co-ordinate an effective campaign to prevent consumers from substituting non-union for union products.

iv(c). Controlling Substitute Inputs

To maintain demand inelasticity in union labour markets, they must discourage the use of substitute inputs such as capital and non-union labour. The union would try to prevent the use of non-union labour by the use of a closed shop, organizing the plant in such a way that it would be inoperable by a skeleton crew, lobbying governments to implement anti-scab legislation and to exercise control over part-time and probationary labour as to minimize the labour

⁷⁰ M. Gunderson, Labour Market Economics. (McGraw-Hill Ryerson Ltd, Canada, 1980), pp. 311.

cost relative to total cost.

Unions are also threatened with the substitution of capital and technology, which may displace current and future union labour. To prevent a rapid change of this kind, unions through the process of collective bargaining may reserve the right to re-negotiate the agreement if there is an unexpected change in technology. "In an industry whose methods are flexible, where technological change is very frequent the workman always feels his job to be insecure because of the progress of invention. It is not difficult for him to get some rudimentary idea that he is more likely to be displaced if he becomes expensive; and apart from this, he naturally directs most of his attention to using his union to safeguard his job, rather than his wage".⁷¹ These practices occur in all unions for it is in their best interests to regulate and control the use of substitute inputs, making them increasingly expensive as to discourage their use. Hence, unions may condone wage fixing legislation that raises the wage rates of non-union workers through minimum wage laws or fair wage legislation to reduce the gap of non-competitiveness, making the union alternative that much more attractive.⁷²

⁷¹ Sir John Hicks, The Theory of Wages. (2nd Edition, New York: St. Martin's Press, Inc, 1966), pp. 153.

⁷² M. Gunderson, Labour Market Economics. (McGraw-Hill Ryerson Ltd, Canada, 1980), pp. 312.

iv(d). Making the Supply of Substitutes Inelastic

In addition to our three previous strategies, unions may seek to render the supply of substitute inputs inelastic. Thus an increase in demand for these inputs would put severe upward pressure on their price, discouraging their use (choking off excess demand), and turning to the relatively cheaper union labour. Therefore it may seem reasonable for unions to support policies that reduce the pool of low-wage labour such as restrictive immigration policies and income maintenance programs. 73

73 Ibid, pp. 312.

V. THE TRADE UNION AS AN ECONOMIC INSTITUTION

Within the framework of the collective bargaining process, it may be tempting and realistic to state that wages are determined by conscious human decisions rather than market forces,⁷⁴ although this statement provides us with no additional insight into the process of wage determination. It would seem appropriate to develop a theory, focussing upon the causal relationships, with the relevant question to ask "about the assumptions of a theory is not whether they are descriptively realistic, for they never are, but whether they are sufficiently good approximations for the purpose in hand".⁷⁵ All realistic occurrences in wage determination may be viewed and/or interpreted as deviations from the scientificism atmosphere of a theory, for market rigidities, imperfections, deviations and discontinuities in the demand and supply of labour permit aberrations in economic phenomena.

In this section, the author utilizes the early theory of J.T. Dunlop, extending his analysis into the development of union-employer preferences and the range of 'practicable bargains' constituting the development of the contract zone,

⁷⁴ In his General Theory of Employment Interest and Money. J.M. Keynes states (ch. 18, pp. 247)..."(2) the wage unit as determined by the bargains reached between employers and employed" to be incorporated as one of the three categories defining his 'ultimate independent variables'. Hence the collective bargaining relationship reduces the market impact on the setting of wages.

⁷⁵ A.M. Cartter, The Theory of Wages and Employment. (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 5.

which for the most part, lies the area of negotiating a mutually satisfying agreement. The divergent views that characterize each party and the question of indeterminacy within the contract zone are stressed. The various factors that facilitate wage determination or provoke strike activity, will be dealt with in later sections.

v(a). An Early Economic Model of Trade Union Behavior

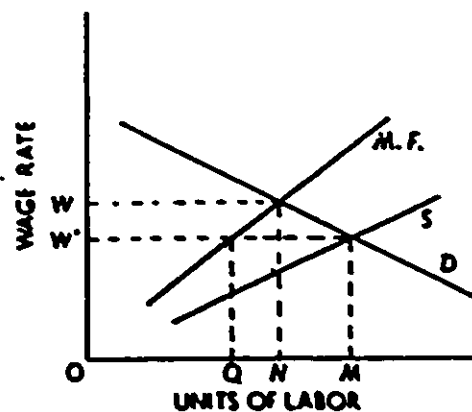
J.T. Dunlop introduced the concept of the wage-membership function, proposing that it should be substituted in place of the traditional supply schedule of labour. The wage-membership function is defined as "the appraisal by the leadership of the amount of labour that will be allied to the union at each wage rate".⁷⁶ Dunlop's proposal was concerned with the maximization of trade union membership which was positively related to the wage level. Thus the wage-membership function reflects the faithfulness of workers rather than their income-leisure preferences. It is assumed in this case that the wage-membership function lies to the left of our traditional supply schedule.⁷⁷ In this sense, the concept of a wage-membership function is specific to each trade union. The membership function is not solely derived from individual income-leisure preferences, for preferences, argues Dunlop, are assimilated into group

⁷⁶ Ibid, pp. 84.

⁷⁷ Assuming that complete organization of the labour force is not possible.

preferences by unions. Individuals act collectively through the union, whose preferences may not coincide with individual ones.

Figure 2



D = Labour demand schedule

S = Labour supply schedule

M.F. = Dunlop's wage membership function

Source: A.M. Cartter, The Theory of Wages and Employment.
(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 84.

Trade unions may consciously restrict the wage-membership function by employing such practices as nepotism, closed shops, etc. "The crucial notion is that the trade union through the leadership at each wage rate regards a certain amount of labour as a part of, or belonging to, the union".⁷⁸ The leadership of the trade union is assumed to know: (1) The wage-membership function, and (2) The wage-bill employment function (i.e. the manner in which the total wage bill will vary with the amount of labour employed), see Figure 2.

Through these concepts, we may analytically determine the wage level, given the wage-membership and demand functions, as well as shifts in these functions. The resulting interplay between demand and the wage-membership function is dependent upon what the trade union wishes to maximize: (1) Given a demand function for labour and the wage-membership function, the union may wish to maximize the total wage bill; (2) There may be some level of unemployment (assuming the wage rate is above the competitive level) the union is willing to absorb in order to maximize the wage rate. However, "the group without work may create difficulty for the reason that a downward pressure on the union wage scale may arise as enterprises reconsider their quoted wage rates and as existing non-union or new establishments have their competitive position in the product market improved".⁷⁹ To

⁷⁸ J.T. Dunlop, Wage Determination under Trade Unions. (New York: A.M. Kelley, 1966), pp. 34.

reduce this adverse temptation by employers, unions must adequately care for their unemployed brothers (through an established unemployment fund, public employment or a private endeavour with deductions to support its unemployed members), and (3) Unions may wish to maximize employment, noting "at lower wage rates the amount of employment may be increased only at the cost of a decline in the total wage bill" ⁸⁰ (assuming the given demand for labour is inelastic).

For all three union strategies and objectives, a different wage would be obtained due in part, to a differing time pattern of adjustment involved with the demand function, while observing the union membership function may be: (1) invariate with respect to the wage, $dn/dw = 0$, or (2) depending upon union goals (there are no formal restrictions). The membership function, its position and slope may be influenced and/or determined by the formal bargaining unit, the degree of unionization of wage earners, membership restrictions, and the amount of political power the union has acquired over wage rate policies. For the union to maximize its membership it will obtain a wage rate where the demand and wage membership function intersect, determining a level of employment.

⁷⁹ J.T. Dunlop, Wage Determination under Trade Unions. (New York: A.M. Kelley, 1966), pp. 36.

⁸⁰ Ibid, pp. 40.

In Figure 2, the wage rate unions would be seeking in order to maximize the union membership function would be OW . However a wage rate of OW' would maximize total employment while simultaneously reducing union membership by NQ . Thus maximizing total employment is not always a predetermined goal of the union.

If the traditional supply schedule of labour and the wage-membership function can be explicitly differentiated, it may be concluded that trade unions are concerned only with maximizing several income aggregates for their membership. However, the case may arise where the trade union may be catering to the needs of some special group of workers within the union, neglecting the needs and desires of the entire membership. This would suggest the union was trying to maximize the wage rate of the special interest group, with any negative repercussions falling upon unrepresented members in the form of unemployment. Such a situation indicates union aims and objectives are not always a precise weighted average of the membership. This divergence of union policy detracts from its ability to maximize as a whole, the membership's overall utility.

Hence, the use of the supply schedule of labour and the wage-membership function may not be fully appropriate when utilized in the context of union behavior. In the former, unions do not maximize net returns over and above costs, and the latter, by substituting the wage-membership function in place of the supply schedule: If the union is concerned with

maintaining its present membership, the function will become increasingly inelastic representing the current membership group and not the potential members of the decision-making process within the union. Thus depending upon union objectives, there are an infinite number of wage-membership functions, with no two unions having a similar function over time. Similarly, the wage-membership function for a specific period will be drawn in a manner in that it will be most unlikely the function will be the same in the direction of a wage increase and a wage decrease. Therefore, it is not only important to know the current wage-employment relationship, but in what direction wages are likely to move for the wage-membership function is likely to have a different slope for a wage increase than for a wage decrease.

Another troublesome characteristic deals with the subtle difference between the wage-membership function and the labour supply schedule. The latter deals with a market reality (i.e. what amounts are actually willing to work at various wage rates), while the former indicates a schedule of union preferences. Therefore, if we have implicitly fallen back onto a preference schedule it would seem desirable to describe the union's set of wage-employment combinations by utilizing indifference analysis. William Fellner ascribes to the view that in the absence of the union facing any real cost functions, preference functions should be introduced when the union has the opportunity to choose among alternatives.⁸¹ "The union works on a schedule

of wage rates required to bring forth given amounts of labour, but there is little or no fluctuation in union costs regardless of the eventual point reached on the supply curve of labour".⁸²

v(b). Union-Employer Preferences

With the increasing weight placed upon the role of the collective bargaining process, the straight-forward determinance by market forces has been severely reduced, "market forces influence the demands and the resolve of the parties to the bargain, but they do not produce the same kind of determinate solution that occurs when prices are determined in a perfectly competitive manner",⁸³ given the limited use of demand and supply in a realistic sense between trade unions and management, it would be beneficial to picture the kind of preference patterns which alter the behavior of both parties within the bargaining process.

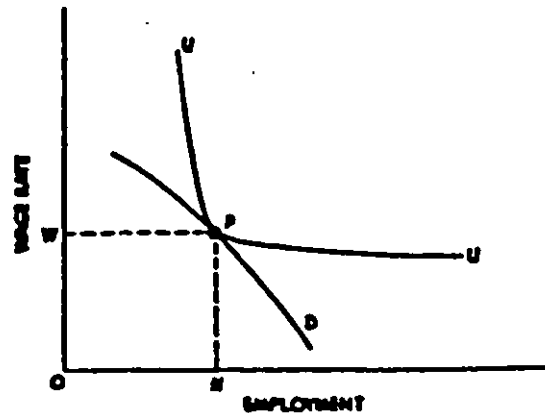
In this context of the union's utility function and its associated wage preference path, A.M. Cartter (1959) emphasized that it would seem unlikely that a union would

⁸¹ William Fellner, Competition Among the Few. (New York: A.A. Knopf, 1949), pp. 252 - 276.

⁸² J.T. Montague, Labour Market in Canada Processes and Institutions. (Prentice - Hall, Canada, 1970), pp. 182.

⁸³ A.M. Cartter, The Theory of Wages and Employment. (Homewodd, Illinois: R.D. Irwin, Inc, 1959), pp. 84.

Figure 3



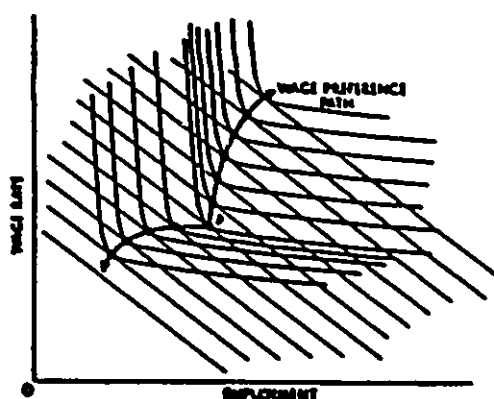
Source: A.M. Cartter, The Theory of Wages and Employment.
(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 89.

pursue the extreme goals of wage or employment maximization, but rather would seek a combination of both. These two variables are to some degree substitutes for one another (although imperfect), implying the preference function being convex to the point of origin, "it would seem most likely, once a union is already enjoying a particular wage employment combination, that it would take a considerable increase in wages to compensate for a reduction in employment, and it would take a considerable increase in employment to compensate for a wage reduction".⁸⁴ A. Ross indicates survival as the unions's primitive instinct, and any significant shift away from its wage-employment

⁸⁴ Ibid, pp. 89.

combination will lead to internal political pressures within the union that may eventually threaten its existence. Hence, together the wage-employment combination may be a point of status quo from which the union departs from. On this basis, the preference function will be similar to Figure 3, indicating wages and employment are not perfect complements for one another.⁸⁵

Figure 4



Source: A.M. Cartter, The Theory of Wages and Employment.

(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 95.

⁸⁵ Although 'complements' are usually thought of as the reverse of 'substitutes', individuals familiar with indifference analysis may recall the usual terminology, that complementary goods are those for which the elasticity of substitution is negative. Thus imperfect substitutes may blend into complements. From the union perspective, wages and employment are goods which go together (i.e. a high wage with no employment is equally as undesirable as a high level of employment and no wages). The fact that wages and employment are not perfect complements can be illustrated by the fact unions can usually be enticed to give up a little of one good; but the price of such a sacrifice in terms of the amount of the alternative good needed to compensate the union is usually quite high.

A wage preference path may be illustrated if various levels of labour demand and the associated points of tangency with the union preference functions are superimposed. In Figure 4, the wage preference path indicates "that unions will prefer to use an increase in demand for a wage increase, only accepting large amounts of employment if the increase in demand is quite substantial. Similarly, with a decrease in demand, a wage cut will be resisted unless the decline is quite substantial".⁸⁶ Thus at any higher wage rate the union negotiators will shift up the wage preference path curve, with management recognizing the union's inflexibility towards wage reductions, and their quest for future progression in collective bargaining agreements.⁸⁷

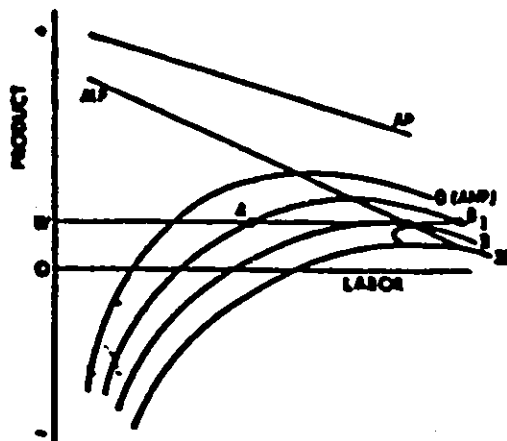
It should be noted that these wage path preferences indicate trade union behavior in a stage of maturity (i.e. unions have previously achieved recognition and survivability) and now pursue wage-employment preferences ("the wage-employment combination is not the trade union's only interest in collective bargaining, but its primary

⁸⁶ A.M. Cartter, The Theory of Wages and Employment. (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 92.

⁸⁷ Union reaction to a wage increase or decrease is likely to be asymmetrical, for in the former case, they are likely to have a higher order of preferences for wage increases, while in the latter they would prefer to resist any wage reductions regardless of the consequences this policy may have upon employment. The union wage preference path indicates the wage-employment combination the union would optimally wish to achieve through the collective bargaining process. The fact that it rises steeply at first reflects union ideology that its initial responsibility is to the existing membership.

economic concern"),⁸⁸ with the union preference structure being highly wage inelastic for increases in demand, and highly employment elastic with decreases in demand.

Figure 5



Source: A.M. Cartter, The Theory of Wages and Employment.
(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 97.

⁸⁸ A.M. Cartter, The Theory of Wages and Employment. (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 94.

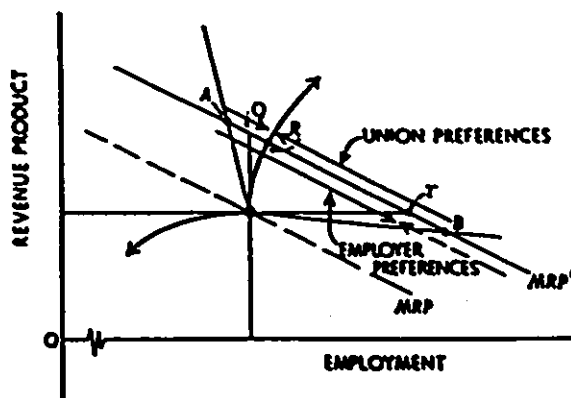
In addition, Cartter develops the employer's preference functions by incorporating the concept of the average net revenue product (ANRP). The ANRP is the resulting wage rate that should be paid if the employer is to break even, that is the ANRP demonstrates all possible combinations resulting in a zero profit level. A host of employer satisfaction curves may be derived if a given level is also included along as a deduction with capital, (illustrated in Figure 5). Each successively lower ANRP curve is associated with a given (higher) level of profit. One property of these curves is the marginal product curve intersects the ANRP at its zenith. Hence, the labour demand curve represents the highest wage that an employer will offer for a given level of profit. If there is a given wage rate (OW) and the employer is free to vary the level of employment (with WA or WB being the current level of employment), it would be to the employer's advantage to modify the level of employment to WC, lying upon a higher employer preference function, "as long as the employer retains the right to determine the amount of employment, profit maximization will always place him at a wage-employment combination lying on the marginal product curve, as traditional theory has indicated".⁸⁹

⁸⁹ Ibid, pp. 98. Assumed is that the level of satisfaction derived by the employer is directly related to the profitability of various wage bargains.

v(c). Wage Expectations and The Role
of Asymmetric Information

If the previous two sections have demonstrated how unions and employers would like to independently determine a wage-employment combination, it would seem only natural to combine the preference maps of the two parties, as they engage within the collective bargaining framework.⁹⁰

Figure 6



Source: A.M. Cartter, The Theory of Wages and Employment.

(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 103.

⁹⁰ Assuming each party is fully aware of one another's position, with the desire to reach a compromise settlement (implying a situation of perfect bargaining conditions, i.e. no party has an advantage in bargaining power). It is further assumed that product demand, labour productivity, and prices and quantities of all other factors of production remain constant.

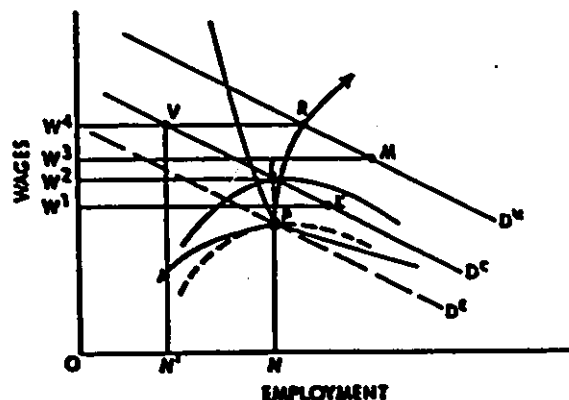
The outside boundaries can now be determined for the new wage agreement (see Figure 6). From the diagram, it is observed that above point R, both parties' objectives are identical (i.e. the position of both is improved by moving down the MRP schedule). Also, below point T, the parties' interests are identical moving in an upward direction. Any new wage-employment combination lying between points R and T is a mutual improvement for both parties although the relative gains are biased towards the employer the closer to point T, and towards the union the closer to point R. Thus, the region of resolution lies within an area of conflicting preferences, where both union and management possess an area of coincident preferences.

To realistically reflect real world phenomena in terms of the negotiation process, it would be proper to describe the conditions that exist as imperfect. Imperfect bargaining conditions exist when either one or both parties wish not to reach a compromise solution, such as: (1) An employer wishing to break a union; (2) A union requesting for other reasons than conditions of wage and employment demands, or (3) Either party not acquiring complete information about the other party's preferences (a realistic occurrence in all bargaining situations), "it is quite possible for a trade union to misjudge the level and elasticity of labour demand; for the employer to misjudge the union's real wage preference path, and for either party to mistakenly estimate the level of profit associated with any given wage-

employment combination....Add to this an element of market uncertainty concerning market conditions to be expected for the duration of a contract, and it will be seen that bargaining normally takes place under some degree of imperfection of conditions".⁹¹

In this respect, the accumulation of knowledge (or lack of) in varying degrees may reflect guided optimism by the union in overestimating the expected level of demand (see Figure 7), D_u , and hence their expected wage settlement. Similarly, the employer may be unduly pessimistic about forthcoming conditions (D_e). If each party is aware that a compromise agreement will be reached, its justification of

Figure 7



⁹¹ A.M. Cartter, The Theory of Wages and Employment. (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 111.

Source: A.M. Cartter, The Theory of Wages and Employment.
(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 112.

its offer is on the basis of its expectations.⁹² For both parties to calculate their offers from a different set of informational variables is to observe for the most part, non-coincidental expectations.

In Figure 7, the employer will strongly resist a wage level above point L, for such a wage will reduce his profit level. However, the employer would be willing to share additional revenue incurred from increased demand in an equitable manner, (such as point K). Thus the employer's offer would be OW1, with his maximum wage offer being OW2. The union with its expectation of higher demand (D_u), would prefer a wage level of OW4 (point R), but in a compromise situation they may be willing to accept OW3 (point M). Thus we have determined the union's as well as management's actual demand (offer) and minimum (maximum) wage offer.

With the union and employer deriving different expectations with respect to the level of demand, we have a situation where the employer's maximum wage offer (OW2) is less than the union's minimum wage demand (OW3), if a

⁹² These levels of demand are not purely propaganda for the opposition and the public, but they may be thought of as real estimates by each party. There are levels of demand to which each, erring slightly in its own favour, attach the greatest measure of probability.

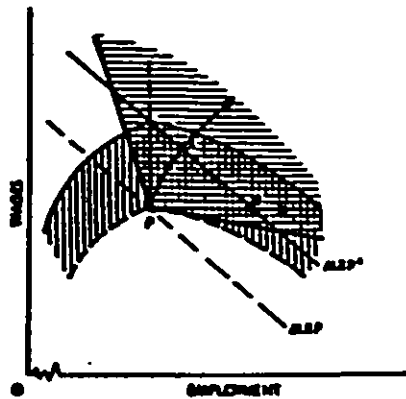
bargain is to be reached, it may take a considerable amount of time and movement by each side, "either one or both parties must reconsider and adjust their sights, or no bargain will be forthcoming. An actual strike is not necessary in this situation; the same result may possibly be achieved by each side calculating the losses which would result from a work stoppage, and then recalculating their maximum or minimum. A strike of a certain anticipated length may be estimated by the employer as the equivalent of a lower level of profit over the next contract period, and he adjusts his 'maximum' offer upward to the point where this lower profit contour intersects his image of the MRP function. Similarly, when a strike appears imminent the union may adjust its 'minimum' downward until a settlement is possible".⁹³

One feature associated with the uncertainty of estimating a level of demand is the danger of 'overshooting'. If the union has a relative advantage in bargaining power it may be able to secure a wage level of OW_4 , however, if anticipated demand turns out to be substantially less (D_u), the employer would reduce employment to ON' and the union may be worse off than under the previous wage agreement (the amount of diminished satisfaction encountered by the union is a function of the elasticity of the MRP schedule). The only way to reduce the adverse effects of overshooting is to

⁹³ A.M. Cartter, The Theory of Wages and Employment. (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 112.

limit the employer's ability to reduce the workforce.⁹⁴

Figure 8



Source: A.M. Cartter, The Theory of Wages and Employment.
(Homewood, Illinois: R.D. Irwin, Inc, 1959), pp. 114.

The ideas introduced and discussed may best be summarized by using a standard case of bargaining where the employer's MRP schedule has increased since the last signed contract (due to increased labour productivity or an increase in demand for the product). With this increase in demand, the position of both the employer and union can be improved from their previous position.

When the MRP shifts upwards, the accompanying employer's

⁹⁴ Often a major obstacle to a collective agreement is the resolution of the union demand for job security.

preference function also shifts upwards (see Figure 8), from the broken to the solid lines), noting that any wage-employment combination that lies within the vertical lines, will improve the employer's profit position. The employer will usually move in an eastern direction in the interests of maximizing profits (indicated by the broken arrow).

The union would be better off with any wage-employment combination lying within the horizontal lines. In practice, the union will try to move in a north-east direction to maximize the union's wage preference path function. Any position within the cross-hatched area will leave both parties better off assuming that neither party has complete control over bargaining power. Thus a compromise wage-employment combination will be encountered between points A and B. This area of negotiation between the employer and the union may be viewed as an area of interest that is complementary (i.e. there are gains to be had by both parties). Thus the boundaries as determined by A and B, now become the limits within collective negotiations, for a contract zone has now been established. Bargaining under these conditions is concerned with the division of the relative gains.

v(d). The Derivation of a Contract Zone

The contract zone is denoted as the area where the wage rate will be determined. The final agreed upon wage rate is a function of management's and union's policy objectives. Management would prefer to operate at point B , so as to maximize profits. Unions on the other hand, depending upon their set of demands and policy objectives may choose to negotiate for a wage employment combination at point A (see Figure 8).

Now the process of collective bargaining may commence as each party has explicitly staked out its position. The contract zone may actually be smaller than the (A,B) range if the union considers OW2 (Fig. 7) so unattractive it would strike indefinitely rather than accept the offer. Alternatively, management may consider OW4 excessive, choosing to shut down, rather than pay the wage rate. The overall effect has been the reduction of the upper and lower bounds of the contract zone. Hence, within these bounds a compromise between the two parties will establish a wage rate that is mutually acceptable.

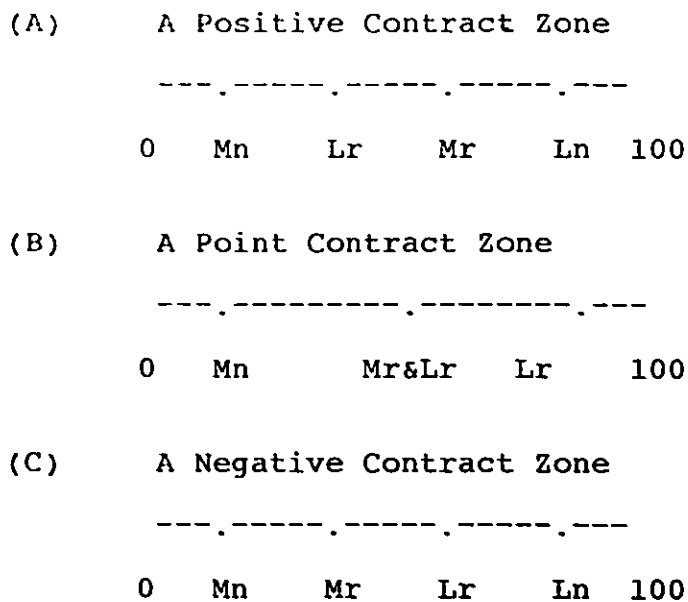
For the union there will be a lower wage limit they would accept rather than strike. Likewise, the employer will have an upper wage limit that they would accept, rather than face a strike (these are the parties 'strike points', for above or below they will not move before taking a stand). If the employer's upper limit is greater than the union's lower

limit, there is a range of practical bargains which could be reached through negotiations. If the employer's wage offer lies below the union's lower limit, a strike may be inevitable; "the employer will fight before he grants a wage above a figure which is below that which the union is prepared to accept without taking a stand".⁹⁵ If both parties can reach agreement, it is still to be determined at which associated wage level. Each party will seek to push towards the other's limit by utilizing such devices as bluff and bluster, ultimately finding themselves in a situation of conflict which neither side has wanted.

The union's real strike point or minimum wage demands is denoted L_r , and management's real strike point or maximum wage offer is M_r . L_n and M_n will denote the union's and management's nominal (initial) positions. Illustrated are several situations that may occur (see Figure 9). In (A) there exists a positive contract zone for there lies a point within L_r and M_r that is mutually acceptable, as their nominal positions are wide apart, only through the bargaining process will an agreement be reached. However, it is still possible an agreement may not be reached if 'pride' or an 'accident' prevents either side from backing away from their original demands.

⁹⁵ N.W. Chamberlain and J.W. Kuhn, Collective Bargaining. (New York: McGraw-Hill Book Company), pp. 163.

Figure 9



Source: L.G. Reynolds, Labour Economics and Labour Relations. (Prentice-Hall, United States, 1978), pp. 440.

In (B), the real positions of both parties coincide, thus we have not a zone but one point where agreement is possible. Once again with the existence of a solution, collective bargaining does not ensure that an agreement will be reached smoothly and/or cost-free.

In case (C), there exists a negative contract zone as the union's true position is greater than management's maximum offer. The probability of strike activity or a shut-down is high, although through the course of negotiations each party

will be trying to shift their opponent's real position towards their own real position by employing effective strategies. Strike activity and a negotiated agreement is conditional on the parties' ability to re-evaluate their offers in such a manner, generating a positive contract zone. In terms of bargaining power, a union may secure higher wage gains; (1) The higher management's real position is at the beginning of negotiations, and (2) The larger the union's influence in shifting Mr over the course of negotiations.

The range of indeterminateness imposes on the negotiation process voluntary limits on the parties' bargaining power. Thus from herein the relative not absolute bargaining power and abilities will influence the final wage position within our boundaries. "The parties will comprehend the limits of the range of practicable bargains only through their estimate of relative bargaining powers, which would include, of course, an evaluation of the costs of a strike."⁹⁶

This range of indeterminateness such as proposed by Pigou⁹⁷ is not itself determinate, even though there may exist limitations to the range of bargains. The objective of

⁹⁶ Ibid, pp. 163. For a more detailed discussion of relative bargaining power, please refer to Appendix I.

⁹⁷ A.C. Pigou (1938) assumed when union and management engage in the bargaining process of wage determination : (1) There is a given wage for which the union will not demand above, due to the negative consequences of resulting unemployment; (2) The employer will not want a wage below a certain level for fear of losing part of his workforce. Both (1) and (2) imply that an excessive wage demand will decrease the demand for labour, while

the negotiators is to make a demand which appears unreasonable at first, take on greater respectability as the alternative to its acceptance becomes more obvious (costly).

Within the process of the contract zone, a wage rate will be determined. However, the existence of a contract zone is a necessary but not sufficient condition for a settlement to occur, for strikes may result due to 'accidents' during the negotiation process. Unfortunately the theory it rests upon solely introduces the boundaries and not the explicit process of wage determination. As Edgeworth stated "we cannot answer the second question raised above, within the limits of the contract zone, the actual wage rate is indeterminable".⁹⁸

an excessive wage decrease will reduce the supply of labour, thus setting boundaries to the wage bargaining process. Within these boundary points lies the 'range of indeterminateness'. It is both impossible for a wage agreement outside the boundary points or to determine exactly where within the limits a bargain will be struck.

⁹⁸ F.Y. Edgeworth, Mathematical Psychics. (Original Edition, 1881), pp. 20.

VI. THE ROLE OF ASYMMETRIC INFORMATION
AND STRIKE ACTIVITY

An important determinant of union bargaining power is the threat and use of the strike weapon. The ability of the union to impose costs upon the employer through a work stoppage and the employer's ability to absorb the cost of a prolonged strike while concurrently forcing union members as well to incur costs, underpin the bargaining relationship and the ensuing settlements that occur. Hence, it is the expected cost of striking to the parties that will determine to a large extent their bargaining positions and the resultant strike probability and mutual agreement. Therefore, expectant participant costs are assumed to play a crucial role in models of strike activity.

It would seem logical for both parties, if they could agree to the post-strike settlement prior to strike activity, for strikes do have a price of disagreement. In a cause-and-effect framework, faulty negotiations or 'accidents' trigger strikes. However, there lies a defect in such an argument for the causes (accidents) would imply a stochastic pattern of strikes, contradicting the observed evidence of systematic patterns.⁹⁹

⁹⁹ W.S. Siebert and J.T. Addison, "Are Strikes Accidental?" (The Economic Journal, June 1981), pp. 79.

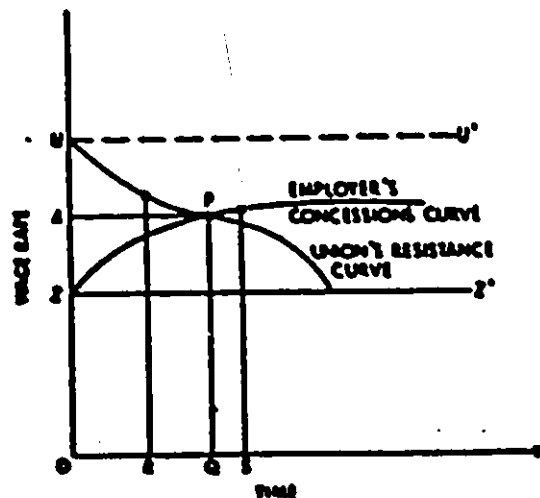
To account for strike activity, theories have been proposed that incorporate such factors as: individual or joint costs; asymmetric information; miscalculation; time (current strikes may impinge upon future bargaining power); deviating preferences between the union leader, union membership and employer, and other variables that will be subsequently discussed. With the preferences of both the union and employer established, the contract zone acts as an area of negotiation from which an agreement is reached. In particular, the contract zone demonstrates a range of bargains that can be potentially negotiated through the bargaining process. Given this foundation, "the approach taken here, on the other hand, is to impound the bargaining process in a 'black box', and make assumptions about the outcome of this process, based on a natural extension of the postulate of rational behavior."¹⁰⁰ To properly account for these components, the most recent major theoretical contributions to strike activity by way of laying down the historical groundwork as proposed by Sir John Hicks (1932) are reviewed.

¹⁰⁰ J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (Journal of Labor Research, Vol. 1, No. 1, 1980), pp. 92. To further explore theoretical postulations on bargaining behavior please consult: Zeuthen (1930), Nash (1950), Pen (1952), Harsanyi (1956), Schelling (1963), Bishop (1964), Walton and McKersie (1965), and Cross (1965).

vi(a). The Hicksian Analysis of Wage Determination
and Strike Activity

To commence our discussion of the theory of strike activity, the seminal contribution of Sir John Hicks (1932), who proposed a solution to the bargaining problem by formulating a relationship between the length of a strike and the wage rate that is demanded by each party (see Figure 10) is presented in detail.

Figure 10



Source: Sir John Hicks, The Theory of Wages. (London: The MacMillan Company, Ltd, 1932), pp. 142.

Hicks derived two curves that were constructed by each party accounting for the gains to be had through the continuance of strike activity, or acceptance of the other's offer. Explicitly, the employer's concession curve (ECC) is

a schedule of wages and length of strike duration, such that each period of work stoppage corresponds to the highest wage an employer will offer, rather than have a strike of that situation. At the offered wage, the expected cost of the stoppage and the expected cost of the concession are to be equivalent. At any lower wage the employer will accept, at any higher wage the employer will prefer strike activity. The curve will not rise beyond a certain fixed level as it is assumed that there are limitations to union power in raising wage rates (i.e. $dECC/dT = 0$, $T \geq T_i$).

The union resistance curve (URC) displays the combination of strike time the workers are willing to engage in to prevent their wages from falling below a corresponding level. Assumed is a finite period of strike time beyond which the union cannot endure. Often there will be a horizontal period along the curve indicating a wage level that the workers themselves feel entitled to.¹⁰¹ The Hicksian model illustrates the location and slopes of the ECC and URC are important determinants of the negotiated wage. Variables that lower or flatten the ECC will lower the wage settlement, while variables that raise or flatten the

¹⁰¹ Implicit in J.R. Hicks' work is the concept of bargaining power. The proposition of the willingness of the employees to undertake a strike and of management to resist depends upon what is to be gained by such a sacrifice. The length of strike activity is a function of the relative return. The higher the wage increase demanded by the union, the more willing is an employer to face a long strike, and the more willing a union is to engage in a long strike, the greater the potential gain.

URC will increase the wage settlement.¹⁰²

One then might assume a determinable solution would yield a wage rate of A after a strike of length Q . However, if this applies to the negotiation period before a strike, the process of negotiation is extremely clear cut as both parties have full information and foresight to accurately estimate one another's concession and resistance curves.
103

Realistically, the collective bargaining process is characterized by unpredictability and a lack of complete information, "if there is a considerable divergence of opinion between the employer and the union representatives about the length of time the men will hold out rather than accept a given set of terms, then the union may refuse to go below a certain level, because its leaders believe that they can induce the employer to consent to it by refusing to take anything else; while the employer may refuse to concede to it, because he does not believe the union can hold out long enough for concession to be worth his while. Under such circumstances, a deadlock is inevitable, and a strike will ensue, but it arises from the divergence of estimates, and

¹⁰² The position of the curves are a function of the demand and supply conditions that exist in the relevant markets. Traditionally the Marshall-Hicks laws of derived demand contribute in determining union bargaining power (see Chapter IV).

¹⁰³ Hicks proposes that if each party had symmetric information about the other's concession curve, there would be no strike. Implying a determinate negotiated outcome would occur where the two curves intersect.

from no other cause".¹⁰⁴ Clearly by misinterpreting one another's signals, the variable of uncertainty plays a significant role in the process of wage determination.

Moreover, one may also interpret Hicks' proposal of wage determination after negotiations have broken off with an ensuing strike. As the strike proceeds, union demands recede, and the employer's offer increases eventually converging to a mutually compatible wage rate, (in our case, A) after Q periods of strike activity. However, this perspective gives the reader an analysis of wage determination after negotiations have collapsed (ex post), and does not enlighten the reader within the theory of negotiation. When strike activity has occurred, the estimation of both parties' curves may induce agreement or prolong strike activity. Where the two curves intersect we have a defined wage rate and strike period. If the union demands a higher wage rate, management will not accept it for they conclude a strike of long duration that would be required to secure this high wage would not make it worth their while for them to give way.

¹⁰⁴ Sir John Hicks, The Theory of Wages. (2nd Edition, New York St. Martin's Press, Inc, 1966), pp. 143.

Hicks views negotiation as a more favourable tool than striking, in securing wage gains. "Although by luck, it may sometimes happen that a better settlement (from the union point of view) is secured by striking than could have been secured without a strike, the general presumption is that a strike is a sign of failure on the part of the union officials".¹⁰⁵ However, should management become complacent in negotiating the collective agreement, unions may exercise the strike option, thus keeping management honest in terms of negotiating in good faith. Hicks continues, "any means which enables either side to appreciate better the position of the other will make settlement easier; adequate knowledge will always make a settlement possible. The danger lies in ignorance by one side of the other's dispositions, and in hasty breaking-off of negotiations".¹⁰⁶

Conciliation and periodic meetings to recognize and appreciate one another's position and concerns is recommended. Hicks discusses the importance of the role of a mediator to smooth over the points of difficulty while putting forward a mutually acceptable proposal. If a mediator has an aura of impartiality, it may be easier for each party to yield to him /her than to the other party. However, one problem with mediators is that often their approach is legalistic (judicial), biased towards the trade unions claims for rights and freedoms while not giving equal

¹⁰⁵ Ibid, pp. 146.

¹⁰⁶ Ibid, pp. 147.

weight to the economic consequences. Alternatively, unions fear that arbitrators harbour class prejudice, such that the "bias of legalism is less easily recognized, and so more insidious."¹⁰⁷

Hicks maintains that the strikers' ability to hold out is a function of: (1) Union funds; (2) Strike pay; (3) Members' personal savings, and (4) The attitude of other parties towards striking (in order to accept credit notes from strikers or to give loans or donations). The stronger these components, the healthier will be the union, and the greater chance of achieving a given level of wages. The determinants of the cost of a strike for management are: (1) The degree to which the union can make the strike effective in causing a stoppage of the employer's business; (2) Direct costs of the stoppage (i.e. foregone profits, fixed charges left uncovered), and (3) The indirect loss through breaking contracts and disappointment of customers. The higher these costs, the greater will be the shift in an upwards direction of the employer's concession curve (ECC), allowing the union to secure a higher wage gain.

There have been limitations and criticisms of the Hicksian approach to industrial disputes. If OA (see Fig. 10) is the determinate wage outcome of bargaining, certain difficulties arise. The intersection of both curves implies that both parties anticipate the length of the strike to be

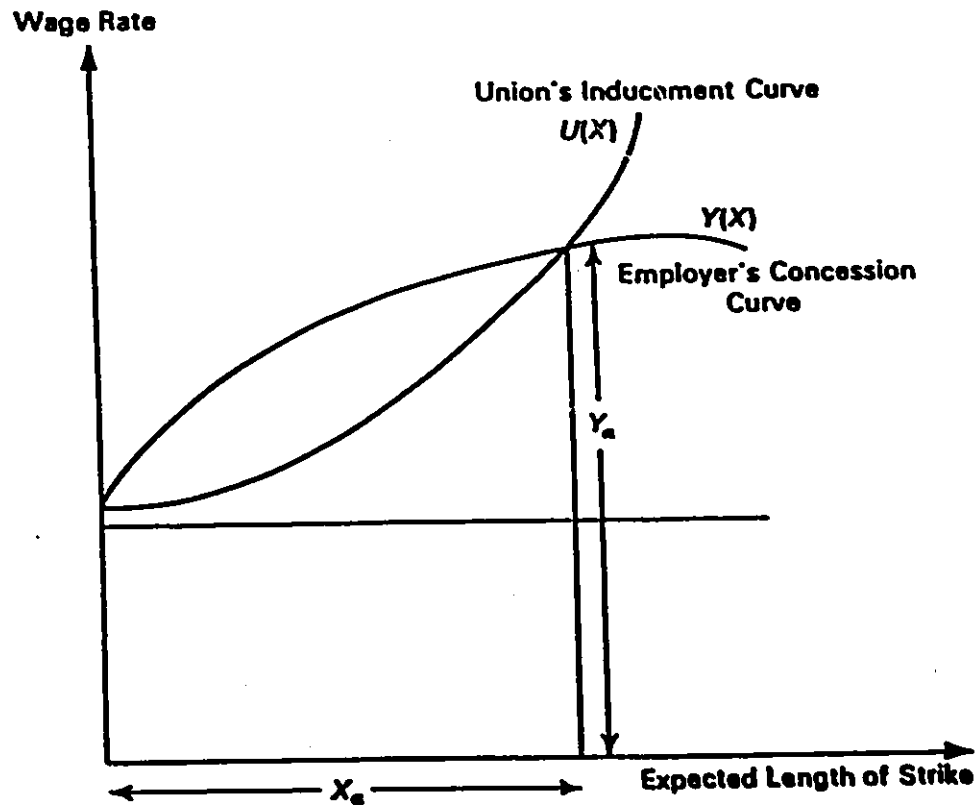
¹⁰⁷ Ibid, pp. 150.

00; therefore there is no bargaining problem. J. Pen (1952) criticizes Hicks on this point by stating "this situation will only be realized by the merest of chance",¹⁰⁸ the probability that both parties anticipated length of the strike will coincide is highly unlikely for each party on the basis of their information and calculations, may have differing expectations with regard to the length of strike activity. Thus determining nothing more than a contract zone which may be above or below the determined wage OA, (from an ex ante point of view). If we view the two curves as the actual time paths (ex post analysis) which will occur after negotiations have ended, it seems acceptable to assume a wage of OA will be reached. However, Hicks' insight does not give us any additional information concerning the bargaining process, except that over a continuing period of strike activity both parties will concede ground.

G. Shackle (1964) criticizes the shape of Hicks' union resistance curve, "....Professor Hicks started out, in his quest for bargaining determinacy, with the idea at the back of his mind that he needed a Marshallian scissors diagram and that since the employer's concession curve must evidently have a positive slope it would be desirable for the other curve to have a negative slope. Having gone thus far it would be natural to seek a meaning for the other

¹⁰⁸ J. Pen, "A General Theory of Bargaining", (American Economic Review, 1952), pp. 26.

Figure 11



Source: W.H. Miernyk, The Economics of Labour and Collective Bargaining. (D.C. Heath and Company, 1973), pp. 394.

curve which would make it slope downwards to the right, as required for a guaranteed scissors intersection".¹⁰⁹ Shackle indicates the URC implies the lower the wage rate, the longer a union would continue to strike. In modifying Hicks' model, a 'union inducement curve' is inserted in place of the URC, reflecting the unions desire to achieve a higher level of wages the longer strike activity takes place. In Figure 11, the employer would yield a wage of Y_a instead of prolonging a strike beyond X_a .

Hence in the Hicksian interpretation, the degree of incomplete or asymmetric information contributes to each party's inaccuracy in assessing one another's position. The advantage of complete or symmetric information is to forgo the imposed costs of strike activity, while concluding a negotiated settlement that may be identical, but more efficient.

¹⁰⁹ G. Shackle, in "The Theory of Wage Determination". (edited by J.T. Dunlop, London: MacMillan and Co. Ltd., 1964), pp. 303.

vi(b). Recent Theoretical Contributions to Models of Strike Activity and the Role of Asymmetric Information

Presented in this section is a thorough inquiry into the recent major theoretical contributions to the role of strike activity. Stressed is the underlying role that asymmetric information plays and the expected costs of strike activity each side would prefer to minimize while reaching a mutually satisfying agreement.

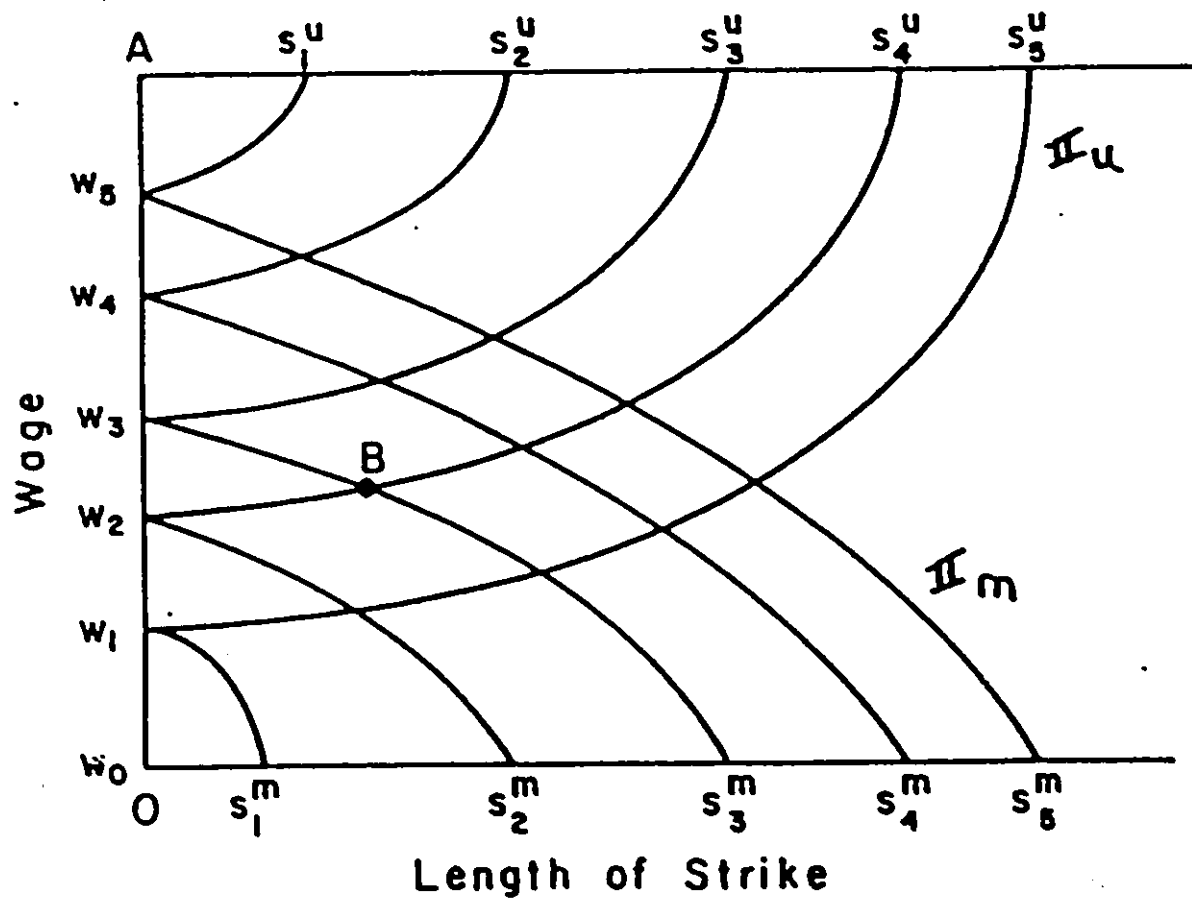
Although a review of the most recent models of strike activity is presented, it would be unrealistic if the important role the bargaining process played in understanding why strikes activity occurs was not acknowledged, and in the same context, why negotiations occasionally fail. However, to address these theories of bargaining behavior would be beyond the scope of this Thesis.

COMAY and SUBOTNIK (1977):110

In a re-statement of Hicks' model, Comay and Subotnik (1977), illustrate that strike activity is not optimal, and attributable to the role of imperfect information by employing a utility maximization approach (see Figure 12).

110 Y. Comay and A. Subotnik, "A Reinterpretation of Hicks' Bargaining Model". (in Essays in Labour Market Analysis, edited by O.C. Ashenfelter and W.E. Oates, 1977), pp. 45-52.

Figure 12



Source: Y. Comay and A. Subotnik, "A Reinterpretation of Hicks' Bargaining Model". (in Essays in Labour Market Analysis, edited by O.C. Ashenfelter and W.E. Oates, 1977), pp. 50.

I_{Im} , management's utility function, is of the form $I_{Im} = I_{Im}(w,s)$. Where w is the wage offer and s the length of strike. I_{Im} will decrease the higher the wage offer and the longer a strike prevails, ceteris paribus:

$$\frac{dI_{Im}}{dw} < 0, \frac{dI_{Im}}{ds} < 0 \quad (1)$$

$$\begin{array}{cc} \text{-----} & \text{-----} \\ dw & ds \end{array}$$

I_{Iu} , the union's utility function, is of the form $I_{Iu} = I_{Iu}(w,s)$. Where higher wage offers increase utility and longer periods of strike activity decrease it:

$$\frac{dI_{Iu}}{dw} > 0, \frac{dI_{Iu}}{ds} < 0 \quad (2)$$

$$\begin{array}{cc} \text{-----} & \text{-----} \\ dw & ds \end{array}$$

Inequalities (1) and (2) imply that management's;

$$\frac{dw}{ds} = -\frac{dI_{Im}/ds}{dI_{Im}/dw} < 0 \quad (3)$$

$$\begin{array}{cc} \text{--} & \text{-----} \\ ds & dI_{Im}/dw \end{array}$$

and the union's;

$$\frac{dw}{ds} = -\frac{dI_{Iu}/ds}{dI_{Iu}/dw} > 0 \quad (4)$$

$$\begin{array}{cc} \text{--} & \text{-----} \\ ds & dI_{Iu}/dw \end{array}$$

indifference curves will be negatively and positively sloped.

Each indifference curve contains the combination of wage offer and length of strike that yields a constant level of utility. Introduced is a 'time equivalent' (denoting the amount of strike activity each party is willing to endure in absence of attaining their wage demands) for any given level of wages, where S_m expresses the time equivalent for management of various wage positions, while S_u expresses the time equivalent for the union.

Any point to the right of the axis OA is not Pareto optimal since either party can be better off without adversely affecting the other. Any wage settlement between W_2 and W_3 requiring no strike activity is preferred to point B. Hence any settlement along the vertical axis is assumed to be Pareto optimal.

Comay and Subotnik demonstrate that static equilibrium exists at (W_3, S_3) "equilibrium will be reached when both parties are willing to incur the same price (length of strike) for the same wage rate"¹¹¹ (concurring with Hicks' a priori model where ECC and URC intersect). At this stage, utility maximization may take place, on the condition of acceptance.

The concept of asymmetric information (as stated by Hicks in 'The Theory of Wages', pp. 143) is crucial in the miscalculation of one another's concession curves "if each

¹¹¹ Ibid, pp. 51.

party knew the shape and position of the other's curve, there would be no cause for a strike; in a world of perfect knowledge, strikes would occur solely through irrationality or errors of judgement. In practice, each party is cognizant only of his own behavioral curve. Bargaining is thus a process of mutual discovery, an indispensable tool in wage settlement".¹¹² The application of a heterogeneous set of informational variables may lead to erroneous estimates, while increasing the likelihood of a strike.

Illustrated in a different manner, the implications of the Comay and Subotnik model parallel those of Hicks. Pareto optimality is a precondition for utility maximization, assuming each party, based on their own expectations has arrived at a mutually acceptable wage demand.

ASHENFELTER and JOHNSON (1969)¹¹³

The Political Model

The Ashenfelter and Johnson 'Political' model expresses the view that strikes play an important part in the learning process by adjusting mutually inconsistent offers over the period of strike activity. The political connotation is attributed to the authors' integration of Ross' (1948)¹¹⁴

¹¹² Ibid, pp. 51.

¹¹³ Orley Ashenfelter and George Johnson, "Bargaining Theory, Trade Unions, and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 35-49.

¹¹⁴ A. Ross, Trade Union Wage Policy. (University of California Press, 4th Edition, 1956), Chapters 1-3.

conception of the nature of unionism. By this view the intentions of the union leadership are: (1) To maintain the survivability of the organization while promoting union growth as an institution, and (2) The personal political objectives of the leadership.

The inclusion of Ross' political ideology permits Ashenfelter and Johnson to derive a new approach to union-management negotiations by recognizing that not only two parties (as in the traditional bilateral monopoly situation), but three, namely, management, the union leadership and the union rank-and-file exist. The division of the union into two partitions is linked to differences in objectives and information each group has access to. The union leadership will pursue their own objectives, while in the interest of maintaining their elected positions will provide the rank-and-file with an acceptable level of benefits.

If the membership's wage demands are higher than what the firm is willing to agree to, the union leadership is faced with a dilemma: (1) Either they sign the agreement that is less than what the rank-and-file expected, with the possibility that the membership will not ratify the proposal leading to charges of 'selling out' to management. Or, alternatively, the union leadership may use 'moral suasion' as a means of reducing the membership's wage expectations, thus accepting management's offer, or (2) The leadership recommends strike activity for they might not risk the

detrimental impact upon their position by signing an unacceptable agreement for the rank-and-file; "under strike conditions the leadership may at least appear as adversaries against management in a crusade which may even raise their political 'stock' and will unify the workers."¹¹⁵

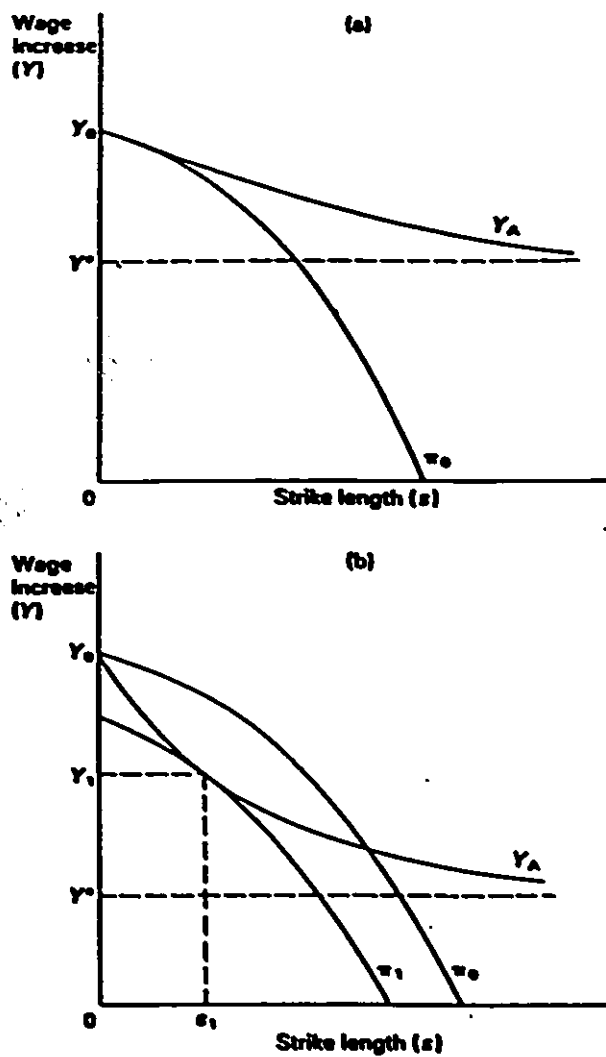
As the strike progresses, unrealistic high wage expectations by the membership will begin to recede due to the loss of income. "The outbreak of a strike, however, has the effect of lowering the rank-and-file's expectations due to the shock effect of the firm's resistance and the resultant loss of income. After some passage of time the leadership feels that the minimum acceptable wage increase has fallen to a level at which it can safely sign with management, and the strike ends."¹¹⁶

Thus the strike acts as an equilibrating force by bringing in line worker's wage expectations with what the firm is able to pay. In this manner, the strike reconciles the expectations of the rank-and-file and those of management.

¹¹⁵ Orley Ashenfelter and George Johnson, "Bargaining Theory, Trade Unions, and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 37.

¹¹⁶ Ibid, pp. 37.

Figure 13



Source: B.T. Hirsch and J.T. Addison, The Economic Analysis of Unions. (London: Allen & Unwin, 1986), pp. 90.

Bargaining is assumed to be over the negotiated wage increase and not the level of wages. It is also assumed that all non-wage items have monetary value and are imputed into the negotiated wage.

Figure 13(a), illustrates the model. Y_a is the union concession curve faced by the firm indicating the wage increase that is acceptable to the rank-and-file and that this acceptable wage is related to strike activity. The dashed Y^* line indicates the minimum acceptable wage increase to the union after a strike of infinite duration. Y_o is the minimum wage acceptable with no strike activity occurring. Functionally, the union's concession curve: $Y_a = Y^* + (Y_o - Y^*) e^{-rs}$, with r being the rate at which Y_a decays over the duration of a strike (s). II_0 is the firm's isoprofit curve indicating the trade-off between Y_o and the length of a strike. As in in section v(b)., the firm increases profits the closer the isoprofit curve is to the origin. However this optimization process is constrained by the union's concession curve (see Figure 13(b)).

Ashenfelter and Johnson assume the reduction of wage demands as strike activity progresses is fully anticipated by the firm, "in fact the employer is perfectly aware of the union's concession curve - that is, he knows the wage rates that will be accepted by the union following strikes of various durations."¹¹⁷ Hence the firm's goal is to maximize

¹¹⁷ R. Lacroix, "Strike Activity in Canada", (In Canadian Labour

its present value of its profit stream by choosing an optimum trade-off between foregone profits during strike activity and increased costs after a strike subject to the union's concession curve, resulting in a determinate wage and strike length. In this sense then, the model is not a bargaining model per se, but rather postulates profit maximization by the firm is subject to the constraint of the union's concession schedule.

In figure (a), no strike occurs for the wage rate Y_0 is agreed on with the firm maximizing profits. In figure (b), the firm will maximize profits (Π_1) at a level that is higher than if a strike had not occurred, yielding a wage settlement of Y_1 after a strike of s_1 periods.

One implication of the Ashenfelter and Johnson model is that the union rank-and-file seem to cause strike activity by demanding excessive wage increases even though strikes are not in the best interests of the less informed membership.¹¹⁸ "The union leadership, while more accurately aware of the bargaining possibilities, nevertheless goes along with the membership to avert any challenge to its continued tenure in office."¹¹⁹

Relations. Edited by W. C. Riddell. University of Toronto Press, 1986), pp. 165.

¹¹⁸ Implicit in the model is the role of asymmetric information in that deviating preferences result from the degree of accessibility to valuable information.

¹¹⁹ B.T. Hirsch and J.T. Addison, The Economic Analysis of Unions. (London: Allen & Unwin, 1986), pp. 91.

Ashenfelter and Johnson additionally focus on the union's concession curve and how differences in their slopes affect strike activity. Unfortunately, they do not give the firm's isoprofit curve the same consideration. The authors conclude a strike is more likely: the higher the union's minimum acceptable wage increase; and the higher the union's rate of concession (for it pays the firm to participate in strike activity). A strike is less likely: the greater is the role of the pre-agreement profit level to the wage bill; the greater the discount rate of the union (i.e. the rate at which they discount future consumption relative to present consumption); and the higher the union's minimum acceptable wage increase after a strike of infinite duration (Y^*).

However there exist certain reservations with respect to the Ashenfelter and Johnson model. (1) The assumption of the employer possessing an informational advantage (which the union leadership has accepted) by hoarding pertinent information that is necessary in deciding whether or not to strike is questionable. Public firms by law must disclose information that would be considered vital to the union with respect to not only assessing their bargaining position, but their proposed (expected) wage increase.¹²⁰

¹²⁰ Other studies by Pencavel (1970), Smith (1972), Ghali (1977), and Farber (1978) have employed the Ashenfelter and Johnson model as the theoretical basis for their empirical inquiry into strike activity. These models were precluded from the Thesis on the grounds: (1) The original seminal publication was an important contribution to the development of theory and empirical analysis in this field despite its limitations, and (2) Given the new theoretical and empirical models, the author

(2) The Ashenfelter and Johnson model fails to specify the characteristics of the objective function that reflect the objectives of the union leadership. Once an offer has been accepted by the union membership, the union settles. The union leadership does not pursue their own special interests, but act as perfect agents for their irrational clients.

(3) The Ashenfelter and Johnson model views the union as a 'passive' body, suggesting the existence of a 'one-way mirror', in that the firm is fully aware of the union's concession schedule, but the union cannot make the same determination given the implicit assumption of asymmetric information. In this respect, the responsibility of strike activity is put squarely on the shoulders of the union. From an alternative perspective, other studies (Eaton (1972), Rabinovitch and Swary (1976), and Siebert and Addison and Bertrand (1985) have employed the converse assumption.

The Ashenfelter-Johnson model is a departure from other models that will be treated in this section. Emphasized is the degree to which both management and the union leadership similarly interpret the available information with the rank-and-file making over-zealous wage demands as a result of asymmetric information. Thus given their limited information, the membership assumes that they are acting in

concluded that further studies along the lines of the Ashenfelter and Johnson approach would provide no additional insight to the original intent of the Thesis.

a rational manner. The leadership endorses a strike not only for political expediency, but as a means of last resort that will bring into focus the current economic realities.

As a complement to the Ashenfelter and Johnson political model, Eaton¹²¹ develop's a model whereby the union is fully aware of the employer's concession schedule and can thus maximize its 'net benefit function' by selecting an optimal wage-strike combination. Unfortunately, Eaton's model does not derive a strike equation with a set of a priori assumptions concerning the effect of macroeconomic variables, but rather empirically measures (in dollars), the profitability of a strike.

Eaton's goal is not to present the perfect model of strike activity, but is derived with the Ashenfelter-Johnson model in mind. "The model is obviously incomplete, since it does not deal with the inverse relationship between union demands and strike duration. The model is mentioned here only as the missing half or the rather cynical treatment of the strike by Orley Ashenfelter and George Johnson".¹²² The author goes on to suggest it is not one model or the other that truly reflects the union-employer wage-strike nexus, but is a process of mutual interdependence in that one party's offer is dependent upon the other's demands. "The

¹²¹ B. Curtis Eaton, "The Worker and the Profitability of the Strike". (Industrial and Labor Relations Review, October, 1972), pp. 670-679.

¹²² Ibid, pp. 674.

interdependence is the essence of the bargaining process, and any model which ignores it is severely deficient".¹²³

As with the Ashenfelter and Johnson model, the Eaton study is subject to mutual criticism, in that there exist shortcomings of theory and application. The main difficulty with all of these models is that there is no room for a realistic bargaining scenario whereby the two party's jointly concede ground (in this respect, Kaufman's (1981) Interactive model is preferable).

REDER and NEUMANN (1980)¹²⁴

The Protocol Model

The approaches of Reder and Neumann and Kennan (in the following sections) depart from the alternative theories that attribute strike activity to asymmetric information, intra-union political factors, exogenous factors (the rate of unemployment and inflation), industry characteristics (concentration ratios), or work environmental elements (morale and injury rates).

Reder and Neumann posit that high strike costs (relative to the cost of avoiding a strike) lead to the development of a 'bargaining protocol' that in turn reduces the probability

¹²³ Ibid, pp. 675.

¹²⁴ M.W. Reder and G.R. Neumann, "Conflict and Contract: The Case of of Strikes". (The Journal of Political Economy, Vol. 88, No. 51, 1980), pp. 867-886.

of strike activity.

The incidence of strike activity is influenced by the institutional structures and bargaining style that are put forward by each negotiating party. The authors indicate these structures and styles are of joint choice and can be justified in terms of the relative cost of strikes.

The present objective of the authors is to demonstrate that "the incidence of strike activity across industries varies inversely with the cost of such activity. While this result is not implausible, it is not the usual explanation of differential strike behavior: indeed to the best of our knowledge, it is a factor to which very little attention has been paid."¹²⁵

In this respect, bargaining pairs with high joint strike costs develop a detailed protocol that as a result, yield a smaller expected number of strikes (by reducing the number of potentially contentious issues that must be dealt with at renegotiation time). Reder and Neumann define protocol as the procedure for negotiating agreements by providing conventions that guide bargaining behavior while improving the efficient interpretation of bargaining signals. Covered are such items as what information will be made available, which issues are bargainable, the time and place of meeting, the authority and/or organizational titles of bargaining

¹²⁵ Ibid, pp. 868.

representatives, specification of a previous contract and when it will continue to apply after its expiration date, requirements to introduce mediation and/or arbitration into the negotiations, the specification of various types of benefits, rates and methods of compensation according to worker skill, and the payment of wages responsive to those of similar industries and to the rate of inflation.

In this sense, negotiations may be very 'strict' by applying a formula or pattern to follow. Alternatively, the 'looser' the specifications of protocol, the greater the opportunity for disagreement, tactical maneuverability and strike activity.

Hence the focus is upon a sequence of negotiations whereby each bargainer during the negotiation process acquires information concerning the other's behavior so that an explicit rational protocol may be developed to guide subsequent bargaining. During negotiations, it is assumed that: (1) Mutual learning occurs "with the result that each is better able than an inexperienced bargainer to predict the minimum pay-off that will induce the other party to accept a contract,"¹²⁶ (2) The protocol places limitations upon a bargainer's behavior (each bargainer is aware and accepts that learning about their behavior has occurred) for within the confines of the negotiation process, their behavior must be compatible with previous learning. "Failing

¹²⁶ Ibid, pp. 869.

such a limitation one's bargaining partner loses the ability to interpret signals, and the bargaining protocol breaks down."¹²⁷ These limitations imposed by an agreement in protocol are assumed to restrict the ability of the bargainer to achieve an expected pay-off.¹²⁸ However by ignoring the protocol they would not be able to gain more than $E(V(t))$. Given these assumptions, a bargainer will accept these conditions if the savings in expected costs of strike activity exceed the expected loss from the formalized restrictions of protocol.

To the authors, strike activity reflects differences in the protocol of experienced bargainers,¹²⁹ with each specified protocol having an expected cost of strike activity over its life. Given that strikes are costly, it is assumed that both parties jointly wish to minimize some increasing function of the probability of strike occurrence and the expected strike duration given its occurrence.¹³⁰

¹²⁷ Ibid, pp. 869.

¹²⁸ If their behavior were unrestricted, they would be able to attain an expected pay-off of $E(W(t))$. With the existence of protocol, the bargainer may have to accept an expected pay-off of $E(V(t))$, where $E(V(t)) < E(W(t))$, but would not permit the bargainer to gain more if they chose to ignore the protocol. If both parties can be swayed to accept a lower pay-off, this reduction must be more than offset by the expected saving in strike costs over the period of the agreement.

¹²⁹ Reder and Neumann focus their attention upon experienced bargaining pairs, for inexperienced or incompatible bargainers may not have adequate skills in developing a long term relationship, thus adversely affecting their survivability.

¹³⁰ The parties choose the protocol that minimizes the sum of present and future strike costs plus the cost of specifying the protocol. According to Siebert and Addison, the protocol shifts the strike probability - optimal negotiation period function ($p-N$ curve) such that for each successive bargaining period, strike

The existence of a protocol that covers a multitude of scenario's may not be efficient when the costs of protocol increase with their complexity, therefore they must be balanced against the reduction in expected strike costs. The protocol is viewed as a reaction to increasing total expected joint strike costs. Implying the greater the expected total joint strike costs, the lower the probability of a strike.

Through the development of this theoretical approach, strike activity is attributed to other factors than union or management aggressivity. The protocol evolves with the specific goal of reducing the uncertainty that surrounds the negotiation process by providing a framework that permits each party to clearly interpret one another.

Although Reder and Neumann consider from an initial point of departure the total joint costs of both parties, they do not expand on the distribution within this sum total. If unequal strike costs exist, they may be translated into bargaining concessions that may not have an impact on strike probability (given a certain degree of symmetry of information). Therefore it may be tempting to quantify on an individual basis, the costs of strike activity where the opponent incurring greater costs will concede certain bargaining issues that may reduce strike activity.¹³¹

probability has been reduced.

¹³¹ D.R. Maki, "The Effect of the Cost of Strikes on the Volume of Strike Activity". (Industrial and Labor Relations Review,

Alternatively, these costs may be considered 'true' joint costs that require a symbiotic relationship (such as net output losses).

KENNAN (1980)¹³²

The Pareto Optimal Tendency Model

As in the Reder and Neumann protocol model, Kennan takes the position that it may be most efficient on theoretical grounds to treat the union-management dilemma as a joint maximization problem by stating that the frequency and duration of strike activity are inversely related to the joint strike cost (i.e. the sum total cost to management and union). If joint strike costs are low (ex: a large union strike fund, the ability of management to recruit scab labour and replace lost output with increased pre and post-strike production) the incentive to negotiate to improve the collective bargaining framework or acquire costly information will diminish as an avenue of avoiding a strike.

Kennan proposes a new approach to the theory of strike activity based upon collective or joint behavior of the union and firm. The concept of the 'Pareto Optimal Tendency' (POT) is developed, in that the desire to reach the POT is strongest when the total joint cost of strike activity are

Vol. 39, No. 4, 1986), pp. 554.

¹³² J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (The Economic Journal, Vol. 1, No. 1, 1980), pp. 77-94.

the greatest.¹³³

The most obvious implication of the POT hypothesis is that strike activity should be most prevalent during a recession than in an expansion for strike costs on average would be lower during a recession. However, much of the empirical evidence tends to suggest that strike activity varies procyclically.

Kennan argues that in spite of the observed data, it would be premature to reject the POT hypothesis based upon the empirical evidence for: (1) There would be a simultaneous denial towards pareto optimality during collective negotiations; (2) The stakes of the bargaining game are greater at the height of the business cycle, increasing the probability of a conflict, although the author dismisses the gravity of this point, "the observed peak in strike incidence near the peak of the business cycle may be caused by large numbers of short strikes over rather trivial issues, which are little more than spontaneous holidays;¹³⁴ (3) To reflect the heterogeneity of issues, disaggregated data should be employed to measure fluctuations in strike activity, and (4) Conditional settlement probabilities should be utilized in place of the number of strikes for they provide a more sensitive measure

¹³³ Rational economic behavior and the inefficiency of strike activity drive the two parties towards the POT.

¹³⁴ J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (The Economic Journal, Vol. 1, No. 1, 1980), pp. 79.

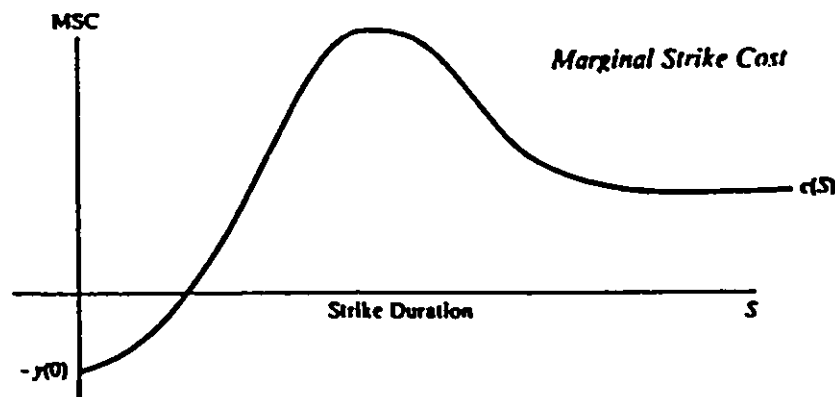
of strike activity. Conditional settlement probabilities¹³⁵ tend to rise during the peak of the business cycle (as the POT suggests).

Featured with the POT, is the concept of Marginal Strike Cost (MSC), defined as the incremental cost to both sides if the strike lasts more than one day. Most theories state that the MSC varies directly with the length of a strike, implying an increasing settlement probability. However Kennan's conception of the MSC is quite different from its generally accepted form.¹³⁶

¹³⁵ Kennan illustrates the concept: "if two strikes A and B are currently in effect, and A has already lasted a week while B has been going on for a month, then in the absence of any other information, A will probably end before B. In other words, the conditional settlement probability decreases with age." Ibid, pp. 79.

¹³⁶ The author argues the reasoning behind the traditional MSC is invalid; stating that errors of aggregation in the aggregate settlement rates are dominated by aggregate bias.

Figure 14



Source: J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (The Economic Journal, Vol. 1, No. 1, 1980), pp. 83.

The MSC curve is illustrated in Figure 14. The proposition has been reformulated in a unique manner with the MSC reaching a peak and then declining with strike duration (s). The shape of the MSC is a function of joint strike costs incurred over the period of strike activity. The profile of the MSC curve will be affected by assumptions concerning inventories, goodwill and worker's income.

The set of assumptions underlying the MSC function are;

- (1) If inventory has been accumulated in anticipation of a strike, the MSC will be low for the strike period in which the inventory lasts. The MSC will be dominated by a gradual decline in worker's income, and will be generally negative

for small (s). (2) Once inventory has been depleted, the firm's order book will begin to accumulate with unfilled orders, with the MSC being the interest charge (cost) on these foregone orders increasing with (s), subtracting for worker's strike income which decreases with (s). (3) A sharp increase in the MSC occurs when new orders must eventually be turned away. This may damage the firms goodwill, for new orders may permanently be lost when customers locate new suppliers and, (4) With a long strike, the MSC is dominated by the fact that the worker's strike income usually levels off to some constant value¹³⁷ and new orders will turn away towards other suppliers when their order book is full. Thus the MSC will reach some limiting value.

The author's initial postulate synthesizes increasing joint total costs with reduced strike probability. However the analysis of joint total costs is disaggregated into continuous incremental units via the MSC. Through the construction of the MSC curve, the concept of conditional settlement probability is linked to the POT. That is, over short strike durations settlement is increasingly probable than over longer periods, not only due to joint total costs, but to the distribution of joint total costs over (s) incremental strike periods.

¹³⁷ It is expected that the marginal value of worker income will decline with (s) due to diminishing returns to alternative uses of time and depletion of union strike funds, reaching some non-negative bound where the worker's income will be constant.

Kennan views the relationship between union and employer as a partnership, in that the returns from the partnership are greater than the returns each party could individually generate. Specifically, the value of the relationship is measured as the present value of total joint revenue minus the sum of the opportunity costs to each party.¹³⁸ If a strike were to occur, there would be a temporary suspension of the partnership and joint returns, although this inconvenience may be off-set by post-strike revenue.

The author also conceives of a total cost function where it is important to consider the income and expenditures that occur due to the strike itself and would not have taken place otherwise,¹³⁹ (such as worker's income from temporary employment, or the ability of the firm to lease some of its capital equipment during the strike) these proceeds must be accounted for, and deducted from the total joint costs of strike activity.

Kennan likens negotiations to that of a pie, in that as long as the parties come to an agreement, the pie shall be divided upon such terms. If there is no agreement neither party receives a portion while the size of the pie shrinks for each party jointly incurs strike costs.

¹³⁸ The opportunity costs for each side is the present value on the returns of the best alternative opportunity if the partnership is terminated.

¹³⁹ It is important to consider the income and expenditures that are generated during a strike for they will have an impact upon the conditional settlement probability, thus encouraging negotiations or magnifying disparaging bargaining positions.

The superiority of the POT agreement is due to the mutual agreement that has been reached before the pie begins to decay. Any decay that occurs is viewed as a collective error, for each party is limited to a degree in forming expectations. If part of the pie has been lost, it is due solely to miscalculation or errors of judgement that do not conflict with the assumption of economic rationality. Hence the cause of decay may be attributed not to irrationality, but rather to the role of imperfect information.

Kennan posits that both parties together possess joint rationality and that the outcome of negotiations is determinant in a probabilistic sense. The most frequent outcome of collective bargaining will be Pareto optimal with the frequency distribution of conflict duration being monotonically decreasing.¹⁴⁰

The absolute size of the pie (IIt) and the rate of decay of the pie (ΔIIt) over successive time periods will both have an effect upon the conditional settlement probability of a strike. Thus, for a given ΔIIt , the settlement probability is less, the greater is $IIt-1$.

In applying these concepts to a model of strike activity the author assumes the MSC is equivalent to ΔIIt and allows (s) to vary continuously. Hence, the conditional settlement

¹⁴⁰ J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (The Economic Journal, Vol. 1, No. 1, 1980), pp. 84. As (s) increases the joint burden increases, raising the incentive to effectively negotiate and settle.

probability of a strike after (s) days is a function of: (1) The absolute size of the pie. (2) The MSC curve (equivalent to ΔIIt), and (3) Strike duration. The larger is IIt (relative to ΔIIt), the lower will be the conditional settlement probability, and the larger the MSC the greater will be the conditional settlement probability.

Kennan's model then, is directed towards the examination of conditional settlement probabilities based on the assumptions of the Pareto Optimal Tendency, total joint strike costs, and the MSC function.

SIEBERT and ADDISON (1981)¹⁴¹

The Accident Model

Siebert and Addison employ the Hicksian rationale that the occurrence of strikes (i.e. through erroneous estimation of one another's concession rates), are due to informational asymmetries. The authors argue that strikes can be compared to accidents, in that the probability of having an accident can be foreseen and is a consequence of rational choice, however any one accident cannot be predicted (foreseen) with certainty. Implicit in this proposition is that individuals

¹⁴¹ W.S Siebert and J.T. Addison, "Are Strikes Accidental?" (The Economic Journal, June 1981), pp. 389-404. Incorporated into the theory are the subtle additions of J.M. Cousineau and R. Lacroix, "Why Does Strike Activity Vary Over Time and Between Industries?" (mimeographed, Université de Montréal, February, 1983). These additions in no way alter the assumptions of the Siebert and Addison model, hence full credit is given to the original authors.

demand accident avoidance (safety), and that this demand varies inversely with time costs.¹⁴²

Incorporated into the model is the concept of the probability of a strike that either party is prepared to face as in Zeuthen (1930)¹⁴³ (for there is a chance (risk) that negotiations may break down), and time costs as in Cross (1965),¹⁴⁴ for the cost of time "motivates the bargaining process. If it did not matter when people agreed, it would not matter whether or not they agreed at all."¹⁴⁵ In this respect, time itself limits the parties ability to acquire the complete set of information. The shorter the bargaining period, the less perfect the set of information, the greater the probability of miscalculation. The model also includes the notion of one's relative bargaining power (in the Chamberlain concept),¹⁴⁶ and how variations in each party's relative bargaining power may be reflected in terms of the negotiated wage. The model assumes an exogenously determined trade-off between the negotiation period and

¹⁴² See S. Peltzman, "The Effects of Automobile Safety Regulation". (Journal of Political Economy, Vol. 37, 1975), pp. 239-256. Driver's 'demand' accidents in the sense that they view accidents as an outcome of saving time. Drivers are seen to maximize their income net of expected losses resulting from accidents by choosing a non-zero probability of having an accident. Accidents are seen as voluntary, although any one accident will be involuntary resulting from some miscalculation.

¹⁴³ Frederick Zeuthen, Problems of Monopoly and Economic Warfare. (London: Routledge, 1930).

¹⁴⁴ J.G. Cross, "A Theory of the Bargaining Process". (American Economic Review, 1955), pp. 67 - 94.

¹⁴⁵ Ibid, pp. 71.

¹⁴⁶ N.W. Chamberlain and J.W. Kuhn, Collective Bargaining. (2nd Edition, New York: McGraw-Hill, 1965). Please see Appendix I for an in depth exposition.

strike probability.

Siebert and Addison posit that when negotiations commence, a period of negotiations has been preselected with an expected wage increase and strike probability that will maximize their net gains of bargaining (including negotiation costs and expected strike losses). Bargaining failures that result in strike activity occur because the acquisition of information that is necessary to provide symmetry is too costly. Thus the probability of an accident will be reduced in sectors where expected strike losses are heavy and where negotiations are extended over a longer period of time (i.e. negotiators reduce the strike probability by choosing a longer negotiating period in the situation of higher strike costs, and by making the necessary effort given the expected costs of strike activity, to acquire the crucial and costly additional information).

The exogenously determined trade-off between strike probability and negotiation period is a function of the degree of communication between both parties. The experience of the negotiators is considered as a positive element that will facilitate a favourable trade-off. As both parties acquire an increasing amount of germane information they may be able to signal their strike points with greater ease and less bluffing. The trade-off is assumed to be independent of relative bargaining power, reflecting only the results of skilled negotiations. In these circumstances, with each party well informed about changes in relative bargaining

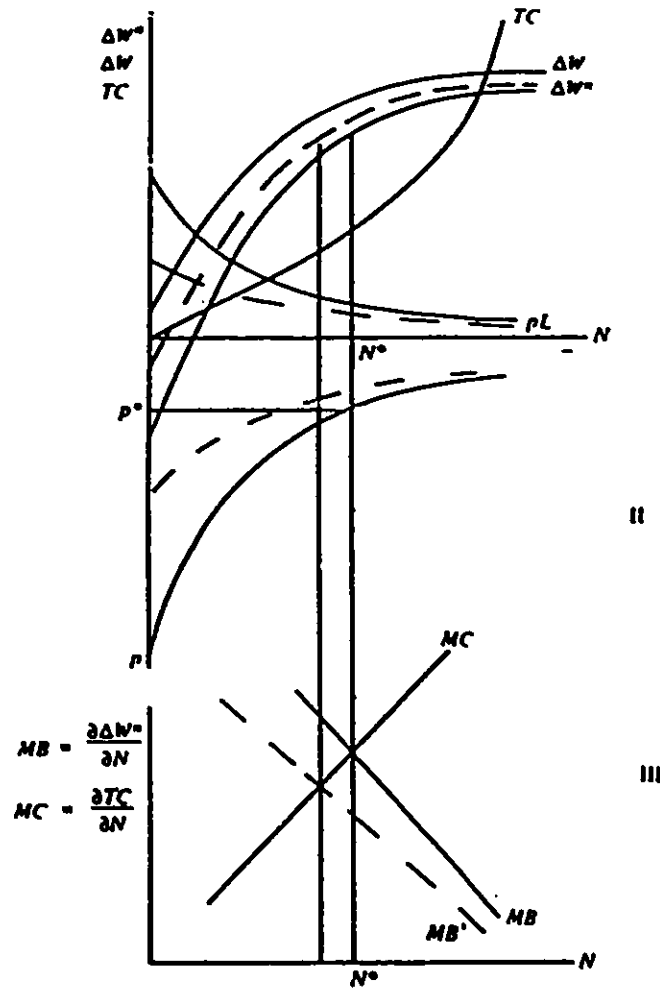
power, the impact will be reflected by an increase or decrease in the negotiated wage. It is assumed that the informational exchanges that indicate such relative bargaining power shifts are perfect and inexpensive to obtain. Logically, the trade-off will worsen the more inexperienced are the bargainers and the greater the task of assessing your opponent's position.¹⁴⁷

Graphically the model is illustrated (see Figure 15), in Quadrant I, the ΔW curve is based upon the union's expectations of various wage increases and length of negotiating periods (N), indicating the best bargain that can be secured through skillful negotiation. For the employer a similar $\Delta \Pi$ curve may be constructed showing profit increases and the length of negotiation.¹⁴⁸

¹⁴⁷ Strike probability will be a consequence of the factors that cause the parties to move up or down an existing trade-off. The skill of the bargainers and the instability of circumstances will determine the position of the trade-off itself.

¹⁴⁸ The upward slope of both parties curves is based upon the assumption of skilled negotiation sessions will be mutually beneficial.

Figure 15



Source: W.S. Siebert and J.T. Addison, "Are Strikes Accidental?" (The Economic Journal, June, 1981), pp. 393.

The position of the ΔW curve is very much tied in to the two parties relative bargaining power. A relative bargaining power advantage in the union's favour will be expected to raise the ΔW curve. The ΔW curve is also sensitive to union strike losses per member (L), and the employer's strike losses. The former varying inversely and the latter directly with the ΔW curve.

ΔW^n represents the subtracted expected strike losses per member (pL)¹⁴⁹ from the 'gross' ΔW curve, resulting in a net benefit of negotiations curve.

In Quadrant II, the exogenous trade-off between subjective strike probability (p) and the negotiation period (N) is shown. The p - N curve is assumed to depend upon the 'ease of communication' between the two parties. The trade-off shifts outwards when it becomes increasingly difficult for the union to properly assess the employer's position and to clearly signal its own. The effective use of communication in the negotiation process is to facilitate each party in signalling their strike points. As an increasing amount of information is exchanged, the ability to bluff or cause instability is diminished.

¹⁴⁹ Strike losses comprise all costs directly associated with a strike if it is called.

The downward slope of the p-N curve is assumed for "the aim of bargaining is to search out more information but that there are diminishing returns to search within any given institutional framework".¹⁵⁰ Moreover, the p-N trade-off is also assumed to be mutually exclusive of the relative bargaining power structure for the trade-off represents the best that can be agreed upon through skilled negotiations. Each side has constructed a viable ΔW and $\Delta \Pi$ curve on the basis of their relative bargaining power. The p-N curve is assumed to be built up on the basis of past negotiations.¹⁵¹

The total cost curve (TC) reflects the cost per member associated with negotiations (such as the cost of maintaining a negotiation team and/or the cost of a postponed contract settlement). The worker's income no longer increases in line with their obligations for real wage levels may substantially decline over the negotiation period with a high rate of inflation, these direct and indirect costs give rise to an upwards sloping TC curve.

In equilibrium, each party wishes to maximize their income/revenue within a desired negotiation period (N^*) and strike probability (p^*). It is at this point (Quadrant III) that the negotiator recognizes the marginal costs of additional information (MC) are equivalent to the marginal

¹⁵⁰ W.S Siebert and J.T. Addison, "Are Strikes Accidental?" (The Economic Journal, June 1981), pp. 394.

¹⁵¹ If the case of symmetric information existed, increases in the relative bargaining power of the union would raise the equilibrium wage and not strike probability.

benefits (MB) (i.e. $d\Delta W_n/dN = dTC/dN$).

The important relationship is the p-N trade-off. Each party constructs its own curve on the basis of expectations (being a function of the degree of information acquired). If it is assumed that through past negotiations some degree of learning has occurred, it might be plausible to expect the trade-off for both parties to be similar (i.e. $P_e^* = P_u^*$, $N_e^* = N_u^*$). "Equilibrium, in sum, occurs when both parties are satisfying their marginal conditions and desired (p^*, N^*) is on average equal to actual".¹⁵²

However, a situation may exist where management was to gain more than the union from negotiations (i.e. $N_e^* > N_u^*$). In such a case, there would be some concessions by management that would lower ΔII and raise ΔW , making both parties better off than N_u^* .¹⁵³

In summary, the accident model concludes: (1) The cheaper the channels of communication between parties, the lower the strike probability. Smaller firms would have a lower probability of striking due to the ease of communication.¹⁵⁴

¹⁵² Ibid, pp. 395.

¹⁵³ This assumption is based upon the primacy of the union in that the party that leaves the bargaining table first has an advantage, thus the bluffing tactic may be utilized to extract additional concessions.

¹⁵⁴ This interpretation contradicts the Ashenfelter and Johnson 'Political' model, predicting larger firms are less vulnerable to strikes for they have much more to lose, and are more flexible in wage concessions. However, if the union recognizes management's position, they may respond by raising their wage demands.

The accident model stresses the role of information. If a disclosure law was put in place, it would shift in the p-N curve, with a marginal change in strike probability. The dashed lines in Figure 15 illustrates this, the p-N and ΔW curve become flatter (with greater certainty provided by the efficient flow of information, and fewer gains to be extracted over the course of negotiations) shifting MB to MB', permitting the selection of a shorter negotiation period.

(2) In periods when there is little information to communicate, the probability of a strike is reduced. In this case the parties may be said 'to know where they are' as there exists greater certainty. With the degree of new information constrained, the cost of acquisition and the instability of forming new expectations is reduced.

(3) The increase in strike costs that equally affect each party will lead to a reduction in strike probability while leaving unaffected one's relative bargaining power. As the costs of a strike increase, there will be a greater incentive for both parties to acquire additional information. If strike costs affect only one side, the relative bargaining power fulcrum is shifted, "we would expect its main outcome to be a change in the equilibrium real wage rather than in strike probability."¹⁵⁵

¹⁵⁵ W.S Siebert and J.T. Addison, "Are Strikes Accidental?" (The Economic Journal, June 1981), pp. 397. Assumed by the authors is that total joint strike costs are constant, implying

(4) In periods where there exists unexpected deteriorations in power (due to the inefficient flow of information) there will be increased strike probability. If each party is slow to adjust and not satisfying its marginal conditions, sudden changes in the determinants of the parties claims and offers will bring with it greater uncertainty.

(5) Symmetry of analysis with respect to the employer and union should be utilized. However it is difficult to observe if both parties concede at the same rate, for depending upon the situation one party may be attacking and the other defending. To circumvent this issue, the authors suggest the observance of each party's behavior in both defence and attack. "Defence is not the same as attack and to evaluate the symmetry assumption one should optimally observe union and management behaviour in both roles."¹⁵⁶

This theoretical model departs from previous assumptions regarding relative bargaining power and its impact on strike activity. From the authors point of view these considerations are dismissed on the grounds of symmetric information, each party fully recognizes relative bargaining power movements and thus wage increases or decreases reflect this changing relationship. In this manner the focus is limited to the informational exchanges that characterize the

that relative bargaining power shifts are redistributed amongst the two parties.
¹⁵⁶ Ibid, pp. 398.

bargaining process and permit each party to signal their positions so as to arrive at a negotiated settlement.

However, if the assumption of full cognizance of relative bargaining power is removed, it seems plausible a disequilibrium wage rate may contribute to strike activity. This scenario is not addressed by the authors, however it may fall under the problems of asymmetric information although additional factors come into play in determining if and when strike activity is to occur.

The model also recognizes the Pareto-optimality of avoiding a strike. Higher expected costs of activity drive the two party's towards extending the negotiation period resulting in an increased amount of information being acquired, interpreted and exchanged, leading to a reduction in strike probability.

KAUFMAN (1981)¹⁵⁷

An Interactive Bargaining Model

Kaufman's model proposes that strategic interaction between management and the union is an integral element to the negotiation process.¹⁵⁸ Specifically, with the degree or access of information constrained, strategic interaction during the negotiation process is a necessary condition for the convergence of management's and the union's concession reaction functions.¹⁵⁹ In other words, for each party to become well informed about the other's concession schedule, information is exchanged via the bargaining process. In this respect, concessions by both parties result from the exchange of information at the bargaining table.

It is assumed that come negotiation time, the major issue to be resolved are wages (i.e. the wage bundle), with the preferences of both the union and the firm being represented by linear utility functions.

As each party approaches the bargaining table, they are prepared with an offer (W_u and W_f). In the calculation of their offers, the extra gain in utility must be weighed

¹⁵⁷ B.E. Kaufman, "Bargaining Theory, Inflation, and Cyclical Strike Activity, in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp.333-355.

¹⁵⁸ This perspective is a departure from the pareto-optimal accident theories, in that they do not model key aspects of the bargaining process.

¹⁵⁹ An analogy would be similar to the Cournot oligopoly (duopoly) model, where a reaction function is constructed for each party that traces out a convergence to equilibrium.

against the additional cost (C_u and C_f) that will be incurred due to a lengthier bargaining period that would be required. The costs may be broken down into two main components: (1) A longer bargaining period would involve direct costs, such as maintaining a negotiation team, overtime payments in order to accumulate a large inventory in preparation of a strike, and the costs of a strike itself, and (2) The opportunity cost of a longer period of bargaining reduces the present value and utility of any future agreement.

It is assumed that each party estimates a constant rate of concession (r) for their opponent (r_u and r_f).¹⁶⁰ These rates are important for the length of time required to acquire a particular demand depends on the speed of concession by your opponent.

The union with an initial wage demand of W_u , expects the firm to concede the distance ($W_u - W_f$) at a rate of r_u . Hence the initial union proposal will be higher, *ceteris paribus*, the higher the expected rate of concession by the firm (r_u), or the lower the direct costs of bargaining (C_u).¹⁶¹ Similarly, the firm will present an initial demand (W_f) based upon its calculation of C_f and r_f .

¹⁶⁰ Based on previous negotiations and perceptions, a certain amount of learning is to have occurred to permit a reasonably educated assessment.

¹⁶¹ B.E. Kaufman, "Bargaining Theory, Inflation, and Cyclical Strike Activity, in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp.337.

The process of negotiation promotes the exchange of information, while reducing the over zealous wage demands by each party. "At the beginning of bargaining, when the direct costs of bargaining may be negligible, it is likely that both sides will expect relatively high rates of concession from the other side, leading to large initial demands from each side and a wide area of disagreement. As bargaining progresses, however, it will become apparent to one or both sides that the opponent's rate of concession is less than that initially expected and, therefore, as r_u and r_f are revised downward each side's demand is correspondingly reduced."¹⁶²

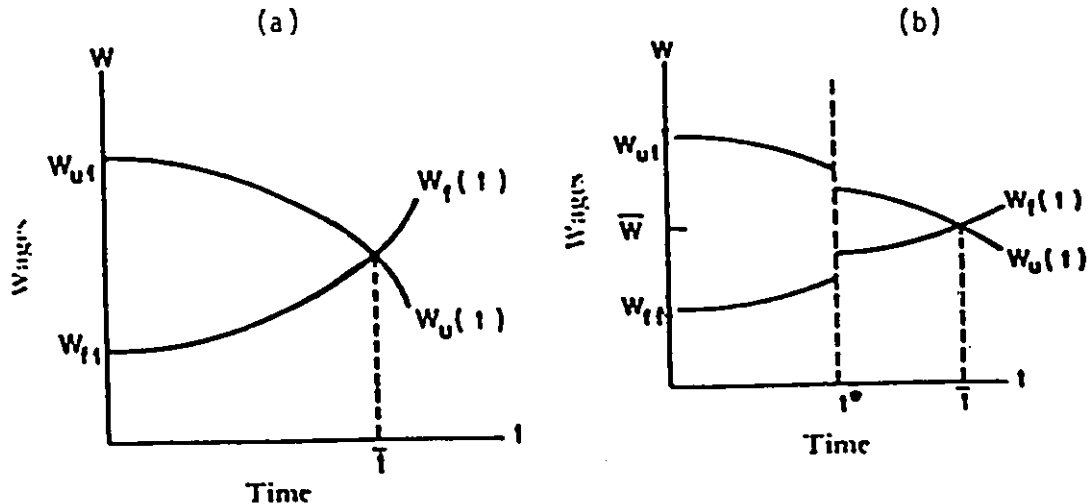
It is this downward revision of expectations that leads to a gradual convergence of the parties demands. Figure 16(a), illustrates the time path and the associated downwards revision of expectations.

If a settlement has not been reached by time $t=t^*$ a strike will ensue (see Figure 16(b)), significantly increasing the costs to each party¹⁶³ and having the effect of pressuring the parties to moderate their demands. The strike will continue until their concession curves converge at $\bar{t}$.

¹⁶² Ibid, pp. 338.

¹⁶³ Affecting not only C_u and C_f , but also r_u and r_f .

Figure 16



Source: B.E. Kaufman, "Bargaining Theory, Inflation, and Cyclical Strike Activity, in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp. 339.

Kaufman's model (with the limitations of information concerning one another's concession curve), proposes that strike activity may still occur despite rational behavior by each party based upon their expectations.¹⁶⁴ Increased knowledge as Hicks suggested, would increase the chances of settlement before t^* .

The author also contends that if movement towards $\bar{W}$ is too quick, it will not encourage settlement, but rather, lead to their opponent to increase their demands. "The nature of the concession process is such that both parties must approach the settlement point incrementally lest one take the other's concession to be a sign of weakness or lack

¹⁶⁴ Based on their expected rates of concession, $\bar{W}$ is a non-optimal demand for either side (see Figure 16(b)).

of commitment to its announced point of resistance. Seen in this light, strikes are not, as sometimes claimed, irrational events but rather arise out of the imperfect information and strategic interaction inherent in the bargaining process."¹⁶⁵

A limitation to the model is the implicit assumption regarding the interdependence of bargaining behavior that requires at least one of the parties to display myopic behavior. In that, an experienced bargainer may come to the bargaining table with over zealous wage demands that are inconsistent with the information they possess. To justify this assumption Kaufman suggests the existence of 'demand exaggeration' - if both parties have accurate expectations regarding the settlement, "thus even if both parties have a fairly accurate estimate of the actual point of agreement, they nevertheless enter negotiations with high expected concession rates that are then gradually revised downwards."¹⁶⁶

One may argue that strikes are more likely to occur when one party is over optimistic (assuming a certain degree of concession on behalf of the opponent), for such expectations will lead to strike activity when the over zealous party cannot adequately revise their expectations to an

¹⁶⁵ B.E. Kaufman, "Bargaining Theory, Inflation, and Cyclical Strike Activity, in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp.340.

¹⁶⁶ Ibid, pp. 338.

appropriate level to permit convergence. The degree of such imperfect information may be attributed to an immature bargaining relationship or sudden unanticipated changes in the economic environment.

Kaufman's model is similar in reasoning to Mauro's model and by extension, Hicks' model as well. Each party, based on a limited amount of information constructs their own concession schedule while forming expectations about their opponent's rate of concession. The bargaining process is emphasized as a means of exchanging information to diminish the amount of uncertainty in the bargaining relationship while providing a point of convergence (negotiations occupy a similar role in the Siebert and Addison model). It is this point that separates Kaufman's analysis from Mauro's, however, the explicit *modus operandi* of the nature of the bargaining process is not expanded upon.

MAURO (1982)¹⁶⁷

An Extension of the Hicksian Model

Mauro examines the impact of imperfect information and the incidence of strike activity in a manner that is faithful to the exposition by Hicks. The occurrence of strike activity is due to 'faulty negotiations' with its

¹⁶⁷ J.M. Mauro, "Strikes as a Result of Imperfect Information". (Industrial and Labor Relations Review, July, 1982), pp. 522-538.

main component being asymmetric information (i.e. divergence of estimates).

Faulty negotiations may occur if one party forms incorrect expectations of their opponents wage-strike trade-off, increasing the probability of strike activity. Additionally, the inefficient intra-organizational communication of information between negotiator and its firm or union may contribute to divergent expectations on the outcome of negotiations.¹⁶⁸ Not only does the formation of divergent expectations contribute to increased strike probability, but the inability to effectively communicate within an organization as well. Together these factors impede the flow and interpretation of information.

In calculating their concession curves, misperceptions may occur when each party employs a different set of informational variables. To illustrate this point Mauro assumes the firm's demand for labour is a positive function of its product price, expressing the employer's concession curve (ECC) as:

¹⁶⁸ See R.E. Walton and R.B. McKersie, A Behavioral Theory of Labor Negotiations. (New York: McGraw-Hill, 1965), pp. 281-309.

$$ECC = F(X, M)$$

X = a vector of informational variables of interest
to the firm.

M = the firm's product price.

Workers are assumed to base their labour supply decisions on previous developments in the real wage, expressing the union's concession curve (UCC) as:

$$UCC = F(Y, CPI)$$

Y = a vector of the informational variables of interest
to the union.

CPI = the consumer price index.

Mauro assumes each party forms its own expectations of the other party's concession curve on the basis of its own price variables while accurately perceiving all other variables considered by its opponent in setting its concession curve, thus the employer's perception of the union concession curve (UCC (Perc E)) will be:

$$UCC \text{ (Perc E)} = F(Y, M)$$

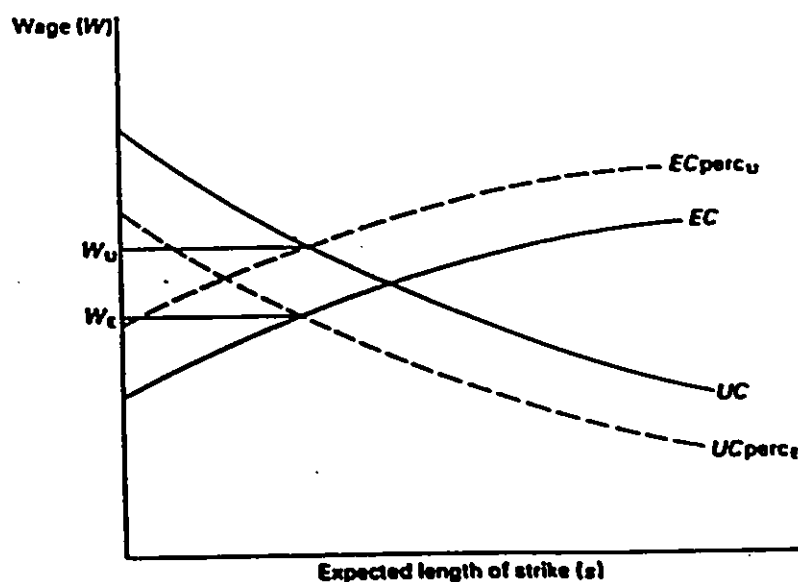
and the union's perception of the employer's concession curve (ECC (Perc U)) will be:

$$ECC \text{ (Perc U)} = F(X, CPI)$$

In Mauro's example (Figure 17), imperfect information occurs when the consumer price index is growing faster than product prices, for the union considers the price level in

determining its real wage and labour supply as well as its UCC and ECC (Perc U). The employer on the other hand, considers changes in its product price as affecting its demand for labour as well as its ECC and UCC (Perc E).

Figure 17



Source: B.T. Hirsch and J.T. Addison, The Economic Analysis of Unions. (London: Allen & Unwin, 1986), pp. 86.

The resulting divergent expected wage settlements, W_U for the union and W_E for the firm are attributable to the (mis)perception of one another's concession curve based upon two different sets of variables. The author assumes it is reasonable to expect the likelihood of a strike to be positively related to $(W_U - W_E)$. Thus, imperfect information

may lead to unduly optimistic scenarios that increase the expected strike probability. The greater the degree of asymmetric information that exists or the more costly the acquisition of information, the higher the probability of non-coincidental perceptions and strike activity.

Divergence in the Hicksian sense occurs when one or both parties construct their own concession curve and the perception of their opponent's curve based on heterogeneous informational sets. Mauro has taken this perspective and extended the analysis as to why misperceptions occur. These limitations of information contribute to strike activity by emphasizing the instability that is inherent in a relationship characterized by asymmetric information.

In this theoretical model, however, it is difficult to envision the firm and the union (who negotiate several collective agreements over an extended period of time), utilizing heterogeneous sets of information in assessing the power relationship, and the firm's ability to pay. Over this period of time one would expect a certain amount of learning to have taken place, reducing the degree of asymmetry of information. In addition, Mauro provides no clear rationale as to why each party in constructing their concession curves should employ heterogeneous sets of information.

HAYES (1984)¹⁶⁹

Hayes develops a theoretical model where strike activity is viewed as the union's optimal strategy with the existence of asymmetric information (i.e. an informational advantage to the firm is assumed).

The author posits that when the union is at an informational disadvantage, it may choose the possibility of striking as a means to extract additional information from the firm. In effect, "the union will offer combinations of wage scales and strike durations such that it will be in the firm's interest to accept high wage settlements when it can pay (a high state of nature) and lower wage settlements when it cannot pay (a low state of nature)."¹⁷⁰ Therefore offers will be made so that the firm will be encouraged to settle with the high wage when the high state of nature occurs and the low wage when the low state of nature is evident. Hence, the acceptance or rejection of the union's wage demand by the firm would implicitly reveal additional information the firm has access to.

169 Beth Hayes, "Unions and Strikes with Asymmetric Information". (Journal of Labor Economics, January, 1984), pp. 57-83.

170 R. Lacroix, "Strike Activity in Canada". (In Canadian Labour Relations, Edited by W. C. Riddell. University of Toronto Press, 1986), pp. 166-167.

The expectations of the union with respect to the firm's ability to pay will have an effect upon its initial wage demands. If based on its information, the union surmises the firm possesses the ability to accomodate its initial wage demands, its demands will be high. Similarly, if the union expects that the firm does not possess the ability to pay, its initial wage demand will be reduced. Associated with either scenario is the expectation of a strike due to the rejection of the union's wage demand. Specifically, potential strikes will last longer the stronger is the likelihood the firm has the ability, and lower the less likely the firm has the ability to pay.¹⁷¹

The union's wage demand is not solely a function of the union's expectation of the firm's ability to pay. The costs the union will have to absorb in the case of strike activity must be carefully considered, for a union with a healthy strike fund will be predisposed to initially demand higher wage increases (raising the probability of a strike).

It is this theoretical perspective that permits Hayes to explain why strikes vary procyclically. In periods of economic expansion (a high state of nature), the union anticipates the firm's ability to pay. However, if the firm experiences a below average performance, and does not reap the benefits of this surge in economic activity, the high expectations the union has regarding the firm's ability to

¹⁷¹ Ibid, pp. 167.

pay may be quite out of line with the firm's actual ability to pay. Thus strike activity may ensue from the union's excessive wage demands (due in part to the degree of asymmetric information).

Additionally, another factor that may contribute to the procyclical variation of strike activity is the growth of union strike funds in periods of economic expansion. The union has the ability to bring about high initial wage demands, and to remain adamant about them.

Bargaining is assumed to take place from time $t=0$ until $t=s$. The negotiated contract is in effect from time $t=s$ until $t=T$, where $t=0$ is interpreted as the expiration date of the previous contract. Hence the length of the new contract is $T-s$ where s is the length of a strike, with the length of the bargaining period being fixed.

The firm is assumed to be risk neutral, "contracts in this model do not allow for risk sharing because constraints on the firm are ex post: the firm can choose any employment level after the contract is signed. Therefore, no contract resulting in negative profits is possible."¹⁷²

¹⁷² Beth Hayes, "Unions and Strikes with Asymmetric Information". (Journal of Labor Economics, January, 1984), pp. 64.

In this bargaining situation, a leader-follower relationship exists, in that present contract negotiations concern wages and strikes only. Wages are set and the employer is free to vary the level of employment in accordance to their profit maximizing schedule (i.e. the union constructs a wage demand schedule¹⁷³ and the employer responds to its demands). Assumed throughout the life of a contract are fixed wages, where no variations in the wage can occur once the agreement has been signed.¹⁷⁴

The union, in assessing their wage-strike offers will take into account the firm's reaction function. Specifically, as the union maximizes their utility function $U(w, L)$ with w as the wage rate and L as the total amount of labour employed, "the union proposes a wage schedule that is a series of wages over time which solves an expected utility maximization problem. The firm can accept or reject the wage offered at anytime. It will choose the offer that maximizes profits".¹⁷⁵

In situations of symmetric information, both the union and firm arrive at the same conclusion concerning the state of nature before negotiations take place. The union will

¹⁷³ Hayes develops a downward sloping wage-strike length offer curve that is based on the assumption of asymmetric information.
¹⁷⁴ The extreme variation occurs during strike activity. During s periods of strike activity a zero-wage, zero-labour situation occurs.

¹⁷⁵ Beth Hayes, "Unions and Strikes with Asymmetric Information". (Journal of Labor Economics, January, 1984), pp. 66.

select the highest wage rate that maximizes utility subject to the firm's labour demand schedule. In this situation, there are no strikes for the union and the firm have based their maximizing functions upon the same expected wage demand.

However in cases of asymmetric information where only the firm has access to information concerning the actual state of nature, the union will be proposing a wage schedule that is a function of their own expectations. "The union cannot propose a wage dependent on the state, because it does not have that information and because the firm never has an incentive to reveal information to the union about its true state. The firm would always lie and announce the state with the lowest wage because profits increase as the wage decreases, independent of the true state".¹⁷⁶

Hence strike activity may result eventhough each party exhibits rational behavior. The existing imperfections in the flow of information cause the union and firm to disagree on a proposed settlement. Time, in the form of strikes, is a variable that allows the union to acquire additional information regarding the true state of nature from the firm.

¹⁷⁶ Ibid, pp. 66.

The model suggests that at the individual firm level, strikes are more likely to occur when a firm is in a low profit state rather than a high profit state (i.e. wage expectations would be similar relative to the overall performance of the general economy, and not to a particular firm).

However, there are limitations to the model: (1) The degree of asymmetric information that exists between the union and firm may not justify the use of strike activity as a means of acquiring additional information; (2) The theoretical postulate may not adequately reflect real world phenomena. Public firms are required by law to divulge financial data with respect to output, sales, assets, liabilities and profits (many non-public firms that are not required to, do so anyway). In these circumstances, what would motivate a firm to conceal information from the union at the negotiation table that it would have to release at a later date?¹⁷⁷ If the union has realized the firm has cheated by way of concealing public information, the union may demand retroactive wage compensation, not to mention the potential damage in mutual trust and respect. It is assumed this scenario is not in the best interests of the firm if mutual trust is essential to the firm's economic performance, and (3) Currently the model has no empirical

¹⁷⁷ There may be cases of small family business' or foreign owned firms that have no legal or moral responsibility to publicly release information. In these circumstances, Hayes' model has implications.

counterpart with respect to its applications. Hayes suggests that an empirical investigation should include data on the firm's profitability and the uncertainty of the firm relative to its performance to the overall economy.

VII. A SURVEY OF EMPIRICAL INVESTIGATIONS
OF STRIKE ACTIVITY

Observed from the previous theoretical section, there have been many differing contributions with respect to their views and analysis of strike activity. Given this diversity, one might expect the empirical evidence to shed light upon the relative merits of the alternative theoretical models.

Unfortunately the empirical estimates that have been derived from theory have proven difficult largely due to the fact that many theoretical determinants have no satisfactory empirical counterparts. Moreover, data sets that provide the necessary information on actual offers and concession rates of the two parties are not usually available - and even if they exist, the quandry lies in building a credible model that captures the intended variable under scrutiny.¹⁷⁸ Hence many empirical investigations lack the ability to measure directly the relative perceptions and expectations of two sides as well as any divergence between union leadership and their rank-and-file eventhough these factors have been developed in the theory as crucial elements in the negotiation process.

¹⁷⁸ B.T. Hirsch and J.T. Addison, The Economic Analysis of Unions. (London: Allen & Unwin, 1986), pp. 95.

An inherent weakness in many empirical models is the confusion between the determinants of strike activity and the determinants of bargaining power. Studies that have focussed on the union as the instigator of strike activity generally contend that any factor that has strengthened labour's position (raising its relative bargaining power), will lead to a higher frequency of strike activity.

The Pareto-optimal Accident theory suggests relative bargaining power shifts will only affect the 'equilibrium wage rate' and not strike probability.¹⁷⁹ By making this assumption, Siebert and Addison implicitly reject the underlying assumptions of the Rees and Hines models (and those of similar rationale), that is, union militancy and their strategies to raise the expected costs of strike activity by manipulating the relative bargaining power relationship, increasing the probability of strike activity. Few studies make this important distinction between the determinants of strikes and wage settlements.

The following section examines in detail, the most recent major empirical contributions to the analysis and interpretation of strike activity. In this sense, Chapter VII complements the previous theoretical discussions by attempting to specify and quantify the relationships that play an important role in determining the frequency of

¹⁷⁹ Strike probability will be affected if total joint strike costs are increased or decreased.

strike activity. For the most part, due to their significance, the empirical investigations originate from the authors of the theoretical models. Other relevant and important empirical contributions have been acknowledged where appropriate.

ASHENFELTER and JOHNSON (1969)

The Political Model

From the foundations of the Ashenfelter and Johnson theoretical postulations, their model is explicitly developed as a non-Pareto optimal outcome of collective negotiations and strike activity, that is, the employer at their discretion is free to choose a wage-strike combination that maximizes the present value of their profit stream.

Strikes in the Hicksian sense (with perfect information), may occur in order to establish union credibility, signalling the intent of their initial demands. In this case, it is the employer who initiates such activity with the intention of reducing the high wage expectations of the rank-and-file.

Given that Y_0 (the union's initial wage demand) does not have an exact empirical counterpart, the probability of strike activity is assumed to vary inversely with the rate of unemployment, the rate of change of real wages, a time trend, and indeterminately with the level of profits.

In expanding these assumptions, Ashenfelter and Johnson propose the minimum wage rate acceptable to the union (Y^*) to be: (1) Inversely related to the rate of unemployment for: (a) low (high) rates of unemployment indicate Low (high) opportunity costs with respect to alternative job opportunities; (b) The leadership may exercise modest pressure (if any) to reduce Y_0 when unemployment is low for large wage increases will only marginally increase their political capital and a high level of strike funds could offset negative employment effects; and (c) In times of high unemployment union militancy will be low due to the available pool of replacement labour; (2) Inversely related to a moving average of real wage changes¹⁸⁰; (3) Indeterminately related to the level of profits (lagged one period), for high profit levels may reduce strike activity as firms become increasingly generous in their wage proposals or, alternatively the union may become adamant concerning over zealous wage demands that may trigger higher strike activity levels. "Hence it is not clear whether the net effect of an increase in profits will be to increase, decrease or have no appreciable effect on the probability of occurrence of a strike"¹⁸¹, and (4) A time trend is included in the analysis and is assumed to be negative for the number of observed institutional strikes have been declining. "It

¹⁸⁰ Implicitly assumed is that workers view wage changes and price changes as opposites (or mirrors) of one another.

¹⁸¹ Orley Ashenfelter and George Johnson, "Bargaining Theory, Trade Unions, and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 41.

has been possible over the years to all but eliminate two of the three major causes of strikes by resort to other means: disputes over recognition are now largely resolved by means of the election, and grievances by means of voluntary arbitration".¹⁸²

With these empirically proxied components of Y_0 , the authors link strike activity to Y_0 and a set of seasonal dummy variables. These variables are included for they are assumed to affect the timing of contract expirations under the conditions of: (1) Weather, a union would prefer a contract not to expire at such a time when inclement conditions offset their relative bargaining power advantage they might otherwise exercise, and (2) The union would prefer: to avoid contract expirations when their demand for income is high; to have a contract expire in months with the fewest paid holidays. Based on these assumptions, the seasons of fall and winter would observe the smallest number of contract expirations, *ceteris paribus*, and fewer strikes.¹⁸³

¹⁸² D. Cole, "Preface" in J. Dunlop and N. Chamberlain, eds., Frontiers of Collective Bargaining. (New York, 1967), pp. vii-ix.

¹⁸³ Orley Ashenfelter and George Johnson, "Bargaining Theory, Trade Unions, and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 42.

With the determinants of Y^* and its assumptions, Ashenfelter and Johnson proceed to quantify their influence on strike activity.

Estimated Equation

$$S(t) = a_0 + a_1U(t) + a_2R(t) + a_3II(t-1) + \\ + a_4N_1(t) + a_5N_2(t) + a_6N_3(t) + a_7T(t)$$

$$a_1 < 0, a_2 < 0, a_3 ?, a_4 > 0, a_5 > 0, a_6 > 0, a_7 < 0$$

S = Measures the number of strikes beginning in each quarter (t). Source: Table E-1 of the Monthly Labor Review (MLR).

U = The civilian unemployment rate, is a quarterly average of the monthly rates, in quarter (t). Source: MLR (U.S. Bureau of Labor Statistics, BLS).

R = A moving average of real wage changes, in quarter (t). The wage rate is an average, weighted by relative 1957 production worker employment of average hourly earnings in mining, construction and manufacturing. Source: Employment and Earnings (U.S., BLS). The CPI is obtained from Table D-1 of the MLR.

LG = A dummy variable equal to one from the period of passage of the Landrum-Griffith Act in 1959, zero otherwise, in quarter (t). (See equation 3).

II = The ratio of corporate profits after tax, excluding inventory valuation adjustment, to total compensation, in quarter (t-1). Source: Survey of Current Business (U.S. Department of Commerce).

N1, N2, N3 = A set of seasonal dummy variables, in quarter (t).

T = A time trend, in quarter (t).

Empirical Findings

The authors employ a time-series model using quarterly data from the time period 1952(1)-1967(2). Standard errors are in parenthesis. The estimated equations:

Equation 1

$$S(t) = 1519.8 - 123.0U(t) - 62.2R(t) + 1.6II(t-1) + \\ (170.0) \quad (13.1) \quad (12.9) \quad (136.7) \\ + 213.6N1(t) + 594.8N2(t) + 457.9N3(t) - 2.2T(t) \\ (30.8) \quad (28.4) \quad (27.9) \quad (0.70)$$

$$R^2 = .938 \quad D.W. = 1.44$$

Equation 2

$$S(t) = 1663.8 - 132.6U(t) - 80.6W(t) + 64.4P(t) + \\ (168.4) \quad (11.8) \quad (24.7) \quad (14.2) \\ + 227.3N1(t) + 602.4N2(t) + 459.4N3(t) - 2.8T(t) \\ (30.2) \quad (27.8) \quad (27.4) \quad (1.1)$$

$$R^2 = .941 \quad D.W. = 1.52$$

Equation 3

$$\begin{aligned}
 S(t) = & 1570.4 - 135.3U(t) - 62.9R(t) + 87.8LG(t) + \\
 & \quad (68.4) \quad (9.8) \quad (11.5) \quad (14.2) \\
 & + 225.7N1(t) + 598.7N2(t) + 460.5N3(t) - 2.3T(t) \\
 & \quad (27.3) \quad (25.8) \quad (25.8) \quad (0.6)
 \end{aligned}$$

$$R^2 = .946 \quad D.W. = 1.61$$

Source: O. Ashenfelter and G. Johnson, "Bargaining Theory, Trade Unions and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 44.

Ashenfelter and Johnson interpret the empirical results as validating their proposed 'political model'.¹⁸⁴ From equation (1), strike activity is greater; the lower the rate of unemployment and past rates of change of real wages. There is no significant systematic relationship between profits and strike activity, with no alternative proposals by the authors to account for their finding. The seasonal dummy variables suggest that strike activity is more likely to occur in spring and summer than fall and winter. Finally, the time trend variable is significant and negative, suggesting over time strike activity may decline due in part

¹⁸⁴ Paradoxically, if the model is inverted (i.e. Siebert, Bertrand and Addison (1985) assume optimal worker strategies in response to a concession schedule of an uninformed management), their model performs in a similar fashion.

to the union becoming an entrenched institution.

In addition, the authors examine the impact of money illusion upon strike activity (equation (2)). "We allow for the possibility that the rate of change of money wages has a more (or less) important effect on strike activity than the rate of change of prices".¹⁸⁵ Based on the data, the authors conclude money illusion is not a factor that influences strike activity, for W and P appear to be close approximates of one another.

To capture the 'liberal' trade union legislation of the Landrum-Griffith Act of 1959 (equation (3)), the authors posit there will be a greater amount of strike activity due to: (1) Increased union militancy as a result of the Act, and (2) Given the occurrence of (1), the union leadership may now become more sensitive to unreasonable union membership wage demands. The dummy variable LG is intended to capture these effects. With this specification, R^2 and D.W. are similar, with an increase of 88 strikes per quarter.

Although the results are preliminary, the implications of the model are important to consider: (1) The unique approach of the three-party bargaining situation permits the firm to select a wage-strike outcome that maximizes its present value of its profit stream. Given this assumption, the

¹⁸⁵ Orley Ashenfelter and George Johnson, "Bargaining Theory, Trade Unions, and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 46.

outcome is, a priori, determinate; (2) The model provides a basis to assess future institutional changes and their impact on strike activity, and may be helpful in evaluating these changes with respect to the role of collective bargaining. In addition, this study provides an explicit rationale for the inclusion and impact of the rate of change of aggregate money wages,¹⁸⁶ and (3) The results do have public policy repercussions. If implemented policies induce union leaders to steadfastly recommend the acceptance of an unattractive offer, the result (apart from the call of resignation by the membership) may be to increase union militancy that rejects the status quo with the end result running contrary to its originally intended objective.

Empirically, the Ashenfelter and Johnson model ignores or fails to consider the impact of the exogenous variables and their ability to put upward pressure on the employer's maximum wage offer in order to avoid a strike.

Moreover, the results have been shown to be a poor predictor of strike activity beyond the sample period (Moore and Pearce, 1982), and have been shown to be sensitive to the specification of the model (Shalev, 1980).

¹⁸⁶ Ibid, see pages 40-41.

In developing their rationale for the inclusion of the rate of unemployment and its negative impact on strike activity, the authors fail to consider how high rates of unemployment might reduce the expectations of the employer, resulting in a lower maximum wage offer. This scenario would result in the rate of unemployment being indeterminate on a priori grounds. Similarly, the authors assume that any drop in the long-term expectations of the rate of change of real wages increase strike activity. However, in changing economic conditions, why could such a drop be reflected with a reduction in the union's long-term real wage expectations? In this case, the impact of the rate of change of real wages on strike activity would also be indeterminate.¹⁸⁷

REDER and NEUMANN (1980)

The Protocol Model

Reder and Neumann assume all employers in each industry are identical in collective bargaining traits and all unions at the negotiation table possess homogeneous attributes. Assumed further is that all industries under investigation face the same distribution of states of the world. Given these assumptions, the sum of the expected cost of strikes (λ_i) for N indistinguishable bargaining pairs in industry i

¹⁸⁷ For an extensive criticism of the Ashenfelter and Johnson model, the author refers the reader to M. Shalev's publication, "Trade Unionism and Economic Analysis - The Case of Industrial Conflict". (The Journal of Labor Research, Spring, 1980), pp. 133-173.

is :

$$\lambda_i = N_i \cdot \sum_{j \in g} \Pi(j)M(j).$$

Reder and Neumann assume a total of h states of the world, with g of them covered by the protocol where $g < h$ and $(h-g)$ that are not. j is an element of h , with the probability $\Pi(j)$ of its occurrence. When $j \in g$, $\Pi(j) = 0$, and if $j \notin g$, $\Pi(j) > 0$. $M(j)$ represents the cost of a unit of strike activity in state j such that $\Pi(j)M(j)$ is the expected joint cost of a strike in a particular industry.¹⁸⁸

The authors propose that the joint cost of a unit of strike activity varies inversely with the intra-industry variation in inventories (Inv) of finished goods (holding Ship constant), and directly with the variation in Shipments (Ship) holding Inv constant.

The rationale for Inv is that intra-year variations of inventories reflect the firm's ability to substitute production intertemporally in anticipation of a strike. "If the reduction in output caused by a strike can be anticipated, inventories built up to tide the employer and his customers over an anticipated strike, and the wages and quasi-rents earned in producing output for inventory

¹⁸⁸ All states of the world are not covered by protocol due to the constraints of specification costs $d(j)$, which are assumed to be greater than $\Pi(j)M(j)$ for some j . Since $d(j) > 0$, there is justification for the occurrence of a strike even with the existence of protocol.

substituted for pay during the strike, then the cost of a strike will be minimal".¹⁸⁹

Large short-term fluctuations in an industry's inventory of finished goods implies their production schedule incorporates a certain degree of buffering so that an employer may insulate himself from the adverse effects of a strike. "Hence across industries, high values of Inv are associated with substantial buffering of the effect of variations in the rate of labour and other inputs upon outputs",¹⁹⁰ and potentially increase the frequency of strike activity by lowering total joint costs.

The intra-year variation in shipments is suggested to proxy the premium placed on timely deliveries. Without this premium the volume shipped would be kept at a constant rate to minimize costs of production. With the premium placed on the timeliness of delivery, strike activity would disrupt efficient production and delivery, increasing expected total joint strike costs. That is, the lower the amplitude in the delivery rates allows a more efficient combination of inputs required by production specifications. Thus strikes are seen to be negatively related to the variability in shipments, for total joint costs of strike activity have increased.

¹⁸⁹ M.W. Reder and G.R. Neumann, "Conflict and Contract: The Case of Strikes". (The Journal of Political Economy, Vol. 88, No. 51, 1980), pp. 873.

¹⁹⁰ Ibid, pp. 875. Joint strike costs are minimized with the intertemporal substitution of production and labour inputs.

Reder and Neumann incorporate into the model a relative wage variable, $(W_i/\bar{W})$, suggesting the higher the relative wage the lower would be strike activity.¹⁹¹ In the context of the Reder and Neumann model, a higher relative wage would increase the costs of disagreeing on the union's behalf while increasing expected total joint strike costs, thus reducing the amount of strike activity.

The election variable (ELEC) is included to capture the effect of an increasing number of elections that signal the protocol has not yet been firmly established and/or reflects internal union strife with regards to whom should represent the union as the certified bargaining agent (suggesting the current protocol has not succeeded, and must be replaced). Hence the greater the number of elections, the less effective will be the protocol and the greater strike activity is expected to be.

The authors explicitly state that the rate of unemployment has no theoretical justification to warrant its inclusion, but do so to contrast their findings with previous studies.

¹⁹¹ In this case, the relative wage is used for convenience to proxy the value of resources made idle by a unit of strike activity, in period i , $V_i/\bar{V}$, for $W_i/\bar{W}$ is highly correlated to $V_i/\bar{V}$.

Estimated Equation

The estimated equation covers fourteen manufacturing industries in the United States over the period 1953-1973.

$$X_{it} = a_0 + a_1 \text{Inv}(it-1) + a_2 \text{Ship}(it-1) + \\ + a_3(W/\bar{W})(it) + a_4 \text{ELEC}(it) + a_5 U(it)$$

$$a_1 > 0, a_2 < 0, a_3 < 0, a_4 > 0, a_5 < 0$$

X = Is defined as the deviations from industry means for the i th industry ($i = 1$ to 14), in period (t). Source: Unspecified. As a unique measure of the dependent variable has not yet been empirically or theoretically determined, Reder and Neumann employ three proxy measurements: (1) The number of strikes per year in an industry. (2) Mean duration of strikes, and (3) Man-days of strikes per worker employed.

Inv = The intra-industry variation of inventories of finished goods (holding constant Ship) in the i th industry ($i = 1$ to 14), in period ($t-1$). Source: Unspecified.

Ship = The intra-year variation in shipments (holding constant Inv) for the i th industry ($i = 1$ to 14), in period ($t-1$). Source: Unspecified.

$W/\bar{W}$ = The relative wage rate for the i th industry ($i = 1$ to 14), in period (t). Source: Unspecified.

ELEC = The number of NLRB elections in bargaining units for the i th industry ($i= 1$ to 14), in period (t).

U = The rate of unemployment for the i th industry ($i= 1$ to 14), in period (t).

In an unusual departure from protocol, the authors fail for the most part to provide data sources.

The most reliable regression results utilize a pooled series of cross-sectional data with 2 and 3 year averages from the following 14 industries: Food, Tobacco, Textiles, Paper, Chemicals, Petroleum, Rubber, Stone-Clay and Glass, Primary Metal, Fabricated Metal, Machinery, Electrical equipment, Transportation and Instruments.¹⁹²

The authors acknowledge the use of 2 and 3 year averages removes much of the pronounced cyclical effects of unemployment upon strike activity.

Inv and Ship were lagged one period so as to reduce any simultaneous equation bias due to the correlation of the disturbances.

¹⁹² The industries under investigation are restricted to the manufacturing sector. This is to exclude cases where it is too easy or difficult to have intertemporal substitution. Single year regressions provided similar coefficients, however the standard errors were large, jeopardizing the credibility of the results.

Inv and Ship and the relative wage are assumed to be exogenously determined by technology and non-strike related input prices, such that no reverse causality from the dependent variable exists. If two-way causality did occur, the expectation of a strike would become a function of Inv and Ship and the relative wage, thus rendering this particular mode of analysis invalid.

Empirical Findings

The equation was first estimated by OLS with the residuals from the regression used to construct a co-variance matrix. The results of Tables 4 and 5 utilize General Least Squares (GLS) estimates that were obtained from the co-variance matrix.

Table 4

2 Year Averages, Strike Activity in Manufacturing,
1953-1973

<u>Dependent Variables</u>			
<u>Explanatory</u> <u>Variables</u>	<u>Strikes</u> <u>(N)</u>	<u>Strike</u> <u>Duration</u>	<u>Man-Days Lost,</u> <u>Total Employment</u>
CONSTANT	37.64 (2.91)	5.41 (1.36)	0.138 (2.47)
Inv(t-1)	3.08 (2.60)	1.20 (2.21)	0.004 (2.67)
Ship(t-1)	-0.2471 (1.70)	-0.004 (1.69)	-0.0002 (1.86)
W/ $\bar{W}$ (t)	-0.538 (2.07)	-0.498 (2.36)	-0.020 (2.61)
ELEC(t)	0.488 (3.47)	2.04 (1.31)	0.027 (2.34)
U(t)	2.84 (1.36)	0.0018 (0.19)	-0.0037 (0.31)

t-values are in parenthesis.

Source: M.W. Reder and G.R. Neumann, "Conflict and Contract: The Case of Strikes". (Journal of Political Economy, Vol. 88, No. 51, 1980), pp. 878.

Table 5

3 Year Averages, Strike Activity in Manufacturing,
1953-1973

<u>Dependent Variables</u>			
<u>Explanatory</u>	<u>Strikes</u>	<u>Strike</u>	<u>Man-Days Lost,</u>
<u>Variables</u>	<u>(N)</u>	<u>Duration</u>	<u>Total Employment</u>
CONSTANT	44.41	4.41	0.102
	(2.62)	(1.01)	(2.89)
Inv(t-1)	2.22	1.16	0.003
	(2.22)	(2.24)	(2.81)
Ship(t-1)	-0.141	-0.001	-0.0001
	(3.01)	(1.44)	(1.87)
W/ $\bar{W}$ (t)	-0.667	-0.614	-0.015
	(2.36)	(2.78)	(3.02)
ELEC(t)	0.510	3.79	0.023
	(2.60)	(1.38)	(2.86)
U(t)	1.04	-0.017	-0.0034
	(0.28)	(0.14)	(0.36)

t-values are in parenthesis.

Source: M.W. Reder and G.R. Neumann, "Conflict and Contract: The Case of Strikes". (Journal of Political Economy, Vol. 88, No. 51, 1980), pp. 878.

As the authors predicted, all measures of strike activity are higher: (a) The greater is the variation in inventories ("this means that greater intertemporal substitutability of inputs makes strikes less expensive, leading to a greater strike quantity");¹⁹³ (b) The greater is the variation in shipments; (c) The lower is the relative wage, and (d) The greater is the number of elections (suggesting less experienced bargaining pairs have more difficulty in reaching a negotiated settlement with no strike occurring).

The results for the unemployment variable are contradictory and not significant at the 5% level. In this respect, these results contrast with previous studies that report a significantly negative relationship between unemployment and measures of strike activity. The authors provide no rationale or explanation and may not have been motivated to do so given that this variable was included on an ad hoc basis.¹⁹⁴

These findings provide Reder and Neumann with a strong case for their postulation that strike activity is inversely related to total joint costs of strike activity.¹⁹⁵ However, in extending the analysis to future studies, it may be appropriate to consider other relevant proxy measures such

¹⁹³ Ibid, pp. 881.

¹⁹⁴ The authors suggest the results do not indicate that unemployment is not correlated to strike activity.

¹⁹⁵ These results do provide backing for the Pareto-Optimal Accident model, in that protocol, extended negotiations or improved informational transactions will occur where the strike/accident costs are the highest.

as: (1) Product perishability; (2) Market concentration levels; (3) The number of buyers and sellers; (4) The degree of product substitutability; (5) The ability to delay/defer consumption, and (6) The extent of intra-industry linkages.

Although this study has been acknowledged as being preliminary, there exist certain practical and conceptual difficulties that should be addressed. A practical problem between the Inv and Ship proxies is the possibility of collinearity, although this phenomenon may not be prevalent in data restricted to manufacturing industries.

Conceptually, two firms that face identical fluctuations in demand may exhibit very different inventory patterns.¹⁹⁶ Reder and Neumann's argument would imply that strike activity would be lower for the second firm. This may not be the case for a strike would be optimally timed to take into account their seasonal production patterns to maximize its effect.¹⁹⁷

For the Ship variable, a certain amount of inventory may be placed aside to maintain the premium placed on the timeliness of delivery and thus may not be captured or reflected by Inv or Ship. This explanation is based on a firm's precautionary instincts, although this does not rule

¹⁹⁶ As an example, the first firm cans tomatoes steadily from a hothouse, while the second firm cans field grown tomatoes during the harvesting seasons.

¹⁹⁷ D.R. Maki, "The Effect of the Cost of Strikes on the Volume of Strike Activity". (Industrial and Labor Relations Review, 1985-1986), pp. 555.

out the possibility of a speculative motive.

Additionally, the assumption of Inv assumes that once a strike has occurred "inventories held can be moved to buyers during the strike - that is, the picket line disrupts production activity but not shipment activity. This is not always the case."¹⁹⁸

Finally, one implicit assumption or occurrence that was not treated by the authors is the uneven distribution of costs in designing protocol across industries. These costs will reflect the (dis)incentive to formulate protocol and to reduce strike activity.

KENNAN (1980)

The Pareto Optimal Tendency Model

In an attempt to explain his Pareto Optimal Tendency model, Kennan employs the use of conditional settlement probabilities. Table 6 illustrates the frequency distribution of strike duration in the United States for the years 1953-1974, to a maximum of 50 days. Table 7 presents the same information; however, strike duration is aggregated upon a weekly basis, to a maximum of one year.

¹⁹⁸ Ibid, pp. 555.

The data source is the Bureau of Labor Statistics (BLS, U.S.). Kennan provides no reference to the industries under consideration.

Table 6

Settlement Rates by Age of Strike, 1953 - 1974

<u>Age</u> <u>in days</u>	<u>Strikes</u> <u>Outstanding</u>	<u>Number</u> <u>Settled</u>	<u>Frequency</u> <u>(%)</u>	<u>Settlement</u> <u>Rate (%)</u>
1	93161	11854	12.72	12.72
2	81307	7970	8.56	9.80
3	73337	5884	6.32	8.02
4	67453	4904	5.26	7.27
5	62549	4357	4.68	6.97
6	58192	3586	3.85	6.16
7	54606	3828	4.11	7.01
8	50778	3019	3.24	5.95
9	47759	2299	2.47	4.81
10	45460	2195	2.36	4.83
11	43265	1958	2.10	4.53
12	41307	1857	1.99	4.50
13	39450	1669	1.79	4.23
14	37781	1844	1.98	4.88
15	35937	1709	1.83	4.76
16	34228	1346	1.44	3.93
17	32882	1255	1.35	3.82
18	31627	1121	1.20	3.54

19	30506	1110	1.19	3.64
20	29396	999	1.07	3.40
21	28397	1104	1.19	3.89
22	27293	980	1.05	3.59
23	26313	799	0.86	3.04
24	25514	807	0.87	3.16
25	24707	775	0.83	3.14
26	23932	741	0.80	3.10
27	23191	664	0.71	2.86
28	22527	712	0.76	3.16
29	21815	673	0.72	3.09
30	21142	679	0.73	3.21
31	20463	663	0.71	3.24
32	19800	564	0.61	2.85
33	19236	543	0.58	2.82
34	18693	525	0.56	2.81
35	18168	546	0.59	3.01
36	17622	500	0.54	2.84
37	17122	490	0.53	2.86
38	16632	405	0.43	2.44
39	16227	459	0.49	2.83
40	15768	424	0.46	2.69
41	15344	401	0.43	2.61
42	14943	450	0.48	3.01
43	14493	417	0.45	2.88
44	14076	358	0.38	2.54
45	13718	378	0.41	2.76
46	13340	336	0.36	2.52

47	13004	341	0.37	2.62
48	12663	312	0.33	2.46
49	12351	346	0.37	2.80
50	12005	290	0.31	2.42

Source: J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (Journal of Labor Research, 1(1), Spring, 1980), pg 87. Settlement Rate = (Number Settled / Strikes Outstanding) x 100, for each period. Frequency = (Number Settled per period / Total Number settled over the entire period) x 100.

Table 7

Average Daily Settlement Rates by Age of Strike, 1953 - 1974

<u>Age in</u>		<u>Settlement</u>		
<u>Weeks</u>	<u>Cases</u>	<u>Settlements</u>	<u>Rate(%)</u>	<u>MSL</u>
1	490605	42383	8.63	---
2	305800	14841	4.85	---
3	222973	8544	3.87	---
4	173477	5478	3.15	---
5	139317	4193	3.00	---
6	113658	3129	2.75	---
7	93645	2488	2.65	---
8	78201	1894	2.42	---
9	65884	1598	2.42	---

10	55841	1223	2.19	---
11	47790	1057	2.21	---
12	40934	850	2.10	---
13	35326	772	2.18	.000
14	30262	500	1.98	---
15	26346	529	2.00	.000
16	22847	467	2.04	---
17	19990	338	1.69	.000
18	17597	342	1.94	---
19	15500	260	1.67	.001
20	13725	231	1.68	---
21	12173	203	1.66	.006
22	10884	180	1.65	---
23	9759	137	1.40	.030
24	8758	134	1.53	---
25	7911	127	1.60	.017
26	7103	101	1.42	---
27	5374	103	1.61	.067
28	5669	86	1.51	---
29	5076	79	1.55	.193
30	4641	55	1.18	---
31	4220	57	1.35	.308
32	3827	59	1.54	---
33	3395	59	1.73	.378
34	3043	46	1.51	---
35	2752	33	1.19	.496
36	2518	31	1.23	---
37	2324	30	1.29	.682

38	2087	32	1.53	---
39	1918	21	1.09	.669
40	1759	21	1.19	---
41	1623	18	1.10	.761
42	1498	20	1.33	---
43	1349	21	1.55	.708
44	1231	11	0.89	---
45	1129	17	1.50	.383
46	1026	10	0.97	---
47	967	13	1.34	.530
48	873	15	1.71	---
49	779	8	1.02	.279
50	714	13	1.82	---
51	631	9	1.42	.171
52	576	4	0.69	---

Source: J. Kennan, "Pareto Optimality and the Economics of Strike Duration". (Journal of Labor Research, 1(1), Spring, 1980), pp. 88.

From inference, Table 6 suggests that the frequency of strike duration decreases with age, providing strong support for Kennan's postulate for the Pareto Optimal Tendency (POT) model. The settlement rate is also very pronounced for small strike durations (s), and decreases with age, levelling off towards some asymptotic value for large (s) (providing an empirical basis for the author's development of conditional settlement probabilities and the associated parallel to the marginal strike cost (MSC) function).

Table 7 illustrates the number of outstanding strikes per week. Kennan likens each day of strike activity to that of a Bernoulli trial, "the strike will be either settled on that day or it will continue to the next day, when there will be another trial".¹⁹⁹ Using the Marginal Significance Level (MSL) and a hypergeometric distribution, Kennan tests the homogeneity of the MSL (i.e. employing a statistical test of the hypothesis that the conditional settlement probabilities (w) is a constant for large (s)). The author concludes that (w) beyond 20 weeks being constant is rejected at the 1% level of significance, while (w) being constant after 28 weeks is not rejected at the 15% level of significance.²⁰⁰ Kennan once again links this empirical result to the slope of the MSC, in that it will be roughly constant for large (s), assuming "any changes in the settlement rate will reflect changes in the error propensity. Thus the data

¹⁹⁹ Ibid, pp. 85.

²⁰⁰ Ibid, pp. 89.

suggests a constant error propensity, at least for (s)".²⁰¹ To explain the data for small (s), where the MSC curve is rising, three explanations are provided; (1) The data suggests increasing error propensity for small (s). (2) $II(s)$ ²⁰² rises quickly enough to outweigh the effect of increasing MSC, or (3) The measured decrease in (w) may be due to the aggregation of heterogeneous strikes, each possessing non-decreasing settlement probabilities.²⁰³

Kennan also suggests that strike settlement probabilities are a function of the major issue that divides both sides. Strikes over plant administration (PA) demonstrate high settlement rates for a small value of (s), while strikes due to general wage changes (GWC) have low settlement rates that rise marginally and then decline.

As an initial theoretical explanation of the differing settlement rates between the two issues, Kennan argues that the share of the pie for PA is much smaller than for GWC because the issue of PA usually occurs during the life of a contract, and the latter at the expiration of a contract. Moreover, if strikes are more fully anticipated on the issue of GWC, the MSC will be relatively high for PA strikes, as the proper foresight utilized in building up inventories

²⁰¹ Ibid, pp. 89.

²⁰² $II(s)$ - The present value of the future stream of joint earnings that could be realized if the strike were to end immediately.

²⁰³ Kennan acknowledges the problem of aggregation over heterogeneous strike data and openly questions the lack of work based on disaggregated data.

would not have occurred.

In conclusion, Kennan summarizes his empirical findings by stating the probability of settling a strike over a period of time is a function of the joint total costs over that period. The empirical data confirms the proposed theory that strike frequencies decline with age implying small errors are more likely than large ones, and the settlement probabilities are in accordance with the theoretical postulate of the POT model.

SIEBERT and ADDISON (1981)The Accident Model

From the Siebert and Addison study, empirical investigations of the theoretical postulates are not developed from within, that is, the authors utilize the Accident theory to explain previous seminal contributions to time series analysis of strike frequency.

The most well-known studies being Ashenfelter and Johnson (1969), Vanderkamp (1970) and Pencavel (1970) for the United States, Canada and the United Kingdom.²⁰⁴ The advantage of comparing these three time studies is the similarity of explanatory variables investigated. Specifically, unemployment, profits and the rate of change of real wages and a time trend.

²⁰⁴ O. Ashenfelter and G.E. Johnson, "Bargaining Theory, Trade Unions, and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 35-49. J. Vanderkamp, "Economic Activity and Strikes in Canada". (Industrial Relations, Vol 9, 1970), pp. 215-230. J. Pencavel, "An Investigation into Industrial Strike Activity in Britain". (Economica, Vol 37, 1970), pp. 239-256.

Empirical FindingsAshenfelter and Johnson (1969)

$$\begin{aligned}
 S(t) = & 1519.8 - 123.0U(t) - 62.2R(t) + 1.6II(t-1) + \\
 & \quad (170.0) \quad (13.1) \quad (12.9) \quad (136.7) \\
 & + 213.6N1(t) + 594.8N2(t) + 457.9N3(t) - 2.2T(t) \\
 & \quad (30.8) \quad (28.4) \quad (27.9) \quad (0.70)
 \end{aligned}$$

$$R^2 = .938 \quad D.W. = 1.44$$

Source: O. Ashenfelter and G. Johnson, "Bargaining Theory, Trade Unions and Industrial Strike Activity". (American Economic Review, March, 1969), pp. 44.

S = Measures the number of strikes beginning in each quarter (t). Source: Table E-1 of the Monthly Labor Review (Bureau of Labor Statistics, BLS).

U = The civilian unemployment rate, is a quarterly average of the monthly rates, in quarter (t). Source: MLR (BLS, U.S.).

R = A moving average of real wage changes, in quarter (t). The wage rate is an average, weighted by relative 1957 production worker employment of average hourly earnings in mining, construction and manufacturing. Source: Employment and Earnings (U.S., BLS). The CPI is obtained from Table D-1 of the MLR.

II = The ratio of corporate profits after tax, excluding inventory valuation adjustment, to total compensation, in quarter (t-1). Source: Survey of Current Business (U.S. Department of Commerce).

N1, N2, N3 = A set of seasonal dummy variables, in quarter (t).

T = A time trend, in quarter (t).

The equation was estimated from quarterly data, 1952(1)-1967(2). Standard errors are in parenthesis.

Vanderkamp (1970)

$$\begin{aligned}
 TL(t) = & -0.175 + .0022Y(t-1) + .0052UM(t) - \\
 & (0.146) \quad (0.0015) \quad (0.0065) \\
 & - .0032T(t) - .1226WD(t) + .0082P(t+1) \\
 & (0.0025) \quad (0.0449) \quad (0.0031)
 \end{aligned}$$

$$R^2 = .3074$$

Source: J. Vanderkamp, "Economic Activity and Strikes in Canada". (Industrial Relations, Vol. 9, 1970), pp. 224.

Ti. = Time loss from strikes in existence during the year (as a percentage of estimated working time), in quarter (t).

Source: The Labour Gazette, and Strikes and Lockouts.

Y = Constant dollar Gross National Product (GNP) as a percentage of trend, in quarter (t-1). Source: GNP from O.J. Firestone's, Canada's Economic Development. Historical Statistics of Canada and The National Accounts. The trend is log linear fitted to the constant dollar GNP per capita data for the period 1901-1966.

UM = Union membership as a percentage of the labour force, in quarter (t). Source: Historical Statistics of Canada.

T = A linear time trend, in quarter (t).

WD = Wartime dummy variable, to allow for a shift in the underlying relation as a result of wartime emergency between 1914-1918 and 1940-1945, in quarter (t).

P = Measures the rate of price change from year (t) to the next (t+1). Source: Historical Statistics of Canada.

The equation was fitted for the period 1912-1966, Standard errors are in parenthesis.

Pencavel (1970)

$$\begin{aligned}
 S(t) = & -147.88 + 74.93N_1(t) + 38.0N_2(t) + 7.01N_3(t) - \\
 & (88.26) \quad (15.01) \quad (14.22) \quad (14.51) \\
 & - 41.29U(t) + 1.87D(t) - 42.46R(t) + 5.50T(t) \\
 & (14.30) \quad (0.72) \quad (8.69) \quad (0.36)
 \end{aligned}$$

Source: J. Pencavel, "An Investigation into Industrial Strike Activity in Britain". (Economica, Vol. 37, 1970), pp. 245.

S = Measures the number of strikes beginning in any quarter (t). Source: Monthly Labour Gazette. Strikes involving fewer than ten workers are not included.

N1, N2, N3 = A set of seasonal dummy variables, in quarter (t).

U = The unemployment rate, in quarter (t). Source: Monthly Labour Gazette.

D = Gross trading profits as a percentage of wage and salary compensation in quarter (t). The index of gross trading profits (1948=100). Source: Monthly Digest of Statistics.

R = A moving average of real wage changes, in quarter (t). Defined as $R(t) = ((W(t+2) - W(t-2))/2W(t) - (p(t+2) - P(t-2))/2p(t))$. Source: Monthly Labour Gazette.

T = A time trend, in quarter (t).

The equation was estimated from quarterly data, covering the period 1950(1)-1967(2), in all industries excluding coal mining. Standard errors are in parenthesis. The equation has been slightly altered from the Ashenfelter-Johnson model to reflect institutional differences between countries.

In two of three three countries there is evidence of the rate of unemployment varying inversely with strike frequency. Although this relationship has been generally accepted, its interpretation is not limited to the Accident theory - predicting less certainty when unemployment is low.²⁰⁵ The Ashenfelter and Johnson model contends low rates of unemployment are associated with greater union militancy and higher wage demands that provoke strike activity.

²⁰⁵ An additional argument in support of the Accident hypothesis would be the costs of striking for both parties are lower when unemployment is high, generating more strikes.

Alternatively, Vanderkamp contends strike costs will be greatest in periods of declining business activity for: (1) The union will not be in the position to accept other job offers; (2) The employer will suffer a greater relative reduction in profits at the trough of the business cycle than at the peak; (3) The option of stockpiling given market conditions may not be viable especially if the union refuses to work overtime, and (4) Temporarily displaced customers may permanently seek new suppliers. These combination of factors suggest "the disutility of a strike for the union and its members is the greatest in depression and relatively smallest during high business activity....It appears most likely that for the typical firm the strike has a greater disutility when economic activity is low".²⁰⁶ Thus the argument is one of whether strike activity varies procyclically (Ashenfelter and Johnson), or countercyclically (Vanderkamp). Siebert and Addison express reservations of the latter's rationale by pointing out the existence of a short-run variation in unemployment and earnings relative to profits and a short-run Phillips curve which tend to reject Vanderkamp's assertions.

The Accident theory attempts to explain the impact of the profit variable by assuming the employer has more to lose when profits are high (thus one might assume not only relative bargaining power movements but increasing total

²⁰⁶ J. Vanderkamp, "Economic Activity and Strikes in Canada". (Industrial Relations, Vol 9, 1970), pp. 219.

joint costs as well). The authors conclude the main effect of high profit levels would be on the relative wage and not on strike frequency for the high expected costs of disagreement the employer may incur due to a strike alters the relative bargaining relationship and thus the equilibrium wage rate.²⁰⁷

The Accident theory purports to explain the relationship between higher past rates of real wage increases and higher rates of strike frequency by linking increasing real wages to a higher level of uncertainty. Unions with previous increases in real wages may not necessarily be satisfied and may come to the negotiating table with higher wage expectations based on previous contracts. This line of reasoning is perhaps contentious for continuing long-term increases in real wages may serve to reduce, not increase strike activity for this continued increase is expected, and may be viewed as one less issue involved in destabilizing the negotiation process. In similar reasoning, Ashenfelter and Johnson expect the real wage coefficient to be, a priori, negative.

²⁰⁷ One then would expect as an explanatory variable, profits would have no substantial impact on strike activity. However Ashenfelter and Johnson and Pencavel observe contrasting results.

The significant positive coefficient of the time trend variable (Pencavel) may be explained through the increased coverage of the working population by union membership. Increases in bargaining activity associated with the spread of unionization will raise the number of bargaining situations where 'accidents' may occur, resulting in higher levels of strike activity. Alternatively, contrasting results between studies may suggest over time, strike activity declines as a certain amount of learning and/or institutional development occurs with each round of negotiations.

Siebert and Addison also attempt to explain the extensive cross-sectional study by Shorey (1976)²⁰⁸ within the confines of the Accident theory. The positive coefficients of the variables; PBR, K, WDI, and WDR are consistent with the theory for these explanatory variables can be expected to give rise to new bargaining opportunities and increased uncertainty.²⁰⁹

²⁰⁸ J. Shorey, "An Inter-Industry Analysis of Strike Frequency". (*Economica*, Vol. 43, 1976), pp. 349-365.

²⁰⁹ Often contained in a negotiated agreement, is the option to re-negotiate if certain exogenous developments dampen the spirit and render the contract obsolete.

Shorey (1976)

$$\begin{aligned}
 S(i) &= 701.0 - 2.3F(i) + 2.7 PBR(i) + 113.2W(i) \\
 &\quad (4.5) \quad (7.2) \quad (7.7) \quad (4.7) \\
 &+ 3.7WDI(i) + 3.9WDR(i) - 0.04FS(i) + 5.9K(i) \\
 &\quad (4.2) \quad (2.0) \quad (2.6) \quad (4.0) \\
 &- 7.4Q(i) + 2.0U(i) \\
 &\quad (2.7) \quad (0.1)
 \end{aligned}$$

$$R^2 = .8830$$

Source: J. Shorey, "An Inter-Industry Analysis of Strike Frequency". (Economica, Vol. 43, 1976), pp. 358.

S = The number of strikes divided by the number of employees in industry (i), averaged 1963-1967. Source: Department of Employment Gazette (DEPG) and Annual Abstract of Statistics.

F = Proportion of female workers, in industry (i). Source: DEPG.

PBR = Proportion of workers on payment by result schemes. Source: DEPG.

W = Rate of change of manual workers earnings, in industry (i). Source: Statistics on Income, Production and Employment.

WDI = Index of changes in industry wage differentials, in industry (i). Source: Statistics on Income, Production and Employment.

WDR = Index of regional differences in industry wages, in industry (i). Source: Census of Production, 1963.

FS = The number of firms in industry (i). Source: Census of Production, 1963.

K = The rate of change of capital stock per annum, in industry (i). Source: Central Statistics Office.

Q = The rate of change of productivity per annum, in industry (i). Source: Statistics on Income, Production and Employment.

U = Level of unemployment in industry (i). Source: Annual Abstracts of Statistics.

The equation was fitted for the period 1963-1967, covering thirty three manufacturing industries. t-statistics are in parenthesis.

PBR, K, WDI and WDR are observed to be consistent with the accident model hypothesis. Changes in these variables can be expected to give rise to additional bargaining opportunities (for the union/firm may wish to reopen negotiations when unforeseen economic circumstances render the current contract obsolete), and increased uncertainty. W is also consistent with the Accident hypothesis - that change breeds uncertainty, for high past wage increases seem just as likely to cause divergence as convergence in each party's expectations.

The authors expect Q to be positive on the grounds that increased productivity will disturb the established relationship, causing uncertainty. Similarly FS is also expected to be positive, for the larger the industry, the greater the number of bargaining relationships and the higher the probability of an 'accident'.

COUSINEAU and LACROIX²¹⁰The Accident Model

In keeping with the Siebert and Addison model,²¹¹ Cousineau and Lacroix attempt to explain variations in strike activity over time due to: (1) Changes in the quality of information of the economic indicators that are employed through the bargaining process and affect the relative bargaining power relationship and the employer's ability to pay; (2) Inter-industry differences in the quantity of information exchanged by both parties; (3) Inter-industry costs of strike activity, and (4) Wage control policies.²¹²

Given this modified model, the authors derive two sets of possibilities that play a role in the variation of strike activity across industries and time periods: (1) The factors affecting the optimal negotiation period (N^*) and/or the strike probability function $p(N)$. However, it is difficult to objectively quantify such underlying variables for they are themselves subjective, based in part upon past negotiating experiences, and (2) The factors altering the quality of information that is exchanged and pertinent to

 210 Jean-Michel Cousineau and Robert Lacroix, "Why Does Strike Activity Vary over Time and Between Industries?" (Mimeographed, Université de Montréal, February, 1983).

211 The authors present the Siebert and Addison model in a slightly altered fashion so as to provide for a wider interpretation. The Cousineau and Lacroix approach is combined with Siebert and Addison in the theoretical presentation with no loss of continuity or content.

212 Jean-Michel Cousineau and Robert Lacroix, "Why Does Strike Activity Vary over Time and Between Industries?" (Mimeographed, Université de Montréal, February, 1983), pp i.

the formation of N^* and p^* for each party.

Due to the empirical testability of (2) and the difficulty in developing an adequate proxy for (1), the second set of factors are investigated by the authors in relation to their ability to explain inter-industry variation in strikes or between types of establishments and over time (i.e. the underlying components that affect the flow of information).

In developing this line of reasoning, the authors suggest four factors that contribute to a greater number of strikes in particular industries: (1) The volume of information to be exchanged. Sectors that face foreign competition (S) will more than likely have a greater array of elements to consider than would a domestic firm that is protected from such pressures. "Thus, at any point during the negotiations, gap closing between the two sides will be less extensive in an exposed industry than in a sheltered sector, and the probability of a strike will be greater, *ceteris paribus*";²¹³ (2) The longer is the life of the preceeding wage contract (DUR), the greater is the probability of a strike when negotiations resume as many new factors will come under consideration that may not have been previously discussed for they were not contentious and/or crucial issues at the time; (3) The total joint costs of strike activity (CIS) may vary over industries thus affecting the

²¹³ Ibid, pp. 10.

selection of an optimal negotiation period (N^*) and strike probability (p^*). As in Reder and Neumann, the two parties have an interest to keep expected strike losses per member constant (pL). If an industry has high strike losses per member (L), it would be best to introduce protocol into the negotiations in hopes of reducing strike probability (p), and (4) The larger the bargaining unit (NEMPL), the greater is the probability of experiencing communication gaps, affecting the length of negotiations and strike probability (i.e. the transmission of information within a small organization could lead to a more efficient conclusion of negotiations).

In exploring these factors, the authors have assumed: (1) Strike costs vary over time and can be expected to rise with the increase in the rate of inflation (i.e. INFL, strike costs vary procyclically), and (2) The importance of economic indicators will lose their significance the greater is their variance, thus reducing their reliability and increasing the probability of an 'accident'.

Hence strike probability can be expected to increase in periods of economic uncertainty for there exists a wider degree of interpretation of the available information. "The past experience of union and management negotiators, which would normally enable each side to anticipate the other's behavior, can be said to be less relevant".²¹⁴ In this

²¹⁴ Ibid, pp. 12.

respect, the combination of quality and quantity of information contributes to increasing the probability of strike activity.

CIS is similar in analogy to the Inv variable in Reder and Neumann, in that the larger the variation in CIS, the more likely is the firm able to absorb and adapt to strike activity. In this sense, a firm is buffering itself from the adverse consequences of failed negotiations. The larger the variation of inventories to sales in the industry, the lower will be total joint strike costs and the greater the probability of a strike.

CUR, CVR, and CRPI may be treated simultaneously for they relate to the reliability of key economic indicators that are used by each party in assessing their relative bargaining power and ability to pay. Any increase in the variation of the productive capacity utilization rate (CUR), the job vacancy rate (CVR) or the retail price index (CRPI), will reduce the amount of reliability in the indicators and the quality of information that is needed to reach a non-strike agreement. The model indicates on a priori grounds, that the coefficients of these three variables should be positive.²¹⁵

Wage controls that are indirectly developed by Siebert and Addison are incorporated into the model and suggest the

²¹⁵ CUR, CVR, CRPI and INFL are employed to capture the effect of strike variation over time.

amount of uncertainty surrounding the negotiations will be reduced for there is less room for unreasonable demands and fewer items to be negotiated. CONTR is expected to be negative.

Estimated Model

The estimated equation covers the years 1967-1982 for all wage contracts involving 200 or more employees in the Canadian manufacturing sector (of 2511 agreements, 527 were agreed upon following a strike).

$$\begin{aligned} \text{DSTRIKE}(k) = & x_0 + x_1S(j) + x_2\text{NEMPL}(k) + x_3\text{DUR}(t) + \\ & + x_4\text{CIS}(jt) + x_5\text{CUR}(jt) + x_6\text{CVR}(t) + \\ & + x_7\text{CRPI}(jt) + x_8\text{INFL} + x_9\text{CONTR} + \end{aligned}$$

$$x_1 > 0, x_2 > 0, x_3 > 0, x_4 > 0, x_5 > 0, x_6 > 0,$$

$$x_7 > 0, x_8 > 0, x_9 < 0$$

DSTRIKE(k) = A dummy variable equalling 1 if the agreement was signed following a strike, and 0 otherwise (k = 1 to 2511).

$S(j)$ = A dummy variable equal to a unity if sector j ($j = 1$ to 20) was protected against foreign competition, and zero otherwise. Source: F. Dussault and R. Lacroix, "La Détermination des Salaires dans les Secteurs Exposé et Arbitré de L'Economie Canadienne." Cahier de Recherche #7947, Département de Sciences Economiques, Université de Montréal.

$NEMPL(k)$ = The number of employees covered by a wage agreement when it was negotiated ($k = 1$ to 2511). Source: Labour Canada data bank.

$DUR(t)$ = The duration of the negotiated agreement in time period t . Source: Unspecified.

$CIS(jt)$ = Coefficient of variation (calculated over 9 quarters) of the ratio of inventories to sales in sector j ($j = 1$ to 20), in quarter t ($t = 1967(1) - 1982(1)$). Source: Unspecified.

$CUR(jt)$ = Coefficient of variation (calculated over 9 quarters) of the productive capacity utilization rate in sector j ($j = 1$ to 20), in quarter t ($t = 1967(1) - 1982(1)$). Source: Statistics Canada, Catalogue # 71-001, 11-003.

$CVR(t)$ = Coefficient of variation (calculated over 9 quarters) of the job vacancy rate in quarter t ($t = 1976(1) - 1982(1)$). Source: Statistics Canada, Catalogue # 71-001, 11-003.

CRPI(jt) = Coefficient of variation (calculated over 9 quarters) of the retail price index in sector j (j = 1 to 20), in quarter t (t = 1967(1) - 1982(1)). Source: Statistics Canada, Catalogue # 62-001, 62-543.

INFL = Annual rate of inflation as measured by the CPI at the time of collective bargaining. Source: Unspecified.

CONTR = Measuring the effect of an incomes policy (Equal to 0 before October 1, 1975 and after March 28, 1978, value of .25 in 1975(4), .50 in 1976(1), .75 1976(2), and 1 from 1976(3) to 1978(1). Source: Unspecified.

The first four explanatory variables seek to explain inter-industry and/or inter-firm variation in strike frequency, while the last five variables purport to explain why strike activity varies over time.

Since the dependent variable is a dummy variable, the equation is estimated by Probit. The results are contained in Table 8. The four variables employed to measure inter-industry variations in strike activity (S, NEMPL, DUR, CIS) all conform to their a priori sign and three are statistically significant. Of the five variables employed to reflect variations in strike probability over time CUR, CVR and CRPI have the expected sign and are statistically significant with CUR and CRPI having the most noticeable impact on strike activity over the period under

investigation.

Although the coefficient for INFL has the expected sign, it is not statistically significant. CONTR is reported to be significant with the appropriate sign, indicating wage control policies exert a negative influence on strike activity by removing the scope for additional issues to cause an 'accident'. The data suggests that CONTR and INFL are substitutes, that is, an incomes policy reduces the inflationary issue and impact at the bargaining table, with the end result being a reduction in strike activity. One might expect if the reverse were to occur, INFL would have a significant influence on strike activity.

Empirical Findings

Table 8

<u>Variables</u>	<u>Coefficients</u>
CONSTANT	-1.83 (-10.86)
Sj	-0.390 (-5.59)
NEMPLk	0.00004 (2.78)
DURt	0.14 (3.80)

CISjt	0.064 (0.31)
CURjt	2.14 (5.81)
CVRt	0.306 (2.02)
CRPIt	0.997 (2.87)
INFL	0.018 (1.35)
CONTR	-.215 (-2.49)

t-statistics in parenthesis.

Source: J. Cousineau and R. Lacroix, "Why Does Strike Activity Vary Over Time and Between Industries?" (Mimeographed, Industrial and Labour Relations Review, February, 1983), pp. 16.

Table 9, illustrates a later published study of 1871 collective agreements (of which 430 were agreed upon following a strike), negotiated in the Canadian manufacturing sector from 1967-1982.

The estimated equation is identical to the 1983 model, except for the inclusion of HB (measuring market structure). HB is incorporated to capture inter-industry or inter-firm variation in strike frequency.

Table 9

<u>Variables</u>	<u>Coefficients</u>
CONSTANT	-2.45** (-9.67)
Sj	-0.444** (-5.33)
HB	13.41* (1.69)
NEMPLK	0.00004** (2.81)
DURt	0.156** (3.64)
CISjt	-0.318 (-.912)
CURjt	2.04** (4.50)
CVRt	0.479** (2.62)
CRPit	0.723** (1.88)
INFL	0.084** (3.40)
CONTR	-.139 (-1.45)

HB = Interaction variable. H = Herfindhal Index. Source:

Statistics Canada. $B = A$ buyer concentration index calculated for Canada by Hollander (1981).

* Statistically significant at the .10 level.

** Statistically significant at the .05 level.

t-statistics in parenthesis.

Likelihood Ratio test = 187.03

Source: J. Cousineau and R. Lacroix, "Why Does Strike Activity Vary Over Time and Between Industries?" (Mimeographed, Université de Montréal, February, 1983), pp. 384.

These empirical results support relatively well the hypothesis that strikes occur in a world characterized by asymmetric information. Inter-industry variations in strike activity may be attributed to changes in the quantity and reliability (quality) of information during a predetermined time period. Cousineau and Lacroix conclude: "There are inter-industry differences in strike activity because not all industries are equally vulnerable to foreign competition, because the average bargaining unit, size and duration of collective agreements vary, and so on. At the same time, there are differences in strike propensity during different time periods because uncertainty about job vacancies, excess capacity, retail price indices, and so on

varies over time".²¹⁶

Overall, the components of industry character, structure and symmetry of information contribute to strike activity. The study employs a series of variables that are industry specific and not macro-economic aggregates of the economy, recognizing that the variability of pertinent economic indicators can severely restrict each party's ability to gauge oncoming negotiations, altering the efficient flow of communication and shifting the p-N curve. Hence, the Cousineau and Lacroix study appears to be a strong step in the right direction, in both theory and empirical work.

²¹⁶ Ibid, pp. 20.

KAUFMAN (1981)An Interactive Bargaining Model

The development of Kaufman's interactive bargaining model permits the derivation of testable implications regarding variations in strike activity over the business cycle and with respect to the rate of inflation in the United States manufacturing sector covering the period 1954(1) - 1975(4).

Kaufman discusses the emergence of a short-run strike cycle following upswings in unanticipated inflation, for unions will become increasingly militant to restore their declining level of real wages, resulting with an increase in strike activity. If the rate of inflation falls below the unions expectations (raising real wage levels), demands at the negotiation table for higher wages will subside along with strike activity falling below its 'normal' rate. In the long-run, where actual rates of inflation are identical to anticipated rates, strike activity is assumed to return to its normal (steady) state.²¹⁷

On the basis of his model, Kaufman predicts that strike activity is directly related to previous rates of inflation and inversely related to past wage increases.²¹⁸

²¹⁷ This analysis parallels that of Milton Friedman's 'Natural Rate' hypothesis and the Expectations Augmented Supply (EAS) curve.

²¹⁸ Of note there is no theoretical link between the Interactive model and the pareto-optimal accident theories, the latter model states strike frequency is inversely related to total joint strike costs and positively related to strike avoidance costs, while the former explains strike activity over the business

Given that prices are an important determinant in each party's calculation of negotiation demands, the author examines the role of prices - either past rates of inflation or the formation of price expectations and their impact on strike activity.

In assessing the role of price expectations on strike activity, the two most prevalent theories are treated, namely, adaptive and rational expectations. By exploring these two theories, Kaufman recognizes that changing expectations with respect to future rates of inflation will affect nominal wage offers/demands by management and the union. Any inflationary impact on strike activity will be reflected through changes in the relative distance that separates each party's demands (i.e. conversely, if both party's expect identical rates of inflation, there will be no impact or cycle of strike activity).

With adaptive expectations, it is assumed that the union's short-run price expectations lag behind those of management.²¹⁹ If the union has underestimated the expected rate of inflation ($P_e(u) = x$), management may be able to take advantage of this miscalculation by bargaining as if $P_e(f) = x$. This strategy of negotiation could mislead the union for a short period of time as they experience declining real wage levels over the contractual period,

cycle with specific attention paid to the rate of inflation.

²¹⁹ The current expected rate of inflation is a function of past rates of inflation, expressed as a declining weighted average.

(i.e. the union is 'fooled' for a short-term period).

However, the firm in its best bargaining interests may find it profitable to raise their nominal wage level to reduce the relative gap between the parties while concurrently decreasing the expected duration and frequency of strike activity.²²⁰ In the succeeding period of negotiations, price expectations by the union are assumed to have completely adjusted to the new higher rate of inflation with money wage demands by the union increasing until their real wage levels have been restored. Compared to the previous period, there has been an increase in the relative distance separating the party's wage demands increasing the frequency and duration of strike activity.

In period 3, the union overestimates the rate of inflation relative to Period 1, further increasing the divergence between the parties, leading to a greater number of strikes.

The major defect of the adaptive expectations approach is that the underlying assumptions are not consistent with rational economic behavior and promote a constant bias in forecasting future price levels.

According to rational expectations $P_e(u)$ and $P_e(f)$ are

²²⁰ For the sake of analysis, Period 1: The rate of inflation begins to increase. Period 2: The rate of inflation levels off at a higher rate. Period 3: The rate of inflation declines on the downswing of the business cycle.

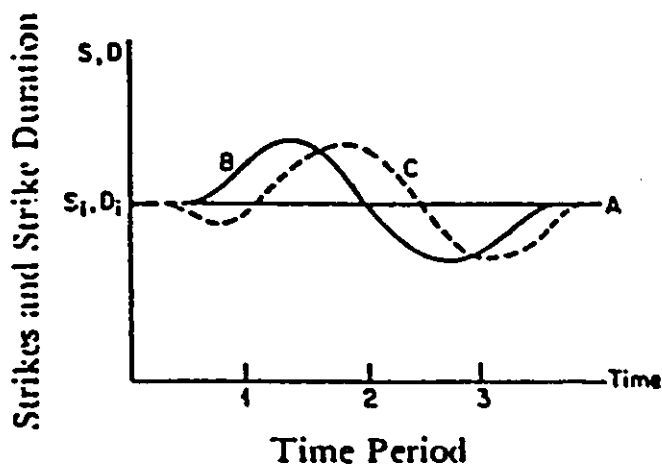
assumed to be unbiased estimators of the actual rate of inflation, any deviation from the expected rate of inflation (P_e) are attributable to random forecasting errors. Hence if each party has access to identical sets of information, such that $P_e(u) = P_e(f) = P_e$, this rise in the expected rate of inflation, while causing an increase of the nominal wage demands of each side, will leave unchanged the distance separating them in real terms",²²¹ *ceteris paribus*, implying no change in negotiation time or strike activity has occurred in order to reach an agreement.

In realistic terms, the union wishes not only to recuperate what it has lost in real wages between the first two periods, "but also as a consequence of the actual rate of price change over the previous contract. In particular, if due either to inaccurate price forecasts or to the existence of long-term labor contracts union members find their real wages have grown less than expected, their nominal wage demands will increase in the next period not only to restore the desired level of real wages but also to catch up for the loss in real income suffered during the previous contract".²²² These wage demands shift up the reaction function $W_u(t)$ (see Kaufman's theoretical exposition, Figure 16), increasing the frequency and duration of strike activity.

²²¹ B.E. Kaufman, "Bargaining Theory, Inflation, and Cyclical Strike Activity, in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp.341.

²²² Ibid, pp. 343.

Figure 18



Source: B.E. Kaufman, "Bargaining Theory, Inflation and Cyclical Strike Activity, in Manufacturing". (Industrial and Labor Relations Review, April, 1981, pp. 343.

Kaufman synthesizes the above discussion by presenting the relation between the strike cycle and the business cycle (see Figure 18).²²³ Time is on the horizontal axis, strikes (S_i) and strike duration (D_i) on the vertical axis. The horizontal line A indicates the existence of a normal level of strike activity, usually occurring with short-term contracts and rational expectations (i.e. the rate of inflation is fully anticipated by each side with no cyclical fluctuations in strike activity).

²²³ Ibid, pp. 343.

Line B demonstrates the variation of strike activity over the business cycle with rational expectations. A strike cycle emerges given the nature of long-term wage contracts, in that it is difficult for the union to fully anticipate future rates of inflation. Over the course of time and the business cycle, lagged strike activity occurs for the union wishes to restore real wage levels (Period 1), as inflation stabilizes strike activity converges towards the normal state for anticipated rates of inflation equal actual rates (Period 2), and with strike activity declining, the union now experiences unanticipated gains in real wage gains (Period 3).

Line C presents the variation of strike activity over the business cycle in the case of adaptive expectations. Strike activity falls under the normal state, for the union lags behind the firm in properly anticipating inflation (Period 1). When the rate of inflation stabilizes, price expectations by both parties converge, with strike activity returning to its normal state (Period 2). In Period 3, strike activity increases due to the unions overestimation of the rate of inflation (Period 3). In addition to price expectations, there will be a 'catch up' wage demand effect on strike activity.

To summarize, each theory produces cyclical movements in strike activity, predicting the strike cycle will lag the business cycle, "both predict the greater the variation in inflation, the greater the fluctuation in strike

activity".²²⁴

In addition to the rate of inflation, Kaufman considers the economic impact of the rate of unemployment and the rate of change of profits on the strike cycle.

Unemployment is justified as an explanatory variable for it is assumed to affect the timing of strike activity and alter the relative bargaining power relationship, "it is likely that in fact the union's bargaining position will be more affected than the firm's by a change in unemployment".²²⁵ The influence of the rate of unemployment rate will tend to synchronize movements of the strike cycle and business cycle since the cyclical turning point in the rate of unemployment leads the business cycle (while the strike cycle lags the business cycle) and the greater the impact changes in the rate of unemployment have on the strike cycle the more likely it will coincide with the business cycle. "Thus our model predicts including the unemployment rate will cause the peak of the strike and business cycle".²²⁶

The author also considers the effect of changes in business profits on the relative timing of the strike and business cycle by presenting a similar rationale as to the rate of unemployment. Changes in business profits have been

²²⁴ Ibid, pp. 344.

²²⁵ Ibid, pp. 345n.

²²⁶ Ibid, pp. 345.

observed to lead the business cycle at the peak and trough and affect the level of strike activity, this profit cycle will tend to magnify the impact of the rate of unemployment by shifting the strike cycle forward.

Estimated Equation

The author employs a time series model using quarterly data covering the period 1954(1)-1975(4), and 1957(1)-1975(4), t-statistics are in parenthesis.

$$\begin{aligned} \ln St(t), \ln Wk(t) = & a_0 + a_1 \ln C(t) + a_2 Time(t) - \\ & - a_3 WP(t) + a_4 Un(t) + a_5 Un(t).W(t) + \\ & + a_6 Un(t).P(t) + a_7 II(t) + a_8 W(t) + \\ & + a_9 P(t) + a_{10} ESC(t).W(t) + a_{11} ESC(t).P(t) + \\ & + a_{12} Pe(t) + a_{13} Pe(t).\Delta Pe(t) + a_{14} Vote(t) \end{aligned}$$

$a_1 > 0, a_2 < 0, a_3 < 0, a_4 < 0, a_5 > 0, a_6 < 0, a_7 ?, a_8 < 0,$
 $a_9 > 0, a_{10} > 0, a_{11} < 0, a_{12} = 0, a_{13} = 0, a_{14} > 0$

$\ln St$ = The natural logarithm of the number of strikes in the U.S. manufacturing sector beginning in quarter (t).
 Source: Bureau of Labor Statistics (BLS).

$\ln W_k$ = The natural logarithm of the number of workers in the U.S. manufacturing sector involved in strike activity in quarter (t). Source: BLS.

$\ln C$ = The natural logarithm of either (a) the number of major (one thousand workers or greater) contract expirations, or (b) the number of workers covered under major contract expirations, in quarter (t). Source: Current Wage Developments (BLS).

Time = A linear time trend in quarter (t).

WP = A dummy variable equalling one for the period of wage-price controls 1971(IV) - 1974(I), and zero otherwise.

Un = The unemployment rate for males twenty years of age or greater in quarter (t). Source: Business Conditions Digest (U.S. Department of Commerce).

II = The percentage rate of change of current dollar corporate profits in manufacturing over the preceeding contract period in quarter (t). Source: Quarterly Financial Report (Federal Trade Commission).

W = The percentage rate of change of nominal wages over the preceeding contract period in quarter (t). Source: Employment and Earnings (BLS).

P = The percentage change in the CPI over the preceeding contract period in quarter (t). Source: Business Conditions Digest (U.S. Department of Commerce).

ESC.P = An interaction term between change in prices and (a) the percent of all expiring major contracts in period (t) that contained an escalator clause or (b) the percentage of all workers covered under expiring major contracts that contained an escalator clause in quarter (t).

ESC.W = An interaction term between the rate of change of current wages and ESC in quarter (t).

Un.P = An interaction term between the rate of change of prices and the level of unemployment in quarter (t).

Un.W = An interaction term between the rate of change of current wages and the level of unemployment in quarter (t).

Pe = The expected annual percentage change in prices over the next year, in quarter (t). Source: A Study of Price Forecasts, A. Carlson (Annals of Economic and Social Measurement).

Pe. Δ Pe = An interaction term between the the level of price expectations Pe and the rate of change of these price expectations Δ Pe, in quarter (t).

Vote = The number of 'right' votes cast in the United States House of Representatives in each session as a percent of all votes cast. This variable is to capture the political climate of the country. Source: A Report on Congress, AFL-CIO news.

Empirical Findings

Table 10
Strikes in Manufacturing

<u>Independent</u> <u>Variables</u>	Dependent Variables			
	(1)	(2)	(3)	(4)
	<u>lnSta</u>	<u>lnStb</u>	<u>lnWka</u>	<u>lnWkb</u>
Constant	3.53 (7.02)*	3.68 (7.16)*	8.37 (8.66)*	9.79 (9.94)*
LnC	0.55 (7.73)*	0.51 (6.96)*	0.52 (6.00)*	0.39 (4.11)*
Time	-.008 (-2.5)*	-.009 (-2.4)*	-.016 (-2.5)*	-.012 (-1.7)
WP	0.25 (2.10)*	0.26 (1.92)*	0.38 (1.78)*	0.38 (1.63)
Un	-.207 (-1.8)*	-.188 (-2.2)*	-.595 (-2.4)*	-.328 (-1.8)*
Un.W	0.02 (1.42)	0.02 (2.45)*	0.06 (1.97)*	0.04 (2.13)*
Un.P	-.021 (-1.7)*	-.020 (-2.6)*	-.042 (-2.0)*	-.034 (-2.4)*
II	0.002 (1.00)	0.003 (1.89)	0.002 (0.57)	0.004 (1.25)
W	-.057 (-2.4)*	-.034 (-1.6)*	-.129 (-3.1)*	-.078 (-2.3)

P	0.108	0.113	0.176	0.166
	(3.93)*	(4.39)*	(3.67)*	(3.78)*
ESC.W	0.055	0.099	0.146	0.128
	(0.92)	(1.99)*	(2.75)*	(2.70)*
ESC.P	-.094	-.167	-.139	-.137
	(-1.3)	(-2.4)*	(-2.2)*	(-2.1)*
Pe	0.035	0.023	-.076	-.161
	(0.46)	(0.24)	(-.56)	(-1.07)
Pe.ΔPe	-.027	-.025	-.003	-.012
	(-1.07)	(-1.03)	(0.053)	(0.26)
Vote	-.004	-.010	0.013	-.003
	(-.67)	(-1.57)	(1.05)	(-.22)
R ²	.641	.678	.560	.550
D.W.	1.82	2.00	2.28	2.30

a includes the time period 1954(I) - 1975(IV).

b includes the time period 1957(I) - 1975(IV).

* Significant at the .05 level for the appropriate one or two-tailed test.

Source: B.E. Kaufman, "Bargaining Theory, Inflation and Cyclical Strike Activity in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp. 348-349.

The specification of the model was chosen to control for the influence of the volume of bargaining activity,

political or institutional developments and changing economic conditions. Additional variables were included to control for the separate effect of price expectations, previous rates of inflation and escalator clauses and their impact on strike activity.

Escalator clauses may have an impact on the inflation-strike cycle relationship by reducing the periodic need to negotiate wage demands that are tied to the rate of inflation. The effect of the escalator clause, then, is to reduce the need for the union to forecast prices, and decrease the effect of inflation in terms of price expectations and catch-up wage demands. This assumes that the escalator clause would lower the level of strike activity towards its normal state.

Empirically (Table 10), strike activity is related to changing economic conditions. Equations 1-4 are verified for their significance via the application of an F-test. Based on the data, the null hypothesis $H_0: a_5 \dots a_{14} = 0$ was rejected, accepting the alternative hypothesis.

$\ln C$ for both (a) and (b) are positive and significant,²²⁷ thus the greater the number of (a) contract expirations or (b) the larger the numbers covered by major contract expirations, the more frequent will be strike activity.

²²⁷ Kaufman argues since union membership has been relatively constant, the contract expirations variable is a more relevant proxy for the opportunity to strike.

The time trend variable (Time) is negative and significant in three of the four equations suggesting over time, strike activity is declining. Kaufman's finding may be interpreted as a learning curve, that is, over the course of time, each party is better able to assess their opponents actual rate of concession and their learning rates.

For the wage-price control variable (WP), Kaufman provides no satisfactory explanation as to why it is significant and positive in three of the equations (as opposed to its a priori determination of being negative.²²⁸

The coefficient and sign for the rate of unemployment (Un) is consistent with previous studies is significant and negative. Suggesting high rates of unemployment dampen the urge to strike when the union is not in a favourable bargaining position.

The interactive terms Un.W, Un.P are considered for the catch-up demands by the union and their timing are assumed to be influenced by the rate of unemployment at the time of bargaining. In all but one case, a5 and a6 are significant with the correct sign supporting the proposal that the impact of inflation upon strike activity is partly a function of the current rate of unemployment facing the union at the time of bargaining.

²²⁸ However, if the same equations are estimated with strikes of 1000 workers or more, a3 is not significantly different from zero.

For business profits, the null hypothesis cannot be rejected for any of the equations, intimating that profits may not be an integral factor in determining strike activity. The sign as proposed by Ashenfelter and Johnson is indeterminate, suggesting higher profit levels may increase the union's wage demands and not be reflected by in a decline in the frequency of strike activity.

The rate of change of nominal wages (W) was found to be significant and negative, consistent with previous studies that suggest the desire to strike in order to recoup lost real wage levels is reduced. Implying that for a given rate of inflation, the greater the increase in nominal wages, the lower will be strike activity.

The past rate of inflation P , was seen as the most significant variable in explaining strike activity. Confined to Kaufman's theory which assumes long-term contracts and the inability of the union to fully anticipate price levels and to accordingly adjust their wage levels, the union will wish to restore declining real wages through catch-up demands, which could increase the frequency of strike activity.

The impact of the escalator clause on $ESC.W$ and $ESC.P$ is included to reduce the impact of inflation on strike activity by tying wages to the level of prices. Hence $a_{10} > 0$, $a_{11} < 0$. Both variables conform to the expected sign and are significant in equations 2 and 4.

According to the theory of rational expectations, $\alpha_2=0$, therefore on empirical grounds, the null hypothesis is accepted. In absence of long-term contracts, fluctuating price expectations would not influence strike activity. In the case of adaptive expectations, it was initially assumed that strike activity would decline due to the union's underestimation of the rate of inflation. Thus the interactive term $P_e \cdot \Delta P_e$ is either equal to 0 and not significant, or significant and negative. In this case we accept the null hypothesis, "these results do not provide any evidence of a lag in price expectations on the part of labor as predicted by the adaptive expectations model".²²⁹

For the Vote variable the null hypothesis cannot be rejected, "over this time period the amount of strike activity was unaffected by the attitude of Congress towards labor-oriented legislation".²³⁰ Kaufman had proposed that public policy that was seen as pro-labor and would induce a greater frequency of strike activity.

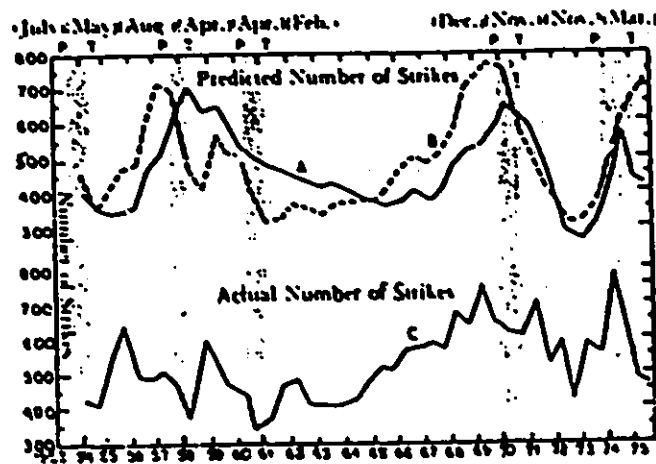
From the regression results Kaufman also evaluates whether or not the rate of unemployment and business profits would shift forward the strike cycle to coincide with the business cycle. The results in Figure 19, suggest Kaufman's postulates could not be refuted. Line A demonstrates the

²²⁹ Ibid, pp. 350. Combining the implications of P_e and P , the model supports rational expectations given the existence of long-term contracts, or adaptive expectation without the assumption of differential price forecasts on labour's behalf.

²³⁰ Ibid, pp. 350.

predicted number of strikes that vary with the rate of inflation, *ceteris paribus*. Line B indicates the number of strikes when both unemployment and the rate of inflation are allowed to vary. Line C shows the actual number of strikes over the period 1954-1975 in the United States manufacturing sector. As noted, Line B shifts forward with its turning points at the peak similar to those of the business cycle. Hence fluctuations in the rate of inflation which manifest themselves through price expectations by the union and firm cause strike activity to assume a cyclical pattern.

Figure 19



Source: B.E. Kaufman, "Bargaining Theory, Inflation and Cyclical Strike Activity in Manufacturing". (Industrial and Labor Relations Review, April, 1981), pp. 352.

The Kaufman Interactive bargaining model suggests that inflation is the strongest explanatory factor. It would not be unreasonable to expect in times of high inflation, wage offers and demands that may increase at a proportional rate that is in line with the rate of inflation. Therefore the impact on strike activity would be indeterminate.

To complicate matters, the ESC variable has been included to capture a certain dampening effect on strike activity, however the remaining interpretation of inflation has not been fully addressed. In the Siebert and Addison framework, higher rates of inflation may involve greater rates of variance of economic indicators that foster a greater degree of uncertainty in negotiations.

The approach taken by Kaufman has been strictly through the use of macroeconomic aggregates that are assumed to be important determinants of not only the business cycle, but the strike cycle as well. However, an investigation as such may encounter problems of aggregation by not considering industry-specific costs or problems that may alter or deny the existence of a strike cycle. Moreover, Kaufman fails to incorporate any microdeterminants that Reder and Neumann or Cousineau and Lacroix have empirically evaluated.

In an attempt to account for the micro foundations of strike activity, R. Swidinsky and J. Vanderkamp, "A Micro-Econometric Analysis of Strike Activity in Canada". (Journal of Labor Research, Vol. 3, No. 4, 1982) disaggregate

their explanatory variables into four groups: (1) The general economic environment; (2) Employer characteristics; (3) Union characteristics, and (4) Contract specific factors.

Although the Swidinsky-Vanderkamp empirical inquiry is important, it may be very difficult to generalize findings that are strictly industry specific (and vice-versa, in the case of Kaufman). Moreover, before the acceptance of such a study, a theoretical foundation must be established and not simply stated on an ad hoc basis that attributes the inclusion of twenty-four explanatory variables to previous studies that have dealt with this matter.

To Kaufman's credit, he expands on his 1981 study by including explanatory variables that cover economic, organizational, institutional, occupational, demographic, market structure, political and other variables.²³¹

²³¹ B.E. Kaufman, "The Determinants of Strikes Over Time and Across Industries". (Journal of Labor Research, Vol. 4, No. 2, 1983).

MAURO (1982)An Extension of the Hicksian Model

In Mauro's model, fourteen bargaining relationships are extracted from the series 'Wage Chronology'²³² and are employed to investigate his theoretical propositions. Estimates of strike probability are derived by the use of a Maximum-Likelihood logit approach.

The major assumption underlying Mauro's empirical investigation is characterized by the term 'divergence'. Divergence implies each party constructs its own perception of the other's concession curve by the use of the same variables employed to construct its own (where a set of informational variables are fully anticipated by each party, see Mauro's theoretical exposition). With symmetric information, no changes in strike probability would occur for each party would be aware of the variables affecting its opponent's concession curve. Given the existence of asymmetric information, divergence may result from inaccurate expectations.

In testing for divergence, it is assumed the union utilizes the CPI, income taxes, real wage changes, and wage changes relative to those occurring in other industries in constructing its concession curves. Management is assumed to

²³² Wage Chronology is published by the Bureau of Labor Statistics (BLS), detailing settlements between unions and firms over a period of thirty years. In the model there are 149 contract expirations of which 34 resulted in strike activity.

employ the firm's product prices, profits, and labour productivity (i.e. factors affecting the firm's derived demand schedule for labour in assessing its concession curves).

TAXEF measures the extent to which real disposable income (RDI) is maintained from the base period to the time of negotiations. Explicitly, TAXEF is the ratio between what RDI would be if the rate of change of wages equalled the rate of inflation over the period divided by the actual RDI in the base period. The lower the ratio, the greater the effect of taxes on wage changes, for wage changes equivalent to the rate of inflation may not maintain RDI levels as incomes belong to higher tax brackets and create a wedge between what the firm pays and what the employee actually receives.²³³ Consequently, TAXEF should be inversely related to strike probability.

DRWAGE measures the change in real wages over the life of the contract. From the union's perspective this variable should have a negative effect on strike probability. However the size of the negative effect depends on how insensitive management is in recognizing the importance of real wage levels to workers (i.e. if management is acutely aware of such an issue, the magnitude of DRWAGE should be significant).

²³³ J.M. Mauro, "Strikes as a Result of Imperfect Information". (Industrial and Labor Relations Review, July, 1982), pp. 527.

RELWAGE captures the current ratio of the firm's wage to the average industrial wage which differs from the mean of this ratio at the times of all contract expirations for the particular firm.²³⁴ Hence, unions are not only concerned with maintaining a certain standard of living, but they are also sensitive to wage relativity across industries. Thus the larger the relative wage ratio, the less likely there will be increases in strike activity.

With respect to divergence, management will become concerned if changes in industry price affect their demand for labour schedule. Strike activity will be more likely to occur when the firm's percentage price change (M) is less than the percentage change in the CPI. Hence if $M < CPI$, strike probability will increase, with no symmetry if the reverse were to occur (i.e. $M > CPI$). The latter case could be interpreted as a move on management's behalf to conclude negotiations with greater ease. DIVERG is used to capture the divergence between M and CPI.

DOPWH is a proxy measure for the value of labour's marginal product by the change in output per worker hour. "It is expected that an increase in DOPWH will raise the value of the Marginal Product of Labour and thereby reduce strike probability by increasing the demand for labor and thus management's wage offer".²³⁵

²³⁴ Ibid, pp. 530.

²³⁵ Ibid, pp. 531.

PROFITS are included instead of industry price changes as a proxy for the derived demand for labour. "We can expect that a measure of profits which is known only to the firm and which is a 'true' gauge of its demand for labor will be negatively related to strikes because an increase in this measure will raise wage offers without correspondingly increasing wage demands".²³⁶

The INTERACT variable is included to capture the effects of inflation and the rate of change of profits on strike activity. High rates of inflation may increase the divergence between groups, however, the rate of change of profits (employed here to proxy the derived demand for labour) would have an impact on the industry price, and may keep the relative distance between the two price measures constant, with no subsequent effect on strike activity (similar to the Ashenfelter and Johnson rationale). Therefore on a priori grounds, INTERACT is indeterminate.

UNEMP and DSHP are factors that are considered in the Chamberlain and Kuhn sense (Appendix I) of altering the relative bargaining power relationship, resulting with an increase or decrease in strike activity. For each party, the cost of disagreeing is an important component of their concession curves and the other party's perception of its importance to its rate of concession.

²³⁶ Ibid, pp. 531.

UNEMP is the rate of unemployment and is assumed to be negatively associated with strike probability. Lower rates of unemployment increase the possibility of accepting alternative job offers thus reducing the union's rate of concession and the costs of disagreeing, increasing the probability of strike activity. Additionally, a union may decide to strike just to keep management honest in terms of negotiating in good faith. In this case then, they would be predisposed to execute such a strategy at a time of strength.

DSHP measures the changes in shipments in the industry over the two-month period preceeding contract expiration. Mauro's argument (similar to Reder and Neumann's Ship variable), is that a firm will be better able to withstand a strike if it has increased its inventories or sales. In the latter case, a firm would reduce the impact of strike costs by strategically arranging the timing of its sales.

Through COLA, the cost of living adjustment clause is viewed as removing the issue of inflation from negotiations.²³⁷ However Mauro argues this does not imply in a direct manner the reduction of strike probability. "A COLA clause also reduces the union member's uncertainty concerning the effects of future inflation, while increasing management's uncertainty about the future wage bill and,

²³⁷ Or at minimum reducing the impact of this issue, for many agreements do not provide full inflation protection.

hence profits for the firm".²³⁸ Thus if management seeks to negotiate the elimination of the COLA clause, its inclusion may increase strike probability. Conversely, a union may strike in the absence of COLA. The a priori expectation of the sign for COLA is then assumed to be indeterminate, dependent on the size of the effects discussed.

Mauro includes in the model a discussion of the development of 'pattern following' as a means of reducing strike probability, for the settlement has been largely predetermined via previous collective bargaining negotiations. This hypothesis is tested by the dummy variable PATF.

The author interprets previous strike activity as having a negative impact on future strike activity for it acts as a learning process, "if strikes are the result of misinformation, a strike should signal the parties to look at variables different from those they currently employ to predict the settlement terms. Since they will now be better informed, the likelihood of a future strike should be reduced."²³⁹ The variable STKL captures this effect.

²³⁸ Ibid, pp. 533.

²³⁹ Ibid, pp 533. However if each party feels it has won the strike, it could have a positive effect on future strike activity.

The dependent variable is binary, equalling 1 if a strike occurred at the end of a contract, and 0 if no strike occurred. A logistic transformation on the dependent variable was performed to reduce the heteroschedasticity that the OLS technique produced.

The estimated model for the thirty-year period:

$$\begin{aligned}(0,1) = & x1DSHP + x2COLA + x3PATF + x4UNEMP + x5TAXEF + \\ & + x6DRWAGE + x7RELWAGE + x8PROFITS + x9INTERACT \\ & + x10DOPWH + x11DIVERG + x12STKL \\ x1 > 0, & x2?, x3 < 0, x4 < 0, x5 < 0, x6 < 0, x7 < 0 \\ x8 < 0, & x9?, x10 < 0, x11 > 0, x12 < 0\end{aligned}$$

(0,1) = A binary variable equal to zero if no strike occurred at the contract expiration, equal to one if strike activity occurred. Source: Wage Chronology.

DSHP = The percentage change in seasonally adjusted levels of industry shipments during the two months prior to the contract expiration. Source: U.S. Bureau of the Census, Manufacturer's Shipments, Inventories and Orders.

COLA = A dummy variable equal to one if the expiring contract had a cost of living clause, zero otherwise.

PATF = A dummy variable equal to one if the contract being negotiated followed a pattern, zero otherwise.

UNEMP = The unemployment rate for prime aged males during the quarter year of the contract expiration. Source:

Employment and Earnings.

TAXEF = The extent to which real disposable income is changed because of taxes, after compensation for inflation. Source: Employment and Earnings.

DRWAGE = The percent change in real wages over the course of the contract. The price level used is the CPI for urban wage earners and clerical workers. Source: The CPI Detailed Report (BLS).

RELWAGE = A variable computed by dividing the ratio of the firm's wage to average wages for private sector non-agricultural production workers by its mean value for all observations for a particular firm. Source: Employment and Earnings.

PROFITS = The ratio of net income to net worth for the firm in the year prior to the contract expiration. Source: Moody's Industrial Manual and Moody's Public Utility Manual.

INTERACT = The product of the percent change in the CPI and the firm's profit rate.

DOPWH = The percent change in output per production worker for the industry over the years of the contracts. Source: Time Series Data for Input-Output Industries (BLS) and Productivity Indexes for Selected Industries (BLS).

DIVERG = The difference between the percent change in the CPI and the percent change in the relevant producer price index when this difference is non-negative, or zero otherwise. Source: CPI Detailed Report and Producer Prices and Price Indexes (BLS).

STKL = A dummy variable equal to one if a strike occurred at the end of previous contract, zero otherwise.

Empirical Results

Table 11

Maximum-Likelihood Logit Estimates of Regression
Coefficients with Wage Changes Computed from the First Day
of the Expiring Contract

<u>Independent</u>	<u>Equations for Fixed</u>			
<u>Variables</u>	<u>Effects²⁴⁰</u>			
	(1)	(2)	(3)	(4)
DSHP	0.53	0.75	0.67	1.19
	(1.36)	(1.36)	(1.43)	(1.49)

²⁴⁰ Dummy variables are employed to control for individual characteristics that may contribute to differing strike probabilities amongst otherwise homogenous bargaining units.

COLA	-0.34	-0.32	-0.38	0.08
	(0.32)	(0.39)	(0.31)	(0.33)
PATF	-1.05***	-1.04***	-1.21***	-1.08***
	(0.31)	(0.31)	(0.33)	(0.32)
UNEMP	-0.11**	-0.11**	-0.14**	-0.14**
	(0.05)	(0.06)	(0.06)	(0.06)
TAXEF	1.98	2.81	2.19	0.40
	(4.71)	(4.92)	(4.62)	(5.00)
DRWAGE	-2.95**	-1.99	-1.76	-3.22**
	(1.21)	(1.42)	(1.33)	(1.24)
RELWAGE	---	-1.81	---	---
		(1.56)		
PROFITS	-5.41**	-5.12**	-7.51***	-5.92**
	(2.34)	(2.34)	(2.67)	(2.43)
INTERACT	---	---	0.21*	---
			(0.11)	
DOPWH	-1.78**	-1.77**	-1.78**	-1.67*
	(0.85)	(0.86)	(0.88)	(0.87)
DIVERG	---	---	---	0.48
				(1.30)
STKL	-0.43**	-0.47**	-0.51**	-0.35**
	(0.18)	(0.19)	(0.20)	(0.18)

* Significant at the .10 level, two tailed test

** Significant at the .05 level, two-tailed test.

*** Significant at the .01 level, two-tailed test.

Standard errors in parenthesis.

Source: J.M. Mauro, "Strikes as a Result of Imperfect Information". (Industrial and Labor Relations Review, July, 1982), pp. 535-536.

DSHP conforms to our a priori determination, however the variable displays a high standard error. Mauro suggests the non-significance of this variable may be due to the use of an unsophisticated tool of measurement. Perhaps the shipment data should be disaggregated for each firm and not simply by industry.²⁴¹

COLA and PATF both have negative coefficients with the former not being significant and the latter significant at the 1% level. However Mauro intimates that both of these factors may remove a certain amount of uncertainty that characterize the bargaining process, thereby reducing strike activity. UNEMP as with previous studies, is consistent in sign and significance.

TAXEF does not conform to the a priori determination and is not significant. According to Mauro this result suggests: (1) Either the firm compensates the workers for the tax effect, or (2) Each party perceives TAXEF as being an exogenous influence whereby the worker's cannot be compensated, perhaps as a consequence pushing for a more

²⁴¹ J.M. Mauro, "Strikes as a Result of Imperfect Information". (Industrial and Labor Relations Review, July, 1982), pp. 536.

attractive settlement on 'non-taxable' items.²⁴²

RELWAGE is negative but not significant, suggesting workers may increase strike activity when their wage levels stray from established differentials. RELWAGE also reduces the impact of DRWAGE (from equation (1) to equation (2)), implying either management is unresponsive to changes in relative wage differentials or not fully informed of their movements (as previously noted).²⁴³

DRWAGE is negative, significant and consistent with previous studies. Suggesting past increase in real wages reduce strike activity.

DIVERG has the appropriate sign but is not significant. This result may suggest that each party perceives M and the CPI relatively well. However, other factors are also pertinent to the negotiation process and thus impact upon strike activity as well. The empirical findings limit Mauro's theoretical and empirical interpretation, suggesting that the existence of divergence due to asymmetric information contributes to strike activity. This does not imply that strike activity will not occur, but the rationale of such activity may lie within the digestion and interpretation of the available information along with other matters of principle.

²⁴² Ibid, pp. 534.

²⁴³ Suggesting the exclusion of RELWAGE may overstate the influence of DRWAGE in other models.

DOPWH has the expected sign and significance; however PROFITS seems to be a better proxy for labour demand than industry price changes (implicit under the DIVERG variable), given its strong negative effect.

INTERACT suggests that the combination of inflation and high profits has a positive impact on strike activity, by perhaps driving a greater wedge between the CPI and the industry price level.

STKL as previously argued by Mauro is negative and significant, suggesting that with each additional strike, a certain amount of learning occurs, reducing the asymmetry of information gap and strike activity. The result is also consistent with the Hicksian 'rusty weapon' rationale (the objective of a strike is to establish credibility and to compel the employer to negotiate in good faith).

Mauro's attempt here has been to explain the incidence of strike activity and not their duration or settlement terms. Strike activity is viewed as a means by which costly information can be attained, allowing each party to have a more informed opinion of the other's position. "Strikes then become a method to transmit the information necessary to correct the parties misperceptions about each other".²⁴⁴

Through the use and calculation of offers and concession rates, asymmetric information can contribute to strike

²⁴⁴ Ibid, pp. 536.

activity. Empirically, the basis of the underlying asymmetry is the DIVERG variable. However this is not identified as a significant influence upon strike activity. This does not suggest then, that symmetry of information occurs, for the acquisition, digestion and interpretation of the data may lead to unequal offers/demands that may be only reconciled through the 'experience' of strike activity. Moreover, the price variables are only a part of the strike equation, and although all other informational variables are assumed to be anticipated, their interpretation and significance to each party may not coincide. Even if the DIVERG variable is empirically insignificant, the importance of other factors contribute to unequal degrees of information, interpretation and strategy. Although it may be legitimate to suggest that each not only perceives the other with relative accuracy, but over successive negotiating periods, learning occurs and magnifies the narrowing of disparaging bargaining positions.

VIII. CONCLUSION

It now follows the conclusion of the foregoing Thesis discussion.

A historical chapter of the development of Canada's trade union movement was included in the Thesis so as to provide the reader with a sense of appreciation of the beginnings of the labour movement from the early 1900s onwards. Moreover, this Chapter was also included for the sake of completeness; by laying down the foundation, a point of departure had been established, tracing the evolution of the movement amongst many different pressures and obstacles.

In a sequential step, the current union situation in Canada was discussed by examining the growth and structure of the union movement and the major role unions, congresses and federations occupy in conceiving, developing and co-ordinating economic, political, educational, research and organizational policies that strengthen and further the causes of organized labour.

The Thesis, in broad sense, has covered a wide range of issues that union and management encounter over the course of collective bargaining negotiations. Often these views are matters of deep-rooted beliefs through which each party adheres to in order to support the appropriate strategy as a means to a justifiable end. These issues have been portrayed or captured within the discipline of economics via the development of the union theory of monopoly, and the

union and employer wage preference functions as conceived by J.T. Dunlop and developed subsequently by A.M. Cartter.

These preference functions and their underlying objectives that characterize their maximizing behavior led to the derivation of the contract zone. The contract zone, although mutually beneficial to each party in absolute terms, took into account the union and management relative bargaining power relationship (in a Chamberlain sense) in identifying where a determinate solution would lie. However, the development of a theory with respect to the mechanics of arriving at a mutually satisfying agreement were not treated. Specifically, this was not the intent of the Thesis and was considered beyond its scope. The objective was to establish an area where a settlement would potentially occur, and then to assume the worst - that is - strike activity.

From this premise, the most recent major theoretical contributions to the analysis and interpretation of strike activity were summarized in a chronological manner. The seminal publication of Sir John Hicks was the main foundation of the theoretical chapter by developing and explicitly acknowledging the role that asymmetric information can play in contributing to strike activity. Through the calculation of the employer's concession curve and the union's resistance curve, Hicks provides a theory of wage determination and strike activity. The theory provides no satisfactory solution in an a priori or ex post

framework, although it has been considered as the cornerstone of much of the new theoretical work in this area.

In a logical manner, Comay and Subotnik re-interpret the Hicksian model, recognizing the Pareto optimality of avoiding a strike, and the role of asymmetric information in contributing to divergent expectations and strike activity. Hence, the degree of asymmetric information may contribute to the formation of non-coincidental expectations, and higher rates of strike activity.

The Ashenfelter and Johnson political model was included not because it was considered a recent theoretical contribution, but rather is viewed as a seminal publication in theory and empirical investigation that has fostered and stimulated debate while extending the analysis and interpretation of strike activity.

Although their theoretical expositions have varied, two basic themes were developed in accounting for strike activity. In Hicks, Comay and Subotnik, Ashenfelter and Johnson, Siebert and Addison (Cousineau and Lacroix), Kaufman, Mauro and Hayes; the authors attempt to account for strike activity as an 'accident' or 'misperception' that occurs when either one or both parties do not have equal access to a set of information and have resulting divergent expectations. These theories fall under the category of asymmetric information. This in no way repudiates the

validity of other necessary factors that have been included in the analysis, however recent theoretical developments in this area have emphasized the impact and importance of asymmetric information in contributing to strike activity.

Alternatively, Reder and Neumann, and Kennan propose a total joint cost theory of strike activity in which situations where the expected total joint costs of strike activity are perceived to be high, each party is 'motivated' or 'driven' to reach a strike-free collective agreement.

In each theory the overall objective has been to reach a pareto optimal solution, however the underlying forces that contribute to strike activity are not asymmetric information but rather the expected total joint costs of strike activity. From a theoretical perspective it may be most efficient to treat this dilemma as a joint maximization problem for participant costs serve as a principal motivator in collective negotiations, while avoiding the difficult task of explicitly accounting for and quantifying the nebulous area of divergent expectations.

In the case where each party exhibits rational economic behavior, it was empirically demonstrated by Ashenfelter and Johnson, Reder and Neumann, Kennan, Siebert and Addison (Cousineau and Lacroix), Kaufman and Mauro that bargaining failures resulting in strike activity may still arise amongst optimizing parties as long as the resource known as information is scarce.

When the acquisition of information is costly, the negotiation process and the specification of protocol are costly; strike activity is more likely to occur in instances where these costs are high relative to the costs of strike activity. Thus, these models have provided two main testable hypotheses: (1) Strike frequency is inversely related to bargaining pairs that may incur the highest expected total joint strike costs, and (2) Accidents are more likely to occur where the acquisition of information is costly.

Perhaps the most promising results are those of Reder and Neumann and Cousineau and Lacroix; the former applying the expected total joint strike costs theory and the latter the accident hypothesis. Reder and Neumann provide a testable theoretical hypothesis that seems to be more tangible than the theories of asymmetric information. In quantifying the factors that contribute to expected total joint strike costs the authors attempt to explain why strike activity varies across industries. Although asymmetric information is alluded to by the authors in terms of developing protocol to ease the exchange of information and to interpret one's opponent's movements with greater certainty, the measurement of total strike costs seems to be a plausible recognition and explanation of why for the most part when expected total strike costs are high, each party will seek to head-off strike activity.

The Cousineau and Lacroix model attempts to capture the impact of asymmetric information through the measurement of

the variability of the relevant economic indicators as well as capturing inter-industry differences that may contribute to different levels of strike activity. The theoretical model incorporates in a mutually exclusive fashion, relative bargaining power and the acquisition of costly information. In the former, symmetric information and the total costs of strike activity are held constant, in the latter, the development of the strike probability-negotiation period curve is a function of the ease of communication between the two negotiators. Empirically, the variables seem to be good approximates and capture to a certain extent the factors that contribute to inter-industry differences and why strike activity varies over time.

Finally, in terms of methodology the problem of capturing or quantifying the relationships that have been proposed has been a factor that has limited the depth and accuracy of these preliminary results. Hopefully as research in this field expands, adequate proxies will be specified so as to provide accurate measurement, as well as accepting or rejecting the theories that have been developed within the Thesis.

APPENDIX ITHE COLLECTIVE BARGAINING PROCESS

The historical importance of the collective bargaining process and its respective repercussions have been relatively obscure and somewhat ignored by the rigidity of early economic doctrines. The role of collective bargaining has received a disproportional amount of theoretical treatment, research and development. Few early economists (Marx, Hobson, Webbs) recognized the rigidity of the theory of the day where unemployment and the associated adjustment difficulties were attributed to a nebulous area of 'outside interference'. This grey area was indeed an unsatisfactory explanation, hence the inclusion of the bargaining concept as an explanatory variable upon wage determination could help to clarify the current theoretical inflexibility. "The main stream of economic theory remained comparatively untouched by these important economic phenomena. While unemployed families were suffering severe hardships and trade unions were risking their lives to secure collective bargaining rights, unemployment was regarded by many writers as practically non-existent and bargaining itself as an empty illusion".¹

¹ K.W. Rothschild, Approaches to The Theory of Bargaining, (Chapter 18, The Theory of Wage Determination, by J.T. Dunlop, MacMillan, New York, 1964), pp. 281.

The rigidity and inflexibility of economic theorists and theory may be attributed to the fact that there may have been a desire (in that period of time) to preserve the status quo in terms of formulating a neat, concise theoretical structure, in essence ignoring the potential disequilibrating forces of bargaining and unemployment. In addition, recognizing the importance of bargaining would be to identify the theoretical limitations of the capitalist system, and the realization of a growing 'socialist' undercurrent.

Within the nineteenth century, wage theories had been conceived, developed and justified by the exclusion of the importance of bargaining. The iron law of wages incorporated the notion of a perfectly elastic schedule of labour, with a wage level maintained at the subsistence level for every wage increase would be subsequently choked-off by an influx of labour thus reducing the wage level to its original level. The wage fund theory, with a fixed stock of capital available to be appropriated to labour, every amelioration in one direction (wage increase) would be offset by a deterioration in the other direction (unemployment). Lastly, the marginal productivity theory in a competitive atmosphere, given the supply of the various factors of production, could construct an employer's demand curve, thus determining an equilibrium wage level, with short-term adjustments or deviations that would inevitably force the wage level to its equilibrium level. In these three cases,

there was no theoretical room to include the role of bargaining, "all existing wage theories appear to ignore the phenomenon which has completely changed the whole condition of the labor market....namely, the rise to power of trade unionism.²

Only when perfect competition was recognized as one of several market realities did a reconsideration of the processes of the economic theory of price and wage formation occur, concurrently widening the scope of bargaining theory within the demand-supply analysis. The role of collective bargaining becomes increasingly important as the necessity of unions and management cooperation becomes a priority in order to attain their specific goals.

With an economic unit's pursuit of an objective, there is the concept of competitive and cooperative relationships, that impose to a degree limitations and a structured framework from which one can operate within. A competitive relationship exists when the aspirations of two or more economic units are considered incompatible, that is, at the heart of this relationship lies the concept of scarcity, (i.e. a limited amount of available resources), that will upon their distribution affect the relative positions of the economic units. "As long as prizes and distinctions are sought, if only pieces of ribbon or buttons or the favor of others, there is competition. There is an absolute scarcity

² *ibid*, pp. 282.

when there is only one first prize, one foreman's job to be won, one union steward to be elected. There is scarcity whenever groups of workers seek to top each other in the wage gains which each makes or when businessmen seek to better each other's rate of profit....Scarcity and competition are of concern to the economist, however, only when they affect the use of scarce resources".³

A cooperative relationship has evolved through the degree of specialization that characterizes our economic process. Thus there is a functional dependence with other economic units which lay the foundation for a cooperative relationship. Economic units will engage in such a relationship not because they are willing, but for the reason that only collectively will the unit be able to obtain the objectives that otherwise would be unfeasible.

In this economic environment, competition occurs due to scarcity of resources, and cooperation occurs due to interdependence, "interdependence is as pervasive and unavoidable an influence as is scarcity. Both are inescapable and together they give rise to the network of economic relationships characterizing society".⁴ The economic units may be considered competitive in some respects, while cooperative in others, for their relationships involve both scarcity and interdependence. In

³ N.W. Chamberlain, A General Theory of Economic Process, (New York: Harper and Row Publishers, 1955), pp. 74.

⁴ Ibid, pp. 76.

order to clearly explore the relationship between competition and cooperation, we refer to all economic units who are similar in a given respect (employers, employees, lenders) so one might be easily substituted for another, as commensals. In contrast, we refer to all economic units which engage in a complementary relationship, where the worker and employer operate within a cooperative atmosphere, characterized by functional interdependence, as symbiotic relationships. All situations of exchange involve a symbiotic relationship, for only together can economic units complete a transaction allowing them to acquire or sell a commodity which the other unit needs or wants. "All situations where production specialization occurs are instances of symbiotic cooperation, since each specialist's services carry meaning when joined with the efforts of other specialists....it is difficult to conceive of a situation in an organized exchange economy, with its division of labour, where objectives calling for the use of limited resources can be achieved independently of others".⁵ Thus the desires of competitive behavior can only be negotiated through symbiotic cooperation.

⁵ Ibid, pp. 77.

If the achievement of competitive goals depends on a symbiotic relationship it is equally valid that a symbiotic relationship depends upon competition. A symbiotic relationship can only prevail as long as all units that pertain to the relationship agree upon the terms of cooperation. Hence, union and management may engage in the collective bargaining process, the result of this symbiotic relationship is to determine the conditions of cooperation which implicitly assume a competitive relationship for the two economic units bargaining within a framework of scarcity and its relative, not absolute, gains and losses. "The resolution of this competitive relationship is a precondition of cooperation - inescapable regardless of the goodwill of the cooperants. Wherever a scarcity relationship exists competition is unavoidable".⁶ Hence the dependence of the symbiotic relationship upon the outcome of the competitive relationship and its nature of scarcity is crucial. The symbiotic relationship that is established, allows both parties to attain a given objective. However, cooperation will not commence until the conditions of cooperation have been agreed upon. This competitive relationship between symbiants is resolved through a bargaining process, where each economic unit proposes an acceptable agreement that caters to its own preferences.

⁶ Ibid, pp. 78.

To resolve the grey area of the contract zone between management and labour, we utilize the concept developed by N.H. Chamberlain by introducing the notion of "the inducement to agree".⁷ If two parties (X and Y) are in a bargaining situation and X proposes a collective agreement, Y's inducement to agree is defined as the cost of disagreeing on X's terms divided by the cost of agreeing on X's terms. Only when this ratio is larger than one, will Y be willing to settle.

N.W. Chamberlain defines bargaining power "as the capacity to effect an agreement on one's own terms; operationally, one's bargaining power is another's inducement to agree. If X and Y are in a contest over the terms of their co-operation, X's bargaining power is represented by Y's inducement to agree".⁸

We can alter the size of the ratio as X makes Y an offer increasingly attractive thus raising Y's inducement to agree. X may also try to raise Y's inducement to agree by using other techniques, such as persuading Y that the cost of accepting X's terms is less than it appears or by bluffing or threatening, raising Y's estimate of the cost of disagreeing on X's terms.

⁷ Ibid, pp. 80.

⁸ The relationship between the two parties appears to be inversely related, although it is not a simple reciprocal as there may be situations where both parties find themselves with an inducement to agree that is greater than one.

The collective bargaining process has been characterized as a dispute amongst conflicting preference patterns, however it is important to underline the importance that any wage employment combination lying within our pre-negotiation boundaries represents an absolute gain for both management and the union. The relative gains of each party by the effective use of one's bargaining power implies that one can maximize its gain at the expense of the other. Thus having an absolute gain is taken for granted with the emphasis placed upon the concept of scarcity which is intertwined with each party's position and its associated power.

In a situation of perfect bargaining conditions (i.e. no one party has a bargaining advantage) it is probable that a settlement will be arrived at without the use of the strike tactic, although there is always that possibility that an impending strike may occur. An agreement that is mutually acceptable is likely to happen when both parties are induced to concede to some degree, desired gains.

The threat of a strike is often sufficient to make both parties give ground, for "the threat of disagreement imposes on each side the realization that there is a cost to disagreeing with the other's offered terms as well as a possible cost to accepting them".⁹

⁹ A.M. Cartter, The Theory of Wages and Employment, (Homewood, Illinois: R.D. Irwin, Inc. 1959), pp. 117.

For our purpose, each party's bargaining power may be expressed as follows (see Figure 1)¹⁰:

Figure 1

$$\text{Employer's bargaining attitude} = \frac{\text{Cost of disagreeing with the union}}{\text{Cost of agreeing on the union's terms}}$$

$$\text{Union's bargaining attitude} = \frac{\text{Cost of disagreeing with the employer}}{\text{Cost of agreeing on the employer's terms}}$$

Each bargaining unit wishes to propose a set of demands which are favorable to oneself and sufficiently acceptable to their opponent so that a collective compromise is reached. Each party will pursue the advancement of their objectives while simultaneously proposing an offer of settlement that would induce his opponent to agreement, not rejection. In such a case, it is likely that each party will advance, in their view an acceptable, but self-beneficial proposal. The role of bargaining will determine the success or failure of the parties to gain or lose concessions, ultimately the completion of a fruitful bargaining process "involves a movement of one or the other or both parties toward the terms offered by the bargaining opponent until there is finally agreement on some common set of terms".¹¹

¹⁰ A.M. Cartter and F.R. Marshall, Labour Economics, (Homewood, Illinois: R.D. Irwin, Inc, 1972), pp. 283.

¹¹ N.W. Chamberlain, A General Theory of the Economic Process, (New York: Harper and Row Publishers, 1955), pp. 81.

However, within the realm of the collective bargaining process it is important to note that it does not detach itself in a mutually exclusive manner from market determined input prices. The rise of trade unionism infers the wage rate determination procedure is bilaterally agreed upon, with the awareness of all the impinging supply conditions existing in the marketplace. Both the employer and the union are aware of the economic constraints of demand and supply, but may nonetheless negotiate for a disproportionate share of the revenues according to their relative bargaining power. The presence of trade unionism exerts additional pressures in the form of interrupting or deteriorating economic efficiency and growth. The view that unionization "does not lead to the replacement of economic by political forces in the setting of wages; rather the economic forces are filtered through political groupings, which delay or redirect them but not reverse their flow"¹² is a rather engaging description involving bilateral negotiations among employer and union.

The cost of disagreeing with the other party is measured in terms of lost revenue/income that results from a work stoppage. The cost of agreeing with the other party is measured in terms of lost revenue/income which would result if an opponent's terms were accepted, and the income flow

¹² A. Rees, The Economics of Trade Unionism (Chicago: University of Chicago Press, 1962), pp. 64.

which would have existed if one's own best offer had been agreed upon. The description is a very rational way of looking at the determination of a bargained wage rate because "each is presumed to weigh the costs of agreeing and disagreeing periodically during bargaining, although the balance will be struck on the basis of 'the feel of the situation', hunch, intuition, rather than an arithmetic calculation of estimated gains and losses".¹³ Although this explicit procedure does shed light upon the process of compromise.

One party may be considered favourable to settlement if $(X) \text{ or } (Y) > 1$, and unfavourable to settlement if $(X) \text{ or } (Y) < 1$. If $(X) \text{ or } (Y) = 1$, it is equally costly to agree or disagree on your opponent's terms. If both parties concurrently determine their bargaining power to be 1, (i.e. $(X) = (Y) = 1$) we would have a nebulous area, for each party is prepared to settle upon the other's terms. However, the terms of the parties may still not coincide. Thus, to arrive at an agreement will require the continuance of the bargaining process.¹⁴

¹³ A.M. Cartter, Theory of Wages and Employment, (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp.120.

¹⁴ Although we have expressed the inducement to agree as a ratio, and given its appearance of an arithmetic ratio, in practice this is seldom feasible. For the costs of agreement and disagreement are often not reducible to a common denominator, but involve a comparison of incommensurable items.

The cost of a union disagreeing with its employer is the loss of wage income of its members during the strike period. The loss to the employer during the same period of disagreement would be the loss of revenue. For both parties the loss of future income/revenue is expectational, thus any current course of action is influential in affecting its choice. ¹⁵ Each party will tend to make two kinds of calculations: 1. Estimating the actual loss that would occur in any time period and, 2. Estimating the probable length of strike duration before they could force their opponent to agree upon their terms.

The union's bargaining power is enhanced if a strike is very costly to management (raising management's costs of disagreeing, while increasing the chance that management will be receptive to settling upon the union's demands). The union's bargaining power is diminished if management's costs of disagreeing fall relative to its cost of agreeing with the union. Generally, if the difference to management between its cost of disagreeing and cost of agreeing is proportionately greater than the difference to labour between the union's cost of disagreeing and cost of agreeing on management's terms, one can say that labour's bargaining power is greater relative to management's.

¹⁵ A.M. Cartter, Theory of Wages and Employment, (Homewood, Illinois: R.D. Irwin, Inc, 1959), pp.118.

With two unfavourable bargaining positions, a strike is likely to occur, for both parties feel a strike is less costly than accepting each other's demands. The duration of the strike will begin to soften each party's demands as they now experience the losses that had been previously estimated, as the strike continues its probable length will appear longer, thus increasing the costs of disagreeing for both parties. If there appears to be no room for compromise the strike will go on until it becomes more costly for one party to continue rather than give in.¹⁶

We note: 1. Throughout the course of negotiations, both parties may alter their bargaining power so as to influence one another as conditions and strategy may affect one's position, demands, and their relative gains and losses as parties maneuver for an advantageous position. 2. Time is recognized as an important factor that can adjust bargaining power, for economic circumstances, public opinion and government legislation are as dynamic as time itself. 3. The estimated costs involved in negotiation are considered within a pecuniary and non-pecuniary framework, "the sort of balancing of costs which is contemplated in the definition of bargaining power, does not require measurement of costs in any arithmetical sense....What these costs of agreeing and costs of disagreeing may be to the bargainers cannot be

¹⁶ For an illustrated example see C.W. Anrod, E.W. Bakke, and C. Kerr, Unions, Management, and the Public, (New York: Harcourt, Brace & World, Inc., 1967), pp. 315 - 318.

known precisely enough to permit balancing, except through the exploratory process of negotiation. Through negotiating, the feasible and unfeasible combinations become apparent".¹⁷ Within this context, bargaining power takes into account the total situation (economic, social, political) as these interrelated disciplines can have an impact upon the costs of agreement and disagreement. 4. The concept of bargaining power is not limited to the two-party case, although it is primarily our case of inquiry. 5. If an agreement is reached, it must be on terms for which all the parties concerned indicate a cost of disagreement that is equal to or greater than the cost of agreement. If disagreement continues it is due to at least one of the parties having its costs of disagreement equal to or less than its costs of agreement. 6. Another important factor in determining the costs of disagreement is the negotiator's conception of the costs. They may be either right or wrong or they may be persuadable. Hence, within the bargaining process, the psychological factor and its associated tactics can invariably influence a negotiator's estimate of the costs involved.

¹⁷ N.W. Chamberlain and J.W. Kuhn, Collective Bargaining, (New York: McGraw - Hill Book Company), pp. 171.

i(a). Bargaining Power as the Ability
to Exploit and Impose Costs
 (An alternative perspective)

N.W. Chamberlain's definition of bargaining is by no means the only definition that has been put forward. Many economists have grappled with the complexities of the bargaining process. J.R. Commons concluded that; "bargaining power is the proprietary ability to withhold products or production pending the negotiations for transfer of ownership of wealth".¹⁸ However there lies a defect in such a statement for it only defines bargaining power in terms of ownership without including the relevance of economic circumstances in which the ownership exists. The right to strike is not equated with bargaining power, although there are degrees of effectiveness of the stated right to strike. Bargaining power may be interpreted as the power to exploit (a departure from a perfectly competitive economy and has no rationale except intended use for group advancement).

In a non-perfect competitive economy, bargaining power bears some relation with the ability to realize one's desires, thus expanding the definition of bargaining power to improving knowledge or increasing mobility rather than being categorized as monopolistic or exploitive. "There is something inadequate about a definition of bargaining power which condemns all group activity for possessing it in any

¹⁸ J.R. Commons, Institutional Economics: Its Place in Political Economy, (New York: The MacMillan Book Company, 1934), pp. 267.

degree". 19

Sumner Slichter's definition of bargaining power is "the cost to X of imposing a loss upon Y",²⁰ but this is a weak definition as it implies, 1. The objective of one party to impose a loss, rather than strive for group advantages, and 2. That any loss that Y incurs may be associated with gains to X.

J.T. Dunlop defines bargaining power as "the relative ability of two contracting parties to influence the wage, in the light of all prevailing factors".²¹ C.E. Linblom extends Dunlop's definition; "bargaining power is best defined to include all the forces which enable a buyer or a seller to set or maintain a price", ²² as Dunlop, he mentions the factors determining bargaining power: 1. Tastes, goals and motives of the parties. 2. Skills in techniques of persuasion and coercion, and 3. Competition from other buyers and sellers.

¹⁹ N.W. Chamberlain and J.W. Kuhn, Collective Bargaining, (New York: McGraw-Hill Book Company, 1965), pp. 166.

²⁰ S. Slichter, "The Impact of Social Security Legislation upon Mobility and Enterprise". (American Economic Review, Vol. 30, Supplement, 1940), pp. 57.

²¹ J.T. Dunlop, Wage Determination Under Trade Unions, (New York: MacMillan Company, 1944), pp. 78.

²² C.E. Lindblom, "Bargaining Power" in Price and Wage Determination, (Quarterly Journal of Economics, Vol. 62, 1948), pp. 402-403.

i(b). Bargaining Power and Bargaining Skill

Bargaining power may be defined as a function of the propensity to withhold agreement plus the ability to reduce an opponent's desire to fight. The skill in bargaining relies upon the negotiator's skill to maintain his power to fight while at the same time wearing down the opposition's resistance. In the process of collective bargaining, opponents may carry an air of confidence in the early stages of negotiation as their opposition cannot comprehend the advantages of accepting their offer. Granted much of the early maneuvering is viewed as grandstanding as the bargaining unit would prefer to raise the risk factor to their opponents. If successful, the opponent's estimate of the costs of disagreeing will increase, moving the opponent closer to the bargaining unit's position.

Another method would be to reduce the estimated costs of agreeing on the other party's terms. The union may do this by indicating profits will not suffer as much as management has estimated, additionally the increase in morale, leisure or living standards will increase the productivity of labour. The increased purchasing power of union workers will eventually come back to the employer in the form of increased demand. Similarly, the firm may employ the same tactical measures by indicating the level of profits cannot absorb an increase in the wage rate, the decrease in employment will make the union members worse off, wage increases will give rise to inflationary pressures. Although

many of these arguments appear to fall on deaf ears at the negotiating table, they may still have an impact upon public opinion which may lead to (in)direct pressure upon the other party to make concessions.

If these two approaches fail to reach an agreement, the compromise may be introduced (directly influencing the opposition's will to resist), reducing the other party's costs of agreeing on his opponent's terms, thus resolving the conflict in a shorter span of time. The problem here is that one's opponent may misconstrue such a signal as a sign of weakness, thus reducing his risk estimate of prolonging the strike in hope of a settlement on his original terms. With the instigation of a compromise offer, his bargaining position may even become firmer, compromise may only be reached through skilled sessions with a mediator. We observe the double-edged nature of the compromise offer.

Bargaining skill and the negotiation of a settlement is very analogous to a poker game, as parties involved must disguise their true positions while trying to accurately assess their opponent's. Their sense of timing is crucial, especially when offering a compromise and how this will affect their opponent's bargaining attitude, while maintaining a rational frame of mind. A.W. Ross described the union leader; "he must know his members' minds and be able to keep their bargaining attitudes attuned to his, so that they will back him upon withholding agreement, and

willingly accept a compromise solution".²³

In assessing the bargaining model, we observe a number of factors in its favour: 1. Often overlooked in price theory is the ability of one party to inflict losses upon their opponent (which is the case in collective bargaining). In competitive theory, this situation is not even considered, as buyers and sellers may enter or refrain from exchange at their discretion, with no corresponding retaliatory costs. However within the bargaining framework the power to inflict losses is pivotal in determining the terms of exchange.

2. Many times a compromise offer is viewed as a sign of weakness, but it can be utilized in a positive manner of lowering the resistance of one's opponent. When one party finds its bargaining position deteriorating, they may seek to improve its relative bargaining power by increasing their opponent's inducement to agree with a compromise offer. This pattern of negotiation often brings settlement even though both parties have conflicting preferences.²⁴

3. One important characteristic of the model is that the concept of time will tend to bring about a settlement, as with the continuation of time through a period of conflict will raise both parties' bargaining attitudes (i.e. increasing the costs of disagreeing). This observation may

²³ A.W. Ross, Trade Union Wage Policy, (Berkeley and Los Angeles, University of California Press, 1948).

²⁴ A.M. Cartter, Theory of Wages and Employment, (Homewood, Illinois, R.D. Irwin, Inc, 1959), pp. 125.

be reflected empirically as it is the rare case that parties engage in a long drawn out strike over a wage settlement. A large majority of lengthy strikes pertain to the problems of recognition, security or the result of ideological differences. Time and its associated costs act as an important equilibrium force in bringing both parties to a settlement.

4. For many years economists have accepted Edgeworth's statement that a contract without competition is indeterminate, implying that once we have determined the range of indeterminacy, one need not go any further. However the process of collective bargaining goes one step further in the analysis of wage determination, as G. Shackle states, "if exchange does take place, the price, in an important sense, is determinate: it is conceptually knowable in advance, if we are fully informed about the gambler-preference system of each bargainer, and the functions according to which he will draw inferences from a given sequence of 'asking prices' or 'offered prices' announced by the other bargainer....In practice determinacy surely cannot mean that the outcome, except in special cases, could be predicted by a third party, however well informed, in advance of the bargaining....(But) the outcome of a bargaining process is in principle determinate".²⁵

²⁵ G. Shackle, Expectations in Economics, (Cambridge, at the University Press, 1949).

i(c). Minimizing the Cost of Disagreement

If the union and management both anticipate a strike, both may take appropriate measures to reduce the costs of disagreeing by increasing their ability to withstand a strike period in hopes of forcing their opponent to concede wage gains previously demanded. Trade unions would develop a strike fund (war chest) to endure a long strike. Noting this does not reduce the cost of the strike over a longer period, however any lost income over this short-term work interruption can be partially compensated for in the form of strike pay. A key factor for unions to maintain a strike is to keep morale high with union membership supporting the union's position. In times of lost income, these factors may be threatened and weakened. If management can sense the faltering of union membership in regards to supporting bargaining aims, the employer may deduce the bargaining power of the union has significantly deteriorated. With this decline in morale, union leaders may face a back-to-work backlash, or even worse the loss of their positions come next election. Therefore a strike fund is a valuable asset to unions to retain the power to withhold an agreement until the appropriate bargaining moment.

An employer may set aside cash reserves or liquid assets that may be necessary for the firm to be able to meet its non-wage financial commitments in the absence of revenue. Just as important for the firm is their ability to continue sales (depending upon its inventory level) and the ability of the firm to regain lost sales during the period of strike activity.²⁶ If the employer is in a highly competitive product market, lost sales may never be regained. If product differentiation is crucial, the employer may lose future receipts as customers may be at least, equally satisfied with substitute products. An employer may face a penalty clause or lose goodwill if he now, cannot meet his contractual obligations, once again costing current and future sales. These factors influence an employer's strategy and his ability to endure a long strike.

If we take the case of an industry where multi-employer bargaining occurs, the ability of the employer to resist may be much greater (as no one competitor is gaining at the expense of his rival), as inventories in the beginning and a higher rate of production at the end of strike activity may reduce the employer's cost of disagreement. "The existence of excess capacity and large inventories, therefore, increases the bargaining power of employers in industry-wide bargaining since the costs of disagreeing are minimized by

²⁶ To neutralize union strategy, a firm may shift its orders among plants or (at an extreme) move the equipment of the strike plant to a non-unionized plant or seek the legal limitation of the union's strike activity.

what the employer anticipates as merely a postponement of income".²⁷ With the industry-wide bargaining case there are conflicting influences as previously mentioned, the fear of losing sales to competitors extinguished, strengthening the employer's bargaining power. With the anticipation that all other firms within the industry will experience a similar increase in costs and prices, implying that the costs of agreeing with the union will diminish with a larger industry gross revenue (or at minimum, market share retention). The lowering of the costs of agreeing tends to increase the employer's bargaining power.

i(d). Union Strategy and the Cost of Disagreeing

The majority of tactics employed involve the raising of the cost of disagreeing with respect to the other party (i.e. induce agreement on its own terms). Unions use the strike while the employer utilizes the lockout option; both strategies do impose costs upon each party.

The employer's estimate of how long the employees will be able to absorb the loss of wages will determine his estimate of the length of the strike and consequently the costs he will bear in rejecting the union's demands. The union's estimate of strike duration is based on how long the employer can afford the loss of revenue, thus determining the cost of disagreeing on union terms. As a result, "each

²⁷ A.M. Cartter, Theory of Wages and Employment, (Homewood, Illinois, R.D. Irwin, Inc, 1959), pp. 130.

party has made efforts to increase the effectiveness of these tactics and to render itself immune to the tactics of the other".²⁸ Hence the union wishes to strengthen the impact of a strike, while management seeks to reduce it. To increase the impact which the strike generates, the strike fund is established to allow unions and its members to endure, while increasing the cost of disagreeing to management. "The tactical aspects of conducting strikes have been carefully and thoroughly explored by both unions and management. Each attempts to conduct itself so that maximum costs fall upon the other party while only minimum costs are imposed itself".²⁹ The timing of a strike is extremely important, in fact a strike that imposes maximum costs to management is most beneficial to attaining union interests.

Picketing is also considered as a bargaining weapon for it not only advertises a strike, but strengthens union ideology and the interrelated struggles which all unions must face as other unions refuse to cross picket lines. "The picket line has acquired an almost religious significance to many union members, so that its violation takes on aspects of sacrilege and taints the offender....In the presence of such dogma, it becomes possible for even a small group of employees to isolate a company from the economy, inflicting a cost of disagreement upon the company out of all

²⁸ N.W. Chamberlain and J.W. Kuhn, Collective Bargaining, (New York: McGraw - Hill Book Company, 1965), pp. 173.

²⁹ Ibid, pp. 173.

proportion to their significance to its operations".³⁰ The ability of the union to impose additional costs of disagreement may depend on the degree of sympathy it can provoke from other union establishments.

Another element (strategy) to impose costs of disagreement upon management is through secondary boycotts (through the boycott, unions encourage others to have nothing to do with the company or its associated sympathizers). The striking union wishes to bring pressure upon a sympathizing union in a related company to also strike, even if the latter union has no grievance with its employer. "The intent was to force the second employer to seek to mediate a settlement of the original dispute in order to solve his own difficulties".³¹

i(e). Management Strategy and the Cost of Disagreeing

Management may impose costs in the event the union rejects management's offer such as acts of intimidation, discharge for union activity, encouragement of rival unions or even the closing of plants.

The alternative used most by management is to withhold employment of union members until they accept terms agreeable to management. Thus the use of a lockout increases the cost of disagreeing on management's terms through loss

³⁰ Ibid, pp. 175.

³¹ Ibid, pp. 176.

of employment and income. This particular type of tactic may be advantageous to the employer if current inventories are relatively high, offsetting any adverse effects of union pressure tactics and allowing the employer to dig in his heels and become increasingly adamant about the wage proposal. The practice of a lockout can be viewed as a different means to the same end (i.e. strike activity), the employer will not reinstate the workforce unless they accept the current wage rate...."Thus the initiative of setting off the action rests with one or the other, but the resulting action involves simultaneously a withholding of labour and a withholding of employment". 32

The short-term cost to the employer may be temporary loss of income and employment, but if the strike persists for a significant period of time, management may pursue other attractive methods to resume production. Such as substituting an increasing amount of capital relative to labour, thus permanently displacing a section of the unionized workforce. With this type of strategy employed by management, the additional costs to the union as an organization, would be loss of members (and union dues) and even its bargaining rights.

32 Ibid, pp. 180.

Another method to increase the cost of disagreeing to each party, is to include the involvement of public opinion and political pressure. The use of picketing, newspaper advertising, press releases, radio and/or television campaigns may arouse the public's disapproval of one or both party's behaviour, hoping the additional pressure of government members, social disapproval and loss of public favour will raise the cost of disagreeing in which the party in question will conveniently try to avoid.³³

The calculation of such costs is difficult if not impossible, as many factors fall under the intangible heading. Nevertheless, these factors are becoming important to management and unions. The size of the bargaining units, the uncooperativeness of settlement and the repercussion effects of strike activity within our interdependent economy have increased government activity (Federal or Provincial) to intervene with greater regularity.

i(f). Bargaining Power and the Cost of Agreeing

Let us consider the costs of agreeing on the other's terms. Bargaining power does indicate "the way in which the strength of one party is in part dependent upon the other party's cost of disagreeing on its terms".³⁴ From the definition of bargaining power, it is evident that the higher the monetary demands, the higher the cost of

³³ Ibid, pp. 181.

³⁴ Ibid, pp. 182.

agreement to the party on whom the demands are made, and the weaker the bargaining power of the demanding party. The union may seek to lower management's cost of agreeing on the union terms by pledging: 1. Greater cooperation by its membership (potentially offsetting the impact of a higher wage bill to the management). 2. To employ stronger methods of curbing wildcat strikes. 3. To ensure greater cooperation between the international union and the local union in disciplinary action over members who have been giving management unnecessary headaches. On the other hand, management may promise: 1. To consult with the union over any major changes in production techniques. 2. To engage in quarterly meetings with the union to discuss the company's economic position. 3. Establishment of a human relations committee, dealing with any problem areas. These gestures may be interpreted as concessions in order to induce agreement, however, it is often the case these very same gestures may be nothing more than symbolical, and empty handed.

The direct costs of agreement will be in the form of specific money costs (through such vehicles as a higher wage bill, or more attractive vacation or benefit programs). Thus the additional amount of resources that must be allocated to budgetary expenditures and the associated time span, is of prime concern. For management will not only be calculating the monetary loss of the present stream of resources devoted

to labour, but for some indefinite period beyond.³⁵

In some cases the calculation of the direct costs is nothing more than an educated guess. What will be the cost in relaxed incentive or foreman's morale and authority if greater control over discipline is granted to the union or if straight seniority is recognized in lay-offs and promotions? What will be the cost in reduced output if union stewards are given the right to challenge time studies? What will be the cost of a severance pay plan? The number of jobs is a function of the technology and the economic climate, but it is difficult to estimate both the former and the latter.

Secondary costs are of a difficult nature. If an employer is dealing with more than one union it is likely that the concessions won by them will set precedents on which other unions will follow. Similarly if one union is dealing with many employers, the union is often obligated to all firms what it would concede to one firm. The secondary cost associated to the employer will be the impact of improved terms for those who are not included in the bargaining unit that originally secured the new terms. The change in production costs due to higher wages leading to rising prices and shifts in product demand is the most important secondary cost. The degree of slack in the employer's cost

³⁵ Which is most likely to be the case, with the long term trend of rising money wage rates.

structure and the degree of competition in the product market will be highly pertinent considerations for both parties in determining the cost of agreement on the other's terms. Also, non-market costs of agreeing on the other's terms are variables which are exclusive of the cost structure, and are considered 'matters of principle' (such as union recognition, establishment of a union shop). "There are indeed certain principles which union and management may adhere to so firmly that they constitute creeds with deep ethical or moral roots, the compromise of which will scarcely be considered, (i.e. the costs of agreement may be viewed as being infinite)".³⁶

³⁶ N.W. Chamberlain and J.W. Kuhn, Collective Bargaining, (New York: McGraw - Hill Book Company, 1965), pp. 187.

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