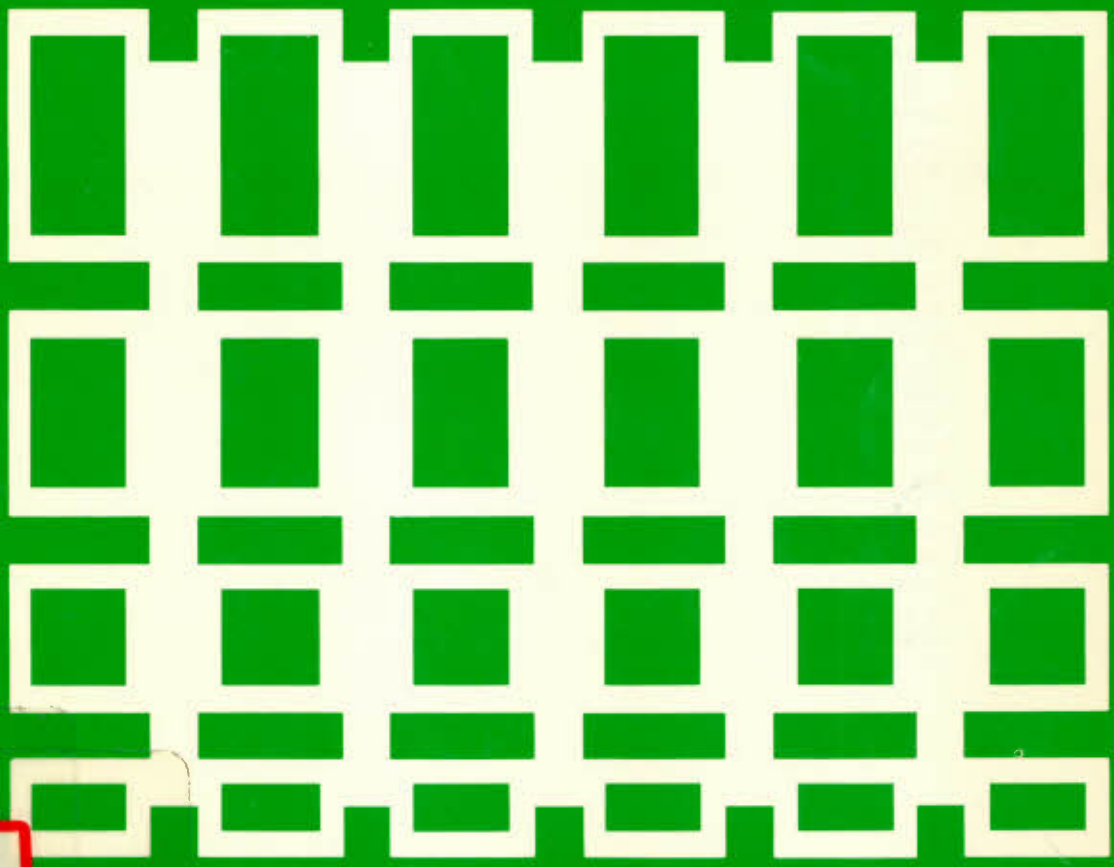
Minimum Wages

The New Issues in Theory, Evidence, Policy and Politics

Edwin G. West
Michael McKee



study prepared for the
conomic Council of Canada, and
he Institute for Research on Public Policy

Minimum Wages:
The New Issues in Theory, Evidence, Policy, and Politics

EDWIN G. WEST
MICHAEL MCKEE

Minimum Wages:
The New Issues in Theory, Evidence, Policy, and Politics

Economic Council of Canada
and
The Institute for Research on Public Policy

Available in Canada through

Authorized Bookstore Agents
and other bookstores

or by mail from

Canadian Government Publishing Centre
Supply and Services Canada
Hull, Quebec, Canada K1A 0S9

Catalogue No. EC22-81/1980E
ISBN 0-660-10550-0

Canada: $12.25
Other Countries: $14.70

Price subject to change without notice.

Table of Contents

List of Tables

List of Figures

Founded in 1972, THE INSTITUTE FOR RESEARCH ON PUBLIC POLICY is a national organization whose independence and autonomy are ensured by the revenues of an endowment fund which is supported by the federal and provincial governments and by the private sector. In addition, The Institute receives grants and contracts from governments, corporations, and foundations to carry out specific research projects.

The *raison d'être* of The Institute is threefold:

— To act as a catalyst within the national community by helping to facilitate informed public debate on issues of major public interest.

— To stimulate participation by all segments of the national community in the process that leads to public policy making.

— To find practical solutions to important public policy problems, thus aiding in the development of sound public policies.

The Institute is governed by a Board of Directors, which is the decision-making body, and a Council of Trustees, which advises the board on matters related to the research direction of The Institute. Day to day administration of The Institute's policies, programmes, and staff is the responsibility of the president.

The Institute operates in a decentralized way, employing researchers located across Canada. This ensures that research undertaken will include contributions from all regions of the country.

Wherever possible, The Institute will try to promote public understanding of, and discussion on, issues of national importance, whether they be controversial or not. It will publish its research findings with clarity and impartiality. Conclusions or recommendations in The Institute's publications are solely those of the author, and should not be attributed to the Board of Directors, Council of Trustees, or contributors to The Institute.

The president bears final responsibility for the decision to publish a manuscript under The Institute's imprint. In reaching this decision, he is advised on the accuracy and objectivity of a manuscript by both Institute staff and outside reviewers. Publication of a manuscript signifies that it is deemed to be a competent treatment of a subject worthy of public consideration.

Publications of The Institute are published in the language of the author, along with an executive summary in both of Canada's official languages.

THE MEMBERS OF THE INSTITUTE

Board of Directors

The Honourable John B. Aird, Q.C.
(Chairman)
Aird & Berlis, Toronto
James Black
President, The Molson Companies Limited, Toronto
Claude Castonguay
President, The Laurentian Fund Inc.
Guy Chabot
Raymond, Chabot, Martin & Paré, Montreal
Dr. Gail C.A. Cook
Senior Advisor on the Regulation Reference to the Chairman of the Economic Council
James S. Cowan
Stewart, MacKeen & Covert, Halifax
Dr. H.E. Duckworth
President, Uniersity of Winnipeg
Dr. James Fleck
Faculty of Management Studies, University of Toronto
Dr. Reva Gerstein
Consultant, Toronto
Hon. William Hamilton
President & Chief Executive Officer, Employers' Council of British Columbia
Tom Kent
Dean of Administrative Studies, Dalhousie University
Dr. Michael J.L. Kirby
President, IRPP
Hon. Donald Macdonald
McCarthy & McCarthy, Toronto
Gerald A.B. McGavin
President, Yorkshire Trust, Vancouver
E.M. Mills
Associate Director, Banff Centre, Banff
Pierre O'Neil
Director, Television News, Radio-Canada, Montreal
James F. O'Sullivan
Vice-President, Finance & Administration, University of New Brunswick, Fredericton
Hon. Robert Stanfield
Former Leader, Progressive Conservative Party of Canada
Eldon D. Thompson
Saint John, N.B.
Bryan Vaughan
Honorary Chairman, Vickers & Benson, Toronto

Secretary
Peter C. Dobell
Parliamentary Centre, Ottawa

Treasurer
Dr. Louis G. Vagianos
Vice-President, Dalhousie University, Halifax

Executive Committee
The Honourable John B. Aird (Chairman)
Eldon D. Thompson (Vice-Chairman)
Dr. Michael J.L. Kirby
E.M. Mills
Pierre O'Neil

Investment Committee
Hon. Donald Macdonald (Chairman)
Tom Kierans (Vice-Chairman)
Peter C. Dobell
Dr. Michael J.L. Kirby
Paul Little

Council of Trustees

Government Representatives
Fred Dickson, Nova Scotia
Harry Hobbs, Alberta
Darwin Kealey, Ontario
Don Leitch, Manitoba
Douglas T. Monroe, Yukon
Robert Normand, Quebec
John H. Parker, Northwest Territories
Gordon Robertson, Canada
Gordon Smith, Canada
Barry Toole, New Brunswick
David Vardy, Newfoundland
Murray Wallace, Saskatchewan
Andrew Wells, Prince Edward Island

Members at Large
Dr. Stefan Dupré (Chairman)
Department of Political Economy, University of Toronto
Doris Anderson
Chairman, Advisory Council on the Status of Women, Ottawa
Dr. Francis Bairstow
Director, Industrial Relations Centre, McGill University, Montreal
Dr. Roger Blais, P.Eng.
Dean of Research, Ecole Polytechnique, Montreal
Robert W. Bonner, Q.C.
Bonner & Fouks, Vancouver

Professor John L. Brown
Faculty of Business Administration & Commerce, University of Alberta, Edmonton
Dr. Mark Eliesen
Director, Federal NDP Caucus Research Bureau, Ottawa
W.A. Friley
President, Skyland Oil, Calgary
Judge Nathan Green
The Law Courts, Halifax
Donald S. Harvie
Chairman, Devonian Foundation
Dr. Leon Katz
Dept. of Physics, Univ. of Saskatchewan, Saskatoon
Tom Kierans
Vice-Chairman, Pitfield, MacKay, Ross, Toronto
Dr. Leo Kristjanson
Vice-President, Planning
University of Saskatchewan
Andrée Lajoie
Director, Centre for Research on Public Law, University of Montreal
Allen T. Lambert
Chairman, Toronto-Dominion Bank, Toronto
Terry Mactaggart
Executive Director, Niagara Institute, Niagara-on-the-Lake
Professor William A.W. Neilson
Faculty of Law, University of Victoria
Marilyn L. Pilkington
Tory, Tory, DesLauriers, Binnington, Toronto
Adélard Savoie, Q.C.
Yeoman, Savoie, LeBlanc & DeWitt, Moncton
Philip Vineberg, Q.C.
Phillips, Vineberg, Goodman, Phillips & Rothman, Montreal
Dr. Norman Wagner
President, University of Calgary
Mrs. Ida Wasacase
Director, Saskatchewan Indian Federated College, University of Regina
Prof. Paul Weiler
Mackenzie King Professor, Harvard University
Rev. Lois Wilson
Rector, Chalmers United Church, Kingston
Dr. John Tuzo Wilson
Director General, Ontario Science Centre, Toronto
Ray Wolfe
President, The Oshawa Group, Toronto

Ex Officio Members
Dr. Owen Carrigan
Representing the Canada Council
Denis Cole
President, Institute of Public Administration of Canada
A.J. Earp
President, Association of Universities & Colleges of Canada
Dr. Claude Fortier
President, Science Council of Canada
Larkin Kerwin
President, Royal Society of Canada
Dr. William G. Schneider
President, National Research Council
Dr. René Simard
President, Medical Research Council
Dr. David Slater
Acting Chairman, Economic Council of Canada
Professor André Vachet
Representing the Social Science Federation of Canada

Foreword

Legislation specifying minimum wage rates has been in existence in Canada for over four decades. It is intended, as the authors of this study point out, to achieve a number of conflicting objectives: to ensure that all workers receive a "living wage," to prevent unfair wage competition among employers, to stabilize incomes in recessions, to reduce poverty and to maintain an incentive to work among low-wage employees.

While many economists have argued that, in practice, minimum wage legislation has the effect of reducing employment among low-wage workers, many politicians, bureaucrats and union officials state that little or no such "disemployment" occurs. Furthermore, the latter believe that the minimum wage achieves important social goals.

West and McKee's assessment of studies ot the impact of minimum wage legislation will no doubt provoke public debate. Both "sides" can find evidence to support their position. In this study, West and McKee, on the basis of theory and methodology, place much more weight on the econometric approach used by the majority of academics. This is in contrast to the survey approach often adopted by government departments. The authors "reach the strong conclusion that there is no convincing evidence to refute the prediction [based on the simple economic model of competition] that minimum wages cause reductions of employment (for young workers at least." Perhaps as provocative as this conclusion is West and McKee's analysis of the political support for minimum wage legislation.

One of the principal *raison d'être* of The Institute is "to act as a catalyst within the national community by helping to facilitate informed public debate on issues of major public interest." The Institute is pleased to publish this study jointly with the Economic Council of Canada. Let the debate on minimum wage legislation be joined.

Michael J. L. Kirby
President
March 1980

Preface

This work explores the continuing economic debate on minimum wages in North America but with special reference to Canada. While much of it is intended for a wide range of readers, it has also been structured to build up, in the last chapter, to a technical résumé of the present "state of play" in current professional discussion. The chapter also provides an "agenda" for future research in areas where, in the opinion of the present authors, new work is urgently needed. It is expected that all researchers will find particularly helpful the bibliography which, we believe, is now the largest to be found on this subject.

Readers will vary in their degrees of requirement for analytical and statistical rigour. For the less technical who want the quickest outline of the issues, we recommend, at least in their initial reading, they skip parts 2, 3 and 4 of Chapter 3 (Analytical Issues), Chapter 4 (Empirics), and Chapter 7 (The Agenda for Future Research).

The first chapter, which contains a brief history of minimum wages in Canada, is followed by an account of the evolution of official federal and provincial wage rates across the country. An exposition, and for many a recapitulation, of the basic economic theory is provided in Chapter 3. The next chapter, which focuses on the latest econometric evidence of employment and other effects of minimum wages, reveals the new and striking statistical refinements that have occurred since about 1970. Chapter 5 examines the discussion concerning the effectiveness of the minimum wage as an antipoverty tool, its interaction with the present transfer system, and its general desirability in comparison with available alternatives.

Our work may appear unique in its inclusion of Chapter 6 on politics, but so much has now been written on this subject that it well justifies a place in any survey that aspires to be comprehensive.

Chapter 7 contains our main conclusions and a list of eighteen suggested items for further research.

We acknowledge helpful exchanges with the members of the Carleton University graduate seminar on public economics, Wayne Simpson, David Henderson, Keith Newton and William Stanbury.

Minimum Wages:

The New Issues in Theory, Evidence, Policy and Politics

1 The Evolution of Minimum Wage Objectives

A minimum wage law restricts a worker from selling his labour below a given price. Such restriction, the lawmaker argues, is nevertheless in the worker's own interest. But this viewpoint has always had its critics ever since Adam Smith wrote his book, "The Wealth of Nations," in the eighteenth century. In his judgement:

> The property which every man has in his own labour, as it is the original foundation of all other property, so it is the most sacred and inviolable. The patrimony of a poor man lies in the strength and dexterity of his hands; and to hinder him from employing this strength and dexterity in what manner he thinks proper without injury to his neighbour, is a plain violation of this most sacred property. It is a manifest encroachment upon the just liberty both of the workman, and of those who might be disposed to employ him. As it hinders the one from working at what he thinks proper, so it hinders the others from employing whom they think proper.... The affected anxiety of the lawgiver...is evidently as impertinent as it is oppresive (Smith, 1776, vol. I, p. 138).

Impertinent or not, lawgivers since Smith's time have persisted in establishing restrictions, and upon arguments that have varied over the years. One of the earliest arguments for minimum wages in the history of the legislation is associated with the term "sweating." This is usually defined as the practice of depleting the stock of human capital through overwork and underpayment; it involves extremely low wages, long hours of work, and unsafe working conditions. Low wages, by themselves, are presumably a necessary but not a sufficient sympton of sweating. Otherwise, all workers who happen to have low marginal productivities, and this includes most workers in underdeveloped countries today, could be described automatically as being subject to it.

Minimum wage legislation originated in Australia in 1896,[1] after a fierce antisweating campaign. That year, the state of Victoria passed a law establishing minimum wage boards in what were considered to be six "notoriously sweated" trades (bootmaking, baking, clothing, shirtmaking, underclothing, and furniture making). But four years later this legislation was extended to other non-sweated trades.

In Great Britain some years earlier, the House of Commons Fair Wages Resolution of 1891 has stipulated that work for which Parliament was responsible could not be done by sweated labour (Hocket, 1968, p. 1). Such a prohibition undoubtedly grew out of the findings of the House of Lords' Select Committee on Sweating, and led eventually to the passage in 1909 of the *Trade Boards Act*. But this did not produce much greater precision in identifying sweating. The authorities were simply instructed to establish wage boards if wages were "exceptionally low as compared with that in other employments" (Blum, 1925, p. 64). Four trades initially were affected. These boards later developed into wages councils by 1945, functioning to establish minimum standards where no adequate collective bargaining exists.

Blum (1925, p. 64) concludes from this evidence that "the minimum wage was primarily an outgrowth of sweat-shop conditions, based...upon the necessity, social and humanitarian alike, of raising certain

depressed classes, incapable of successful bargaining for themselves, to a minimum level of decent subsistence." To this end, according to Zaidi (1970, p. 1), government intervention was required "as a countervailing force against capitalistic exploitation and social injuctice," as emphasized in Fabian social philosophy. But this statement does not get us much further either. It leads us next to demand a definition of the term "exploitation." Further discussion aimed at removing the remaining imprecision will be undertaken in Chapter 3, which is devoted exclusively to minimum wage theory.

In other European countries (such as France, Germany, and Norway), minimum wage legislation often applied at first only to homeworkers, to ensure that the principle of comparability was observed; that is, homeworkers were to be paid the same rates as other workers doing the same work in the same industry. This principle stemmed from both a concern for minimum standards of decency for these workers, as well as the desire to provoke some standardization in employers' ability to pay (Hockett, 1968, p. 3).

An important early forum for the articulation of minimum wage objectives was the Eleventh Conference of the International Labour Organisation (ILO), held in 1928. This body had had its genesis in the Treaty of Versailles of 1919, one of whose Articles had stated that the "following [principle seems] to be of special and urgent importance...the payment to the employed of a wage adequate to maintain a reasonable standard of life as this is understood in their time and country" (Article 13, Section 2). But this statement seems to be so broad and vague as to be of little use for practical purposes.

The issue of minimum wages was the subject of a Convention and Recommendation passed later at the 1928 conference; each member ratifying[2] the Convention

> must undertake to create or maintain machinery whereby minimum rates of wages can be fixed for workers employed in certain of the trades or part of trades (and in particular the homeworking trades) in which no arrangement exists for the effective regulation of wages by collective agreement or otherwise and wages are exceptionally low (Convention 26, Article 1).

The accompanying Recommendation passed by the conference stated that "special regard might usefully be had to trades or parts of trades in which women are ordinarily employed." Further,

> the wage-fixing body should in any case take account of the necessity of enabling the workers concerned to maintain a suitable standard of living. For this purpose, regard should primarily be had to the rates of wages being paid for similar work in trades where the workers are adequately organised and have concluded effective collective agreements, or, if no such standard of reference is available in the circumstances, to the general level of wages prevailing in the country or in the particular locality (Recommendation 30, Article 3).

Canada did not ratify the Convention on minimum wage-fixing machinery until April 1935, even though it had voted at the 1928 conference in favour of both the Convention and Recommendation in question, and had had a Fair Wages Branch in the Department of Labour since 1900.[3]

Pressure for legislative enactment followed the *Report* of the Royal Commission on Industrial Relations in Canada, which had been set up in 1919 to help improve relations between employers and employees in the Dominion; several of the presentations concerned the minimum wage, leading the commission to conclude:

> in several of the Provinces of Canada the absence of a minimum wage law, particularly for women and girls, was mentioned as a serious cause of dissatisfaction... We believe that such a law should be enacted in all the Provinces, and should cover not only women and girls, but unskilled labourers as well (Royal Commission, 1919, para. 46).

Provincial agreement in principle about the necessity for minimum wages (at least for women) was achieved at the National Industrial Conference in 1919, convoked to examine the *Report* of the aforementioned Royal Commission. During discussion of the minimum wage question, the role of women as the mothers of the next generation was emphasized. The payment of living wages was set in the context of

ensuring the health of working women and thus of future children. (It was noted by one speaker, however, that "every argument that can be applied to a minimum wage for women can be equally applied to the establishment of a minimum wage for every individual.")[4] The conference agreed to refer the matter of minimum wages to a committee, which later reported:

> We approve the principle of a minimum wage for women and girls and recommend that a competent authority be created in each province in the Dominion to establish a minimum wage adequate to maintain self-support.[5]

Although the history of the enactment of laws in each province will be dealt with in the next section, it is interesting to note that some degree of pressure for enactment was exerted on recalcitrant provinces, as is clear from the following statement by Ontario's deputy minister of Labour at the Federal-Provincial Conference on Minimum Wage Laws held in 1923 (by this time, Alberta, Ontario, Manitoba, and British Columbia had enacted and enforced such legislation):

> The Province of Quebec, for example, has a Minimum Wage law which has not been in force as yet. That situation is not regarded very favourably by the Province of Ontario which has an Act that is operative, and I think it is advisable that some understanding should be arrived at by these two Provinces and the other Provinces regarding such matters (Ballantyne, 1923, p. 249).

Similarly, Ontario made the following rather bald reply to an ILO questionnaire on the topic of minimum wages in 1928:

> A general extension of minimum wage laws would help to protect our workers against the competition of countries which have not yet recognised wholesome standards of living for their workers. ...high wages are necessary in Canada to maintain the standards of living which exist.[6]

One early aim of minimum wage legislators, at least in Ontario, may therefore be interpreted as a reduction of what was stated to be the "unfair competition" that stemmed from the legislation itself. The problem was that a party in one jurisdiction might fail to raise wages in an effort to procure a competitive advantage over another party in another jurisdiction who was subject to a minimum wage. In this regard, the ILO had pointed out in the Preamble to its Consitution in 1919 that "the failure of any nation to adopt humane conditions of labour is an obstacle in the way of other nations which desire to improve the conditions in their own country" (ILO, 1978, p. 27).

Another early aim given much lip-service was that of ensuring decent living and working conditions for independent women by setting wages that were at least sufficient "to protect the physical, moral and intellectual well-being of female workers."[7]

This goal is clearly seen in the original restriction to women and minors of much early North American minimum wage legislation, as well as the special reference to women's trades in the ILO Convention (detailed above).

With regard to the protection of children, a desirable side-effect of such legislation for women was perceived as follows: "The requirement of higher wages for minors will cause their replacement by adults. Thus children will be kept in school longer, and they will become better trained for industry when finally they go to work."[8] One of the interesting aspects of this statement is the clear acknowledgement of the disemployment effects of minimum wages.

The United States federal jurisdiction[9] first passed minimum wage legislation in 1938, as part of the *Fair Labor Standards Act*. This act applied to persons employed in enterprises involved in interstate commerce, and was introduced by President Roosevelt as a means

> of insuring to all our able-bodied working men and women a fair day's pay for a fair day's work...goods produced under conditions which do not meet rudimentary standards to decency should be regarded as contraband and ought not to be allowed to pollute the channels of interstate trade.[10]

Another reason for the introduction of this legislation was the increasing subscription by many policy makers to the theory that expanded purchasing power was necessary to spur economic recovery: during a period of substantial unemployment, minimum wage laws were seen as a means of preventing "cumulative wage-price deflation (and could) bolster purchasing power," helping to pull the economy out of a recession or depression (CAALL, 1968, p. 27).

A theoretical notion which achieved prominence with the refinement of neoclassical economics in the 1930s was that of imperfect competition, resulting in worker exploitation. It was argued (but not clearly demonstrated empirically) that there could be many flaws in the labour market due to discrimination, imperfect mobility and information, language barriers, and so forth, which resulted in some workers being hired at a wage rate less than their productivity warranted. This phenomenon is termed worker "exploitation" and is related by economists to a situation they call monopsony, which denotes the payment of a wage rate below a worker's marginal revenue product. (The modern status of the monopsony argument will be thoroughly reviewed in Chapter 3.) One influential labour economist stated:

> It cannot be too strongly emphasized that minimum-wage regulation is needed primarily because labor markets are so imperfect...and because "exploitation" of labor can and does occur, although there are so many imperfections in the labor market that the full extent of such exploitation is difficult to determine (Lester, 1941, pp. 316-17).

The argument is that the reduction of this source of exploitation is considered desirable on social and humanitarian grounds, and could be partially effected by the imposition of a legislatively enforced minimum rate. It is a role often cited by organized labour, by the women's movement, and by human rights groups in support of minimum wage increases.[11] What is described as the weak bargaining power of disparate, unorganized, low-wage workers is argued to require the protection of minimum wage regulation.

Recently, some policy makers have extended this notion to suggest that a prime function of the minimum wage is to *narrow the gap* in wages between the organized and unorganized sectors, to allow low-wage workers to increase their share of rising incomes: some notion of income redistribution is therefore being explored. For example, U.S. studies have concluded that

> the immediate effects of past increases in the minimum wage have been to compress the wage structure with wage increases going to employees paid at or close to the Minimum Wage. With the elapse of time, wages tend to disperse, but they do not reach the degree of dispersion existing prior to an increase in the Minimum Wage.[12]

For several decades, however, it has also been suggested that at least one reason for the strong support for higher minimum wages by organized labour was "to eliminate cheap alternative sources of labour," so that union workers would look better to employers; this "floor" would also help to "staunch the flow of industry to the South."[13]

Probably the most frequently cited reason for increasing minimum wages, in recent years, meanwhile, has been to help eradicate poverty. Concern with a living wage has been enunciated since the turn of the century, but accelerated economic growth and rising average incomes have made the elimination of poverty a more credible social goal. In an influential article written three decades ago, George Stigler stated that the *abolition* of poverty is the main objective of minimum wage legislation (Stigler, 1946). However, few economists today would be so optimistic about its prospects, since a variety of complex factors are known to contribute to impoverishment. Rather, minimum wages are now advocated as a means of *reducing* poverty among the employed.

Another goal of minimum wages, and one advanced rather timorously by its proponents, is that of enhancing productivity and efficiency in the firm: some economists believe that there is a shock effect for entrepreneurs who are forced to raise wages, resulting in a search for more economical methods of

production.[14] At the same time, however, employers may feel impelled to introduce labour-saving devices as the cost of labour increases, so that unemployment among the unskilled could increase. The net result of increasing minimum wages could therefore be ambiguous. The shock effect argument will be fully examined in Chapter 3.

Hicks believes it important to distinguish between technical discovery and technical innovation:

> that wage increases sometimes act as a kind of detonator which spurs the entrepreneur to increased activity cannot be denied but this consideration appears to have more relevance with regard to the rate ot introduction of known improvements than to the tempo of technological discovery (Hicks, 1963, p. 112).

A related rationale for minimum wages, and one cited frequently vis-à-vis underdeveloped countries, is that of contributing to economic growth through the expansion of workers' purchasing power. For example, the 1968 ILO *Report on Minimum Wage Fixing and Economic Development* (p. 10) concluded that minimum wages were "an instrument of a more general policy aiming at rapid growth and equitable distribution of national income," and that in some economies "the purpose of minimum wage fixing is not so much to bring unduly low wages towards the general level as to exert an upward pressure on the general level itself" (ILO, 1968, p. 6).

Yet this advocacy of minimum wages as a tool for economic growth is not confined to non-industrialized countries. In testimony before the House Subcommittee on Labor Standards concerning proposed increases to the minimum wage, the U.S. Secretary of Labor, Ray Marshall, stated:

> I believe that minimum wage increases will contribute to the economic upturn by increasing the purchasing power of lower paid workers and their families and by increasing productivity as employers are induced to seek more efficient operations.[15]

This concept of the minimum wage as a built-in stabilizer against a recession, it seems, is invoked most frequently during an economic downturn. (The whole purchasing power argument will receive critical assessment in a subsequent section.)

A final purpose of the minimum wage, articulated only since the advent of widespread social security programs, has been that of providing an incentive to work for employees who are tempted to rely instead on pensions, unemployment, or welfare benefits. Most governments recognize (at least informally) the intimate relationship between social assistance and low-wage employment (since individuals may switch back and forth frequently) by attempting to set minimum wages somewhat above that which a single person can expect to earn from such schemes. A latter-day purpose of minimum wage legislation, therefore, is to induce workers to search for jobs. The validity of this argument will be examined in Chapter 5, which is devoted to policy issues generally.

LIMITATIONS OF VARIOUS RATIONALES FOR THE MINIMUM WAGE

Ten objectives of minimum wages were identified in the preceding section. They are not mutually exclusive but have been used to advocate minimum wages over the past century.

These may be recapitulated as follows:

1. To eliminate the sweating of labour;
2. To ensure that all workers receive a "living wage";
3. To prevent unfair wage competition among employers;
4. To protect the physical, moral, and intellectual well-being of women and children in the labour market;

5. As a stabilizing device during a recession;
6. To counter exploitation;
7. Either to maintain or to narrow the gap in wages between the organized and unorganized sectors, such that the relative position of lower-paid workers does not deteriorate;
8. To reduce poverty;
9. To increase firms' productivity and efficiency, thus contributing to economic growth;
10. To maintain an incentive to work among low-wage employees.

If these goals were relevant or justified in the past, some of them are now obsolete, at least for North America; none has become pre-eminent, both because of the weaknesses described briefly below, and more thoroughly in our later chapter on theory, as well as the fact that economic concerns vary over time and location.

Sweating of Labour

Those who argue that this practice was prevalent in the past would now agree it has largely disappeared from North America because of vigilance by labour standards inspectors and the press, the availability of social assistance, and economic growth and competitiveness requiring the payment of more reasonable wages. The existence of minimum wage legislation, meanwhile, is not likely to deter those few remaining employers who engage in such unscrupulous practices.

Assurance of a Living Wage

Such assurances for workers may have been a reasonable goal when minimum wage legislation was directed mainly at single working women. However, those employed now at minimum wages include young persons living at home, women (sometimes with dependents), or newly arrived immigrants; the minimum wage is an intractable tool for satisfying the requirements of such a heterogeneous group of workers.

Further, there is no generally accepted definition of the term "living wage" — where originally it often implied mere subsistence, there is now some support for the notion that the effort of any adult worker in a modern industrial economy should entitle him to more than bare subsistence. The concepts of dignity and well-being are frequently cited, yet these provide little practical guidance to setting a minimum wage.

Prevention of Unfair Competition

The need for preventing unfair competition among employers has been one of the most consistently used arguments in favour of minimum wage legislation. Yet some economists have countered this argument as follows: in a perfectly competitive situation, the possibility of paying very low wages will attract more firms into the industry, thus bidding up wages as employers compete for workers. In the long run, therefore, competitive forces should neutralize the advantage of firms (or jurisdictions) paying subsistence wages.

The major limitation of the unfair competition argument, however, is operational: "a wage that might be considered unfairly low if paid by a large-scale employer to committed, experienced workers...might seem inappropriately high if it were fixed as the lowest wage that could be paid to an experienced worker badly in need of a job by a small man struggling to establish a modest business. The notion of fairness has to

extend to workers and employers in less favourable as well as in more favourable circumstances" (ILO, 1978, p. 9).

Protection of Women

The protection of the general well-being of women and children in the labour market is now difficult to invoke as a rationale for minimum wages, even if the economic logic were unassailable, because antidiscrimination legislation on this continent usually prevents the application of such laws only to one sex. (The protection of children is the concern of other legislation and programs.)

Minimum Wages as a Stabilizing Device

With respect to the use of the minimum wage as a "stabilizing" device to cushion declining wages during a recession, it should be noted that minimum wage levels set in North America are considerably lower than the generally prevailing wage. And only a small proportion of those employed are covered by the minimum. So the policy would be quantitatively limited at best.

Today it is common for other macroeconomic tools (such as government expenditure and taxation programs) to be in reserve for combatting the types of wage-price deflation characteristic of the Great Depression.

Reduction of Exploitation

Even if widespread monopsonistic exploitation is demonstrated empirically (a point that we shall return to in our theory section), there is once again an operational limitation to the use of minimum wages, since the productivity of workers varies greatly. This rationale might therefore be rephrased as that of protecting *some* low-productivity workers against exploitation by setting a minimum wage in accordance with their productiveness. Other tools, meanwhile, are required to eliminate the economic exploitation (where it can be demonstrated) of more productive and better paid workers.

An alternative understanding of the term "exploitation" may be the tendency of wages "persistently [to] fall below a level that is socially acceptable in a community" (Gunderson and Kinley, 1968, p. 4). This definition is imprecise and difficult to operationalize, yet it does perhaps provide a clue as to much of the subjective support that the notion of a legislated floor to wages has aroused.

Narrowing the Wage Gap Between Organized and Unorganized Workers

Some argue that an unfortunate effect of using minimum wages to narrow the gap between the organized and unorganized sectors is wage inflation: a substantial boost in the legal minimum is likely to have a "ripple effect" on other wages, as workers fight to maintain traditional differentials. If prices rise correspondingly, low-wage workers may be no better off in real terms over the long run. Others reply that governments should ensure that minimum wage increases *follow* (not lead) increases in other wages and prices. By linking minimum wages, at revision, to some average measure of wages (such as hourly manufacturing earnings), an attempt might be made to maintain the relative position of minimum wage workers in the overall wage structure, so that, at least their position does not worsen. Such questions of leads and lags involve empirical evidence. We shall return to this point in Chapter 4 on Empirics.

Reduction of Poverty

The reduction of poverty through minimum wage legislation is open to criticism on several fronts. In the first place, only the *working* poor can be affected; second, there are many causes of impoverishment (sporadic work histories, illness, large numbers of dependents, etc.), none of which can be tackled by minimum wage legislation. One economist has noted "in this respect [that] preventing poverty through the minimum wage is like trying to fix a wristwatch while wearing mittens" (Skolnik, 1977, p. 6). Third, there is some evidence that increases in the minimum wage could decrease employment, which will exacerbate impoverishment among affected low-wage workers. Fourth, whether rising disposable income for those who have jobs exceeds the net income loss of those losing jobs cannot be known *a priori*, and even if an excess *can* be demonstrated the policy implications are not obvious.

Finally, it has been suggested that to have a *meaningful* effect on poverty, minimum wages must bring about a permanent redistribution of real income (Whittingham, 1970, p. 9). Its supporters must therefore be able to show that the wage structure has been compressed over time. While there is some evidence that this has taken place in the United States, other studies for Ontario found that the initial wage distribution was *restored* within two years of revision (Fantl and Whittingham, 1970; and McKenna, 1973). Meanwhile, even though wage dispersion is shown to be reduced, this does not imply an unambiguous decline in poverty. Some workers may be discouraged from entering the labour market altogether and so suffer an *aggravation* of poverty. Some recent Canadian evidence on this outcome is surveyed in Chapter 4.

Increasing Productivity and Efficiency

Attempting to increase a firm's productivity through the use of minimum wages runs the risk that some marginal firms will cease production altogether, rather than tightening up their operations. However, it has also been argued that

> if minimum wage legislation pushes these firms across the marginal line and production is concentrated in a smaller number of larger and more efficient plants, the result to be expected would be a higher wage bill for the entire industry without necessarily higher — or at least proportionately higher — costs per unit of product (Millis and Montgomery, 1938, p. 279).

Clearly this analysis ignores the possibility of induced monopoly in the product market, a problem of *decreased* efficiency.

A second qualification is that much of the low-wage employment is concentrated in small-scale and labour-intensive industries (such as the hospitality sector, personal services, or retail trade). The scope for "rationalization" of the enterprise in such industries is limited in any case. In other words, an increase in labour costs cannot be absorbed by the employers. The likely outcome is that product prices may rise and/or that the work-force is reduced.

Inducement to Work

For minimum wages to provide an inducement to work among low-wage workers, it is necessary that the difference in net income available from each source be sufficient to compensate workers for forgone leisure time and for work-related expenses, both of which vary greatly among individuals.

Also, most income support systems are related to family size, whereas wage rates do not have this flexibility — setting the minimum wage at a rate high enough to surpass minimum welfare benefits, for a family of four, for example, may not be economically feasible.

In any case, inducement to work can be effected not only by the increasing size of the wage but also by moderating the rate of government assistance in the form, for example, of unemployment insurance. The policy issue becomes therefore, more complex, and exclusive attention to minimum wages (even if they were believed to have no unemployment effect) would be inappropriate.

CONCLUSIONS

No one purpose of minimum wage legislation has emerged as predominant in the context of normative economics; evidently its goals could be described as multipurpose, with the added restriction that none of these is entirely satisfied by the minimum wage itself.

Whether or not any of these important social objectives could be achieved more efficiently and equitably by other means will be examined in Chapter 5.

The task of *positive* economics, meanwhile, is to put forward testable hypotheses that predict minimum wage legislation, even if it is *counter-productive* to the (normative) goals of poverty reduction, equity, efficiency, and so on. It is in this context that our above reference to the alleged union motivation to reduce competition from non-union workers is relevant. The way in which this interesting new appraisal to the minimum wage phenomenon is being developed in Canada, by such bodies as the Ontario Economic Council (1977), will be the subject of Chapter 6, which focuses on the "economics of politics."

2 The Present Structure and Administration of Canadian Minimum Wages

This chapter is mainly descriptive. The first part of it discusses Canadian federal and provincial machinery for the administration and revision of minimum wages. The second part presents statistics of past and present rates in the different provinces and the federal jurisdiction, including the special levels for students and teenagers.

FEDERAL LEGISLATION

The *Canadian Labour Code*, which incorporated the provisions of the *Canada Labour (Standards) Code* when the Revised Statutes of Canada 1970 were proclaimed in force, sets minimum wage rates for employees in any work, undertaking, or business that is within the legislative authority of the Parliament of Canada. Part III, which contains the minimum wage provisions, specifically includes employees of any corporation which performs functions on behalf of the Government of Canada. Excluded are employees in any undertaking of a local or private nature in the Yukon Territory or Northwest Territories; managers, superintendents, or persons exercising management functions; and members of such professions as may be designated by regulation as exempt.

Since 1 April 1976, all employees 17 years of age and over who come within the provisions of the code must be paid at least $2.90 an hour, or its equivalent where the basis of payment is other than hourly. Employees under 17 years of age may be employed only in occupations and at a minimum wage rate established by regulation. The hourly minimum wage rate for employees under 17 years of age has been $2.65, since 1 April 1976. A lesser rate of pay is permissible where a person under the age of 17 years is receiving on-the-job training, provided that the rate is not less than that established by regulation for the class of employees to which he belongs. Registered apprentices are exempt from the minimum wage provisions of the act if they are paid in accordance with the schedule of fees set out in a provincial apprenticeship act; likewise other employees receiving training are exempt if certain requirements are met by the employer. Handicapped persons may be employed at less than the minimum rate with ministerial consent and upon documentation of their disability.

The minimum hourly rate may be increased by order of the Governor in Council, but such order must specify an effective date which is at least three months subsequent to publication in the *Canada Gazette*. The amount by which the minimum wage may be reduced by deductions or payments for board and lodging is established by regulation.

PROVINCIAL LEGISLATION

All the provinces have minimum wage legislation which applies to most classes of workers other than farm labourers and domestic servants. The legislation in each province provides for a board to set minimum wage rates. The rates are imposed by means of minimum wage orders generally issued by minimum wage, employment, or labour standards boards (a commission in Quebec) holding varying degrees of autonomy. Thus, in British Columbia the board has unrestricted power to make an order fixing a minimum wage. In Manitoba and Newfoundland the rates are imposed by means of orders issued by the Lieutenant-Governor in Council on the recommendation of the board. The boards in Alberta, Nova Scotia, Prince Edward Island, Quebec, and Saskatchewan issue the orders subject to the approval of the Lieutenant-Governor in Council; and in New Brunswick, the orders are subject to review by the minister. Under the *Ontario Employment Standards Act, 1974*, the Lieutenant-Governor in Council may establish minimum wage rates by regulation.

Wide discretion is given to all the boards as to the determination of the classes of employees for which minimum wages are to be established and as to the rates themselves. Periodically, the boards hold inquiries to hear representations concerning the need for additional or revised orders. Notices of these inquiries are published in the provincial *Gazettes*. There are commonly two kinds of orders — general and special. A "general order" is one not restricted to particular industries or occupations, although it may be confined to specified areas. A "special order" is one that applies to a particular industry or occupation.

ALBERTA

Division 2 of *The Alberta Labour Act, 1973* vests in the Board of Industrial Relations the authority to establish minimum wage rates. The act does not apply to farm labourers, domestics in owner-occupied private dwellings, municipal policemen, or government employees. However, agents of the Crown and their employees come within the provisions of the Act as do farm labourers employed, in the opinion of the board, in a commercial undertaking. *Minimum Wage Order No. 1 (1976)* applies to all employees except the following: employees covered by another board order; seasonal or casual workers hired by others than employers engaged in any industry for work in such industry and those hired under contract approved by the board; employees working under a subsisting collective agreement until the first anniversary of such agreement following the effective date of this order; and students whose employment is part of their training. Since 1 March 1977, all employees in the province to whom the order applies (including employees who are paid in whole or in part on a commission basis and employees who are paid on the basis of piece-work or otherwise) must be paid a minimum wage of not less than $3.00 an hour if over the full age of 18 years and $2.85 an hour if under 18 years of age. Where a period of employment is less than three consecutive hours, exclusive of a meal period of one hour, an employee must nevertheless be paid for three hours at not less than the minimum rate to which he is entitled. While deductions for board and lodging at set rates are permissible, no deduction may be made from the minimum wage for meals not consumed by an employee. Deductions for breakages or the supply and care of required uniforms may not reduce an employee's wages below the minimum rate. Students under 18 years engaged in part-time employment between opening and closing dates of school are entitled to a minimum rate of $2.50 per hour, effective 1 March 1977, with a minimum of two hours payable if working time is less. Students engaged in certain training and work-experience programs are excepted from these provisions.

British Columbia

Minimum wages are established by the Board of Industrial Relations pursuant to the *Minimum Wage Act* which is applicable to all employees with the exception of farm labourers and domestic servants. The board is empowered to make minimum wage orders either of general application or for a group or class of employees in any industry, business, trade, or occupation.

General Minimum Wage Order No. 1 (1975) applies to all employees who come within the provisions of the act with the exception of employees covered by other minimum wage orders and those whose duties are entirely of a supervisory or managerial character. The minimum hourly rates and the effective dates of increases are set out as follows:

Classification of employees	1 June 1976
Employees 18 years of age and over	$3.00
Employees 17 years of age and under	2.60

The rate of pay for apprentices, the handicapped, and part-time employees is prescribed in employment permits issued by the board. An employee who reports for work on the call of the employer must be paid his regular rate of pay for the entire period spent at the place of employment, with a minimum in any one day of two hours' pay at his regular rate except where he is not competent to perform his duties; and four hours' pay if he commences work, except where work is suspended for reasons beyond the employer's control and then the two-hour minimum applies. However, provision is made for other mutually acceptable arrangements. School students reporting for work on a school-day must be paid at their regular rate for the entire time spent at work in response to a call, with a minimum in any one day of two hours' pay at the employee's regular rate. Deductions for board and lodging are subject to board approval and no deductions from an employee's wages may be made for accidental breakage or damage to an employer's property or as a penalty for unsatisfactory work.

Employees exempted from the provisions of the *Minimum Wage Act* by *Regulation No. 23 (1972)* include casual employees, artists, musicians and players, student nurses, employees on boats for hire, caretakers not employed in apartment buildings, certain employees in the logging and fishing industries, and so on.

The provisions of the *Minimum Wage Act* entitle an employee to recover from his employer the difference between the amount of wages he receives and the amount of the minimum wage, together with costs, by bringing a civil action.

Manitoba

The Employment Standards Act provides that the Lieutenant-Governor in Council may establish one or more minimum wage boards and may make regulations embodying the recommendations of a minimum wage board with such amendments as may be deemed desirable.

The minimum wage rates payable to employees during standard hours of work are set by regulation as follows:

Minimum hourly rates	Effective 1 September 1976
Employees 18 years and over	$2.95
Employees 17 years and under	2.70

Minimum wage provisions do not apply to persons employed under a government-approved or -implemented training scheme. A handicapped person may be employed at less than the established minimum hourly rate, subject to ministerial approval. The employer must obtain a permit which shall set out the hourly rate payable and which may limit the period during which the handicapped worker may be paid at the reduced rate. If meals and lodging are provided by the employer, the amount of permissible deductions is set by the board. On each occasion that an employee is required to report for work, he must be paid for not less than three hours' work at the established minimum rate. This provision does not apply to employees of theatres, hotels, or restaurants in rural areas, nor to child employees. Where an employee is required to wear a uniform or specific clothing, the employer may not deduct charges for supplying and maintaining such clothing which would reduce the employee's salary to less than the minimum hourly rate.

"Employee," as defined in *The Employment Standards Act*, does not include an independent contractor, a person employed in agriculture, fishing, fur farming, dairy farming, or in growing horticultural or market garden products (with certain exceptions), a domestic employed in a private home and remunerated by the householder (excluding persons remunerated by an agency for homemaking, nursing, or similar duties other than a baby-sitting agency), a voluntary worker in a religious, philanthropic, political, or patriotic institution, a person employed under a rehabilitation or therapeutic project, a person qualified to practise a profession, or a student engaged in training for a profession.

Schedules issued under *The Construction Industry Wages Act* provide the minimum wage rates for all classes of workmen employed in the construction of public and certain private works in the province.

New Brunswick

The Employment Standards Advisory Board, pursuant to the *Minimum Wage Act*, may make regulations fixing minimum wages which are subject to review by the Minister of Labour. The *Minimum Wage Order* applies in respect of all employees as defined in the act and must be posted conspicuously on the premises of every employer affected. Excluded by statute are persons employed in domestic service and agriculture.

The minimum rates of wages which an employer must pay his employees for a 40 hour workweek are as follows:

Minimum hourly rates	Effective 1 November 1976
1. All employees covered by the order except those in subsection (3)	$2.80 per hour
2. Piece-workers: wages paid to piece-workers shall not be less than the minimum wage provided for time workers for the number of hours actually worked during a pay period.	

3. Employees whose hours of work per week are unverifiable and are not strictly employed on a commission basis shall receive not less than $123.00 per week

The board may establish special minimum wage rates for handicapped and part-time employees and for apprentices. Tips and gratuities are the property of the employee, as are surcharges or other charges paid in lieu of a tip or gratuity.

Where an employer furnishes board and lodging or both to an employee, the employer shall not deduct from the minimum wage of the employee an amount exceeding the amount established by order. No employer shall charge an employee for a meal that the employee does not receive.

Reference should also be made to the industrial standards schedules which provide for minimum wages for the particular industries covered by the schedules.

NEWFOUNDLAND

The Labour Standards Board, pursuant to the provisions of *The Labour Standards Act*, may make investigations, on the directions of the minister, into terms and conditions of employment and may make recommendations as to the minimum wage rates that should apply to employees in different categories and in different areas. The Lieutenant-Governor in Council is empowered to make regulations to give effect to these recommendations with such amendments, additions, or deletions as are deemed expedient. There is a duty to review all orders and regulations every two years from the date of coming into force or a lesser period of time if it is deemed advisable. An employer must pay an employee to whom a regulation applies at not less than the minimum wage and he must post a copy of the regulations in a conspicuous place in the work area.

The act defines "wages" as remuneration, salary, or commission received for work or services performed by an employee for an employer and, if the context so admits, includes vacation pay and holiday pay but does not include tips and gratuities.

The *Labour Standards Regulations*, 1978, provide that an employer must pay an employee 16 years of age and over a rate of wages of not less than $2.50 an hour; and every employee 16 years of age and over, employed in domestic service in a private home, is entitled to be paid not less than $30 a week, and the wages of such employee shall not be reduced below the rate of $30 a week either by deductions for meals supplied or board and lodging provided. A "private home" is defined as a residence "other than a place where board and lodging is provided for more than two persons for remuneration and as a business." The amount by which an employee's wages may be reduced by deductions for meals, board, or lodging is established by regulation, and an employer shall not charge an employee for a meal he did not receive.

The minimum rate of wages prescribed apply to (a) an hourly rated employee or one paid on the basis of a fixed salary, (b) an assistant, defined as a person employed in a shop or in an office connected therewith, whether remunerated wholly or partly by commission, and (c) an employee in the beauty culture trade whether remunerated wholly or in part on a commission basis. The board may exempt handicapped persons from the minimum wage provisions of the act, or may fix special minimum wage rates which are below the general minimum wage rate depending on the circumstances.

Nova Scotia

The Minimum Wage Board, under the *Labour Standards Code*, may make orders fixing the minimum wage rates subject to the approval of the Lieutenant-Governor in Council. The general *Minimum Wage Order* applies to all employees in the province with the exception of domestic servants in private homes, farm labourers whose employment is directly related to primary agricultural production but "farm" does not include agricultural production carried on predominantly under cover from the elements, employees to whom special orders apply, apprentices, qualified practitioners and students of designated professions, persons receiving training under a government-sponsored plan, persons employed at playgrounds or summer camps operated on a non-profit basis, real estate and automobile salesmen, salesmen other than route salesmen who receive all or part of their remuneration as commission and who normally work outside their employer's establishment, licensed insurance agents, persons working on fishing vessels, and employees to whom other minimum wage orders are applicable.

The following minimum wage rates became effective 1 January 1977:

Class of employees	Rate per hour
18 years of age and over (not experienced)	$2.75
Underage employees (under 18 years of age)	2.50
Inexperienced employees (employed less than three months)	2.50

The rates fixed by the order are for a maximum workweek of 48 hours within a period commencing on a Sunday and ending the following Saturday. For the purposes of this order a period of 15 minutes and not more than 30 minutes shall be counted as a half hour and a period of 30 minutes but less than 60 minutes shall be counted as an hour.

Permissible deductions for board and lodging are set out but an employee may not be charged for a meal he does not receive. No charge may be made from the minimum wage for the supplying of or laundering of uniforms, but where such are made of woollen or similar material requiring dry-cleaning, the cost of cleaning may be charged to the employee.

Workers employed on a piece-work basis must be paid not less than the hourly rate fixed by this order for the number of hours worked regardless of the amount earned, in accordance with the established piece-work rates. Any time during which an employee is required to wait for work on his employer's premises shall be counted as time worked. Where an employee is recalled to work outside his regular working hours, other than emergency work in certain categories of employment, he must be paid for not less than three hours at the minimum straight time rate notwithstanding that he may work less than three hours. Underage or inexperienced employees must not exceed 25 per cent of employer's total working force without board approval. Where the working force is seven or less, two underage or inexperienced employees may be employed. During the period 15 June to 15 September an employer operating a motel, hotel, restaurant, or tourist resort may employ underage or inexperienced employees to the extent that they do not exceed 60 per cent of his working force. A handicapped employee may not be paid less than the minimum wage unless specifically excepted by an order of the Minimum Wage Board.

Minimum wage orders applicable to employees in beauty parlours, in logging and forest operations, and in road building and heavy construction industries are specially listed.

Ontario

The Employment Standards Act, 1974 provides that the Lieutenant-Governor in Council may make regulations establishing minimum rates of wages for employees. An employment standard established by the act shall be deemed to be a minimum requirement only, and a right, benefit, or more favourable condition of employment provided under an oral or written contract or under another act prevails over the provisions contained therein.

A general regulation exempts persons engaged in certain employment from minimum wage provisions of the act: qualified practitioners of certain professions and students thereof; registered drugless practitioners; teachers as defined by statute; persons engaged in commercial fishing or employed as domestic servants; salesmen, other than route salesmen, remunerated in whole or in part by commission in respect of offers or sales normally made at a place other than the employer's place of business; and persons employed in designated agricultural pursuits. Specifically exempted from the applications of Part V of the act which contains those sections dealing with minimum wages are students employed in recreational programs, camps or instructional or supervisory activities pertaining to children; superintendents, janitors, or caretakers of residential buildings who reside therein; and trainees in courses leading to registered nursing assistant, laboratory technician, or radiological technician. A "home-maker," defined as a person employed by a person other than the householder to perform home-making services in the private residence of the householder, must be paid at least the minimum wage.

An employer shall be deemed to have agreed to pay at least the minimum wage if he permits an employee to perform work or supply services for which a minimum rate has been established. To provide gainful employment for the handicapped, the director of Employment Standards may, upon application, authorize employment of such handicapped persons at a wage lower than the minimum wage prescribed under the act.

Rates for those covered by the minimum wage provisions are set out below.

Type of employment	Rate effective 1 January 1979
General minimum, hourly	$3.00
General learner rate, hourly (during first month of employment)	2.90
Employee who serves liquor directly to customers or patrons on licensed premises	2.50
Student rate, hourly (under 18 years of age) where weekly hours are not in excess of 28 hours or where student is employed during a school holiday	2.15

Wages, by definition, include any monetary remuneration payable to an employee under a contract of employment, oral or written, and any allowances for room or board as prescribed by regulation; not included within the meaning of "wages" are tips and other gratuities; any sums paid as gifts or bonuses that are paid at the discretion of the employer and are not related to hours, production, or efficiency; travelling allowances or expenses; or contributions made by the employer to a fund, plan or arrangement for the benefit of employees which comes within the provisions of the act. Rates of deductions for board and lodging are established for those who are employed on the basis of receiving meals or room or both as part

of their wages, but no charge may be made where an employee has not actually received the meals or occupied the room. Now, written authorization of an employee shall entitle an employer to deduct or retain an employee's wages for faulty workmanship, or for cash shortages or loss of the employer's property where a person other than the employee has access to the cash or property. If an employee who is not a student and regularly works more than three hours a day, is required to present himself for work and works less than three hours, he shall be deemed to have worked for three hours for the purpose of determining whether he has been paid the minimum wage. No person shall be paid as a learner who is employed for less than 28 hours in a workweek or is a homeworker.

Prince Edward Island

The *Prince Edward Island Labour Act* empowers the Lieutenant-Governor in Council to appoint the members of the Employment Standards Advisory Board, which is authorized to establish minimum rates of wages. "Wage" is defined as compensation for labour or services but does not include tips or gratuities of any kind. Enacted in 1971 and revised in accordance with the Revised Statutes of Prince Edward Island, 1974, the employment standards provisions of the act do not apply to farm labourers unless they are engaged in an undertaking which, in the opinion of the board, is a commercial undertaking.

Board Order No. 1-78 is applicable to all persons except registered apprentices, farm labourers as defined by the act, and persons employed solely in "protecting and caring for children in private homes." The male and female wage differential having been removed by an earlier order, the minimum hourly wage rate payable to employees 18 years of age and over advanced from $2.70 to $2.75, and for those under 18 years of age from $2.35 to $2.40, effective 1 July 1978.

The inspector of Labour Standards may authorize the payment of wages to handicapped workers which are less than the minimum rate on the application of the employer or the handicapped person. Permissible deductions for board and lodging are set by the board and no charge may be made for a meal not received.

Quebec

The Minimum Wage Commission, pursuant to the provisions of the *Minimum Wage Act*, may establish by ordinances minimum rates of wages which are approved by the Lieutenant-Governor in Council with such amendments as may be deemed desirable.

The act applies to all employees except agricultural employees, household servants, and employees governed by decrees under the *Collective Agreement Decrees Act*.

The following wage rates apply to all employees subject to the *Minimum Wage Act* with the exception of those governed by another ordinance, an employer's spouse and children, and students employed in carrying out a children's recreational or instructional program. Excluded also from the rates set out below are employees to whom a "limited fitness" permit has been issued, students employed in an approved occupational training program, students engaged in professional studies, and patients assigned to an employer for social rehabilitation purposes:

	Effective 1 October 1978	Effective 1 April 1979
a. Employees under 18	$3.17	$3.27
b. Other employees	3.37	3.47

Minimum wage rates are indexed automatically every six months, on 1 January and 1 July, in relation to increases in the consumer price index.

Under the provisions of *Ordinance No. 4, 1972*, where an employee reports for work at his employer's request and works less than three hours, he is entitled to three hours' wages at the minimum rate except where the employee is a student working part time during the school year. No deduction may be made from wages for the purchase or upkeep of a required uniform, and permissible deductions for room and board are set out. Tips are the exclusive property of the employee.

Rates for employees covered by special ordinances are set out governing forest operations, sawmills, certain public works employees, and the retail food trade.

Saskatchewan

The Minimum Wage Board, pursuant to *The Labour Standards Act, 1977*, may fix by order the minimum wage which shall be paid to full-time employees in any call of employment, subject to the approval of the Lieutenant-Governor in Council. Special licences may be issued by the board to handicapped persons, setting out certain conditions of employment.

Board orders may be of general application or may be restricted to establishments in specified areas. The provisions of *Minimum Wage Order No. 1 (1978)* apply to all employees except those excluded by the *Labour Standards Act, 1977*. The minimum hourly rate, effective 30 June 1978, is $3.25 per hour. Every employee other than a school student in regular attendance during the school term, a janitor, caretaker, or building cleaner shall be paid a minimum sum of $9.45 for each occasion he is required to report for duty, other than for overtime, whether or not he is required to be on duty for three hours on such occasion, increasing to $9.75 effective 30 June 1978. However, any school board, safety patrol personnel, or noon-hour supervisors employed by a school board may be exempted from the latter provision by permit issued by the Minimum Wage Board.

Exempted from the provisions of the order, by virtue of the application of the act, are employees engaged primarily in farming, ranching, or market gardening, but for the purposes of the act the latter are deemed not to include egg hatcheries, greenhouses and nurseries, or bush-clearing operations. Excluded by regulation are employees of sheltered workshops and work activity centres who are socially, physically, or mentally impaired or handicapped. The act does not apply to a person employed in a family undertaking or to a domestic worker in a private home; however, minimum wage provisions apply to a domestic worker employed in a private home where the employer is in receipt of a wage subsidy from a municipal, provincial, or federal government or a publicly funded organization.

Special provisions covering employees of hotels and restaurants, educational institutions, hospitals and nursing homes, including the supplying of uniforms and permissible charges for meals and lodging, are set out in Order No. 3.

Minimum wage orders affecting his employees must be kept posted in his establishment by the employer.

Northwest Territories

The *Labour Standards Ordinance* provides for payment of a minimum hourly wage of $3.00 effective 7 June 1976, to all employees 17 years of age or over with the exception of those employed as domestic servants in private homes, trappers, persons engaged in commercial fisheries, members of professions excluded by regulation, and persons who exercise management functions. Where an employee's wages are

paid on other than a time basis, the Labour Standards Board may by order fix a basis for computation of an equivalent rate. Persons under 17 years of age may be employed in any occupation, except in such occupations and subject to such conditions as may be prescribed by regulation at the minimum rate of not less than $2.55 per hour effective 7 June 1976. A Labour Standards officer may, upon application of a handicapped person or an employer, authorize the employment of such a person at a wage lower than the established minimum wage rate. The commissioner may, by regulation, exempt an employer from minimum wage provisions where adequate on-the-job training is provided. The Labour Standards Regulations limit charges for board and lodging where these facilities are furnished as part of the payment of wages, and provide that the wages of an employee shall not be reduced below the minimum wage by charges for meals, the furnishing or laundering of required uniforms, or accidental breakage or articles or property belonging to the employer. By definition, wages do not include tips and gratuities. A call-in premium of a minimum of four hours' pay at regular rates is provided, whether or not the employee is actually called upon to perform any duties after reporting for work.

Yukon Territory

The *Labour Standards Ordinance* applies to every person employed in connection with the operation of any industrial establishment. For employees 17 years of age and over, the minimum rate of wages is established as the amount of the minimum wage set out in the *Canada Labour Code* as amended from time to time, plus 10 cents. As the minimum hourly wage rate for employees 17 years of age and over within federal jurisdiction advanced to $2.90 effective 1 April 1976, the minimum wage for employees 17 years of age and over in the Yukon Territory automatically increased to $3.00 an hour effective the same date. Persons under 17 years of age may be employed only in occupations specified by regulation at a wage not less than the rate prescribed therein. Rates of pay for apprentices are established by regulation.

Where an employee has accepted an arrangement whereby board or lodging or both are furnished by the employer, the permissible deductions from his wages are set by regulation. By definition, wages do not include tips and gratuities.

HISTORICAL AND GEOGRAPHICAL DIFFERENCES IN MINIMUM WAGES

Table 2-1

Minimum Wage Rates per Hour Prevailing at the End of Each Year under Federal and Provincial Jurisdictions, 1965-78

Area of jurisdiction	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
	(Dollars)													
Federal	1.25	1.25	1.25	1.25	1.25	1.65	1.75	1.90	1.90	2.20	2.60	2.90	2.90	2.90
Newfoundland	.70	.70	.70	1.10	1.10	1.25	1.25	1.40	1.40	2.00	2.20	2.50	2.50	2.50
Prince Edward Island	1.00	1.10	1.10	1.25	1.25	1.25	1.25	1.25	1.40	1.75	2.30	2.50	2.70	2.75
Nova Scotia	1.05	1.10	1.10	1.15	1.25	1.25	1.35	1.55	1.65	2.00	2.25	2.50	2.75	2.75
New Brunswick	.80	.90	.90	1.00	1.00	1.15	1.25	1.40	1.50	1.90	2.30	2.80	2.80	2.80
Quebec	.85	1.00	1.05	1.25	1.25	1.40	1.50	1.65	1.85	2.30	2.80	2.87	3.15	3.37
Ontario	1.00	1.00	1.00	1.00	1.30	1.50	1.65	1.65	1.80	2.25	2.40	2.65	2.65	2.85
Manitoba	.85	1.00	1.10	1.25	1.35	1.50	1.65	1.75	1.90	2.15	2.60	2.95	2.95	2.95
Saskatchewan	.95	1.00	1.00	1.05	1.25	1.25	1.50	1.75	2.00	2.25	2.50	2.80	3.00	3.25
Alberta	1.00	1.00	1.15	1.25	1.25	1.55	1.55	1.55	1.90	2.00	2.50	2.75	3.00	3.00
British Columbia	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.25	2.50	2.75	3.00	3.00	3.00

SOURCE Compiled from data supplied by the Legislative Analysis Branch, Labour Canada.

Table 2-2

The Timing of General Minimum Rate Changes for Experienced Adult Workers, 1966-79

Area of jurisdiction	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Federal					July 1 $1.65	July 1 $1.75	Nov. 1 $1.90		$2.20	July 23 $2.60	April 1 $2.90			
Alberta		Aug. 1 $1.15	Jan. 1 $1.25		April 1 $1.40 Oct. 1 $1.55			Jan. 1 $1.75 Oct. 1 $1.90	April 1 $2.00	Jan. 1 $2.25 July 1 $2.50	March 1 $2.75	March 1 $3.00		
British Columbia		May 1 $1.10 Nov. 1 $1.25			May 4 $1.50		Dec. 4 $2.00	Dec. 3 $2.25	June 3 $2.50	Dec. 1 $2.75	June 1 $3.00			
Manitoba	Dec. 1 $1.00	Dec. 1 $1.20 Aug. 1 $1.20 Dec. 1 $1.25	April 1 $1.15	Dec. 1 $1.35	Oct. 1 $1.50	Nov. 1 $1.65	Oct. 1 $1.75	Oct. 1 $1.90	July 1 $2.50	Jan. 1 $2.30 Oct. 1 $2.60	Sept. 1 $2.95			
New Brunswick			Jan. 1 $1.00		Jan. 1 $1.15	Sept. 1 $1.25	March 1 $1.40	Jan. 1 $1.50	Jan. 1 $1.75 July 1 $1.90	Jan. 1 $2.15 July 1 $2.30	Jan. 1 $2.55 Nov. 1 $2.80			
Newfoundland			May 1 M $1.10 F $0.85		July 1 M $1.25 F $1.00		June 1 $1.40		Jan. 1 $1.80 July 1 $2.00	Jan. 1 $2.20	Jan. 1 $2.50			
Nova Scotia	June 1 M $1.10 F $0.85		April 1 M $1.15 F $0.90	Aug. 1 M $1.25 F $1.00		Jan. 1 M $1.30 F $1.10 July 1 M $1.35 F $1.20		July 1 $1.55	July 1 $1.80 Oct. 1 $2.00	Jan. 1 $2.20 Mar. 1 $2.25	Jan. 1 $2.50	Jan. 1 $2.75		
Ontario				Jan 1 $1.30	Oct. 1 $1.50	April 1 $1.65		Feb. 1 $1.80	Jan. 1 $2.00 Oct. 1 $2.25	May 1 $2.40	March 15 $2.65		Aug. 1 $2.85	Jan. 1 $3.00
Prince Edward Island	April 16 $1.10		July 1 F $0.80	Jan. 1 F $0.85 July 1 F $0.95 Sept. 1 M $1.25			July 1 F $1.10	July 1 M $1.40 F $1.30	Jan. 1 $1.65 July 1 $1.75	Jan. 1 $2.05 Oct. 1 $2.30	July 1 $2.50	July 1 $2.70	July 1 $2.75	
Quebec	Nov. 1 $1.00	April 1 $1.05	Nov. 1 $1.25		Nov. 1 $1.40	May 1 $1.45 Nov. 1 $1.50	Nov. 1 $1.65	May 1 $1.70 Nov. 1 $1.85	May 1 $2.10 Nov. 1 $2.30	June 1 $2.60 Dec. 1 $2.80	July 1 $2.87	Jan. 1 $3.00 July 1 $3.15	Jan. 1 $3.27 Oct. 1 $3.37	April 1 $3.47

(cont'd)

Table 2-2 (Concl'd)

Area of jurisdiction	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Saskatchewan	July 22 $40.00 per week		Oct. 1 $1.05	Oct. 1 $1.25		June 1 $1.50	Jan. 2 $1.70 July 1 $1.75	Dec. 1 $2.00	July 2 $2.25	Mar. 31 $2.50	Jan. 1 $2.80	Jan. 1 $3.00	June 30 $3.25	
Northwest Territories			July 1 $1.25		Sept. 1 $1.50			Sept. 1 $2.00	April 1 $2.50		June 7 $3.00			
Yukon Territory			July 1 $1.25		May 1 $1.50		Jan. 1 $1.75	June 1 $2.00[a]	April 1 $2.30[a]	July 23 $2.70[a]	April 1 $3.00[a]			

a Federal rate plus ten cents.

SOURCE Compiled from data supplied by the Legislative Analysis Branch, Labour Canada.

We now present some general tables of statistics of minimum wages showing their relative changes over time and their differences between regions. Table 2-1 shows that Quebec took the lead in the Canadian rates in 1977. On average, minimum wages have about tripled since 1965. Quebec's rate increased the most (by 3.85 per cent and the federal government's the least (by 2.32 per cent). After Quebec, Newfoundland showed the biggest increase (3.57 per cent).

Table 2-2 gives the specific dates of minimum wage changes between 1966 and 1979.

In Chapter 3 we shall show that there has recently been considerable discussion on the desirability of teenage differentials in minimum wages. Table 2-3 shows that in Canada, at present, differentials are allowed only to individuals under 18, and the largest differential is in British Columbia where the minimum wage for individuals under 17 is 86.7 per cent of the general rate. Three provinces no longer have special rates for young workers or students.

Table 2-3
Minimum Wage Rates for Young Workers and Students,[1] 1979

Jurisdiction		Rates per hour	Percentage of general rate	Effective date
Federal	Employees under 17	$2.65	91.4	April 1, 1976
Alberta	Employees under 18	$2.85	95.0	March 1, 1977
	Students under 18 employed part-time	$2.50	83.3	March 1, 1977
British Columbia	Employees 17 and under	$2.60	86.7	June 1, 1976
Manitoba	Employees under 18	$2.70	91.5	Sept. 1, 1976
Nova Scotia	Underage employees 14 to 18	$2.50	90.9	Jan. 1, 1977
Ontario	Students under 18 employed for not more than 28 hours in a week or during a school holiday	$2.15	81.1	March 15, 1976
		$2.15	75.4	August 1, 1978
		$2.15	71.7	January 1, 1979
Prince Edward Island	Employees under 18	$2.35	87.0	July 1, 1977
		$2.40	87.3	July 1, 1978
Quebec	Employees under 18	$3.17	94.1	Oct. 1, 1978
U.S. Federal	Full-time students in retail or service, etc., and students in educational institutions, not working more than 20 hours per week or during vacations	$2.25	85.0	January 1, 1978
	Students in agriculture not working more than 20 hours per week or during vacations	$2.25	85.0	January 1, 1978

1 New Brunswick, Newfoundland, and Saskatchewan have no special rates for young workers or students.
SOURCE *Labour Standards in Canada,* September 1978, Legislative Analysis Branch, Labour Canada.

Table 2-4 shows the ratios of provincial to federal minimum wage rates since 1965. From its clear lead in 1965, the federal minimum is now around the average for the country. These figures show again how Quebec has taken the lead over the other provinces in recent years.

Table 2-4

Ratio of Provincial Minimum Wage Rates to Federal Minimum Wage Rate[1], 1965-79

Area of jurisdiction	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Federal	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Newfoundland	56.0	56.0	56.0	88.0	88.0	75.8	71.4	73.7	73.7	90.9	84.6	86.2	86.2	86.2
Prince Edward Island	80.0	88.0	88.0	88.0	100.0	75.8	71.4	65.8	73.7	79.5	88.5	86.2	93.1	94.8
Nova Scotia	84.0	88.0	88.0	92.0	100.0	75.8	77.1	81.6	86.8	90.9	86.5	86.2	94.8	94.8
New Brunswick	64.0	72.0	72.0	80.0	80.0	69.7	71.4	73.7	78.9	86.4	88.5	96.6	96.6	96.6
Quebec	68.0	80.0	84.0	100.0	100.0	84.5	85.7	86.8	97.4	104.5	107.7	99.0	108.6	112.8
Ontario	80.0	80.0	80.0	80.0	104.0	90.9	94.3	86.8	94.7	102.3	92.3	91.4	91.4	98.3
Manitoba	68.0	80.0	88.0	100.0	108.0	90.9	94.3	92.1	100.0	97.7	100.0	101.7	101.7	101.7
Saskatchewan	76.0	80.0	80.0	84.0	100.0	75.8	85.7	92.1	105.3	102.3	96.2	96.6	103.4	112.1
Alberta	80.0	80.0	92.0	100.0	100.0	93.9	88.6	81.6	100.0	90.9	96.2	94.8	103.4	103.4
British Columbia	80.0	80.0	100.0	100.0	100.0	90.9	85.7	118.4	113.6	105.8	103.4	103.4	103.4	103.4

1 The adult rate prevailing at the end of the year is used.

SOURCE Compiled from data supplied by the Legislative Analysis Branch, Labour Canada.

3 Analytical Issues in Minimum Wage Literature

Constructing a general theory of minimum wages by way of a search for possible connections with minimum wage constraints in each and every labryinth of established economic analysis would be a formidable program. To avoid misunderstanding, we should point out straight away that our task here is confined to the more tractable one of providing a survey of the minimum wage literature. In such literature, of course, the minimum wage is the central, not an incidental, part of analysis. So, in this chapter, we shall focus upon those issues of economic analysis that have been taken to be important by minimum wage specialists. We shall bear in mind, nevertheless, that our terms of reference also invite us eventually to outline an agenda for further research. This will relate to existing research areas that seem to us to be incomplete, or to be quite new and promising areas. We believe that the best way to accomplish this joint task is gradually to make increasing use of these degrees of freedom as our literature survey unfolds. A more formal agenda will then follow, and this will recapitulate and develop the assessments and suggestions that emerge along the way in this and subsequent chapters.

In their survey of pre-1970 research, Peterson and Stewart (1969) concluded that there is an anti-theoretical bias among minimum wage advocates; and where they do use models they are non-predictive in theory and fact. Peterson and Stewart, themselves, start with the economists' methodology, a methodology that, according to Blaug (1975), has a direct connection with the work of Karl Popper. Popper, whose main innovation has been to shift the emphasis in analysis from verification to falsification, now views science as an "endless dialectic sequence of conjecture and refutations" (Blaug, 1975, p. 401). In parallel form, economists now emphasize a theory, deduced from assumptions, realistic or otherwise, that culminates in predictions that are *falsifiable*. And it is from this "positive economics" standpoint that Peterson and Stewart offered their criticism.

Such positive economics carefully avoids placing analytics and empirics into separate compartments. Instead, the emphasis is on their mutual dependence. But this attitude has a long history. Alfred Marshall, for instance, once declared:

> But I conceive no more calamitous notion than that abstract, or general, or 'theoretical' economics was economics 'proper.' ... General reasoning is essential, but a wide and thorough study of facts is equally essential... A combination of the two sides of the work is *alone* economics proper. Economic theory is, in my opinion, as mischievous an imposter when it claims to be economics proper as is mere crude unalysed history (as cited in Pigou, 1925, p. 84, note 5).

In accordance with the same approach our present economics chapter will avoid *exclusive* attention to theoretical models even though its title refers to "analytical issues." The discussion will constantly return to the theme of testing models with the empirical facts. Some empirical facts will be sampled from our next economics chapter to demonstrate the process of constant interaction. Similarly, although our next chapter is called Empirics, it is strictly a continuation of analysis in the sense described. The chapter, therefore, will

also move back and forth from facts to models, even though the balance of the chapter is taken up with the former. In doing so, we shall show how the process results in a constant revision and extension of the models themselves, and how, in turn, these improved models can indicate the need for still further facts to test them.

Items of analysis that have been regarded so far in the literature as most relevant, or important, include the effects of minimum wages on employment/unemployment, productivity, prices and wages (income distribution). The bulk of positive economic analysis, for data reasons, has hitherto been concentrated on the employment/unemployment effects. The present chapter will accordingly be taken up largely with them. But some space will also be devoted to productivity consequences, the distinction between micro and macro dimensions, and that between partial and general equilibrium. An examination of the less abundant literature on the analysis of price and wage effects will be provided in our next chapter.

As a final clarification, the major purpose of our work is not "to provide government policy makers with various theoretical frameworks for analysing minimum wage changes" (although they may derive such benefits). Modern positive economic analysis does not normally attempt to confine its findings to such limited groups. In any case, long-run policy makers extend beyond particular governments and range from opposition parties to voter-taxpayer citizens. But more important, an increasing part of the new literature on the economic analysis of minimum wages now regards the (self-interested) behaviour of government policy makers themselves as an important part of the phenomenon to be studied. Since our survey would be incomplete without a report on such published developments, we shall devote our last chapter to them.

The analytical issues selected for examination in this chapter will cover statics or the marginal productivity and the monopsony models; the shock effects of minimum wages; partial versus general equilibrium effects; and macro versus micro analysis.

STATIC THEORY

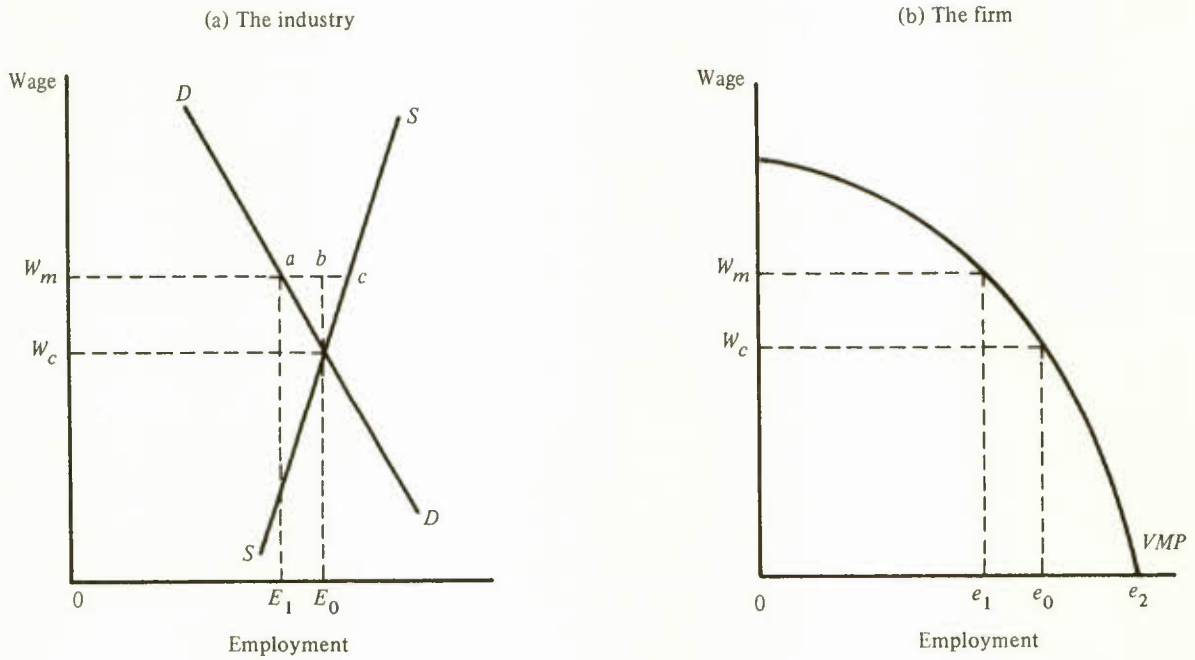
At first sight it may seem appealing to take minimum wage legislation as given and then simply look for theoretical implications throughout the economy, other things taken as constant. This approach, however, is not appropriate to positive economics. We need at least to make an experimental comparison between *two* worlds: one where minimum wages exist, and one which is the same in all respects except that minimum wages are *not* given. Our minimum need, in other words, is a study in *comparative* statics. But even then the facts in these two worlds will not speak for themselves; they have to be systematically arranged. The normal procedure is to apply models that can be falsified (or supported) by evidence. The first model assumes competitive markets; the second, imperfectly competitive markets. Much of the elementary economic analysis employed next will be familiar to most readers. A careful review of it is necessary, however, because some important steps are often overlooked in minimum wage discussion.

Competitive Markets

Competition is assumed to exist initially in two markets: the market for the product, and the market for inputs such as labour. A characteristic of such markets is the large number of participants in them, no one of whom, by his own actions in buying and selling more or less, can consciously influence the price of what is being purchased or sold. In the case of product competition, we assume large numbers of firms, and because each one cannot influence the price of the product, they are described as price takers. Similarly, on the input side, there are a large number of purchasers of factors of production. Each firm, as a purchaser, is thus a price taker in contracts for labour or any other factor of production.[1]

In the circumstances of competition in the product and input markets, the determination of the relevant prices entails the simple analysis of supply and demand. Figure 3-1 illustrates demand and supply for labour in one industry and shows how its price is determined in the conditions so far described.

Figure 3-1
Wage Determination in a Competitive Market



In Figure 3-1a, the market demand curve for labour is *DD* and the market supply curve is *SS*. Their intersection determines the competitive wage, W_c at employment E_0. At any other wage, there would be forces of excess supply or excess demand forcing the wage lower or higher respectively. If, for instance, the attempted wage was W_m, there would be an excess supply of *ac*. If we assume that the horizontal axis measures the number of workers (as distinct from the number of hours worked), then *ac* represents the number of workers who would like to be employed in this industry but cannot secure jobs at wage W_m. Because there is free entry, by assumption, such workers will begin to price themselves into this labour market by offering wages lower than W_m. As wages begin to fall, we contract leftwards along the supply curve from *c* and expand downwards and rightwards on the demand curve from *a*. Only at wage W_c will the excess supply, and its tendency to cause undercutting of wages, fall to zero. The textbook intersection of the market demand curve and the upward-sloping supply curve of labour to this market thus determines the equilibrium wage and the total number of workers employed.

Figure 3-1b shows the simultaneous position of one of the firms in the industry. (The horizontal scale in 3-1b is a fraction of that in 3-1a.) The wage, having been determined at the industry level at W_c has to be taken as given by the firm; that is, the firm is a price taker for this input. It can purchase as many workers as it wants at the constant wage W_c. The line running horizontal from W_c in Figure 3-1b is both the marginal wage and the average wage. The profit-maximizing firm will hire e_0 workers. This level of employment is determined by the intersection of the marginal wage, W_c with the downward-sloping curve

showing the value of the marginal product of the worker (*VMP*). Wages and the marginal product are both measured on the vertical axis of Figure 3-1(b). The marginal product itself is usually expressed in physical terms such as pounds, gallons, or other output units. In Figure 3-1b, we express the marginal product, in value terms; that is, we multiply the physical quantities (pounds, gallons, and so on) by the price of such output per unit. The output price is determined in the market and is conventionally taken as datum by each firm. The aggregate output of all firms in the industry, of course, influences price (through supply), but each firm separately is assumed not to have any *perceptible* influence.

The firm will not use more workers than e_0 because beyond this point the wage paid to hire another man exceeds the value of his product. (Profits will be reduced unecessarily.) Similarly, the firm will not use less workers than e_0 because the value of the marginal product will exceed the amount of money the firm has to pay to hire the labour unit. (Further profits can be made so long as *VMP* exceeds the cost of labour, W_O.)

It will be seen from Figure 3-1 that if the law now fixes the wage at W_m, the numbers of workers employed in both the industry and the firm will fall (from E_0 to E_1 in the industry and from e_0 to e_1 in the firm). If the law covers all industries and occupations, there will be no alternative jobs available and aggregate disemployment will result.

The conventional diagram in Figure 3-1 neglects fringe benefits. In practice, many industries provide non-pecuniary rewards connected with the job such as the opportunity for on-the-job training. A minimum wage will force employers to substitute pecuniary for non-pecuniary rewards. The low-skilled young workers' alternatives then become either jobs without growth or more formal schooling.

After non-pecuniary benefits have been reduced as much as possible, the only remaining adjustment to a minimum wage available to the firm and industry is as described previously — a reduction in the numbers employed. This outcome is a direct consequence of the downward slope in each industry's demand curve for labour and in each firm's *VMP* curve. (The two types of curves are related because the demand curve for labour in Figure 3-1 is obtained by summing the *VMP* or demand curves of all the firms in the labour market horizontally.) The downward slope is so central to minimum wage discussion that a recapitulation of the standard classroom theory may be helpful.

The downward slope of the firm's *VMP* curve in the short run is a direct consequence of two things: first, the law of variable proportions (or diminishing returns); second, the fall of the price of the product when more of it is supplied. (The firm is one of many similar ones so the total or aggregate supply increase will be sufficient to lower the market price.)

To explain diminishing returns, we need to refer to Figure 3-2. On the horizontal axis are measured man-hours of homogeneous labour per period of time. The vertical axis measures units of capital services such as machine-hours. Output per time period is measured perpendicularly above the plane defined by the axes. All points on the isoquant Q_1 represent a constant output of, say, 100 tons, even though the input mix of capital and labour is different at each point. All points on isoquant Q_3 are greater than all points on Q_1 by 100 tons. Similarly, any given point on Q_3 measures the same output (namely 200 tons) as any other point even though the input mix is different at each point. The diagram is drawn on the assumption of constant returns to scale.

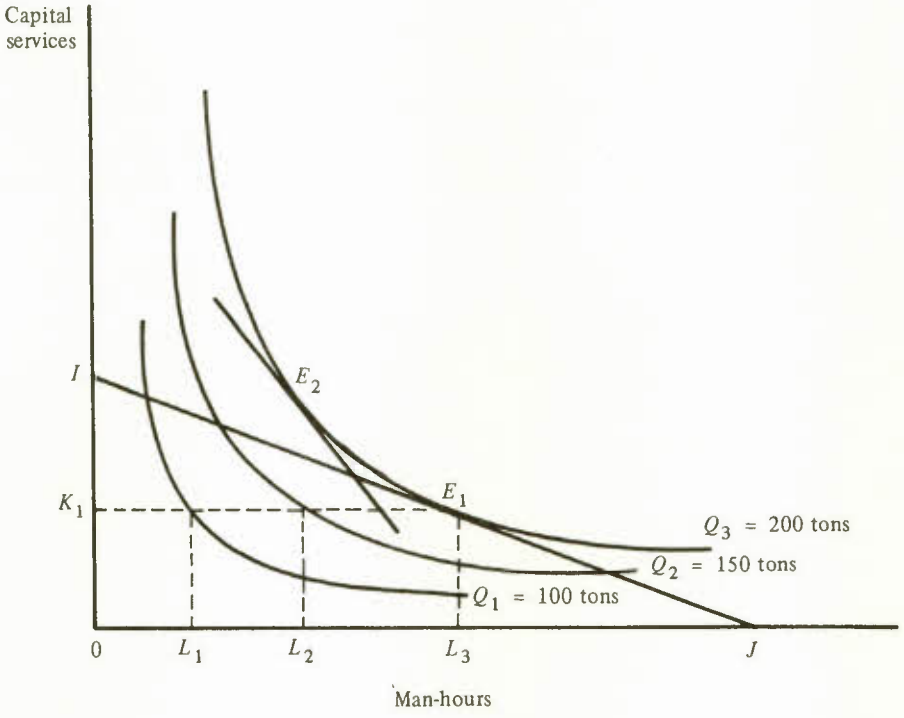
The isoquants are convex to the origin because of diminishing marginal rate of substitution in production between labour and capital. The higher the proportion of capital in the input mix, the more of it one would have to add to make up for the loss of one unit of labour if output is to remain the same.

Consider next a fixed quantity of capital K_1 in Figure 3-2. As we add labour to this fixed capital, we would move to the right from K_1, rising higher up the output plane as we cross successive isoquants. But for each equal increment of height in the output plane in order to reach each new isoquant 50 tons higher than

the previous one, the firm requires successively increasing increments of labour. Thus, the extra labour L_2L_3 needed to cause total product to increase from 150 to 200 tons is greater than L_1L_2 which was needed for the previous increment of 50 tons. Conversely, an *equal* increment of labour yields successively smaller increments of production. This last formulation translates into the type of short-run (declining) marginal product schedule shown in Figure 3-1b. Such schedules are short run because one factor, usually capital, is assumed fixed (as in our example of K_1 in Figure 3-2).

Figure 3-2

A Production Function of Two Factors



In the long run, we shall assume, initially, that technology is constant but that the quantity of capital services can be varied. Assume there is a fixed production budget which, if spent entirely on capital services, would purchase $0I$ of those services in Figure 3-2. If the budget were spent entirely on labour it would purchase $0J$ man-hours. In practice, the budget is normally split between these two factors. The firm may choose any combination of factors that is consistent with a given point on the budget constraint line IJ. The slope of this line is determined by the ratio of the price of labour services to the price of capital services. In the long run, the firm will obtain the greatest output from its fixed budget at point E_1 where the budget opportunity line is tangent with isoquant Q_3. Alternatively, point E_1 represents the minimum cost of producing 200 tons.

Suppose next the price of labour is increased, but that this change is compensated by an increased budget to allow the same output as before. The new budget constraint line would now be steeper than before and would be tangent to Q_3 to the left at, say, E_2 where labour is reduced to L_2. Capital is thus substituted for labour through changes in the amount and kind of equipment. In turn, this means that the long-run demand

curve for labour must be more elastic. The demand curve for labour (*DD* in Figure 3-1), in other words, will still slope downwards but at a smaller rate. The disemployment effect (the distance between *a* and *b* in Figure 3-1) will consequently be larger in the long run.

Next, we may assume that, in the still longer run, the technology embodied in the production function can change. New efforts will be made to devise technologies that save the scarcest or most costly inputs. In our example of the rise in the relative cost of labour, there will be incentive to provide more labour-saving techniques. To the extent that this succeeds, the demand for labour will be still more elastic.

The consistent finding in both short-run and long-run analysis that the demand curve will slope downwards has an important consequence in the context of minimum wage analysis. We emphasized earlier that positive economic attempts to devise models that offer predictions may be falsified (refuted) by the evidence. An unambiguous prediction may now be derived from the competitive model so far developed.

Refer once more to Figure 3-1a. The intersection of the demand and supply curve determines the competitive wage W_c at employment E_0. If a legal minimum wage is set at W_m, this model predicts that there will be a reduction in the number of jobs in this industry. (We initially assume only partial minimum wage coverage — that is, the legal minimum has not yet been imposed on other industries.) In the diagram this reduction is from *b* to *a* (= E_0 to E_1). The basic reason, a downward-sloped demand curve, has now been fully explained.

The competitive-market model therefore unambiguously implies *disemployment* (to the extent just shown). But it also implies *unemployment* in the sense of a supply-demand gap — here to the extent of *ac*. But one cannot conclude that the result is an increase of *statistically reported* unemployment of *ac*. This total excess supply certainly includes workers who would like to work in this, the covered labour market, at the new wage but who do not succeed because there are no vacancies. But it need not follow that, while searching for employment in this industry, they are obliged to leave other jobs; it is possible to search for one job while being employed in another.[2] We shall see accordingly that modern econometric investigators usually prefer measures of *disemployment* to those of unemployment. The disemployment effect of *ab* in Figure 3-1 meanwhile, could come from changes in the numbers of workers employed by each firm, and also from a reduction in the number of firms in the industry.

Thus we have produced in outline the first of several models that economists apply in the minimum wage context. It is a model that has culminated in predictions that are falsifiable and thus meets the requirements of modern positive economics. This is not to say that the remaining task of testing the model with the evidence is an easy one. As we shall see, there are some difficult data problems. Nevertheless, such problems have to be faced and, meanwhile, we have reached the first stage of *scientific* enquiry.

It has been pointed out by Rees (1973, p. 58) that the marginal productivity theory of the demand for labour that we have just outlined has been severely attacked by institutional labour economists. Nevertheless,

> It survives the attacks both because the critics have often misunderstood it and because they have conspicuously failed to develop a coherent alternative theory to put in its place.

The critics have often asserted that in the short run, capital-labour ratios are fixed by technology. This means that the short run marginal product schedule is discontinuous — as is the short-run demand curve for labour. The consequence is that raising wages will *not* reduce employment. Such situations are dismissed as unrealistic by Fortin (1978, p. 19). One should note that, even if the capital-labour is fixed within one industry, so long as it differs across industries, an increase in wages will reduce demand for labour because higher product prices in the labour-intensive industries will lower the demand by consumers.

Some believe the competitive labour market model is refuted when there is an *increasing* number of jobs in the industries concerned, following minimum wage legislation. But in an industry in which employment

has been expanding rapidly, one would not necessarily expect a reduction in employment to result from a minimum wage. In these circumstances, the model simply predicts a smaller growth of employment in those areas or firms most affected by the legislation.

Another form of criticism is that which dismisses the perfect competition model on the grounds that it is based on unrealistic assumptions. Thus Aykroyd (1976, p. 31) raises the importance of what he calls "institutional factors" on the grounds that "...product and labour markets rarely, if ever, approach the theoretical ideal of perfect competition." Writers such as Peterson and Stewart would reply that it is the predictability of the model rather than the "realisms of the assumptions" that is the crucial test. But other economists would deduce from Aykroyd's criticism simply that in the real world competition is imperfect. From this, they would turn, not to institutional factors, but to alternative models that are based on the *imperfect* competition assumption. It will be helpful next to outline the alternatives.

Non-Competitive Markets

Imperfection in competition can come on the side of product markets, input markets, or both. We shall start by dropping the assumption of perfect competition in product markets.

Refer again to the *VMP* curve of Figure 3-1b. We showed that points on this curve represent the marginal physical product times the price of the product. This is sometimes called marginal revenue product. In imperfect competition the marginal revenue product, however, is not equal to the *VMP*. This is because in imperfectly competitive product markets marginal revenue is always less than price. As it employs more labour the firm must now lower its product price to sell the additional output. It is true that the last unit produced will obtain the new market price, but to obtain the net marginal revenue we must deduct the damage done to the prices of all the previous units produced. Since, therefore, in imperfect competition marginal revenue is always less than price, it will fall more rapidly than the value of marginal product as employment is increased. This is illustrated in Figure 3-3. In this diagram, the profit maximizing entrepreneur will hire labour up to the point where the *MRP* curve cuts the wage W_0. This results in an employment of eo_m. He would not employ beyond this point because the wage bill would be increased by more than the increase in total revenue. Labour will still receive a wage equal to its marginal value to the firm, but fewer workers will be employed than in the case of the competitive product market associated in Figure 3-3 with employment of eo_c.

So far, we have been assuming that the firm in the non-competitive product market is a price taker in the labour market. Suppose now a minimum wage was introduced. This is shown as W_m. The consequence is again a reduction in employment, this time from eo_m to eo_{m2}. This model, therefore, predicts the same direction of effect on employment as does our previous case where all markets were assumed to be competitive. It is for this reason that Rees (1973, p. 75) argues that it is more interesting to keep the assumption of competition in product markets and abandon the assumption of competition in the labour market.

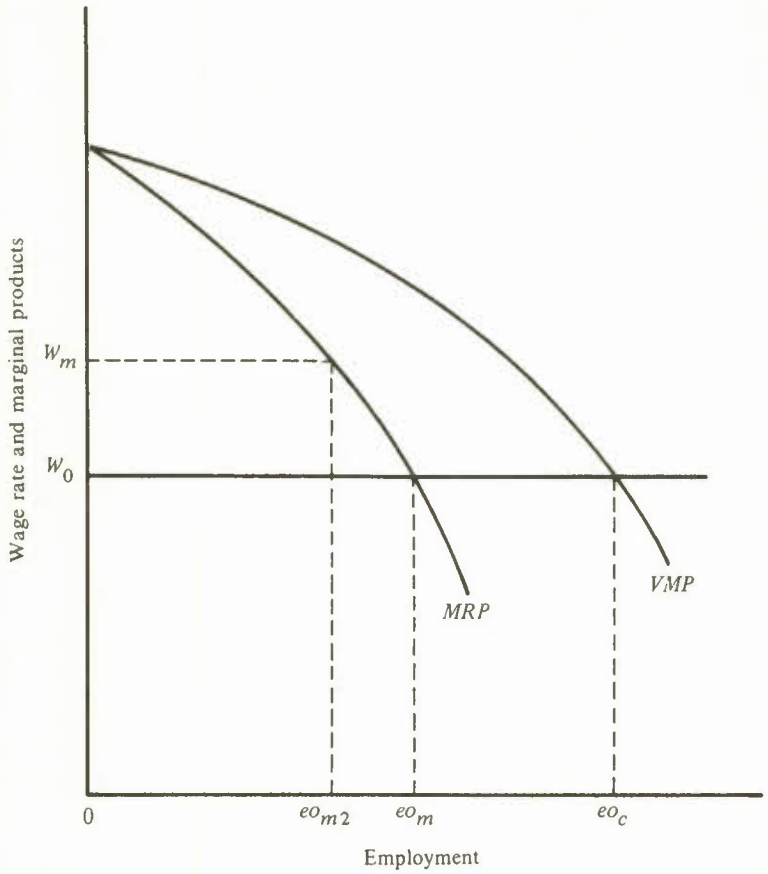
Just as a monopolist faces a downward-sloping demand curve for his product rather than a price set in a competitive product market, the firm that experiences imperfect competition in the labour market faces an upward-sloping supply curve of labour. This, of course, is the textbook case of *monopsony*. And again, although familiar in basic outline to most readers, a brief review will eventually enable us to establish some of the minimum wage analysis with the necessary precision.

Whereas, in a competitive labour market, the marginal wage is equal to the average wage and both appear as the same horizontal line, in the case of monopsony, shown in Figure 3-4, they each slope upwards, and at different rates. The slope of the marginal wage *MW* is steeper because, if the firm wants to obtain

more labour, it has to raise wages, not only for the additional workers but also for the preceding ones. Maximization of profits occurs when MW is equal to the marginal revenue product of labour (MRP). OA men will be employed at a wage of OW.

Figure 3-3

The Demand for Labour in a Non-Competitive Product Market



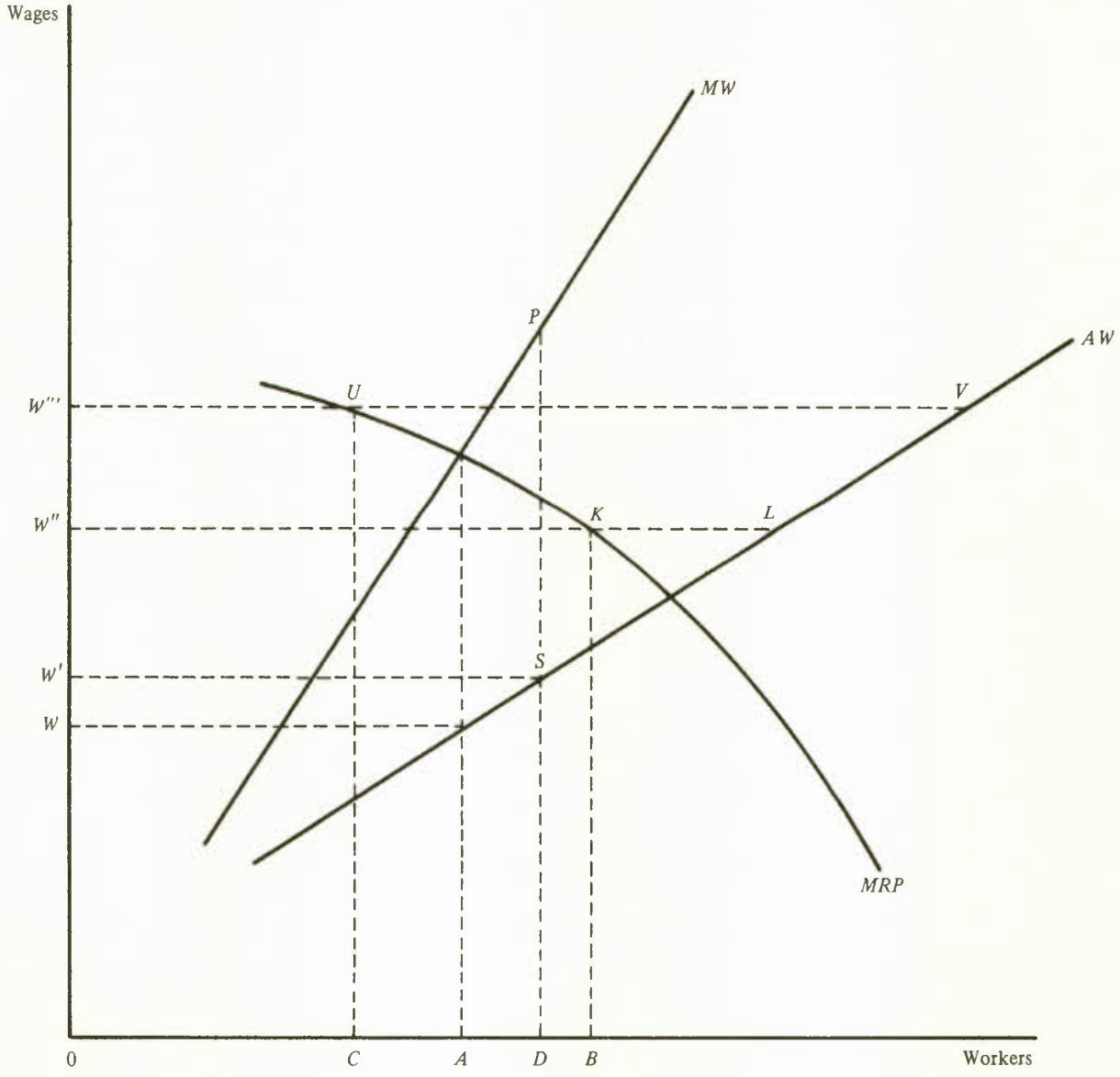
If a relatively low minimum wage of OW' is set in this firm exclusively (partial coverage), the new wage line will be $W'SAW$. The marginal and average are now equal up to point S since over this range the same wage OW' has to be paid, however many are employed. At this relatively low minimum, the firm would want to employ the quantity associated with the point S because the marginal cost of employing labour continues rightward from this point along the MW curve from point P (there is a vertical discontinuity). This minimum wage, therefore, causes an increase of employment (of AD) and no unemployment because OD workers would be supplied, as well as demanded, at this wage.

If the minimum were set higher, at W'', there would again be increased employment (to OB) but also increased *unemployment* in the sense of an excess of supply (KL).

Finally, a still higher wage of W''' would lead to *disemployment* (of CA) and *unemployment* (in the above sense) represented by the gap UV. So much for the classroom example.

Figure 3-4

Wage Determination in a Non-Competitive Labour Market



Considering that models should be falsifiable, the question now arises, with what evidence can we test for the possible situations in Figure 3-4?[3] Clearly the monopsony model, as outlined, is consistent with a variety of outcomes.

At wage OW' there is an unambiguous expansion of employment (the number of jobs) and no unemployment. This would be a *favorable* effect. But at OW'' there is both expanded employment and unemployment shown as an excess supply of labour of KL.[4] At the higher minimum wage of W''' the prediction is the same as the competitive model. Clearly a crucial variable in testing whether actual minimum wages have the *favourable* effects mentioned above is the number of extra jobs created (the impact on *employment*).

In short, we have outlined two models that can be used scientifically, that is, that can be directly tested by evidence. If the evidence shows that minimum wages, or increases in them, are followed by a *reduction* of employment (or a failure to increase), then the competitive model has not been refuted. Conversely, if the evidence shows that significant employment *expansion* follows minimum wages, or increases in them, it would be consistent with the monopsony model. At this stage, we may, as promised, sample our evidence from the next chapter and apply it immediately in keeping with the earlier emphasis of Marshall and others that analysis and the facts should never be far apart.

As we show in the next chapter, there is available both econometric and non-econometric (or survey) evidence. Our preference, like that of most economists, for econometric work will be argued in the next chapter. Here we report in Table 3-1 the more important post-1970 econometric studies of the employment effects of minimum wages. For reasons already explained, we have excluded from the table those studies measuring exclusively the effects on *unemployment*. The results reported in Table 3-1 represent the general findings of the cited studies and refer to the statistically significant effects on *broad cohorts* (e.g., teenagers or young adults taken as a whole).

Table 3-1

Survey of Employment Effects of Minimum Wage Revisions

Author (date)	Employment increased	No significant effect	Significant reduction in employment
Kaitz (1970)		√	√
Kosters and Welch (1972)			√
Katz (1973)			√
King (1974)			√
Welch (1974)			√
Kelly (1976)		√	√
Mincer (1976)			√
Gramlich (1976)		√	√
Siskind (1977)		√	
Welch (1977)			√
Ragan (1977)			√
Welch and Cunningham (1978)			√
Swidinsky (1978) (Canadian)			√

Notes:

1 Table 3-1 relates to effects on employment. Figures for unemployment are ambiguous because they are influenced by both the participation rate and the demand for labour. Thus we have not included those studies which report unemployment effects only. Such studies included Adie (1973) and Moore (1971). They found statistically significant adverse impact. Kaitz (1970) and Lovell (1972), using a similar measure, found no adverse impact.

2 Kaitz (1970) studied both the employment and unemployment effects. We have omitted his result concerning unemployment (see note 1), but have included his employment results because these are less ambiguous. We have ignored the result of Kaitz's study using annual data. This will be discussed in the Empirics chapter.

3 Details of results:

Kaitz – found the employment effect to be negative and statistically significant for whites except females 18-19 (not significant) and insignificant for non-whites except males 18-19 (positive and significant).

Kelly – employment effect is negative and statistically significant in three of four cases—insignificant and positive in the fourth.

Gramlich – teenagers experienced a reduction in full-time and an increase in part-time employment; adult males experienced a reduction in full-time employment.

Ragan – employment impact was negative and generally statistically significant for teenage males; mixed but largely insignificant effects for teenage females.

4 Siskind's results are presented in a comment in Welch's (1974) work, in which he argues that Welch erred in his use of unpublished B.L.S. data. Siskind reworked Welch's study with the corrected data and argues that Welch's finding of a statistically significant disemployment effect are disproved. Welch (1977) responded by performing his own re-estimation by industry class and supports his view that minimum wages cause adverse employment effects.

Nine of the 13 studies report unambiguous and statistically significant reductions in employment, one finds no significant effects, three show mixed results, while none reports significant increases in employment. By "mixed results," we mean significant disemployment was found for some groups investigated and insignificant disemployment for others. Typically, the former outnumbered the latter — as we shall show in detail in the next chapter. The competitive labour market model is thus not refuted. This provides the analytical support to a proposition that is widely argued on purely *descriptive* grounds (see below).

The facts in Table 3-1 should next be employed as a test for the possibility that actual minimum wages favourably offset monopsony restrictions on employment. This possibility, based on Figure 3-4, is that *expansion* of employment *can* be achieved by a minimum wage policy where monopsony is present. Table 3-1 contains no empirical findings of expanded employment.

The evidence presented in Table 3-1 does not strictly refute the existence of monopsony power in the labour market. It is possible that the minimum wage revisions have been too large for optimum counterbalancing of monopsony situations. Thus where the minimum is raised to OW''' in Figure 3-4, the model predicts the same of the competitive model — a decrease in jobs. Here the decrease is from OA to OC.[5] The fact remains, meanwhile, that policy makers do not have post-1970 econometric evidence to refute the existence of competitive labour markets.

One further observation on the analysis — to be developed in the next chapter — will be helpful. In our models, we have assumed that long-run labour supply schedules (curves labelled AW) are upward sloping. This is consistent with what is called "the encouraged worker effect" where the size of the labour force (the participation rate) varies positively with the wage rate. In so far as high minimum wages affect workers' expectations in a certain way, the fuller theory allows for the possibility of "*discouraged* worker effects." As we shall show, these appear to account for a considerable amount of the disemployment that occurs after minimum wage legislation.

The inability of the Canadian and American econometric evidence to validate the monopsony hypothesis is supported by casual inspection of the types of individuals covered by the legislation. These include barbers, taxi-drivers, waitresses, bartenders, laundry workers, beauty parlour employees, sales clerks in retail stores, and students. In these trades, the individual typically has more than one employer to choose from. And it is not obvious that the employer has to put wages up to get more labour, as does the monopsonist.

While, to repeat, the main test of the presence of competition on the labour market is the conformity of the evidence with the prediction of the model, it is interesting to find in the literature a frequent emphasis on the *description* of the trades affected by minimum wages as being competitive (Fortin, 1978, p. 11; Bunting, 1958; Brozen and Friedman, 1966). Where there is competition in the product market, there are large numbers of firms. This means the choice of employers will be wide. The larger the number of employers, the more difficult it is for them to collude (Rees, 1973, p. 79). Robinson (1969, p. 227), the inventor of the term 'monopsony,' acknowledged the same point: "The most important cases of monopsony will occur in connection with monopoly." Finally, there is the same conclusion in the 1968 Research Committee Report of the Canadian Association of Administrators of Labour Legislation (CAALL):

> In both Canada and the United States, the low wage industries are for the most part highly competitive ones. The firms in question are likely to be relatively small, to have high labour to capital ratios and, in many cases, to be non-union. This situation is particularly characteristic of the service industries, but it is also an important consideration in manufacturing, especially in sawmills, garments, food processing and some others. In these circumstances, management does not have the latitude for adjustment that may be available to those *having some form of monopoly power to exploit* or having to take a collective agreement into account (CAALL, 1968, p. 55, emphasis added).

Before we leave this review of the predictions of different market models when minimum wages are superimposed, it may be helpful to examine the meaning of a phrase that is frequently employed by

minimum wage advocates — "the need for protection." In a memorandum of 28 November 1973, from the federal minister of Labour to the Cabinet, it was stated that "one of the objectives of federal and provincial minimum wage laws is to extend protection to those categories of wage earners who are generally unorganized and are least able to protect themselves through collective bargaining." Labour Minister John Munro subsequently argued the same, and at greater length (Munro, 1977, p. 347).

But as has just been indicated, the econometric evidence does not yet support the idea that monopsony is the typical labour market structure in those trades likely to be affected by minimum wage laws. Indeed, it typically indicates that the legislation hitherto has caused disemployment. On the basis of such testimony, the argument that minimum wage laws afford unambiguous "protection" is untenable.

At the same time, it cannot be concluded *a priori* that a minimum wage law will be regarded by policy makers as undesirable — even if competitive conditions exist and disemployment results. "The gain in income to the remaining workers in the covered industries could be considered important enough to offset the losses to those who lose their jobs, particularly if some alternative source of income (including transfer payments) was available to workers" (Rees, 1973, p. 68). We shall return to this kind of proposition in our chapters on policy and politics.

SHOCK EFFECT

Some of the dynamic effects of minimum wages will be examined in our later review of the problems of measuring statistically the impact of legislation. Here we shall concentrate on what can also be treated as part of dynamic analysis, the proposition that there could be favourable effects upon managerial efficiency from the shock that higher wages could bring. The shock theory of minimum wages appears to be a common theme in research papers prepared for Canadian government departments. Recently, it has received special attention in Dhruvarajan (1974), Donner and Lazar (1975), Zaidi (1970), Lederer (1973) and Canada Department of Labour (1974). It has been subjected to the most critical analysis in Fortin (1978, p. 17), Baril (1975, p. 28), and West (1972, p. 14).

Some writers appear to interpret the shock to be simply an encouragement to management to employ more capital. But it is not clear why, in partial equilibrium analysis, there is a need for such a special term to describe this consequence, for it is predictable from conventional economic theory (see, for example, Rees, 1973, pp. 68, 83) as an ordinary case of long-run factor substitution following a change in relative factor prices.

The more legitimate variant of the shock theory does more than predict simple substitution into capital (in the static sense of a movement along a given isoquant). In this case, the shock results in an upward shift in the productivity of all factors. In the extreme terms of Figure 3-2, the introduction of minimum wages could, by itself, shift production from an existing isoquant Q_1 (producing, for example, 100 tons) to Q_2 (producing 150 tons at all points). One of the most common reasons to explain this phenomenon is given, for example, in Lederer (1973) who argues that "to the extent that management was not fully extended previously, the better supervision and control of workers can induce higher productivity" (p. 3).

Rees (1973, p. 83) agrees that a large *initial* wage increase "could well inspire management to re-examine its methods and procedures with some care." However, "it is much harder to imagine repeated waves of successful innovation in response to annual wage increases... Such negotiated wage increases will themselves become routine, and a complacent organization can deal inefficiently with them as well as with other aspects of its activity."

In his study of the effect of minimum wages in Quebec, Fortin (1978, p. 17) argues that, *for a given production level*, it is unrealistic to expect that the shock will cause an improvement in productivity sufficient to outweigh the increase in costs so that no reduction in employment is involved.

West (1972) observes that in so far as the shock works, it stems from a government-administered rise in input costs. On this logic, other government policies, such as a discriminatory tax on profits or raw materials, could accomplish the same task. He also maintains that, where there is competition, firms are always subject to the natural shocks of lowered costs from new entrants. It is interesting, meanwhile, that the argument that the shock of continual squeezes on profits will provoke managers into recovering (cost-cutting) action is in direct contrast to the usual government case for tariffs to protect against foreign competition. The case of textiles and clothing industries are good examples. These industries consist of many small firms and employ a considerable number of workers at the minimum wage. If one argues that protection is needed against the shock of overseas competition, it is difficult to hold that the shock of increased labour costs is simultaneously beneficial and self-correcting.

The Theory of X-Inefficiency

Consider next the proposition that shocks may be effective in the presence of what Professor Harvey Leibenstein has called X-inefficiency. Although this particular argument has not so far appeared in the minimum wage literature, it seems to be implicit in many of the versions of the shock theory of minimum wages that now prevail.

In his most recent writing, Leibenstein (1978, p. 328) has described as follows the basic proposition of his theory:

> Suppose a multiperson firm is given the following option: to produce X-units for which it is offered successively larger budgets B_0, B_1,...,B_n ($B_0 < B_1 < \ldots < B_n$) plus a fixed profit. The firm is free to return any portion of the budget. What size budget will it choose? What happens to cost per unit as B increases? I believe that the best answer is that the firm would probably choose B_n, and cost per unit will increase in proportion to the increase in B. There is no benefit to returning any of the budget. Keeping it gives firm members more elbow room, since it would allow them to choose to work less hard or harder, give less attention to details or more attention, choose their own good time, rather than to feel pressured by time, etc.... We would not expect such a firm to minimize cost per unit, that is, to choose the lowest possible budget.

In the present context, we would want to know whether those organizations that receive the most impact from minimum wage laws fit the above picture of high cost firms where X-inefficiency is present. Leibenstein appears to supply an important answer in his next sentence. "This suggests that under parallel circumstances firms will not minimize costs for a given output *unless competition or environmental elements force them to do so*" (1978, p. 328, emphasis added). Since we have already cited a consensus and supporting evidence that the firms most affected by minimum wages typically operate under strong competition, this would appear to reduce the relevance of the "X-inefficiency argument" to the shock theory of minimum wages.

In his concluding remarks, Leibenstein (p. 332) suggests more specifically where his theory might be applied:

1. In the case of regulated monopolies;
2. The non-private sector, where adding funds need not add output proportionally, or add output at all;
3. Health services under a health insurance scheme;
4. Municipal services, where the passing on of costs to the taxpayer may yield very high costs per unit of service.

As already explained, the first category does not typify the minimum wage-intensive sectors. Similarly, the non-private and municipal sectors employ only a small proportion of workers at the minimum wage. Apart from this, it is not clear that the shock of a minimum wage or an increase in the minimum would automatically result in cost reductions; for, in the non-private sectors, it is difficult to speak of a profit motive, and organizations are not allowed to go bankrupt. With respect to health services, Leibenstein explains that in this category "managers of health firms simply pass on higher costs to insurees." But if this is so, then presumably they will also pass on the cost of higher minimum wages and be immune to any pressure to improve efficiency.

Institutionalist participants in minimum wage discussions appear often to find difficulty in accepting that many firms in a competitive industry are operating efficiently when they are experiencing what is believed to be subnormal profits, high labour costs as a proportion of total costs, unskilled workers, and smaller-than-average size. There seems, however, to be no method of obtaining a measure of normal or subnormal profits except by observing the profits of those competitive firms who survive. So either the firms in question are in process of leaving the market, in which case the market shocks are already weeding out the inefficient or, if the firms are managing to survive, then, by definition, they are earning at least normal profits. Neither is it permissible to argue that a firm is inefficient if it is below average size or above average in labour intensity. Only if entrepreneurs and workers were homonegeous could we expect *one* optimum size and one common degree of labour intensity.

The liquidation of some firms after a minimum wage introduction (or increase) is not automatic proof, therefore, of the success of the shock theory. Before the introduction of the minimum wage, the firms in question may have been competing, in the product market, with firms in other labour markets paying wages higher than the minimum wage for superior labour. "The minimum wage would then raise wages in the low-wage market without improving the quality of its labor. If the firms in question had been competing on even terms before the minimum wage law, they would now be at a disadvantage and might have to move out of the local labor market or go out of business" (Rees, 1973, p. 68).

The shock theory, in general terms, boils down to the proposition that if agent group B (for example, management) is allowed to squeeze the rewards of agent group A (for example, non-management), the latter will be prodded into greater effort. It is not obvious, however, that the proposition is not reversible — that is, that it could not be written so as to present group A as the "squeezer" of group B's income, and this also in the pursuit of greater effort. If this is the case, the ultimate policy implications might be ambiguous.

Some Canadian authors indeed acknowledge that desirable shocks from minimum wages *can* also be applied to the side of labour. Yet no writer has been led to recommend a *freeze or reduction* in wages.[6] Donner and Lazar (1975) argue simply that a higher minimum wage "could motivate workers to such an extent that they will be more satisfied with their jobs and they will be willing to put in a greater effort on their jobs..." (p. 20).

Dhruvarajan (1974) argues that a significant wage increase may have the consequence that "labour may be motivated into working harder for fear of being laid off if their productivity did not increase; the increased wages may provide the employer with the basis for insisting on greater efficiency from his employee" (p. 51). But clearly the extra utility obtained from higher money wages may be offset by the disutility caused by the new fear.

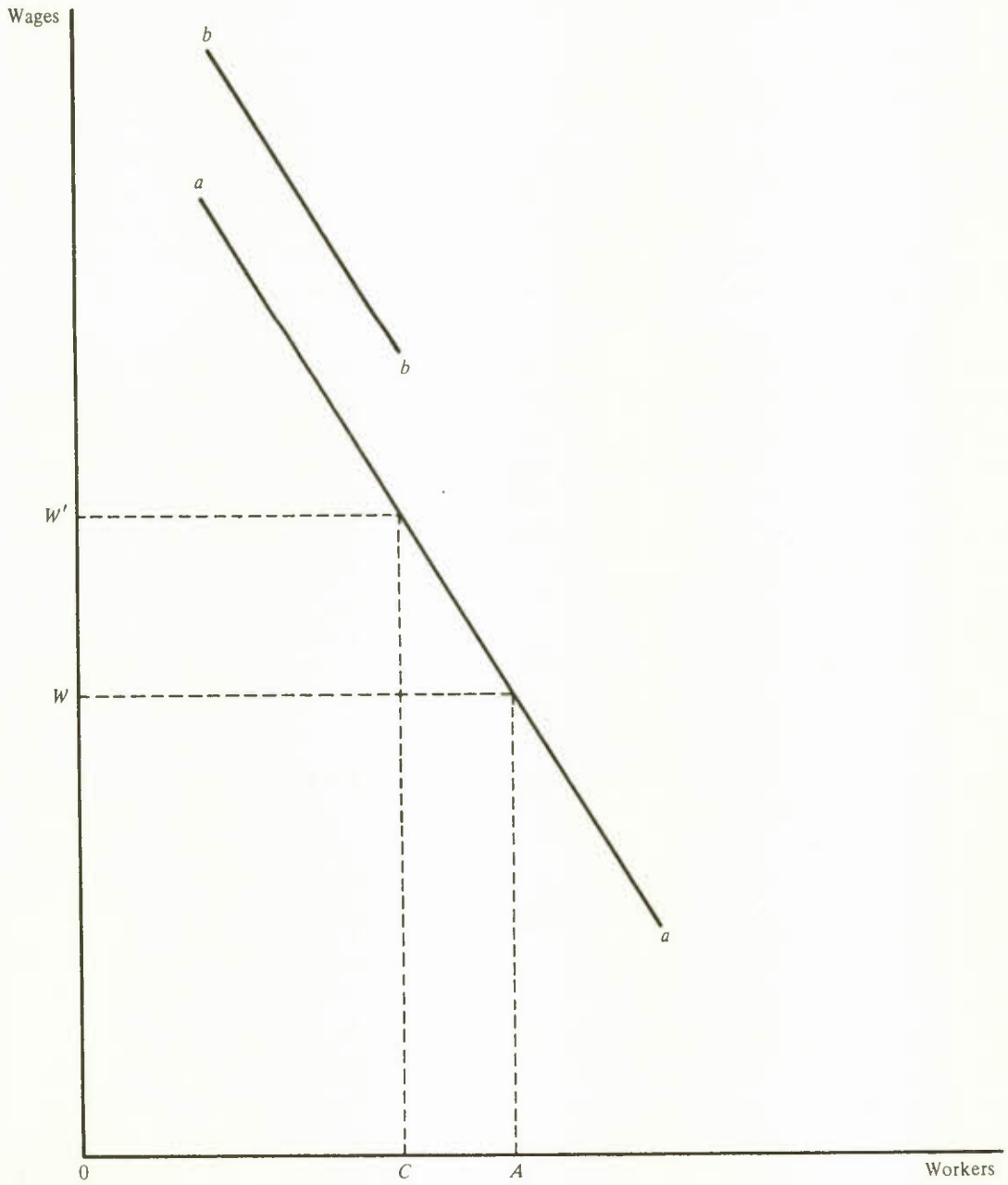
A clearer argument, suggesting how improved motivation of workers might be effected, goes back to the nineteenth-century high-wage economy theory of Webb and Webb, outlined in their book *Industrial Democracy* (1897). This theory, in effect reversed the usual functional relationships between wages and productivity. Whereas the marginal product theory now argues that wages are a function of the marginal product ($w = f(MP_N)$), instead the marginal product of workers was argued by the Webbs to be a direct function of wages ($MP_N = f(w)$). The argument was that wage increases improved labour productivity by

allowing labour to be healthier, happier, and better fed. Conversely, a wage decrease would lower worker's efficiency (Webb, 1912).

Consider Figure 3-5. The original wage is W and the numbers employed, OA. A legislated minimum wage of W' would cause CA to be dismissed.

Figure 3-5

The Relationship between Labour Productivity and Wage Levels



The result is the emergence of two groups: *OC* and *CA*. The former who enjoy the wage of OW' will also, after a lag, increase their productivity as is reflected in demand curve *bb*. With this increased demand curve, the favoured workers will eventually enjoy a wage higher than W' because of competition between employers for a restricted amount (*OC*) of more efficient workers. The dismissed workers, *CA*, will presumably be even less productive than they were originally, since they will have experienced unemployment or a move to still lower-paid occupations (Bronfenbrenner, 1943).

It is now believed (Rees, 1973, p. 80: Hicks, 1963, p. 97) that the theory that higher wages increase productivity could only apply realistically to underdeveloped economies. In developed economies, increased wages after a point could have tendencies in either direction. "At first, indeed, while he [the worker] is becoming accustomed to a new standard of living, much of the increase may be wasted, spent upon commodities with a merely meretricious attraction..." (Hicks, 1963, p. 209).

In one sense, Webb's theory of increased labour output following increased inputs into the quality of labour itself translates into the modern idea of an investment in human capital. But then the question arises, why, if such investment pays off, employers themselves will not take the initiative to increase wages sufficiently to obtain the necessary investment, for the investment will have favourable repercussions on profit. Becker (1964) argues that, in some circumstances and where skills are firm specific, this could occur. One should note that in so far as firms compete for *potential* trainees there is no monopsonistic exploitation. The situation is more akin to a bilateral monopoly. Employers and workers will share in investment costs. And although the ultimate wage will not be precisely determinate it will exceed alternative wages elsewhere.

Feldstein (1972), however, has argued that, under the right circumstances, and even in competitive product and labour market conditions, workers of very low incomes will be led to invest in their own human capital so as to increase their marginal productivities. But the circumstances when this result is *least* likely are those in which governments have intervened to fix a minimum wage. Because of minimum wage laws, firms cannot afford to offer useful on-the-job training to a broad class of young employees. "A firm can generally provide the opportunity to acquire new marketing skills — by on-the-job training, detailed supervision, or even just through learning by experience — only to a worker whose net product during the period of training is at least equal to his wage" (p. 22). With minimum wage laws, the net product of such workers having training may be much lower than the wage; and this means that the employer will not offer the training. Young individuals, therefore, especially those with only little education, are thus prevented by the minimum wage law from "buying" on-the-job training by taking a very low wage for a year or so. The shock effect of minimum wages in Feldstein's treatment is thus to *reduce* efficiency.

All of the arguments on the shock theory, so far reviewed, have been conjectural. To return to an earlier point, the persuasiveness of a theory is positively related to its own predictive powers and its ability to lend itself to empirical refutation (or support). In so far as minimum wages (or increases thereof) do cause self-compensating shocks, the evidence should show no adverse employment effects. The evidence in Table 3-1, therefore, appears to be as unsupportive of the shock theory as it is of the imperfect labour market model in areas where minimum wages apply.

PARTIAL VERSUS GENERAL EQUILIBRIUM ANALYSIS

Contrary to the conclusions of partial equilibrium analysis so far examined, there are some special circumstances in general equilibrium theory in which a partially applied minimum wage law may possibly result in benefits to workers in *all* sectors. In his demonstration of this point, Johnson (1969) presents a model of an economy divided into two sectors using two commodities and employing two factors of

production. Commodity X is assumed to be relatively capital intensive; commodity Y is assumed to be relatively labour intensive; both are assumed to be produced subject to the constant returns-to-scale production functions.

The special result of benefits to all workers from a minimum wage law is obtained when the law is imposed on the capital-intensive industry, the X industry. Because of compulsorily higher wages, this industry's marginal costs will rise. This in turn will result in a leftward shift in its supply curve. The new supply curve will intersect the demand curve at a higher point. Thus the price of X will rise and the quantity produced will fall. But if the demand for X is very elastic, the production of it could fall so much as to release capital. When this released capital migrates to the Y industry, it will increase the capital-labour ratio there and hence the marginal product of Y labour. Thus there will result a higher wage in the Y industry — the industry that was not covered by the minimum wage legislation. This conclusion is opposite to the conventional argument that, with homogeneous labour, a minimum wage in one industry will always *reduce* the rewards of labour elsewhere.

Johnson's (1969) analysis appears to be relevant only where there is a significant distinction between an area that is covered by minimum wage laws and another area that is not. In Canada, most writers today assume that coverage is now relatively complete (the major exceptions being agricultural and domestic workers). Those who wish to attempt to apply Johnson's special analysis, therefore, would have to go back to the earlier years, say to the early 1960s, when coverage was incomplete.

Johnson himself insisted that there was no basic conflict with the conclusion of partial equilibrium analysis when dealing with a minimum wage law that, like that in Canada today, applied to all sectors, or to all sectors but those regarded as constituting a "subsistence sector." The traditional conclusion, Johnson argued, remains the same: "Minimum wage laws, though they benefit those workers who are successful in obtaining employment in the industry subject to them, tend to create unemployment or else to drive a number or workers into the equivalent of the subsistence sector of economy" (Johnson, 1969, p. 599).

In a subsequent criticism of the Johnson model, de Fontenay and Warskett (1976) have argued that it does not yield general results. They contend that Johnson's analysis was seriously limited by considering labour as homogeneous. Instead de Fontenay and Warskett allow for labour of different types in which earning power is different. Where there is only a single type of labour, they argue, an effective minimum wage would lie above everyone's wage. Where there are at least two types of labour, there are two wage levels initially. An imposed minimum wage can then lie somewhere between the two existing wage rates so that only one type of labour is eligible for coverage. The burden of the transfer created by the minimum wage, they argue, is borne by the owners of capital and the high productivity labour that earns a wage above the minimum, as well as those who are rendered unemployed.

The critique of Johnson next proceeds to the observation that his model does not, in fact, predict that the total wage bill for labour will decline after the imposition of minimum wages. In defence of Johnson, one could argue that this is not a criticism, since he employed a model that assumes no long-term disemployment effects; workers temporarily out of a job in one industry will eventually be employed in the non-covered sector. The model employed by de Fontenay and Warskett appears implicitly to disallow this assumption. Their concern is to show that, with given elasticities of demand (and rates of substitution), the total amount of wages going to labour as a whole can increase following the minimum wage and that, therefore, there is a larger wage fund, which can benefit labour as a whole despite reductions in jobs.

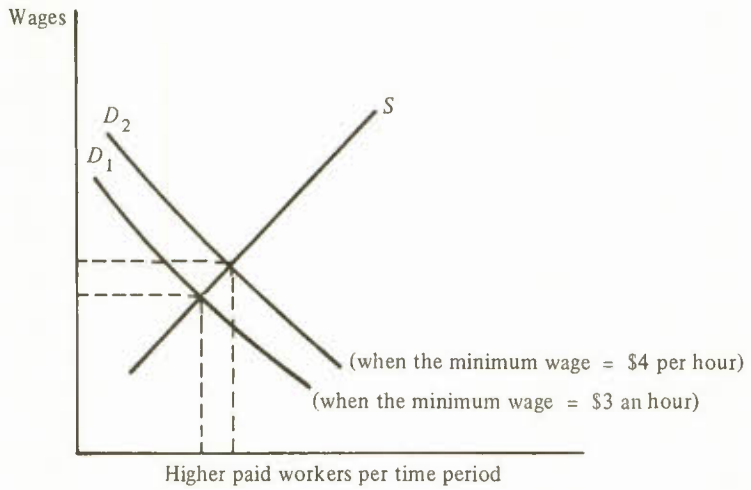
Dhruvarajan (1974) was also interested in the general equilibrium consequences for the wages as a whole. His empirical work drew attention to what he called "the ripple effect" (p. 114). His argument was that, when minimum wages rise, although it is clear that firms have to raise the wages of all those workers who were earning less than the new minimum, employers find themselves obliged, nevertheless, to raise the

wages of workers already receiving the new minimum or higher. Dhruvarajan found that failure to do this tended to "reduce the loyalty and productivity of these workers." In his empirical study, Dhruvarajan found, in fact, that there was a "moderate ripple effect," especially in the manufacturing and services sector.

Economic theory does not unambiguously predict the above type of ripple effect. It only does so under special assumptions. This is that labour intensities and average wages do not vary across industries. In this case increases in the minimum wage will affect all product prices equally so that there will be no significant substitution between products. Consider (in these circumstances) two types of workers, A and B, one with a low marginal productivity, and the other with a marginal productivity a little higher. Next, assume, as appears to be another assumption in the literature, that the two types are substitutable. Assume that workers with the slightly higher marginal productivity enjoy a wage on the free market which is above the prevailing minimum wage. The theory shows that, under these circumstances and provided there are no significant scale effects reducing all outputs of their employers, the demand for their services will vary positively with the minimum wage in the covered sector. Figure 3-6 provides a simple exposition.

Figure 3-6

The Effect of Increased Minimum Wages on the Demand for Higher Productivity (type B) Workers Who Normally Earn Above the Minimum



When the minimum wage affecting lower productivity workers (type A) is $3 an hour, the demand for higher productivity workers (type B) is D_1. When the minimum wage in the covered sector is increased to $4, the demand curve for the higher productivity workers shifts to the right, to D_2 in the diagram. With a given supply, the increased demand will intersect at a higher wage, so those already earning a little more than the minimum enjoy a wage increase from the legislation as well as those lower productivity workers earning just the minimum wage.[7]

De Fontenay and Warskett (1976) regard such a consequence as a "ripple effect" for it makes probable an increased wage bill in *total*, that is, in our example, including type A and type B workers together. Welch (1978) reminds us, however, that what drives this effect is reduced employment of the least productive. When counting the winners and losers, moreover, the latter include *consumers*, and it is not clear that they have the highest incomes. Welch's main point, however, is that the assumptions necessary

for the simple ripple effect are unrealistic. Labour intensities and average wages are not invariant across industries. This being so, there will be different effects on different product prices leading to *complex* substitution effects. For instance, when increased wage minimuns lead fast food outlets to substitute cost-saving machinery for counter clerks, the ripple effect then benefits the investors in capital in this part of the machinery-producing sector. It will also increase the demand for the workers who produce the machines. These will normally be earning wages much higher than type A and B employees in the above example.

MACRO VERSUS MICRO ECONOMIC EFFECTS

In the literature on minimum wages there is, as we have already seen, an occasional mention of the so-called purchasing power argument (see CAALL, 1968, p. 141; and Maphangoh, 1976). The argument is that if the increased earnings of those whose wages are raised exceed the loss in earnings of those who lose their jobs as a result of minimum wage increases, there will be a net addition to effective demand. This in turn, it is argued, might generate enough additional employment to compensate for direct job losses. There is not much analytical research on this subject reported in the recent literature. We shall, however, take a closer look at the argument.

The first point to notice is that, even if purchasing power is increased, there will be a change in its composition. Minimum wage advocates agree on this and also that there will be some transitional unemployment. The extent to which full employment can be restored depends upon the ease with which workers displaced in firms and industries adversely affected by the increased minimum can transfer to other firms, possibly in different industries and areas. Thus, even on the most optimistic of interpretations, the argument must acknowledge lags in adjustment. Government policies of retraining may be allied with minimum wage policies so as to ease the transitional period.

Where the demand for labour is inelastic — the case generally assumed by the purchasing power advocates — the reduction in numbers employed will be less than proportionate to the increase in wage payments (the wage bill). In this case employers will have to face increased total wage costs. The question then arises as to how these can be financed? The usual assumption is that of borrowing. Presumably, however, businessmen would not be as willing to borrow to finance these increased wage costs as to finance promising new investment of the traditional multiplier kind. Equally important, increased borrowing will raise interest rates. This, in turn, will lead to a fall in the demand for money and a rise in its velocity. Moreover, if sufficient demand is to be generated to bring back into employment those who lose their jobs after the minimum wage legislation, the special economic assumption must hold that investment is not very sensitive to interest rate increases. Yet this insensitivity is not well documented in the literature and cannot be known *a priori* to hold for Canada.

Another related proposition, and one that Canadian administrators have previously voiced (CAALL, 1968, pp. 141-142) is that minimum wage laws redistribute income from the rich to the poor, and since the latter have a higher propensity to consume, the total spending for consumer goods will increase.

One model that takes into account most of these elements was developed by Weintraub (1956). Using aggregate supply and demand curves, he produced a taxonomy of outcomes including the classical, the Keynesian, and the under-consumptionist cases. On this analysis there was a fall in employment, related with the classical case at the macro level. In the Keynesian case, there was no change in employment while, in the under-consumptionist case, there was a rise.

Bronfenbrenner (1956) employed an algebraic model as follows:

Let k represent the fraction of the wage increase that is paid out of profits. Its complement $(1-k)$ is the fraction passed through to selling prices. Let the workers' marginal propensity to consume in money terms be m, a positive fraction, and their marginal propensity for induced investment be n, also a positive fraction. In general, workers' marginal propensity to spend, defined as $(m+n)$, will not exceed unity. The corresponding marginal propensities for receivers of non-wage income (entrepreneurs and rentiers) are written as m' and n', so that their marginal propensity to spend is $(m'+n')$, which is generally less than unity. Thus, the increased working-class demand for goods and services resulting from each unit of wage increase is $(m+n)$, while the decreased capitalist demand is $k(m'+n')$.

The net change in demand is therefore given by the difference $(m+n)-k(m'+n')$.
Hence, employment and output will be influenced favourably by a wage increase if:
$(m+n)-k(m'+n')>1-k$.

We may assume (as did Keynes) that $m > m'$. We may also suppose that although $n'>n$, the difference between them is much less than the difference between m and m'. If we assume, for instance that $(m+n)$ is equal to 0.8 and $(m'+n')$ is equal to 0.7, then the condition that wage increases have a favourable effect on employment becomes: $0.8 - k(0.7) > 1-k$ or $k > \frac{2}{3}$.

Thus, only if two-thirds of the wage increases were financed out of profits would there be a favourable effect on employment. Bronfenbrenner's appeal to real (1950s) measures of m and m' (and reasonable assumptions about n and n') resulted in magnitudes of K much higher than would have been consistent with the expansion experienced during the period investigated. Bronfenbrenner's conclusions suggest, therefore, that macroeconomic effects are not, in general, sufficiently strong to offset the adverse employment effects of a rise in minimum wages.

Ultimate judgements on Canada, of course, are best obtained from comparing Canadian facts with the predictions of these models. Hitherto, no writer appears to have attempted to present falsifiable (or refutable) macro models of minimum wages. It seems reasonable to assume, meanwhile, that neither the American nor Canadian evidence in Table 3-1 supports the argument that the macroeconomic effects on demand are strong enough to prevent adverse employment effects.

At the beginning of this chapter, we promised to examine the more important analytic aspects of minimum wages except for price and wage effects (to be studied in our next chapter). We undertook, also, to demonstrate in the chapter the mutual dependence of analytics and empirics. The summary of empirical findings in Table 3-1 has accordingly been shown to relate directly to the predictable consequences of the competitive (and non-competitive) models of comparative static labour markets, the shock theory, and macro analysis.

It is now time to explore in more detail the individual items of research shown in Table 3-1. The next chapter will proceed with this task, and in such a way as to develop further, where necessary, particular points of *analysis* so far introduced.

4 Empirics

Empirical investigation is first and foremost intended to test the hypotheses formulated in the theoretical discussion. Most of the empirical literature, to date, has been devoted to a study of the employment/unemployment aspects of minimum wages. This has proceeded within both a partial- and a general-equilibrium framework. There has been much less work on the income distribution and purchasing power issues. This lack is due, in large part, to problems of data availability.

We indicated in our theory section that the bulk of the published empirical literature of the 1970s has failed to refute the competitive labour market model. The refutation or confirmation of this model calls for evidence on the employment effects of minimum wages. We open this section with a more detailed review of the empirical evidence on this question of the employment effects and, since our task is to critically survey the field, we discuss the employment *and* unemployment issues in some detail. Following this, we discuss the current literature on the selection of an operational minimum wage variable (index). Our third subsection is devoted to the econometric problems of the appropriate form of the lagged responses to minimum wage revisions. Some special aspects of the participation rate effects are dealt with next, followed by a brief discussion of some additional employment-related issues. Finally, we critically survey the current work on the price and income distribution effects of minimum wages. A summary table of the works surveyed is presented at the end of this chapter (Table 4-2).

Peterson and Stewart (1969) presented a state-of-the-art review of empirical research to the end of the 1960s. They characterized the empirical work as leading to no clear consensus concerning the impact of minimum wages. They saw "analytical weakness" in method as a major reason for this "general state of confusion." In particular, Peterson and Stewart criticized the supporters of minimum wage legislation for their "fundamental anti-theoretical bias" (p. 4). They noted that the method adopted by supporters mainly involves "describing changes subsequent to a minimum wage rate increase or polling employers on the reasons for particular changes" (p. 4).

This type of analysis is usually identified by the use of survey techniques whereby employers are questioned regarding their adjustments to minimum wage revisions. While this technique is capable of generating some interesting insights, it is fraught with problems which limit its usefulness with respect to the question of the disemployment effects of minimum wages. A major difficulty is the inability to identify causal relations, but the same criticism can be made for studies based on cross-sectional data. The impacts that are measured may be due to a variety of factors and this technique is largely incapable of sorting these out. McKenna (1973), for example, found a 10 per cent reduction in employment in the year following the January 1969 revision to Ontario's minimum wage, but he was unable to identify the cause on the basis of his study.

Fantl and Whittingham (1970) also studied the effects of the January 1969 revision. They concentrated on the short-run impact (two weeks) and utilized a survey questionnaire directed to employers in five

low-wage industries. They reported no significant disemployment effects although they recognized the difficulties of such a study, "...difficulty of isolating the effects of a minimum wage" (p. 2), and of a time period, "...too short to permit a detailed analysis of adjustments" (p. 3). As well, their data (Tables 26 and 27) appear to indicate some substitution towards learners (there was a ten-cent differential in effect). This could raise the turnover rate which imposes costs of its own.

Rhodes (1973) also used a survey study to assess the impact of the 4 December 1972 revision in British Columbia. He studied the situation eight months after the revision and found little direct layoff impact. However, some 500 jobs were lost through attrition or were closed prior to staffing. Finally, Dhruvarajan (1974) studied the impact of the 1 October 1972 revision in Manitoba. He used the survey approach and studied two time periods — between the announcement and the effective date, and five months following. Generally he reported no adverse employment impact.

By now, a pattern is clear. Those studies utilizing the survey method have unanimously reported no adverse employment effect due to a minimum wage revision.

Peterson and Stewart (1969) arrived at a number of conclusions (p. 15) on the pre-1970 literature and these will be useful as points of departure for our post-1970 survey:

1. Most *government* studies have created the impression that minimum wage policy has produced no adverse employment effects.

2. Most *academics* research has concluded that there are adverse relative employment effects of minimum wages and these are related to the relative wage impacts of statutory minimuns.

3. According to the academic research, the general model of economic theory (by which we presume the competitive model) most nearly corresponds to the observed results of statutory minima, whereas the alternative models used to support minimum wage advocacy have been shown to be non-predictive in theory and in fact.

4. Existing evidence on the effect of minimum wage rates is substantial and should serve to sharpen the focus of further research and debate in the field.

EMPLOYMENT VERSUS UNEMPLOYMENT EFFECTS

In the preceding chapter, we briefly discussed some of the issues concerning the correct measure of the employment-related impact of minimum wage legislation. There we argued that the use of *unemployment* as the yardstick led to certain ambiguities resulting from identification problems with respect to supply and demand impacts. In this section, we present the issues in more detail.

In a Bureau of Labor Statistics (U.S.) study, Kaitz (1970) reported significant adverse *employment* effects of minimum wage revisions for many of the age/sex/colour cohorts. Thus he went part way towards meeting some of the criticisms of Peterson and Stewart that studies performed by government bureaus were supportive of minimum wages. His study utilized a linear equation fit by ordinary least squares (OLS) to quarterly data for the period 1954-68, thus meeting another of the Peterson and Stewart criticisms that research performed for the bureaus tends to be descriptive in nature.

Kaitz made many important contributions in his study, and we will make use of his pioneering work as a vehicle to present much of our discussion in this chapter. First, he illustrated clearly the problems of using unemployment as an index (or as the dependent variable in the case of econometric estimates) of the impact

of minimum wage revisions. In place of the unemployment *rate* (the percentage of civilian *labour force* unemployed), Kaitz used the unemployment *ratio* (the percentage of civilian population unemployed) as one of his dependent variables. He argued that the unemployment *rate* was an incorrect specification of the dependent variable since it was sensitive to the definition of the labour force, and thus subject to supply-induced fluctuations. Lovell (1972) used the same argument to explain his use of the unemployment ratio in his study of teenage unemployment.

According to Fisher (1973), while Kaitz and Lovell were correct in their criticism of the use of the unemployment rate as the dependent variable, the unemployment ratio is also incorrect. Let us look at the two variables in symbolic form:

$$\text{Unemployment Rate} = UR = \frac{L - E}{L}$$

$$\text{Unemployment Ratio} = ur = \frac{L - E}{P}$$

Where L = civilian labour force
E = civilian employment
P = civilian population

The numerator is the same for each and this is where the problem arises. Both depend on the definition of the labour force and are thus subject to the same labour supply-induced fluctuations.

Table 4-1

Unemployment Ratio Versus Unemployment Rate: the Differences in Findings

Study	Index	Reported effect of minimum wage increases
Kaitz (1970)	Unemployment ratio	No adverse effect
Lovell (1972)	Unemployment ratio	No adverse effect
Moore (1971)	Unemployment rate	Adverse impact
Adie (1971)	Unemployment rate	Adverse impact

In his survey article of 1974, Goldfarb analysed the basic differences in the findings of Adie (1971), Moore (1971), Kaitz (1970), and Lovell (1972). He found that Kaitz and Lovell reported no significant adverse *unemployment* impact, while Adie and Moore reported significant adverse impact. Lovell had argued that a crucial difference between Kaitz and Moore was the inclusion, or omission, of variables to capture teenage population growth (a supply effect). Moore ignored this population factor and found a significant impact, while Kaitz included this factor and found no significant impact. Actually, Goldfarb noted that the Kaitz, Moore, Adie, and Lovell studies differed in a number of ways:

1. The definition of the unemployment variable;
2. The treatment of possible lags in the minimum wage effect;
3. Inclusion of a relative population growth term;

4. The deflator used in the minimum wage index;

5. The classification of the study group into cohorts of age/sex/colour.

We shall discuss most of these points throughout this section but for the moment it is interesting to note that one can classify the Adie, Kaitz, Moore, and Lovell studies by their definition of the unemployment variable and obtain the following classification of results in Table 4-1. Fisher directed further criticism toward Lovell's use of the unemployment *ratio* on the grounds that it *understated* the unemployment impact.[1]

Fisher (1973) argued that the use of the unemployment *rate* was just as incorrect as the unemployment ratio. He argued further that the single equation-reduced form model of the type

$$u = \beta_0 + \beta_1 E + \beta_2 MW + \sum_{i=1}^{n} \beta_1 \chi_i$$

where u = unemployment rate or ratio

E = index of economic activity

MW = minimum wage variable

X_i = other exogenous variables

was an inadequate specification. Fisher maintained that it ignored the supply interaction. In place of the above formulation he urged the use of a simultaneous equation system (equations). This would measure the effect of minimum wage revisions on the number employed *and* the effect of the altered job opportunities on the participation rate. Some later authors, notably Mincer (1976), Ragan (1977), and Swidinsky (1978), take partial account of this point in their models. We shall discuss these more recent studies shortly.

Returning to Kaitz, his use of the unemployment ratio as the dependent variable for a part of his empirical work does illustrate an important source of ambiguity in many earlier studies (Adie, Moore, Lovell), as well as some of the subsequent studies. With the unemployment ratio as his dependent variable, Kaitz found the minimum wage effects to be statistically insignificant for all cohorts. However, when Kaitz ran the model with the employment rate as his dependent variable the results changed considerably. He found the effects of minimum wages on employment to be negative and significant for all whites, except females 18 to 19 years old (positive but not significant), and insignificant for all non-whites except males 18 to 19 years old, where it was positive and significant.[2,3]

One result of Kaitz's work was to show that a statistically insignificant unemployment effect was consistent with a statistically significant employment effect.[4] These results, plus the analytical discussion by Fisher, indicate that any further work in this area should concentrate on the employment and participation rates separately. In fact, as we show later, the more recent work takes this into account.

Maphangoh (1976) studies the impact of minimum wage legislation on a traditionally low-wage sector of the Canadian economy. He used a cross-section method as applied to the retail trade and personal services sector, with data from the 1966 Census and 1971 Census. The 1971 data were used only to estimate the minimum wage effect. Maphangoh used a two-equation model:

$$E_{ij} = \alpha_0 + \alpha_1 W_{ij} + \alpha_2 S_{ij} + \alpha_3 Ed_j + \upsilon_{ij} \quad (1)$$

$$W_{ij} = \beta_0 + \beta_2 M_j + \beta_3 Ed_j + \beta_4 W_{-j} + \upsilon_{ij} \quad (2)$$

where W_{ij} = average weekly earnings in the ith industry and jth region

E_{ij} = per capita employment in industry i region j

S_{ij} = per capita sales (proxy for output) in industry i region j

Ed_j = median years of schooling in region j

M_j = average hourly earnings in manufacturing in region j

W_{-j} = legislated minimum wage in region j

In this model, minimum wages were assumed to have an impact on the general wage level, W_{ij}, and employment was assumed to be a function of the general wage level. Minimum wages thus make their force on employment felt through their impact on the general wage level. *A priori*, β_4 is expected to be positive. Maphangoh argued that the wage effect is due to the resulting compression of the low-wage tail of the distribution. The more likely result is a general upward revision in the overall wage levels with the dispersion unchanged. Maphangoh called β_4 the "wage elasticity" and α_1 the "employment elasticity." The size of the employment impact of minimum wages is given by $\alpha_1\beta_4$.

Maphangoh found that the employment response to wage increases was fairly high, ranging from –0.26 to –0.84. The wage impact was much more moderate: 0.16 to 0.63. The resulting employment impact to $(\alpha_1\beta_4)$ was moderate: -0.05 to -0.53. From this, he concluded that minimum wages should *not* lead to substantial reductions in employment. We feel that an employment impact of -0.53 *is* (numerically) significant, Maphangoh's stated conclusions notwithstanding.

The Maphangoh study has a number of shortcomings which affect the validity of his results. The causal chain described in his model (minimum wages influence general wages which in turn affect employment) tends to dilute the impact of the minimum wage revisions. This is particularly true of Maphangoh's estimates since β_4 is not statistically significant for any of his industry classifications. As well, this approach ignores specific study of low-wage workers who are likely the chief recipients of minimum wage employment effects. Meanwhile, his cross-sectional approach restricts us to a static view of the work and precludes an analysis of dynamic adjustments such as lagged response to minimum wage revisions.

DIFFERENTIAL MINIMUM WAGE EFFECTS ACROSS REGIONS

There is one sense in which the use of the unemployment rate may be appropriate. Unemployment is a measure of labour market disequilibrium; it represents negative excess demand and therefore a market that is not cleared. In contrast, a distortion-free economy is characterized by cleared markets and zero excess demand. If we have a set of markets that are effectively separated, say, through legal fiat, we can measure the relative degrees of distortion by comparing measures of excess demand in them.

Labour markets, of course, are effectively separated at an international level by legal restrictions on migration and the necessity of acquiring work permits. Here a simple index of excess demand such as the unemployment rate is a sufficient measure of relative market distortion. Intra-nationally, the labour market separation is less complete. It is effected by a host of transaction costs such as moving expenses, information costs, and any jurisdictional restrictions on income support programs (welfare, unemployment insurance, hospitalization, and so on). Where such separation factors are not complete, we would expect the adjustment process to work through migration and eventually to equalize unemployment rates across all regions. Due to the existence of adjustment costs, however, the migration process will work only very slowly and we might expect short-term differences in provincial unemployment rates in response to local distortions.

One potential distortion is provincial minimum wage legislation. If minimum wages cause unemployment, to the extent that adjustment through migration is incomplete, we will see short-run differences in provincial unemployment rates. This will be particularly true if some jurisdictions engage in rapid and sustained revisions in their minimum wage rates.

Maki (1978) chose the period 1970-77 to study the effect of minimum wages on provincial employment rates. This period was marked by steady inflation, which lead policy makers to a rapid and sustained program of minimum wage revisions. This was particularly true of Quebec, which steadily increased its minimum wage rate to relatively high levels in this period. Maki fitted a single OLS equation to an annual pooled cross-section time-series set of data. The equation he used was:

$$URATE = f(\text{provincial dummy variables}, {}^{UICB}/_{AWW}, {}^{MW}/_{AWW}, PCEI, DSQLR, LFPR)$$

where $URATE$ = aggregate unemployment rate

$UICB$ = unemployment insurance benefits

AWW = average weekly wages

MW = provincial minimum wage rate times 40 hours

$PCEI$ = percentage change in employment index

$DSQLR$ = disqualification rate for unemployment insurance benefits

$LFPR$ = aggregate labour force participation rate

All variables are defined for the particular province.

Maki estimated the elasticity of the unemployment rate with respect to the minimum wage variable (as measured at the mean of MW/AWW) to be 0.56. The coefficient itself was statistically significant (p. 10). He compared minimum wage effects between provinces and found that "differences between minimum to average wage ratios among provinces were found to be statistically significant determinants of differences in provincial unemployment rates" (p. 12), although the *magnitude* of the effects was small (p. 13). These results are in accord with our theoretical discussions. Maki noted that Alberta, British Columbia, Ontario, and Newfoundland would have had higher unemployment rates if their minimum wage to average wage ratios had been at the national average. He concluded, "preliminary findings presented here suggest the impact of minimum wages on unemployment may be non-negligible" (p. 13).

Some of Maki's other findings are of interest. He found that the variable representing unemployment insurance benefits was largely insignificant as a determinant of the provincial unemployment rates. This is surprising since the existence of unemployment benefits lowers the direct cost of unemployment, and thus tends to reduce the extent to which workers adjust to local labour market conditions via migration. As well, Grubel, Maki, and Sax (1975) found unemployment insurance benefits to be a significant determinant of aggregate unemployment. It may be that *UICB/AWW* shows very little variation across the provinces. Most of the interprovincial variation in unemployment rates is accounted for by the provincial dummy variables (about 74 per cent). However, this does not pose a problem; the result is expected given the extent of regional disparities in Canada (Economic Council of Canada, 1977b).

There are some problems with Maki's model. He recognized that labour force participation rates may not be perfectly exogenous and thus the coefficient of this variable is suspect. As well, his use of annual data may obscure some of the short-run fluctuations in the labour market and this will likely lead to an underestimate of the impact of minimum wage revisions. Maki used the *aggregate* unemployment rate as his dependent variable and this will tend to dilute the impact of minimum wage legislation. Minimum wages have their greatest impact on low-wage workers and, although these persons are disproportionately represented in the unemployment statistics, the aggregate statistics will include some persons who would not be affected by minimum wages. It might be useful to apply Maki's methodology to unemployment rates for, say, teenagers or older persons.

This review of Maki's study explains why we feel that it does not fall heir to the usual problems of studies relying on unemployment effects. Earlier we explained that figures of unemployment are usually ambiguous because they are influenced by both the participation rate and the demand for labour. Maki's study is exceptional because it looks at *differential* rates of unemployment across the provinces.[5]

Participation rate *levels* vary across provinces for a variety of reasons (for example, the 1977 average rates for males aged 15 to 24 were 62.3 per cent in New Brunswick; 69.9 per cent in Ontario; and 77.5 per cent in Alberta).[6] But if we can reasonably assume that the adjustments to these rates are fairly constant across provinces (for example, a uniform relative decline) under a given shock, then Maki's results can be generally accepted as an indication of total employment effects.

At the same time, we wish to reiterate the ambiguity of unemployment figures in other studies. Our theory section emphasized that the strict condition for failure to refute the competitive model is that an employment decrease follow a minimum wage increase. The proposition that the minimum corrects for monopsony requires that an employment increase follow. We also emphasized that an increase in *unemployment statistics* is consistent with either model. This is further evidence that the appropriate test is employment change.

RECENT STUDIES OF EMPLOYMENT EFFECTS

Four recent studies of the employment effects of minimum wages are of particular interest. Three of these (Mincer, 1976; Gramlich, 1976, and Ragan, 1977) are American while the fourth (Swidinsky, 1978) is Canadian. These studies share some methodological similarities and we shall discuss them together.

Mincer's work set the tone of the current studies of minimum wage impact. He estimated employment equations of the form:

$$E/P = f(MW, UC, AF, T, T^2)$$

where E/P = the employment rate

MW = minimum wage variable defined as minimum wage over average hourly earnings times a coverage factor

UC = unemployment rate of adult males aged 45 to 54 which serves as a cyclical index

AF = fraction of the particular population group who were in the armed forces

T = time trend

for ten age/sex/colour cohorts, using quarterly data for the period 1954-69.

For the moment, we will discuss only those aspects of Mincer's work which pertain to the employment impact of minimum wage revisions. Other aspects of Mincer's model will be discussed in subsections to follow.

Mincer found the disemployment effects of minimum wage revisions to be larger for teenagers than for young men aged 20 to 24, "...as one would expect" (p. 103). In fact, Mincer obtained negative impact elasticities of minimum wages for all ten of his cohorts. The results were statistically significant at the 1 per cent level, for white teens aged 16 to 19, white and non-white males aged 20 to 24, white males over 65, and white females over 20. As expected, males aged 25 to 64 exhibited low impact. Low estimated elasticities for non-whites may be due to non-compliance effects or to the problems of sample partitioning that we discussed in connection with Kaitz's work.

Although the employment effects constitute only a small part of Gramlich's (1976) very comprehensive study, his results are well worth discussing. Gramlich used quarterly data to estimate equations of the following general form:

$$lnE = g(L(lnQ), L(lnMWI), t, D, lnS)$$

where E = civilian non-farm employment

Q = civilian non-farm real output

MWI = minimum wage index (the composition is discussed below)

t = time trend

D = dummy variables to represent changes in coverage

S = supply constraint variable[7]

L = a four or six quarter lag operator of the Almon type

This equation was estimated for three groups: teens aged 16 to 19, adult males, and adult females, with each group broken into full- and part-time employment status. Gramlich finds his estimated coefficients for the minimum wage index to be robust — largely independent of the specific set of independent variables.

For the teenage cohort, the coefficient for the minimum wage index is negative for the full-time and total employment equations. It is generally statistically significant in the full-time equations and marginally significant in the total equations (Table 6, pp. 436-37). For the part-time employment equations, the coefficients are uniformly *positive* and marginally significant. The supply constraint variables for the teenage group are based on the number of teens in the armed forces or the number of teens enrolled in school.

The results for adult males are generally uniform in terms of sign and magnitude of the coefficients for the minimum wage index. The equations estimate for total employment show negative coefficients for four of the five variations; however, they are largely insignificant. The full-time/part-time split shows some interesting results. The minimum wage coefficients are negative in three of four cases for the full-time equations, are larger than for the total employment equations, and are statistically significant at the 1 per cent level. In the part-time employment equations, the coefficients are positive but not significant even at the 5 per cent level.

The adult female results are very inconsistent. None of the coefficients are statistically significant and the signs are not uniform within the group or without.

Gramlich notes (1976, p. 442) that his results indicate that teenagers are made worse off after a minimum wage increase. It appears that minimum wages cause some substitution of part-time for full-time work among teenagers. This shift may explain why studies which ignore that part-time/full-time split find relatively slight overall employment impact. Clearly, as Gramlich notes (p. 443), the shift from full- to part-time work represents a loss to teenage workers, and "...the most reasonable verdict is that teenagers have more to lose than to gain from higher minimum wages" (p. 443).

For adult males, there is also a noticeable rise in part-time work. Gramlich observes, however, that the low estimated elasticities led him to conclude, "...adult males benefit somewhat from an increase in the minimum" (p. 443).

In the case of adult females where the part-time signs were all negative and full-time, largely positive, Gramlich argues that it may be that women are shifted into the full-time labor force replacing lower-wage teens who then occupy the part-time jobs vacated by women. This is plausible in the first round. Minimum wage revisions compress the wage tail and shift the terms of trade in favour of the higher wage group. If women working part-time represent this higher wage group, then they will experience an increase in employment as they are made relatively less expensive by the minimum wage revision. Women may be the main beneficiaries of minimum wages just as teenagers appear to be the main losers.

The employment impact portion of Gramlich's study appears to support the view that minimum wages cause some adverse reaction. It is impossible to judge whether the losses incurred by teens are offset by the gains to women without making interpersonal utility comparisons. We note that although the signs of the minimum wage coefficients for full-time employment for women are generally positive, none of them are significantly different from zero. This gives us some cause to doubt Gramlich's view that women benefit from minimum wage legislation by increasing their full-time involvement in the work-force.

Ragan's (1977) methodology was similar to that of Mincer and Gramlich. He estimated an employment equation:

$$N/P = f(MW, U, P, mp)$$

where N/P = employment ratio (fraction of study group employed)

MW = minimum wage variable (to be discussed in a later subsection)

P = supply variable – the ratio of the study group population to the population 16 and older

mp = a manpower program variable – Ragan based it on participation in the Neighbourhood Youth Corps

This equation was estimated (using quarterly data for the period 1963-72) for 16 youth subgroups defined on the basis of the (16 to 17 and 18 to 19), race (white, and non-white), sex and school enrolment status.

Again, we will consider only the results for the minimum wage variable at this time. The coefficient was negative for all eight of the male equations reported and for four of the eight female equations. Where the coefficient had a positive sign, it was not statistically significant. The coefficient was significant in five of eight cases for males and in two of four negative cases for females. Ragan concludes that his results represent "...strong support for the hypothesis that federal minimum wage legislation reduces youth employment" (p. 133).

Swidinsky's (1978) work is unique in Canada, as far as we are aware, in that he follows the more recent methodology (as represented by Mincer) by estimating separate equations for employment and labour force participation. Using annual data for the period 1950-75 Swidinsky estimated an employment equation:

$$E/P = f(U, MWI, T, T^2)$$

where E/P = the employment rate for the relevant group

U = prime age male (25-44) unemployment rate (the cyclical index)

MWI = minimum wage index

T = time trend

This equation was estimated for male and female teenagers. Swidinsky found the estimated coefficients for the minimum wage index to be negative for both groups and significant at the 5 per cent level or better. The employment elasticities with respect to minimum wage changes (including coverage) are $-.135$ for males, $-.560$ for females, and $-.316$ for teenagers as a whole. These are somewhat higher than Mincer's estimate of $-.205$ for white teenagers although the demographic groups are not quite comparable (Swidinsky, 1978, p. 16). Swidinsky's results indicate the employment impact of minimum wage revisions are not inconsequential.

Mincer, Ragan, and Swidinsky all estimated separate equations to explain participation rate behaviour under minimum wages. They integrated these results with those obtained from the employment equations to generate estimates of the *unemployment* effects of minimum wages. The explicit inclusion of the participation rates emphasizes some of the problems which can arise if unemployment is studied in isolation. We discuss the participation rate behaviour in a later subsection of this chapter and we will include the estimated unemployment rate effects at that time.

THE MINIMUM WAGE INDEX

Kaitz's second major contribution was his creation of a minimum wage index. The chief components were federal minimum wage coverage rates across industries, and the proportion of young workers (since this was his study group) in the various industry classes. His index may be expressed as:

$$\text{Minimum wage} = MWI = \sum_{i=1}^{n} c_i \cdot \frac{MW_i}{AW_i}$$

where c = industry weights computed by multiplying the proportion of industry i covered by the *Fair Labor Standards Act* (*FLSA*) times the radio of youth to total employment in industry i

MW_i = *FLSA* minimum wage in industry i

AW_i = average hourly earnings in industry i

This index or a similar one was used in many subsequent U.S. studies (for example, Mincer, 1976; Ragan, 1977; Kosters and Welch, 1972; Welch, 1974; Lovell, 1972) and also in a Canadian one (Swidinsky, 1978). The explicit incorporation of coverage and employment ratio factors, c_i, recognized the fact that the impact of minimum wage revisions will not be the same across all industries.

The specification of the minimum wage variable has been widely discussed. We will deal first with questions concerning the definition and use of the coverage index. Ragan (1977) argued, "...the fraction of the group covered by the minimum wage legislation is as important as the level of the minimum wage" (p. 130). Clearly, the extent of the impact of revisions to the minimum wage will depend on the fraction of the work-force actually affected, and there is a strong case for inclusion of such a factor in the empirical work. Of course, questions on this matter arise only if there is a substantial sector of the labour force not covered by minimum wages.

The results reported in Swidinsky's study indicate the importance of the coverage factor, particularly for cases where there was a sizable change in coverage. In 1963, there was a substantial extension of coverage in Ontario. This produced a marked increase in Swidinsky's minimum wage index (1962 = .238, 1963 = .416), and accounted for much of the employment impact he found (p. 11, footnote).

The exact manner in which the coverage index should be used is somewhat less clear than is the case for its inclusion. Fisher (1973) argued that it is unlikely that changes in coverage and minimum wage level would be *equally* important and, further, the use of a composite index implicitly assumes identical response. He also argued that legal coverage is not equivalent to effective coverage. Workers may be legally defined as covered by the legislation although their wage rate substantially exceeds the minimum wage range. The legally defined coverage will generally exceed the effective coverage. Gramlich (1976), too, argued that the use of a composite coverage and level index is incorrect and that its use would probably bias the estimates of the elasticity of the minimum wage impact downward (p. 415).

Fisher's criticism of the use of composite indices was based on the problem of errors in the variables arising from the distinction between legal and effective coverage (1973, p. 516). The data on coverage usually pertain to *legal* coverage while the actual impact of minimum wage revisions is based on *effective* coverage. If the minimum wage variable in the estimated equation is composed of a composite of the minimum wage level and the legal coverage rate, this will induce errors into those data. The OLS estimator of the resulting coefficient for the minimum wage variable will be inconsistent (Johnston, 1972, pp. 281-82; Maddala, 1977, pp. 292-303).[8] The classical analysis of the errors in the variables model indicates that the result is an underestimation of the particular slope coefficients. For the current problem, we cannot be sure

of the direction of the bias. Maddala (1977, p. 302) shows that the presence of a systematic arrangement in the measurement of error can led to an under *or* overestimate of the slope coefficient.

Gramlich (1976) argued that the use of a composite index led to biased estimates of the wage elasticity of demand (pp. 415, 433). He specifically argued that the bias was in a downward direction. From his discussion, it appears that Gramlich was more concerned with problems caused by the functional form rather than the errors in the variables issue.

Gramlich's use of dummy variables to represent changes in coverage wants careful consideration. By their nature, we expect reasonably good statistical fit for dummy variables. Gramlich's failure to obtain good fits is somewhat disturbing. Further, the use of dummy variables is likely to incur problems of interactions and thus of interpretation of coefficients.

As a final point, we note that including actual measures of coverage as a separate variable does not eliminate the errors in the variables problem as it concerns the coefficients for the minimum wage term. It merely shifts the domain with continued troublesome results (Maddala, 1977, p. 294).

However, there is a pragmatic reason for avoiding composite indices. Changes in these indices are composed of wage level and coverage changes, sometimes simultaneously. Thus the elasticity to either change alone is impossible to identify. From a policy viewpoint, this is unfortunate. This problem is especially acute in Canada where coverage is now nearly complete. Any further revisions to the minimum wage index will be via wage level adjustments.

Fisher also criticized the deflator used by Kaitz, Mincer, Ragan, and Lovell – the average hourly earnings in the particular industry. Other authors (such as Swidinsky, 1978) have used average hourly earnings in manufacturing as a general deflator, while still others (such as Adie, 1973; Gramlich, 1976) have used price indices such as the wholesale price index. Under Fisher's new treatment, these are all incorrect. His argument is that the correct deflator is the market-clearing wage for teenagers which would have prevailed in the absence of minimum wages. This, of course, is unavailable. (Katz (1973) attempted to estimate this wage as part of a simultaneous model.) Fisher noted that only if the market-clearing wage had been highly correlated with average hourly earnings (for whatever sector), or the various price indices, would average hourly earnings be the correct deflator. Otherwise, we have the errors-in-the-variables problem. Fisher argued that it was unlikely that teenage wages would have risen as rapidly as average wages through the 1960s, given the demographic pressures experienced by the teenage cohort for this period. For this reason, the minimum wage index, which uses average hourly earnings or general price indices as a deflator, is very likely biased.

Fisher's contention is open to debate. What is the purpose of deflating nominal values of the minimum wage? Is it to incorporate relative prices or to convert nominal minimum wages to real values? It seems that the purpose should be both. Now, average hourly earnings is a good proxy for a price deflator if labour's share of output is near constant. At the same time, $^{MW}/_{AW}$ is a measure of relative wages although AW may not represent an appropriate alternative. This will be discussed shortly. In any case, the use of a fictitious market-clearing wage is incorrect. It is logically impossible to have both the minimum wage and the free market wage in the absence of minimum wages in existence at the same time. Hence, the free market wage cannot be viewed as an alternative to the minimum wage in the employers' decision to hire.

The issue of the correct measure of relative wages turns on the correct definition of the labour market. The implicit assumption in the analysis of Kaitz, Moore, Lovell, Mincer, Ragan, Adie, Swidinsky, and others is that the demand for teenage labour is a relevant concept and that it represents the low-productivity workers who are most affected by minimum wages. Swidinsky (1978), however, notes "...there may

actually be several such [teenage] markets" (p. 14). Some teenagers earn high incomes and some adults compete with teenagers for low-wage jobs; it is an empirical question regarding the degree of dilution of minimum wage effects in the teenage cohort. If teenagers are generally low-wage workers, then MW is a fair approximation of teenage wage rates. The AW term will capture relative wage effects if the wage dispersion is near constant through the study period. The actual replacement wage is unlikely to be AW but rather some wage just above MW.

Complete discussion requires investigation of the characteristics of low-wage workers. Kelly (1976) addresses the question by testing various minimum wage specifications. In particular, his index incorporated alternate deflators to account for supposed differential growth rates of teenage wages. He found his results to be sensitive to the specification which indicates some support for Fisher's view that the use of average wages may lead to biased results. In any case, Kelly's work warns us to be careful in the selection of the minimum wage variable.[9]

LAGS IN RESPONSE TO MINIMUM WAGE REVISIONS

Kaitz omitted the inclusion of a lagged response to the minimum wage revisions. This topic received some attention from Fisher (1973) who noted, "Any study, therefore, that does not allow for a [lagged response] will understate the true impact of a minimum wage and will be biased toward showing no impact" (p. 519). There are many reasons to expect a lagged response. Adjustments in factor proportions are costly and this cost may be reduced by making the adjustments slowly (Alchian, 1959). Kaun (1965) used a simple rank-correlation exercise to show that minimum wage induced wage hikes do lead to adjustments in factor proportions.

Various authors attempted alternate specifications of the lagged response to minimum wages. Lovell (1972) adopted a partial adjustment model:

$$U_t - U_{t-1} = \delta(U_t^e - U_{t-1}) + \epsilon_t$$

where U_t^e = equilibrium unemployment in period t

δ = partial adjustment coefficient

Fisher (1973) argued strongly that this specification will involve problems of interpretation since it may lead to the estimation of "sensible" coefficients and an acceptable Durbin-Watson statistic when, in fact, there may be significant serial correlation (Griliches, 1967). The use of a lagged endogeneous variable may cause one to commit an omitted variable error since a good fit may be obtained from an incomplete specification, and the Durbin-Watson statistic will not signal the omitted variable error.

The partial adjustment model poses some problems from the point of view of economic theory. This model argues that the largest adjustment occurs in the first period after the revision and that subsequent adjustments grow progressively smaller. This would seem to make sense if we assume that the cost of being out of equilibrium increases with the distance from equilibrium. With costly adjustments the incentive will be to make large adjustments only when one is well out of equilibrium, and to decrease the size of adjustment as one approaches equilibrium and the returns to adjustment diminish. Kaun (1965) found that

those firms paying the lowest wages prior to the minimum wage revision tended to adjust their factor proportions to the greatest extent in response to the revision.

The above reasoning, however, ignores learning behaviour. We discuss here the version of learning behaviour that accords with our view of the labour market operations. This involves only *lagged* responses to minimum wage revisions. Other adjustment patterns are possible. Minimum wage revisions are accompanied by lengthy advance announcements (generally provided by law). This could result in a *lead* response as employers make adjustments in advance of the actual revision. One could also argue that more frequent minimum wage hikes will lead employers to form expectations of some form of explicit or implicit indexation of minimum wages, and this will lead employers to pursue long-run adjustments and ignore short-run fluctuations in the minimum wage. This raises another, more subtle problem. Behaviour of this type would make it very difficult to measure the impact of minimum wage revisions since we would be observing long-run adjustment behaviour, which may be all the more pervasive. Consider, for example, the trend towards self-serve gas stations. This represents a change in the production function towards less use of labour and may have been due to expectations of continued minimum wage increases.

We disagree with the argument for a lead response for this reason. Minimum wages generally apply to low-skilled, low-productivity workers. These are likely to be relatively homogeneous and have low attachment to other factors of production. Thus transaction costs (hiring and firing) to the employer are quite low and he can adjust easily to changes in relative factor prices. We would argue that the rewards to advance adjustment are small and not worth pursuing.

We will concentrate our attentions on lagged responses to minimum wage revisions. Minimum wage revisions are infrequent. Intuitively, it is appealing to expect that initial adjustments will be small as employers learn the impact of adjusting to an infrequent occurrence. The magnitude of adjustment will increase as information becomes available and then decrease as costs and benefits trade off. Thus we expect an inverted-V type of lagged response. This will be reinforced by the normal labour market dynamics. When minimum wages are revised, employers will initially rely on attrition to reduce the size of their work-force since this carries a lower cost than outright lay-offs.

The rational response of labour to higher wages, meanwhile, is a reduction in the quit rate. This slows the initial adjustment to minimum wage revisions. The employer will perceive that attrition is not a sufficiently rapid or complete adjustment mechanism and will respond with direct lay-offs, thus increasing the size of the adjustment. As in the earlier discussion, the adjustment process will slow as the net benefits of the adjustment fall. Once again one expects the inverted-V lag structure.

In Goldfarb's (1974) discussion of lagged responses to minimum wages, he argued that lags result simply from the fact that labour supply is growing more rapidly than demand. And, in a world of heterogeneous labour, the supply of various categories of labour is presumably growing unevenly. The Goldfarb version of the lagged response, however, has its difficulties. Consider its implications, for instance, that the effect of minimum wage revisions continue to grow through time. The lag is based on the presumption that labour supply grows more rapidly than labour demand and embodies the rather odd argument that labour supply is somehow not connected to population and thus to aggregate demand.

The length of the lagged response and its actual shape are matters for empirical investigation. The evidence from some American studies appears to support the notion of relatively lengthy adjustment periods and, in some cases, the general inverted-V structure of the lag.

Adie (1973) used a simple unconstrained model by lagging the minimum wage variable, eight, sixteen, and twenty-four months. He found that the elasticities held the same sign as the lag increased and the elasticities generally increased as the lag was lengthened. There were some exceptions to this last point, notably with respect to females. These exceptions could be construed as a refutation of the inverted-V lag

hypothesis except that Adie used the unemployment rate as his dependent variable, and therefore probably captured some participation rate effects in his result. This is especially likely given that he did not correct for school enrolments, a factor that could be more relevant to females than males.

Mincer (1976) employed a second degree polynomial lag on the minimum wage variable. He found that lags of six to eight quarters' duration were significant for most groups. The minimum wage variable, itself, was significant for most groups.

Kelly (1976) used a third degree polynomial lag of three quarters' duration which he found to be generally significant (significant and negative in three of four cases; insignificant and positive in the fourth).

Gramlich (1976) applied a polynomial lag of four or six quarters (whichever appeared to fit best) but he did not report the degree of the polynomial lag structure.

Ragan (1977), however, used a simple one-quarter lag applied to his minimum wage variable. He found that alternative lags gave similar results but that "short, simple lags performed best" (p. 129).

Swindinsky (1978) used annual data for Canada and found that "most of the adjustment to changes in provincial minima are likely to take place in the first year of the change" (p. 10). Consequently, he reported no lag effect, although he did attempt the use of a one-year lag. We feel that his use of annual data may have obscured the lag phenomena.

Mincer found that very long lags were in order while Ragan found much shorter ones performed best. Why the difference? The lag may stem from various timings of the ripple effect.[10] Second, it may be peculiar to the cohort being studied. If the cohort is made up largely of low-wage, low-productivity workers, the duration of the response might be expected to be quite short since transactions costs to the employer are quite low for this group. For the same reason, we doubt that one would expect to find a lead response related to the announcement of minimum wage increases. If the transaction costs *are* low, there is little requirement for the employer to anticipate the effects and make partial adjustments *ex ante*. On the supply side these possible *ex ante* adjustments depend on labour's expectations concerning the effect of minimum wages on participation rates. We can turn to the participation rate question now.

PARTICIPATION RATE EFFECTS

Earlier, we argued that the use of the unemployment rate as a dependent variable was incorrect because its use would tend to obscure the separate demand and supply effects. Some recent studies have examined separately the impact of minimum wages on labour force participation rates of various cohorts. On theoretical grounds, an upward minimum wage revision could lead to an *increase* or *decrease* in the participation rate. There are two forces at work here. An upward revision to the minimum wage will increase the relative attractiveness of work and so induce an increase in the participation rate. As well, the rise in the minimum wage rate will induce the demand for labour, *ceteris paribus*, and so lower the returns to job search by reducing the probability of success (finding a job). Which effect predominates is a matter for empirical verification.

Mincer (1976) investigated the effect of minimum wage revisions on labour force participation rates with a fairly simple model:

$$L/P = f(MW, UC, AF, T, T^2)$$

where L = labour force

P = population

MW = minimum wage index entered with an Almon lag – quadratic polynomial

UC = unemployment rate for prime age males – cyclical proxy

AF = fraction of population group in armed forces

T = time trend

This specification is similar to that used for his employment equations and it was estimated for the same age/sex/colour groups over the same time period. Mincer found that the labour force effects of minimum wages were generally negative. The estimated coefficient had a negative sign in all ten cases and was significant at the 1 per cent level in six. He concluded, "...low-wage workers who are not employed in the covered sector perceive the minimum wage hike as a deterioration of their wage prospects" (1976, p. S104). This has been called the "discouraged worker" effect. The existence of this type of effect demonstrates the errors which arise from the use of unemployment as a measure of the impact of minimum wage revisions. A decline in employment due to upward revision in the minimum wage may be offset by a fall in the participation rate with the consequent reduction in the *measured* unemployment rate.

Ragan's (1977) participation rate specifications was identical to the one he used to estimate the employment impacts. His findings were much less consistent than Mincer's. Some groups responded negatively to minimum wage revisions (participation rates decreased), while others responded positively (participation rates increased). For non-white males, the participation rate effect is unambiguously negative and is statistically significant in two of four cases. This may explain the findings of some studies that non-white unemployment does not increase when minimum wages are raised. There is very little regularity in the remainder of the results.

Swidinsky (1978) employed the same specification for his participation rate equations as he had for his employment equations. He found a significantly negative participation rate impact for both males and females for the estimation period. The elasticities of the participation rate (at the mean) with respect to the minimum wage index was $-.133$ for teenage males and $-.472$ for teenage females.

Swidinsky, Ragan, and Mincer integrated the results of their employment and participation rate studies to generate some indirect estimates of the unemployment effects of minimum wage revisions.

Mincer found the participation rate elasticities to be lower than the employment rate elasticities for most of his cohorts. The net effect is an increase in *measured* unemployment which is, of course, smaller than it would have been without the labour force (supply) adjustment.

Ragan's supply adjustment was less consistent than Mincer's so his unemployment results were more dramatic. He specifically reported his estimated impact of the 1966 revision to the U.S. federal minimum wage. By Ragan's estimate the youth unemployment rate in 1972 would have been 3.8 per cent lower had the 1966 revision not occurred.

Swidinsky (1978) found that the supply effect nearly offset the fall in employment, so the unemployment effect was relatively modest. Yet the unemployment rate for Canadian teenage males had increased by .17 per cent and for females by 1.54 per cent as a result of the minimum wage revisions since 1950. The increase in the unemployment rate for teenagers as a whole was .75 per cent. Swidinsky found the unemployment rate elasticity with respect to minimum wage revisions to be .421 over the estimation period.

But we return to the point that the unemployment rate does not capture the total employment effect of minimum wages. Labour force withdrawal deserves important attention since it is an unambiguous employment effect. The most striking result of the Swidinsky study, therefore, is his finding that, in Canada, increases in the respective coverage and minimum wage rates since 1950 *have reduced teenage male employment by 16.6 per cent.*[11] The more frequent the adjustments in the rates, meanwhile, the stronger the effect on such employment. The most frequent adjustment, of course, is achieved by indexation of the rate. Swidinsky (p. 10) concludes: "...but such indexation would result in a permanent reduction in teenage employment and a permanent increase in teenage unemployment." The permanent effects on teenage employment he predicts to be "substantial."

Finally, we should note that Swidinsky's evidence demonstrates that, although teenage jobs have expanded in absolute terms with the expansion of the teenage population, one cannot say that minimum wages have not had a seriously detrimental effect.

ADDITIONAL EMPLOYMENT ISSUES

Cyclical Sensitivity of Teenage Employment

Kosters and Welch (1972) estimated the impact of cyclical fluctuations on teenage employment in the United States. They found, not surprisingly, that teenage jobs are quite sensitive to cyclical fluctuations in overall economic activity. Teenagers, especially those earning low wages, tend to be residual elements in the labour force. Their relatively low level of training and human capital render them expendable during periods of slack demand. Since the hiring and firing costs are low, employers are quick to make adjustments to this sector of the labour force.[12]

Researchers have recognized this effect and have included variables in their analysis to represent cyclical conditions. While improving the explanatory powers of the respective equations (and permitting the researcher to concentrate on minimum wage effects), these variables have also provided indirect tests of the Kosters-Welch hypothesis. Typically, the variable chosen for this task has been a general index of labour market conditions such as the unemployment rate for adults or prime age males (e.g., Swidinsky, 1978; Ragan, 1977; Mincer, 1976; Welch, 1974; and Kaitz, 1970), or as a measure of real output (Gramlich, 1976).

Swidinsky used the unemployment rate for males aged 25 to 44 and entered it coincidentally in his equation. The performance was somewhat disappointing. The coefficient was negative in the employment rate equations for both males and females but it was statistically significant only for males. Swidinsky's use of annual data may have obscured some of the more subtle fluctuations which could have improved the performance of this variable.

Mincer (1976) found "...substantial cyclical sensitivity of the teenage labour force..." (p. 104), but he did not report his estimated coefficients specifically for the unemployment variable.

Ragan's (1977) results are the most striking in this regard. He found the regression coefficient for the unemployment rate variable (he used males aged 25 to 54 lagged one quarter) to be negative in all 16 employment rate equations and statistically significant in 12 of these. The strength of Ragan's result leads us to believe that Swidinsky did indeed underestimate the cyclical responsiveness of the youth labour force.

Gramlich also found substantial cyclical sensitivity of teenage employment. Using civilian non-farm real output as his cyclical index, Gramlich obtained significantly positive coefficients for all cases where this variable was tried.

A Youth Differential?

In the chapter on the evolution of minimum wages in Canada, we noted that, historically, there has been a movement towards consolidation of minimum wage rates in Canada. Recently, there has been renewed interest expressed in the question of youth differentials. Part of this is due, no doubt, to the current high levels of teenage unemployment. It is felt, by some, that a uniform minimum wage rate discriminates against young workers[13] and a youth differential would permit teens to compete more effectively in the work-force. This topic is discussed further in the next chapter (on policy). For the moment, we will discuss some empirical work which is, at least partially, directed to the question of differentials. At present, there has been very little work on the efficacy of the youth differential in Canada *or* in the United States.

Clearly, the impact of a youth differential will depend upon the extent of the substitutability of teenage and adult labour. Cotterill and Wadycki (1976) and Welch and Cunningham (1978) attempted to test explicitly the extent of the substitution effect. Mincer (1976) and Ragan (1977) did not address this issue *per se* but their results can be used to provide some insight on the question. We shall discuss these studies here.

Cotterill and Wadycki selected a traditionally low-wage sector — retail trade — for their study of the impact of minimum wage legislation on the relative employment of teenage and adult workers. They reported no significant shift away from teenage labour subsequent to the legislation. This finding would appear to indicate a low degree of substitutability and therefore offers no support for a youth differential. The study is worth further examination.

In selecting the retail trade sector for study, Cotterill and Wadycki argued that teenagers are concentrated in low-wage jobs (p. 70) but, while measuring changes in the aggregate teenage/adult employment ratio will indicate the displacement effect of minimum wage legislation, it will not provide a discriminating test of the substitutability of teenage and adult labour: teenage employment declines relatively in the aggregate because low-wage jobs decline. Thus, one must concentrate attention on low-wage sectors specifically if one wishes to answer the question of the need for a youth differential. By this reasoning, a youth differential may be tantamount to an industry differential.

Gramlich (1976) provided some data which enable us to evaluate the conjecture concerning the concentration of teens in low-wage jobs. He notes that teenagers comprise 30 per cent of the low-wage group, adult males 20 per cent, and adult females 50 per cent (p. 432). Clearly, teens are disproportionately represented in the low-wage group. Further, the minimum wage was 94.2 per cent of the median wage for teenagers in 1975 (Table 2, p. 422), while it was 40.2 per cent of the median for adult males (*ibid*).

Cotterill and Wadycki's conjecture appears to be supported — teenagers inhabit low-wage jobs. They used a two-stage hypothesis to test the teenage/adult substitutability question:

1. Retail employees receive higher wage rates in those metropolitan areas where the degree of coverage is greatest.
2. Covered employers adjust to the higher wage rates hiring fewer teenagers and less "low-quality" labour in general.

They support Hypothesis 1 and reject Hypothesis 2. We have some misgivings concerning their method which, we feel, may affect the validation of their conclusions.

To test Hypothesis 1, they estimated the equation

$$\text{Log } W = f(C,I,S,M) \qquad (1)$$

where W = individual's wage rate

C = degree of federal minimum wage coverage

I = subindustry dummy variable

S = a state minimum wage variable

M = an area wage variable

This was estimated for a cross-sectional sample of retail employees for 1967. Hypothesis 1 is supported if the coefficient on C is positive (and significant).

To test Hypothesis 2, the authors added a new variable to their original equation:

$$\text{Log } W = f(C,I,S,M,X) \tag{2}$$

where X = age (and other employee characteristics) variables

This is estimated over the same sample as before. They argued that the addition of X should reduce the coefficients on C and S from those of equation (1). They state, "when equation (2) is specified to include all revelant personal characteristics variables (X), the entire effect of minimum wage laws on wage rates should disappear" (p. 73). So the *strict* test of Hypothesis 2 is that the coefficients of C and S in equation (2) are not significantly different from zero. The test of Hypothesis 2 amounts to a test of the robustness of equation (1).[14] They reject Hypothesis 2 — the coefficients of C and S do not materially change from equation (1) to (2).

It is interesting to note that, by this methodology, acceptance of Hypothesis 2 implies at least partial rejection of Hypothesis 1 and vice versa. Yet, if Hypothesis 1 (minimum wage coverage affects wages at the low end of the scale) is accepted, economic theory tells us that Hypothesis 2 (employers react to altered terms of trade) should also be accepted. It is also interesting that the inclusion of X raised the R^2 from approximately .15 to approximately .45. As well, the coefficients of the X-type variable are very interesting. Wages are negatively (significantly) affected when the worker is a teenager, or non-white, or part-time which sound like normal adjustments of employers to market conditions. The authors noted that their results should not be generalized for several reasons because the employment effects of economic expansion may have offset the minimum wage impact (p. 82).

Kosters and Welch (1972) found that the teenage labour market is especially sensitive to cyclical swings in the economy by virtue of its position as a residual labour market. The structure of retailing altered during the study period (establishment sizes increased) and this may have led to a shift toward cheaper, less-skilled labour.

Nevertheless, Cotterill and Wadycki concluded that "...during 1961-67, minimum wage policy did not appear to have had a major impact on the willingness of retail employers to hire teenagers" (p. 83). But they note that, "It would be unwise to attempt to extrapolate our results beyond 1967 because substantial increases in minimum wage rates and coverage have occurred since then" (p. 83).

In a recent study, Welch and Cunningham (1978) explicitly addressed the youth differential question by disaggregating the teenage labour market into three age groups: 14 to 15, 16 to 17, 18 to 19. Broadly, they

found that the adverse effects were greatest for the 14 and 15 year olds and smallest for those aged 18 and 19. All three age groups experienced a negative employment impact subsequent to minimum wages. Since Welch and Cunningham provided no evidence of the impact on adults, their evidence is somewhat incomplete for our purposes. They provide sufficient detail, however, to enable us to consider some interesting points.

In a free labour market, wage rates would adjust to reflect relative productivities. Since younger workers presumably have lower skill levels, their relative marginal productivities would be lower and thus their free market wages would be lower than those for older workers. On this basis, a uniform legislated wage floor (minimum wage) will effectively raise the wage more for younger than for older workers and thus raise the relative costs of hiring younger workers. This should lead to greater relative employment reductions for the younger workers.

Welch and Cunningham used data from an unpublished work of Donald Parsons, which showed that a 1 per cent increase in hiring costs of 18 and 19 year olds represents a 1.7 per cent increase for 16 and 17 year olds, and a 3.3 per cent increase for 14 and 15 year olds. Thus minimum wage revisions have a magnification effect on younger workers which exacerbates the employment effect. With a minimum wage revision representing a 1 per cent increase in the hiring costs of 18 and 19 year olds, Welch and Cunningham found employment *reductions* of 4.04 per cent for 14 and 15 year olds, 2.38 per cent for 16 and 17 year olds, and 1.35 per cent for 18 and 19 year olds (p. 142). The negative effect for 18 and 19 year olds, they argued, "...suggests that substitution between these groups is less than might have been expected" (p. 142). It may also suggest some adult/teenager substitution even for 18 and 19 year olds.

Welch and Cunningham estimated the effect of youth differentials for the 14 to 15 and 14 to 17 age groups. They found significant increases in employment for the 14 to 15 year old age group when the 20 per cent differential was applied to this group. As well, differentials led to an increase in employment for the teenagers as a group. This would tend to support the argument for a youth differential.

Mincer (1976) found that employment rate elasticities with respect to minimum wage revisions were largest for teens. The greatest impact of minimum wage revisions was on this group and such evidence could be interpreted as supporting the claim for a youth differential. To compare: for teens aged 16 to 19, it is -0.205; for males aged 25 to 65, it is -0.020 — both for whites.

Ragan (1977) disaggregated his teenage group into 16 to 17 and 18 to 19 year olds. The impact coefficients were generally larger for the 16 to 17 age group than the 18 to 19 year one, *ceteris paribus*. The evidence is, again, somewhat incomplete since Ragan did not report estimates for adults. His results do tend to support the hypothesis that the youngest workers fare worst when minimum wages are revised (levels and/or coverage) — at least within the teenage group.

From the above evidence, it appears that a case can be made for youth differentials. It we return to Cotterill and Wadycki for a moment, they argued that it was inappropriate to examine the aggregate teenage/adult unemployment ratio since this may capture general declines in employment rather than a substitution. It seems to us that the concentration of teenagers in low-wage industries does not weaken the case for differentials. If the purpose of the differential is to protect teenagers, then it should not matter whether the protection is from substitution of adults or from declines of employment in low-wage industries.[15]

INCOME DISTRIBUTION AND PRICE EFFECTS

To this point, we have been discussing studies directed towards measuring the employment-related effects of minimum wages. In the section on the evolution of minimum wage objectives, we noted that poverty

reduction was a frequently cited goal of minimum wage policy. Thus one would expect that some research has been directed towards an assessment of the income distribution effects of minimum wage legislation. Data problems have restricted the number and scope of such studies but we have some examples for review.

The simplest approach to the income distribution question: assume those currently working at a wage below the new statutory minimum are *all* raised to the new level, without loss of employment or hours, and then determine the number of families below some poverty line. The difference between the pre- and post-revision numbers is the measure of the resulting reduction in poverty. This analysis is equivalent to asking: what if every existing worker received the new minimum wage? This approach has two glaring problems:

1. It assumes that there is no reduction in employment (number or hours) as a result of the minimum wage hike.
2. It ignores any subsequent rise in the price level which should require a redefinition of the poverty line.

This is decidedly optimistic concerning the antipoverty effects of minimum wage revisions. This was the approach undertaken by Kelly (1976) and, in spite of the embodied favourable assumptions, he found that the poverty-reducing effects of minimum wages, over normal ranges, was minimal. He noted some potential reasons for these results:

1. There are data problems such as unrepresentative samples.
2. The period selected for the analysis (1973) was a poor choice since unemployment was relatively high.
3. For many working poor, the problem may be insufficient hours of work rather than low wages.
4. The working poor may be characterized by large family sizes.
5. If we accept the sample and period as valid (reject 1 and 2), the problem may be the weak correlation between family income and hourly wages of low-wage workers.

This last point is the most interesting and it was carefully investigated by Gramlich (1976). He found that, "The generally loose correlation between wages and family incomes implies that minimum wages will never have strong redistributive effects" (p. 445). This issue has not yet received much attention in Canada, and it is an obvious area for further research.

The way research on this issue has proceeded in Canada has been towards an examination of the characteristics of low-wage workers. For this, one can make inferences concerning the poverty reduction potential of minimum wages. A Department of National Health and Welfare study (1976) of the characteristics of low-wage workers in Canada found that the bulk of these workers are young, single, and female.

These conclusions were buttressed by the findings of an Ontario Ministry of Labour study (1974) which found that two-thirds of those being paid at or near the minimum wage in that province were female, over one-half of those earning at or near the minimum wage were under 25 years of age, and about one-tenth of minimum wage earners were married men. On the basis of these findings, one would certainly not choose to compare annualized minimum wage earnings to the poverty lines for families of four with a single-income earner. We still have not been able to study the correlation of hourly earnings with family income and, pending such results, we will accept Gramlich's conclusions for the United States as applicable to Canada.

The discussion of the characteristics of low-wage workers has also shed some light on the question of the appropriate labour submarket in which to evaluate the impact of minimum wages. Fisher (1973) questioned the implicit assumption of most studies that the demand for teenage labour is a relevant concept and that it

represents the low-skilled workers who will be affected by minimum wage increases. He argued that some teenagers earn high wages and/or are in unionized sectors (which should preclude need for protection via minimum wages), while some adults and older persons earn very low wages and/or are in non-unionized sectors. Fisher raised this point in conenction with the deflator used in the minimum wage index. Average hourly earnings itself is not likely to be a representative price for teenage labour substitutes.

Those points are, of course, quite valid. The question is: to what extent can we approximate the low-wage labour market by the teenage subgroup? The studies of the characteristics of low-wage workers (Department of National Health and Welfare, 1976) would seem to indicate that such an approximation is valid. Since data are unavailable to permit a rigid classification by wages, we wish to use that classification which exhibits the least "leakage," that is, the group with the highest proportion of workers at the low-wage end of the spectrum. Teenagers fit this bill. Gramlich (1976) presented evidence (Table 2) which showed that 22 per cent of teenagers were earning below the minimum wage in 1975 versus 2.6 per cent of adult males. To the extent that numbers of teenagers earn wages in excess of the low wage, there will be an understatement of the impact of minimum wages.

Gramlich (1976) also investigated the impacts of minimum wages on the wage structure. He studied both the low- and high-wage sector in the United States. He argued that minimum wage legislation will exert a much smaller impact than is commonly presumed because, at the low-wage levels:

1. Coverage (legal) is not complete.
2. Compliance is not complete.

His estimation of coverage is debatable. But to argue the lack of adverse impact of a policy on the basis of the degree of illegal avoidance of the policy is strange logic, at best.

The coverage debate is of mild interest in Canada where legal coverage is currently near complete. It is interesting to review Gramlich's (1976) discussion on this issue, nevertheless. He used data from some supplementary questions in the labour force surveys (1973 and 1975) which pertained to hourly earnings. Then he computed the fraction of those earnings within the minimum wage band ($1.60 to $1.80 in 1973; $2.00 to $2.25 in 1975) as a percentage of all workers at or below the minimum wage band. Those earning the minimum wage were covered, those below were not covered. Non-coverage was attributed to the lack of legal coverage or to non-compliance. Gramlich attempted to explain differences in the degree of effective coverage across industry groups. He found it was due primarily to lack of compliance (p. 426). Compliance issues have received little attention in Canada in spite of the relevance of the issue.

Gramlich studied the emulation effect of minimum wage revisions on higher-level wages. To do this, he measured the change in the overall wage levels following an increase in the minimum and then compared this change with the direct impact of the revision. Any increase in the overall wage level over and above that accounted for by the direct impact could be taken to be an emulation effect.

He used a Phillips curve equation of the form:

$$W_t = \beta_0 + \beta_1 UGAP + \sum_{i=1}^{n} \gamma i \frac{\Delta P_{t-i}}{P_{t-1-i}} + \delta \frac{\Delta MW_t}{MW_{t-1}} + \epsilon_t$$

where W_t = percentage rate of change of wages

$UGAP$ = inverse of the actual unemployment rate times the estimated normalized rate of unemployment (normalized for changes in labour force composition) and by 0.25 (scaling factor)

P = general price level

MW = minimum wage

This was estimated on quarterly data from the period 1954-75. A number of interesting results were generated. Gramlich found that minimum wages do work in a Phillips curve relation — R^2 increased by 5 per cent over the identical equation without the minimum wage variable. The current period impact was, by far, the most potent. When Gramlich maintained the above equation and introduced two new minimum wage terms,

a) $\sum_{i=1}^{4} V_i \frac{\Delta MW_{t-i}}{MW_{t-i-1}}$ — a four quarter Almon Lag

b) $\frac{\Delta MW_{t-1}}{MW_{t-2}}$ — a second period lag

he found that neither contributed significantly to the equation and that the coefficients on the original variables were largely unchanged.

Gramlich argued that these results indicated a near instant emulation effect and that this was very likely due to the considerable advance notice given minimum wage revisions. It may also indicate the extent to which the minimum wage serves as a base for higher wages.

An even more interesting result is the substantial (near 50 per cent) *direct* impact of minimum wage revisions. Of the remaining impact, Gramlich argues, the bulk is concentrated at the bottom tail of the wage distribution which implies a general compression of the wage structure and a relative improvement in living standards for those earning low wages. This is not to imply that the relation is linear. If relative income hypotheses are to mean anything, a substantial increase in the minimum wage level must lead to subsequent attempts to restore the wage distribution. In fact, one wonders if Gramlich's optimistic results are not due to the very modest minimum wage levels in the United States (currently well below those in most of Canada). He, himself admits this point (p. 430).

Gramlich discussed the potential impact on price inflation generated by minimum wage increases (p. 430). The substantial direct impact and immediate emulation effects led to a very rapid increase in the overall wage rate following a minimum wage increase. Presumably this is matched by price increases — labour's share of total output tends to be relatively stable over time. This should be a once-for-all change in the price level except that the price term in Gramlich's equation (above) has a coefficient very near one for all of the equations estimated. This indicates that "...this supposedly one-shot change in the overall price level would be converted into a nearly permanent one-shot in the *rate* of price inflation" (p. 430, and footnote 23).

This inflationary response ought to lead to increases in the general wage levels to the extent that wage bargaining rests on the general price level. There is no reason to expect those at the high end of the wage scale to be less astute negotiators, so it could follow that the wage distribution would be restored or even further dispersed relative to the pre-minimum wage revision period. Thus we wonder why Gramlich found no evidence of a long-term emulation effect. One possibility might be the very low *effective* coverage rates

Table 4-2

Summary of Empirical Work on the Employment Effect of Minimum Wage Legislation

Author date	Study period	Study method	Minimum wage specification	Minimum wage lag	Dependent variable(s)	Other specification aspects	Results
CANADIAN STUDIES							
Fantl and Whittingham (1970)	Minimum wage revision of 1 Jan. 1969 Ontario	Survey of employers 2 weeks after revision	N/A	N/A	N/A	N/A	No adverse employment effect.
McKenna (1973)	Minimum wage revision of Jan. 1969 Ontario	Survey of employers one year after revision	N/A	N/A	N/A	N/A	Employment fell during the study period (by 10%) but it was impossible to attribute this to any particular cause.
Rhodes (1973)	Minimum wage revision of 4 Dec. 1972 British Columbia	Survey of employers 8 months after the revision	N/A	N/A	N/A	N/A	Little direct employment effect – less than 1% of employees in the survey were laid off as direct result of minimum wage. Indirect result was that some 500 jobs were lost through attrition or being eliminated prior to staffing.
Dhruvarajan (1974)	Minimum wage revision of 1 Oct. 1972	Survey of employers taken between announcement of revision, May 1972, and the revision, 1 Oct. 1972 and again shortly after, 23 Feb. 1973 – two survey periods	N/A	N/A	N/A	N/A	No adverse impact on total employment in the sectors surveyed. However, there was evidence of some adverse impact on student hours, older workers, and full-time vs part-time workers.
Maphangoh (1976)	1966 and 1971	Cross-sectional analysis of retail trade sector. Two equations: a wage equation and an employment equation solved sequentially by OLS and 2 SLS.	Simple minimum wage in nominal terms – no weighting, no deflating	N/A –cross-sectional study	1) Employment 2) Average wage rate	1) $E = f(W,S,Ed)$ 2) $W = f(M,Ed,MW)$ where E = employment, W = wage rate, S = sales (output), Ed = average level of education, MW = minimum wage, M = average wage in manufacturing	Very low employment effect. Wage impact from 0.16 to 0.63. Employment response to wage increase from 0.26 to 0.84. Combined "minimum wage" effect from 0.05 to 0.53.

Swidinsky (1978)	1950-1975 Annual data	Time series analysis of annual data. Three single equations estimated by OLS.	Minimum wage index for Canada (national) computed annually thus: $MWI = \sum_{i=1}^{10} \frac{Li}{Lc} \left(\frac{MW_i}{AHE_1} \cdot C_i\right)$ where L_i = non-agricultural labour force for province i; L_c = non-agricultural labour force for Canada; MW_i = average hourly earnings in province; C_i = average rate in province i	No lag. Attempted lag response (one year simple lag) but the results were poor.	1) Unemployment 2) Employment 3) Participation rate	$Y = f(UR, MWI, T, T^2)$ Y = depend variable(s) UR = cyclical proxy (adult male unemployment rate) T = time trend	Employment impact statistically significant. Cumulative fall in teenage employment since 1950 – females: 11.8%, males: 16.6%. The unemployment effects were – females: 1.54%, males: 0.17%. The employment impact was offset, in part, by the negative participation rate impact.
Maki (1978)	1970-1977	Pooled time-series, cross-section to test hypothesis that provincial unemployment rates cause differential unemployment rates. OLS.	Minimum wage (nominal) divided by average wage (nominal) MW/AW.	No lag	Unemployment rate	$U = f(D_i, PR, MW/AW, UIC/_{AW}, DSQ, \%\Delta U)$ D_i = provincial dummy; PR = participation rate; UIC = unemployment insurance benefits; DSQ = disqualification rate on UIC; $\%\Delta U$ = per cent change in unemployment index	Differential provincial minimum wage rates were found to be a statistically significant determinant of provincial unemployment rates across regions.
AMERICAN STUDIES							
Kaitz (1970)	1954-1968 1948-1968	Time-series analysis. Single equation OLS. Quarterly (nominally adjusted) data for 1954-68, annual data for 1948-68.	Minimum wage index $MWI = \sum_{i=1}^{n} e_i \cdot \frac{MW_i}{AW_i}$ e = industry weighting factor; MW = nominal minimum wage; AW = nominal average wage; i = industry	No lag	1) Unemployment 2) Employment 3) Participation ratio	$Y = f(MWI, MP, AF, Ag, UR, P_{i/P_T}, S)$ MP = manpower program dummy; AF = armed forces employment; Ag = agricultural employment; UR = adult male employment rate; P_{i/P_T} = population ratio of group i to total; S = school enrolment	Quarterly model: Unemployment effects are insignificant for all cohorts. Employment effects are statistically significant and negative for some white cohorts but insignificant for non-white cohorts. Annual Model: Unemployment and employment effects are insignificant.

(cont'd)

Table 4-2 (Concl'd)

Author date	Study period	Study method	Minimum wage specification	Minimum wage lag	Dependent variable(s)	Other specification aspects	Results
Kosters and Welch (1972)	1954-1968	Time-series OLS. Two equation recursive model.	Minimum wage index $MWI = \frac{MW}{AW} \cdot$ coverage	No lag	Employment and "coefficient of marginality"	Cyclical and trend decomposition of teenage employment. $E = \gamma EP + \beta ET$ $\gamma = f(MWI, r)$ $\beta = f(MWI, r)$ where E = employment, P = permanent, T = transitory, r = long-run growth rate of employment, β/γ = coefficient of marginality	Minimum wages reduce teenage share of permanent employment and increase share of transitory employment. Minimum wages render the teenage labour force more sensitive to cyclical economic activity.
Katz (1973)	1960	Cross-section four equation model solved by 2 SLS	Federal and state minimum wages in amount values	N/A	1) Employment 2) Labour Force	Solve for "market" wage. Employment is a fraction of average wage and output. Labour force is a function of average wage, family income, adult male unemployment rate. Average wage is a function of minimum wages and market wages	Teenage employment adversely effected by minimum wages. Disemployment effects range from 5% for teenage males to 12% for non-white teenage females.
King (1974)		Non-econometric. A model of risk analysis developed and the elasticity conditions for a welfare gain are determined. These elasticities are compared with those estimated by Katz.	N/A	N/A	Employment	Mean-variance analysis	Blacks are unambiguously worse off under minimum wages. Other classifications are not studied.
Welch (1974)	1954-1968	Time-series single equation OLS	Similar to Kaitz		Employment	Employment is a function of minimum wage, adult unemployment rate, school enrolment rate, manpower (youth) policy, armed forces.	Adverse employment effects. Minimum wages statistically significant. Cyclical responsiveness of teenagers. Notice there are data problems in Welch's work – see Siskind (1977) and Welch (1977).
Kelly (1976)		Time-series simultaneous	Similar to Kaitz but tests alternative specifications with respect to market-clearing wage of teenagers	Three-period third-degree Almon lag	Employment	Employment is a function of minimum wages, school attendance.	Adverse employment effects. Minimum wage term is statistically significant and it affects the industrial distribution of teenagers.

Cotterill and Wadycki (1976)	1967	Cross-section. Two single equations to test two hypotheses. OLS. 31 metropolitan areas	State minimum wage and degree of coverage of Federal minimum wage in the study area	N/A	Wages	Wages are a function of the extend of coverage under the Federal rate, state minimum wages, industry, and the average area wage. To test second hypothesis they include worker characteristics in the above specification.	Average wages increase when minimum wages are revised but this does not cause employers to shift away from teenagers.
Mincer (1976)	1954-1969	Time-series two single equations to model employment and participation rate OLS. Quarterly data	Minimum wage index similar to Kaitz	Polynominal of degree 2. Four to eight quarters fit best.	1) Employment 2) Participation rates	$Y = f(MW, UR, AF, T, T^2)$ where Y = dependent variable, MW = minimum wage index, UR = adult male unemployment rate, AF = armed forces population, T, T^2 = time	Adverse employment effects and participation rate effects particularly for teenagers and non-whites. The minimum wage variable is statistically significant for these groups.
Gramlich (1976)	1948-1975 1963-1975	Time-series single equation OLS. Total labour for various cohorts from 1948-75. Part-time/full-time split for 1963-1975.	Minimum wage index with coverage entered separately as a dummy to indicate changes in legal coverage.	Almon lag four to six quarters	Employment	Employment is a function of output, minimum wages, time, coverage, supply factors.	Teenagers: full-time employment fell and part-time increased. Adult Males: full-time employment fell. Effect on part-time employment is statistically insignificant. Adult Females: minimum wage is statistically insignificant. (Based on 1963-75 results)
Siskind (1977)	1954-1968	As per Welch (1974)	As per Welch (1974)	As per Welch (1974)	Employment	Siskind re-estimated Welch's (1974) work on basis that Welch used incorrect unpublished data.	No adverse employment effect.
Welch (1977)	1954-1968	As per Welch (1974)	As per Welch (1974)		Employment	Re-estimated original work on basis of Siskind data correction. Disaggregated the sample by industry class.	Adverse effect in two of four industries. Minimum wages are statistically significant in two industries.
Ragan (1977)	1963-1972	Time-series. Two single equations. OLS. Quarterly data.	Similar to Kaitz	Simple one quarter lag	1) Employment 2) Participation rates	Included cyclical proxy, manpower program, dummy variables, population ratios, and seasonal dummy variables.	Minimum wages increase teenage unemployment and prevent market adjustments when teenage population is growing relative to adult.
Welch and Cunningham (1978)	1970	Cross-section 49 states OLS	Fractional increase in cost of 18-19 year old workers as a result of minimum wage revision.	N/A	1) Employment	Relative population. Index of regional economic activity (unemployment rates).	Adverse impact of minimum wages is greatest for those 14-15 years old.

for the labour force as a whole. Gramlich's evidence indicates that 6.2 per cent of all workers were effectively covered in 1975 (Table 2, p. 422).

Another possible explanation for Gramlich's results may be found in the specification of his equation. If policy makers attempt to maintain minimum wages in real terms, then it is likely that nominal minimum wages and the general price level will be correlated. This will lead to problems of multicollinearity and the usual problem of imprecise coefficients. Since Gramlich did not include any evidence of the robustness of his coefficients, we cannot judge their reliability.

CONCLUSIONS

We have covered a great deal of material in this section and we present a summary of this empirical review in Table 4-2.

From our survey of past empirical studies of the impact of minimum wages, we arrive at a number of general conclusions:

1. The results obtained appear to be dependent, in some sense, on the study method. Short-term survey and pure cross-sectional studies tend to find the employment effect to be "non-serious." Long-term time-series studies tend to find that minimum wages cause some adverse employment effects. The results are also quite sensitive to the chosen index of impact. Studies using unemployment measures (ratio or rate) tend to find little or no adverse impact, while those using *employment* measures tend to find some evidence of adverse impact.

2. Econometric evidence is unable to refute the competitive model. Neither does the non-econometric evidence support the monopsony model.

3. Finally, the evidence to date (although meagre) does not support the view that minimum wages are an effective antipoverty policy tool.

These conclusions form a natural bridge between the discussion on theory aspects of minimum wages and the section on policy questions which follows.

5 Minimum Wages and Economic Policy

While most of our previous discussion has been in terms of positive (predictive) economics, the present chapter reviews a part of the literature that is predominantly normative. It will examine the suitability of minimum wages as a tool for poverty reduction and income redistribution; the desirability of differentials in the minimum wage for particular groups; and the comparative efficiency of alternative tools that are directed to the same publicly stated objectives as minimum wage laws. Among the latter alternatives, we shall examine the negative income tax, the wage subsidy, and the program of job creation. A related issue that will also be studied is the effect of the minimum wage on the inducement to work. On the question of the productivity effects of minimum wages, nothing further will be added to our treatment in Chapter 3 (concerning the shock effects).

MINIMUM WAGES AS AN ANTIPOVERTY TOOL

According to Fortin (1978, p. 2), the main objective of the minimum wage in Quebec is to obtain a redistribution of the national (provincial) income in favour of low-wage workers. Similarly, Gramlich (1976, p. 443) argues that "the main appeal of the [U.S.] minimum wage...appears to be its effect on income distribution." In a research paper undertaken for the Canadian Department of Manpower and Immigration entitled, "Minimum Wage Policy," Donner and Lazar (1975) emphasized that, since a large proportion of the poor are found in families where at least one member of the family works for some period during the year," ...some policy or set of policies aimed at restructuring the labour market in which these poor families find employment must comprise an important role in an overall antipoverty program. Obviously, the main purpose of the restructuring should be to increase wage levels..." (Donner and Lazar, 1975, p. 1). The same kind of view if put forward in *A Review of the Minimum Wage Level in British Columbia* (Research Branch, B.C. Department of Labour (February 1975), pp. 5-7, quoted in Aykroyd (1976), and also in "Rapport du groupe de travail sur la politique de salaire et des conditions minima de travail" (Castonguay *et al.*, 1975, pp. 10-14).

Kelly's (1976) empirical investigation of the income distribution effects of minimum wages in America concluded, nevertheless, that they are "amazingly small." This was even after significant upward biases in the estimates. Kelly examined the effects of increasing coverage to 100 per cent, and increasing the minimum wage to higher levels. Using a base year of 1973, he made the strong assumption of no reduction in hours. Among his results was the finding that, if the 1973 prevailing U.S. minimum of $1.60 was raised by over 50 per cent to $2.50 (coverage and compliance rates remaining constant), the reduction in the poverty rate would have been 1 per cent.

Among several hypotheses advanced to explain his findings, Kelly included the suggestion that a large proportion of those who are directly affected by a minimum wage are not in poor families. His general conclusion was: "These results bring into question the poverty effectiveness of the minimum wage as a transfer device" (p. 28).

In another examination of U.S. data, Gramlich (1976, pp. 445-46) found a "generally loose correlation between wages and family incomes" which implied that "minimum wages will never have strong redistributive effects..." The looseness of the correlation was attributed to low-wage secondary workers in high-income families, varying family sizes and numbers of earners per family, and varying amounts of unearned income. For every boost in minimum wages received by adults, Gramlich found that "25 per cent goes to families with incomes above the median, requiring 25 per cent to families with incomes below the median just to cancel the distributional impact of this leakage, and leaving only half as a net absolute gain to the latter group" (pp. 448-49). Teenagers who benefited from minimum wages were "so spread out along the distribution as to prevent effective income distribution" (pp. 447-48).

In his study done for the Quebec Minimum Wage Commission, Fortin (1978) explains that he began his investigations with a prejudice in favour of redistributing income within Quebec society. But he became increasingly convinced that raising the minimum wage in recent years had actually reduced the earnings from employment of those it is meant to help (pp. 86-87). Much of Fortin's argument focuses on the fact that the Quebec minimum wage is too high relative to that in Ontario and the United States. This has led companies to lay off employees and shorten the hours of work, so that the income earned through work actually declined for those at the minimum wage level. Raising the minimum wage over the 20 months preceding July 1978, Fortin concludes (p. 86), has increased the number of unemployed in the province by between 25,000 and 42,000. Most affected are the young workers whose unemployment has increased between 1 and 1.5 per cent as a result of the higher minimum wage. "At the very best, it was a curious way of giving low-wage earners a greater share of the benefits of economic progress" (p. 88; unofficial translation).

Fortin's argument about the disparity between Quebec's minimum wage and those of other countries (provinces) is presumably more widely applicable. Thus, if the average Canadian minimum wage is higher than the average in the United States, one should, on Fortin's reasoning, look for disemployment and lower than potential incomes in Canada as a whole. More generally, if wages in one industry such as textiles become more out of line with textile wages elsewhere, one could predict the same results, in the absence of increased tariff and quota protection. Since most textile wages in the world, meanwhile, are determined by market forces, rather than legislated minimums, Fortin's argument appears ultimately to attack the principle of unilateral national (or provincial) minimum wage legislation itself.

Table 5-1

Minimum Hourly Wage Rate (x 40 Hours) as a Share of Average Weekly Wages, by Province, 1968 and 1977

	1968	1977
	(Per cent)	
Federal	45	48
Newfoundland	39	43
Prince Edward Island	61	58
Nova Scotia	52	53
New Brunswick	45	50
Quebec	40	51
Ontario	35	44
Manitoba	46	54
Saskatchewan	40	53
Alberta	46	45
British Columbia	41	44

SOURCE IRRR, November 1976, p. 14.

The impression is sometimes given that minimum wages have reduced poverty if we look merely at the compression of published wage differentials. The data shown in Table 5-1, for instance, demonstrate that hourly minimum wages, converted to a weekly rate on the assumption of a forty-hour week, typically increased relative to average weekly earnings between 1968 and 1977. (The exceptions were Prince Edward Island and Alberta.)

The figures take no account, however, of the discouraged worker effect, the effect that Swidinsky (1978) found significant. Those discouraged by high minimum wages from entering the labour force may have no independent source of income, but may instead rely on a level of family support that is well below official poverty lines. Second, the figures take no account of unemployment.

This has led to objections such as that of Ragan (1978):

> Poverty is directly related to income, not to wage rates. It is hard to see how a person who is unemployed when the minimum wage if $2.65 an hour is better off or less impoverished than an employed person who earns $2 an hour. Those who lose their jobs as a result of the minimum wage experience a reduction in income, not an increase (p. 62).

Minimum wages can also reduce the weekly income of some workers if they lead to a reduction in hours worked. Gramlich (1976) found that minimum wage legislation did indeed reduce the average workweek of younger employees, shifting some youths out of full-time and into part-time jobs. Some Canadian evidence on the reduction of hours worked, and the switch to part time, is included in Aykroyd (1976). In the category of the trade and service sector called "Hotels, Restaurants, and Taverns," a category which is the largest employer of low-wage earners, Aykroyd reported (see Table 5-2) that the weekly earnings rose in recent years in Ontario and British Columbia by a rate lower than those in manufacturing. Aykroyd deduced a substantial shift towards part-time employment from the additional fact the employment index for the hotels and restaurants industry rose sharply over the period. Working on limited data (for 1975-78) relating to the Maritimes, West and McKee (1979) found the same general switch into part-time work as did Gramlich for the United States.

Table 5-2

Percentage Increase in Weekly Earnings in Selected Industries, Ontario and British Columbia, 1966-74

	Hotels & restaurants	Manufacturing
	(Per cent)	
Ontario (1966-74)	57	77
British Columbia (1967-74)	64	78

SOURCE Aykroyd (1976).

Another frequent criticism, dating from Stigler (1946), is that minimum wages do not get to the roots of poverty in those families where there are no wage earners, or where wage earning is very sporadic. Aykroyd (1976, p. 5) argues that "The vast majority of persons with low incomes are not poor because of low wage rates but either because these persons are subject to periods of unemployment or because they depend on transfer payments which are not high enough to ensure their livelihood."

The argument in this last quotation could overlap with the criticism that minimum wages cause unemployment, for it refers to low incomes of some persons "subject to periods of unemployment." Meanwhile, there is no clear evidence that all the remaining non-earning heads of households are

"unemployables." *Everybody* is unemployable at some wage rate. It may be that nearly everybody is employable at another. But the existence of minimum wages truncates the market and precludes us from knowing.

The Economic Council has observed in its publication *People and Jobs* (1976, p. 47):

> As minimum...wages continue to rise, it becomes increasingly costly to employ or hire persons who, through inexperience, inadequate skills, or physical or other disabilities, have limited productive capabilities... And, while many employers are genuinely concerned about helping persons with special needs...we believe that more can be done by all...

This reasoning then leads to an argument for "direct employment":

> Our recommendation to create direct employment could provide the basis for help by means of conditional grants, to the various public or voluntary agencies that provide persons with sheltered employment... (p. 49).

West and Miller (1978) argue that logically a more appropriate procedure is to relax the minimum wage legislation. Meanwhile, the same taxation machinery planned to finance direct employment could be used to supplement individual incomes. Consider persons with a labour productivity worth $2 an hour and the legal minimum wage is $3. If a government employs them, it will have to pay at least the minimum wage of $3. Thus, governments would have to subsidize these workers by at least $1 an hour. The question, in other words, is whether the money used for direct subsidies or supplements would not be better used in the form of a negative income tax. Such a procedure would probably involve less administrative costs than would an elaborate direct employment program. West and Miller conclude also that there would be less interruption in work whereas:

> A minimum wage program that prices people out of a job will place them on the unemployment lists for some period of time pending the development of the public employment scheme. And even then it is not clear whether they will be in the most productive place (p. 236).

Some researchers work directly from the figure of the officially recognized poverty line, say, for a family of two, to obtain the corresponding poverty-line minimum wage (assuming, for example, a forty-hour workweek). Working on the Croll Committee's finding that the 1969 poverty line for a family of two was $3,570, Donner and Lazar (1975) derived the appropriate 1975 poverty-line minimum wage after adjusting for inflation and productivity. Assuming an average annual employment of 1,500 hours, they concluded that the hourly minimum wage in 1975 should have been $3.32. The *actual* federal minimum prevailing in 1975 was $2.20 for adults and $1.95 for young workers. The highest provincial wage was $2.60 (in Quebec).

Ragan (1978, p. 63) argues that since the typical youth is not a household head, there is no logic requiring him to refuse work unless he can make enough to support a family of two or more. (On the formula used by Donner and Lazar, a *single* person working 1,500 hours a year would have needed a wage of only about $1.60 in 1975 in order to reach the poverty line.) Ragan also maintains that, by taking jobs away from some secondary workers, the minimum wage prevents them from contributing to family income. "Since most families rely on more than one wage earner, this is an important consideration. Removing a source of income, however modest, will increase the burden on other members of the household."

An increasingly favoured response to Ragan's type of argument is to argue that there is a greater probability of income benefits to the poor *in the long run*, despite (conceded) disemployment effects. The new reply focuses on the *duration* of unemployment. If there is a high turnover, a person unemployed today may be re-employed tomorrow, and at a minimum wage level that increases his income in the long run by an amount more than sufficient to compensate for his spells of unemployment.

Some evidence derived from three provincial studies done in the early 1970s shows high turnover among low-wage earners in Canada. It is presented in Table 5-3.

Table 5-3

Duration of Last Job for Low-Wage Earners, Ontario, Alberta, and Quebec, Early 1970s

	Date of study	12 months and under	More than 12 months	Total
		(Per cent)		
Ontario	(1973)	72.2	27.8	100.0
Alberta	(1974)	70.3	29.7	100.0
Quebec	(1974)	57.3[1]	42.7[2]	100.0

1 1.5 years and under.
2 More than 1.5 years.

SOURCE Aykroyd (1976), p. 10.

Borrowing an argument of King (1974), Aykroyd (1976, p. 10) suggests that such information indicates that "any adverse employment impact will be spread among a much larger group of persons than those initially discharged by employers." King argued that, in casual labour markets, the more frequently jobs turn over, the more is the "average" experience descriptive of the experiences of each worker. As the variance in earnings approaches zero, the less meaningful it is to distinguish between those who benefit and those who are harmed by the legislation. But even if all workers share the unemployment equally, the next question is whether the working population as a whole will receive net benefit or net harm in terms of income. The answer depends on prevailing elasticities of demand for labour. King concludes that, if the percentage increase in the wage rate caused by legislation exceeds the percentage decline in the employment ratio, the minimum wage laws *can* benefit the target group. The point was developed further by Gramlich (1976).

On King's statistics, and using his measure of sufficient conditions for welfare improvement, he found that a small increase in the minimum wage will improve the welfare of male and female teenage workers. West (1975) points out, however, that when these groups were broken down, King found that some smaller component groups, namely, non-white teenagers of both sexes, would still be unabiguously harmed by an increase in the minimum wage. (The same sort of observation on Gramlich's 1976 study was made by Wachter (1976, p. 457).) Further research is needed to determine whether in Canada there are not similar minorities in the population who would suffer equal harm by sharing the unemployment *unequally* — minorities such as native peoples and immigrants.

The data on labour turnover (see Table 5-3) do not indicate to what extent it is due to *voluntary* labour force withdrawal rather than to shifts in the availability of employment caused by seasonal, cyclical, or other factors. According to Feldstein (1972), we can expect that a considerable proportion of such turnover to be voluntary. Because of minimum wage laws, fewer firms can offer useful on-the-job training to a broad class of young employees. The net product of such workers having training is likely, initially, to be much lower than the minimum wage, a fact that discourages employers from offering training. Young people are thus prevented from "buying" on-the-job training by taking a very low wage for a year or so. The jobs offered ultimately become unsatisfactory "dead-end" jobs in which the employer takes little interest in the career plans of those he employs.

Feldstein thus concluded that the consequent high turnover rates connected with minimum wages are due significantly to voluntary action by the employees; that is, to high quit rates and short-run absenteeism. His ultimate diagnosis, indeed, was that in these respects the minimum wage has poverty *increasing* effects; and this follows when we use the correct measure of income which is *increasing lifetime income in present terms*.

> The lack of additional training for those who start with low skills makes them part of the permanent poor. For the disadvantaged, the minimum wage law might have the ironic effect of lowering the life-time income by a very large amount (Feldstein, 1972, p. 23).

This is only one side of the coin. The results reported in a recent paper by Leighton and Mincer (1979) indicate some substitution of formal schooling for on-the-job training subsequent to minimum wage revisions. This is consistent with the findings of Mincer (1976) and Swidinsky (1978) that participation rates decline following minimum wage increases. For the young, leaving the labour force may be accompanied by a return to formal schooling. Thus it may appear that gross human capital formation is unaffected by minimum wage legislation. It must be recognized, however, that this shift towards formal schooling is not without cost. Education in Canada is heavily subsidized which raises the social cost of human capital formation, while the private cost rises by some fraction of the wages that would have been paid during on-the-job training.

With respect to involuntary job losses, some writers appear to argue that, where there is a small residue of unemployed persons, their worsened position can be traded off for the improved position of the majority. The work of de Fontenay and Warskett (1976, reviewed above, pp. 49-52), for instance, gives this impression. Their main attention is on the argument that the low-income group includes large numbers earning just above the minimum wage, and measures of the poverty reduction effect of minimum wages should acknowledge the favourable ripple effect upon this group, even if some individuals with the lowest productivity are disemployed. In Aykroyd's opinion:

> Where these [unemployment] effects are not large enough to indicate severe economic dislocation, however, it remains a debatable question whether the *total* loss of employment income suffered by workers who lose their jobs can be legitimately compared with the *marginally higher* incomes received by the far larger group who retain their jobs (Aykroyd, 1976, p. 9).

The nature of the debate in Aykroyd's "debatable question" needs further elucidation. His observation, which is made in the context of a section in his paper on the appropriateness of the minimum wage in the attack on poverty, appears to refer to the need for a normative judgement whether the interests of a *large* number of people who benefit can be compared with a *small* number of people who are made worse off, the latter comprising those who lose their jobs. Among those who would decide in favour of the large number would be the classical utilitarian. In his view, one should not hesitate to use "welfare weights" to obtain the greatest *sum* of happiness.[1]

In contrast, the "difference principle" of Rawls (1971) prescribes that, for any given public intervention, or change, those who are lowest on the income scale must be benefited. "The intuitive idea is that the social order is not to establish and secure the more attractive prospects of those better off unless doing so is to the advantage of those less fortunate" (p. 75). Rawls' argument appears to mean that "those less fortunate" can be any number down to one. He insists that his difference principle is lexically prior to maximizing the sum of advantages (p. 302) and that, in contrast, "utilitarianism does not take seriously the distinction between persons" (p. 27).

Earlier versions of the "Pareto optimality test" in welfare economics would allow a change that would make some members better off and would potentially allow compensation for others who would otherwise be worse off. It may be argued that such a situation is possible with a wage change where the demand for labour, as a whole, is sufficiently inelastic. For then a suitably designed minimum wage could provide net increases in income to the majority who were better off even after they had more than compensated those who lost their jobs. The Pareto test, however, applies to the whole society, not just to workers. Others would remain injured. These would include consumers faced with higher prices, and investors.

Later versions of the Pareto principle impose the extra condition that not only should there be a *potential* for compensation but that such compensation *should* be made. Clearly a minimum wage law *per se* would not comply with this.

In terms of *positive* economic analysis, the question of comparing the interests of large with small groups translates to predictive hypotheses relating to how the former will (not should) act. The question in these terms will be addressed in our chapter entitled "Politics."

THE INTERACTION BETWEEN THE TRANSFER SYSTEM AND THE MINIMUM WAGE

In discussing the relationship between the minimum wage and social policy generally, some writers emphasize that the minimum wage applies to an individual *worker*, whereas social assistance benefits apply to a family. The recipient of social assistance benefits receives not only financial payment according to family status, but also other benefits such as free or subsidized prescription drugs. Conversely, an individual worker receives employment-related benefits such as holidays with pay, employment-related costs such as income tax, and work-related expenses such as clothing and transport to and from the job. The distinction is regarded as important, because sometimes social improvement can best be achieved by giving incentives to individuals to work — and these incentives may be weak if the ratio of net income when unemployed (via transfers), to income when employed, is "too high."

In the *Working Paper on Social Security in Canada*, it was argued that, in some cases, there is virtually no incentive for a person to get off social assistance because income from it may be higher than one could earn at the minimum wage. It decreed therefore that "...a fair and just relationship must be maintained between the incomes of people working at or near the minimum wage, the guaranteed incomes assured to people who cannot work, and the allowances paid to those who can work but are unemployed" (Lalonde, 1973, p. 17). Such observations have led a federal Department of Labour group to investigate the question, "How much higher should a minimum wage be than social assistance or unemployment insurance benefits?" (Department of Labour, 1974, p. 13). While attempting no simple answer, it emphasized that the difference between earnings from employment at a minimum wage and income from social assistance should certainly take into account the employment-related costs such as income tax and costs of going to work.

If, in order to encourage individuals to accept employment, it is necessary to alter the ratio between wages and unemployment insurance, one of two events will effect the change: a rise in wages, or a fall in unemployment insurance benefits. The matter is clearly for policy makers to choose. Administrators of minimum wages have, hitherto, advanced one of these policies — the increase in the minimum wage — as the appropriate boost to incentives to work. The 1968 Report of the Canadian Association of Administrators of Labour Legislation (CAALL) observed, for instance, that "...minimum wages clearly have an advantage over other means of alleviating poverty as they do not impair the incentive to work, but are likely to increase it."

This position is subject to four criticisms. First, while minimum wage hikes might enhance the incentive to seek work, simultaneously they reduce the incentive of employers to offer it. The net result could be not a decrease but an increase in the numbers of people receiving unemployment insurance and welfare. Second, Mincer (1976) found a decline in participation rates following minimum wage increases, thus suggesting work *disincentive*, or discouraged worker, effects. Strictly, there are two potential consequences on the supply side from an establishment of, or increase in, the minimum wage. The first, which is the one that the administrators of labour legislation seem to have exclusively in mind, can be depicted as a movement outward along the aggregate supply curve. The second is the withdrawal from the labour force by those who perceive that job opportunities are reduced as a result of the minimum wage. This can be depicted as a backward (a leftward) shift in the supply function (curve). In other words, there are two conflicting effects, one acting to increase, the other to decrease, the supply of labour.

Third, it is incorrect to say that all other means of alleviating poverty impair incentives to work. As we shall see, wage subsidy programs *increase* such incentives. A fourth criticism of the argument, that the minimum wage should be increased (relative to prevailing unemployment insurance benefits) to encourage employment at satisfactory levels of pay, is that it fails to set the problem in terms of *lifetime* income. On the Feldstein analysis (above), young workers will accept low pay now to ensure them of much higher (and more than compensating) pay later, after they have received on-the-job training. In so far as the present minimum wage level prevents them from buying such training, and keeps them out of employment, the correct policy would be to allow differentially lower wages for teenagers.[2]

Historically, the tendency in Canada has been towards consolidation of minimum wage rates. Initially, most jurisdictions established a comprehensive set of differentials with minimum wages being specified by urban or rural location, by various geographic zones, by youth versus adult, by learner versus experienced, by part-time versus full-time, by male versus female, and so on. Gradually the number and range of these differentials have been reduced. At present, no jurisdiction employs a zonal differentiation, and all male/female differentials have been abolished. In addition, Newfoundland, New Brunswick, Saskatchewan, and the Yukon have no youth differentials and only Nova Scotia and Ontario have general learner differentials[3] (and these apply for a very short time: one month in Ontario and three in Nova Scotia). As well, since many of the remaining differentials are maintained in absolute terms rather than proportions or fractions, the effectiveness of such differentials has been diminishing.

It may be objected that, while a youth differential would increase the *aggregate demand* for labour, and therefore aggregate employment, it could be expected to reduce *adult* employment. The degree of this effect would depend on the elasticity of substitution between youth and adults, and on the differences in productivity between them. In so far as some adults will lose their jobs, the outcome could have perverse consequences for social welfare objectives since more heads of families are found within this group.

Much of this question can only be answered by empirical studies. Some research in America, including that of Jack Carlson, Chief Economist for the U.S. Chamber of Commerce, and Professors Robert Goldfarb and Anthony Yezer of George Washington University (quoted in Ragan, 1978, p. 64), suggests that there is only very limited substitutability of youths for adults in practice.

Even if further research in Canada shows that only a few adults would lose their jobs as a consequence of substantial differentials between teenage and adult wages, the question remains one of a trade-off between a small number of adult jobs for a larger number of teenage jobs. It would have to be determined, for instance, whether a youth differential can be accepted if three new youths find jobs for every one adult displaced by the lower minimum wage for the young. But where some adults are displaced by young workers, the case, according to Ragan (1978, p. 64), "is not so much a problem of a differential wage, but of a minimum wage per se."

Working from the Feldstein hypothesis that low initial wages encourage human capital formation by way of on-the-job training, Ragan (1978) has suggested the appropriate differential is not necessarily between adults and teenagers but between those workers who are just taken on by employers and other more "long-standing" employees. The Ragan plan is to allow lower minimum wages for all *workers*, adults as well as youths, during their "break-in" period, say, for the first six months with an employer.

> If companies were allowed to pay lower wages initially, they would hire workers they would not otherwise employ — workers whose labor is worth less than the full minimum wage. During their first six months on the job, workers would gain experience and pick up job-related skills valuable to the company. Given its investment in the worker and the consequent increase in his productivity, the company would have a strong incentive to retain him, even after the break-in period expired and the full minimum wage had to be paid. The lower minimum wage, even if only temporary, enables an individual with low productivity to acquire valuable skills, experience, and work discipline and therefore helps him break out of the vicious

> circle. Moreover, since they desire to minimize costs, employers have no incentive to replace experienced workers with inexperienced ones. The wage costs saved by hiring an inexperienced worker at the lower minimum wage would be offset by hiring and training costs associated with a new employee. Therefore, there should be no displacement of experienced by inexperienced workers, only an increase in total employment (pp. 64-65).

In our section on the empirical evidence, it became clear, especially in the studies that have followed the work of Jacob Mincer, using both American and Canadian data, that it can now no longer be confidently asserted that there are no serious disemployment effects of minimum wage policies. Some researchers, hitherto, appear to have felt obliged to prove their particular figures of unemployment effects to the last decimal place. Goldfarb accordingly complains that it is a mistake for economists to attempt to oversell their quantitative results in an effort to "slay the evil minimum wage dragon" (Goldfarb, 1974, p. 268).

Goldfarb suggests that strong antiminimum wage arguments are available that do *not* require the overselling of limited empirical results. Such arguments focus on the *uncertainty* of actual outcomes following minimum wage increases and the potential competitiveness, rather than complementarity, of minimum wage policies with other social welfare legislation. Goldfarb would pose the whole position as follows:

> The minimum wage is often proposed as a poverty-fighting device, but the uncertainty of its effect makes its usefulness in fighting poverty highly questionable. On the negative side, there is reasonably good tentative evidence that teenage employment declines as a result of minimum wage increases. On the positive side, serious minimum wage proponents usually argue that income gains outweigh employment losses, so that income distribution improves. But in actuality there is no assurance of such an improvement, and proponents have presented no empirical evidence that an improvement occurs. Given that there are other ways of attacking poverty, why employ a policy whose supposed benefits may be non-existent, but whose costs are probably very serious? (Goldfarb, 1974, p. 268).

Three years after Goldfarb's observations, it appeared that economists no longer had to struggle to sell the proposition that minimum wages cause significant disemployment — at least in the United States. In 1978, Secretary of Labor Ray Marshall openly acknowledged the job loss consequences. He went on, however, to attempt to justify them. When, for example, 30,000 young people lose their jobs, Marshall observed, government is in a better position to induce them into school under such policies as the Youth Entitlement Program. Similarly, the Apprenticeship Training and Job Corps Programs would be more effective (West, 1979).

Many of those who reject Marshall's argument may wish to persist along Goldfarb's lines and demand why other policies that are available to governments cannot secure poverty reduction or income redistribution in a more certain and less costly way across government departments.

In Canada, this question has recently been raised at the highest government levels. Prime Minister Trudeau's speech to the Federal Provincial Conference of First Ministers on 13 February 1978 contained the following:

> It is clear minimum wages serve social goals. But, in my view, it is worthwhile to examine whether direct income supplementation for low-wage workers would not accomplish the same social objectives as the minimum wage with less distortion in the economy.

MINIMUM WAGES VERSUS ALTERNATIVE POLICIES

One alternative to the minimum wage, of course, is the negative income tax, introduced in principle by Prime Minister Trudeau's government on 24 August 1978, in the form of refundable tax credits for low-income earners with children. The full policy would redistribute income from society as a whole and

target it on *all* individuals or families who are in the lowest income range. The minimum wage policy, in contrast, it has been argued, does not place the burden of redistribution on the whole of society but upon some selected employers whose own incomes, from the small-scale and labour-intensive industries that they are engaged in, are quite modest. More important, in so far as disemployment effects occur, there are serious costs involved with the minimum wage method of income redistribution, the most important being the reduction in the national output.

We have found only one explicit attempt to meet such criticisms head-on. This is contained in Gramlich (1976). Treating the minimum wage as "basically an attempt to alter the distribution of income," Gramlich observes:

> Minimum wages do, of course, distort relative prices, and hence compromise economic efficiency, but so do all other attempts to redistribute income through the tax-and-transfer system. The important question is not whether minimum wages distort, but whether the benefits of any income redistribution they bring about are in some political sense sufficient to outweigh the efficiency costs. Economists may still be able to devise tax-and-transfer schemes that do the job better — that is, bring about the same redistribution with less distortion — but if minimum wages do the job reasonably well, who is to say that the politicians are making a big blunder (p. 410)?

Recognizing the disemployment effects of minimum wages, Gramlich chooses to address the question "of whether prevailing estimates of disemployment are high enough to make low-wage workers worse off from increases in the minimum wage." He then proceeds to offer a theory of minimum wages that aims "to stick with objective concepts, such as the mean and variance of worker's disposable income and the value of lost employment opportunities" (p. 410).

Gramlich's work starts with the distinction, more important in the United States than in Canada, between those types of employment that are covered by the minimum wage legislation and other types that are not so covered. One simple theory suggests that an increase in the minimum wage in the covered sector will cause workers to leave that sector at the margin and enter the uncovered sector, so depressing the wage there (since an increased supply curve will intersect a given demand curve at a lower point). The more sophisticated theory of Mincer postulates that wages in the uncovered sector would not fall all the way to the level that equates demand and supply. In so far as some workers who do not have covered jobs prefer to remain unemployed until covered jobs open up, the wages in the uncovered sector would remain higher than otherwise. At equilibrium, the utility of a relatively certain but lower-wage job in the uncovered sector should be equal to that of a less certain but higher-wage job in the covered sector. One can then determine whether low-wage workers are better off as a result of a legislated change, Gramlich argues, simply by measuring changes in the uncovered wage. That wage forms a "certainty equivalent" to the covered sector package.

Define p as the probability of a participant in the covered sector having a covered job, or,

$$p = \frac{D_c}{D_c + U},$$

where U is the amount of unemployment and D_c is covered employment.

Gramlich next determines theoretically the uncovered reservation wage on the assumption that there is no uncovered unemployment or any other difficulty in getting an uncovered job, no risk aversion, and no cost to job switching. With a covered wage of W_c the uncovered wage would then be:

$$W_u = pW_c + (1 - p)rW_c,$$

where r is the wage-income replacement rate for unemployment insurance and similar transfer programs. Gramlich points out that, as r increases as the government picks up some of the cost of a worker's unsuccessful search for a covered job, the uncovered reservation wage increases. "This simple expression shows the interaction between the transfer system and the minimum wage, which could be very important in any empirical assessment of the benefits to low-wage workers from altering minimum wages" (p. 414).

In terms of such a model, Gramlich applies data that lead him to the conclusion that minimum wages have both positive and negative aspects which suggest, at current levels, they may be "slightly beneficial." Discussants of Gramlich's empirical work have lead them to opposite verdicts — even on Gramlich's own statistics. One of their criticisms has already been anticipated in our observation above; it is unrealistic to assume that all workers can be expected, in the long run, to share the unemployment equally, that is, that they are equally likely to be laid off or rehired. Some workers know with probability close to unity that they will stay in a covered job. "Others know with a similar probability that they will be fired. In this framework, Gramlich's statement that all low-wage workers can benefit from minimum wages is not supported by the empirical results" (Wachter, 1976, p. 458).

It seems equally important to assess the specification of Gramlich's model in terms of his argument (above), that a minimum wage policy should be judged according to whether its benefits outweigh the efficiency costs *compared with alternative policies*. Gramlich describes these alternative policies as "tax-and-transfer schemes." A glance at Gramlich's second equation, above, will show that he is not, indeed, comparing a minimum wage policy exclusively with an alternative tax-and-transfer system. In fact, the policy he examines is a compound of minimum wages *and* tax-and-transfer schemes.

As r increases, Gramlich argues, the government picks up some of the cost of a worker's unsuccessful search for a covered job, and the uncovered reservation wage increases. On his argument, low-wage workers are better off the higher this uncovered wage. Their income improvement with such an increase, however, is not due to the minimum wage policy exclusively, but also to the tax-and-transfer that is simultaneously implied by the drawing on r. This leads to an increase in R, or the total increase in tax revenues required to finance unemployment payments.

A crucial question is whether such tax revenues, of the magnitude of ΔR, cannot more effectively be employed by an alternative policy to minimum wages. Thus, for example, if such revenues were channeled directly through a negative income tax policy, it is arguable that all in the target group would enjoy assurance of help, in contrast to the uncertainty associated with a minimum wage policy. It is not sufficient merely to demonstrate that the administrative costs of such an alternative policy would be higher than those associated with minimum wages (although no such demonstration *has* yet been made). Neither is it sufficient to argue work disincentive effects would follow a negative income tax. Such effects are also associated with unemployment insurance of magnitude ΔR,[4] and the channelling of ΔR via the minimum wage plus unemployment insurance route involves an efficiency cost that is not present in alternative policies — it reduces the incentives of firms to employ workers and thus reduces the whole national income.

It may be argued that using ΔR to finance unemployment insurance will be less inefficient in so far as workers will be able to search for jobs more effectively — since the costs of search are reduced. This argument is, however, vulnerable. Since a minimum wage w_m is imposed on a part of the economy, it creates a differential $w_m - w_n$, where w_n is the resulting earning rate in the uncovered sector. Because wages are above equilibrium in the covered sector, jobs in it must be curtailed. Mincer (1976), who develops this kind of argument, proceeds as follows:

> The probability of a worker finding employment (at w_m) depends positively on the amount of time he puts into search and negatively on the amount of time put into search by everyone else. If all workers were identical, then in equilibrium all persons searching would put in an equal amount of time and have an

> equal probability of finding employment. The time they all put in — which essentially offsets each other — is the unemployment that is observed. It is precisely due to the offsetting of this time that this unemployment is unproductive, and this is why minimum wages produce social waste (p. S90).

Interestingly, the Gramlich paper, which begins, as we have seen, by announcing that it is exclusively an attempt to evaluate minimum wages as a means of altering the distribution of income, ends, in the last paragraph, with a conclusion that "they are far from the *best* way of redistributing income..." (1976, p. 450). This being so, it is difficult to see what rationale remains to support any minimum wage whatever, according to the internal logic of his argument. Gramlich, however, makes the suggestion merely that it is "unwise to boost the minimum wage any more, and that point is likely to be not much above the present minimum" (1976, p. 450). His reasons for restraining increases in minimum wages include the disemployment effect, but emphasize still more "a whole series of other complications" (1976, p. 451). These include the resistance by employers of paying the minimum in the first place, the distortions on overall wages and prices, undesirable changes in the composition of jobs for teenagers and some adults, and a provision of income support for families who do not need it. Gramlich's claim concerning employer resistance as a positive function of minimum wage rates appears to have empirical support. Ashenfelter and Smith (1979) showed that overall compliance with the U.S. federal minimum wage in 1973 was about 65 per cent and dropped about 10 per cent after the new minimum was established in 1975.

Another interesting observation in the Gramlich study is that a boost in the minimum wage will at least give workers more leisure time and this point should be taken into account in the welfare assessment (pp. 411, 419). But the extreme view that unemployment has *no* social or private cost, because the individual's loss of wage income is at least offset by the value of his leisure (and of the information that he acquires by his job search activity), is regarded by Feldstein (1978) as false, even if we accept the premise of the argument that all unemployment is voluntary. His reason is that the taxes and unemployment insurance that the employed worker pays imply a substantial gap between the individual's *gross* wage and the value of his time when unemployed. "The existence of the rigidities that cause involuntary unemployment only strengthens the reason to reject this view" (p. 157).

As a final observation it should be noted that the negative income tax is only one alternative to the minimum wage policy. Another available program is the wage subsidy, and it is a method that is beginning to be used in Canada. Under this policy the government pays some portion of the wages of less-skilled workers so that, while an employee may be receiving, for instance, $3 an hour, the company is paying perhaps only $2 an hour with the government making up the difference. Again, this difference can come from the same ΔR that was mentioned above.

The virtue of this scheme is that it *encourages* employment rather than discourages it. This is because a private employer pays only a portion of the wage bill for workers with lower productivity and therefore has an incentive to hire additional help (Browning, 1973, p. 38; Ragan, 1978, p. 65).

It is important, however, to distinguish between a program of wage subsidies *instead of* minimum wages, from a program of wage subsidies that attempts to *complement* minimum wages. The latter program, as we have seen, involves unnecessary transaction costs, administration, and job distortion. The consensus is that minimum wages cause people to be disemployed. This situation, in turn, puts pressure on governments to supply subsidies to re-employ them. Consider the present Ontario Youth Employment Program (OYEP) which encourages the employment of young people by paying a dollar an hour wage subsidy to employers who take them on. More than 37,000 young people have already been found jobs and it is hoped that many of them will have gained enough experience during the period of the subsidy to justify keeping them on permanently. Such a program seems a tacit acknowledgement of the Feldstein hypothesis that minimum wages prevent the youngest employees from entering employment at low wages and receiving, in return, on-the-job instruction so that, in time, they can earn considerably higher wages that more than compensate

for the initial low incomes. The government, which set the minimum wage, is obliged to offset it either by subsidies, or by hiring, within the government, those who are not worth that wage to industry. Welch (1978, p. 45) asks, "Is it not strange that at a time when a major concern of welfare programs is to increase work we also push a minimum wage program, which reduces work?"

Another scheme, the Ontario Career Action Program (OCAP), announced in 1977 that it will provide for the payment of $100 a week to the young person employed for a maximum of 16 weeks, in the hope that many of those placed will be kept on when the 16 weeks have expired. About 2,000 of the openings initially made under OCAP were in government departments. But as the Toronto *Globe and Mail* (11 October 1977) observed: "It is scarcely a coincidence that $100 is the product of 37½ hours work at the Ontario Minimum wage of $2.65 an hour."

Meanwhile the federal government, in addition to its $150 million expenditure on-job-creation projects, has reallocated funds within the Canada Employment and Immigration Commission to expand by several million dollars the Job Experience and Training Program. This program, which commenced in September 1977, was also designed to give recent school-leavers who are unable to find work a period of subsidized employment so they can gain work experience and training. The government pays half their wages, up to a maximum federal contribution of $1.50 an hour, for up to 26 weeks. The focus is on those between 15 to 24 years who have been out of school between three and twenty-four months.

The combination of minimum wage programs with such youth employment subsidy programs might distort job allocation between the public and private sector, and involve unnecessary administrative expense. This is not to say that there is no place at all for such government programs. The point is that social waste may be involved when the government creates wage rigidities by one policy and then resorts to second-best policies to offset the damage instead of relaxing the first policy directly. Without minimum wages, the numbers requiring wage subsidies to secure their employment may be considerably less.

6 Politics

Our first two chapters were organized in terms of positive economic analysis. The previous chapter (Policy) reviewed *normative* arguments for and against minimum wages. In the present chapter, we return once more to positive analysis.

It may appear curious to some that a review of minimum wage discussion by economists should include a chapter entitled "Politics." The explanation is that some of the most recent writing by economists on minimum wages has been in the new area called the economics of politics. Our duty to review the whole literature would evidently be neglected if we excluded this section of it.

The first part of this chapter will review the facts of discussion of minimum wages by public and quasi-public, or political and quasi-political, bodies in Canada. The chapter will then proceed by surveying the contribution of economists in the fields of the economics of bureaucracy and the economics of politics. The last part of the chapter is devoted to the economics of politics in Canadian regional policy, and the revelance of minimum wages to it.

THE NEW CONCERN OVER MINIMUM WAGES

Official anxieties over the social costs of minimum wages appear to be increasing. And this is especially so in their connection with teenage unemployment. Hitherto, this problem has been attributed predominantly to demographic trends. Canada, like many other countries with high levels of structural youth unemployment, has certainly experienced above-average growth rates in the youth labour force. But, as the Ontario government acknowledged in 1978, teenage unemployment is remaining unacceptably high with the leveling off of the growth rate of the youth labour force. Minimum wages, among other wage rigidities, is now acknowledged to be an important factor to contend with. Yet strictly this was also true *before* the leveling off of the population growth rate. When the youth labour force increases in size, its relative wage normally declines as more youths price themselves into employment, a point that seems now to be officially recognized: "The existence, however, of minimum entry wages under union contract, rigidities in relative wage differentials, and the operation of legal minimum wage rates may frustrate a complete wage adjustment."[1]

In its study, *Living Together,* the Economic Council of Canada (1977) expressed concern that minimum wages in three provinces with higher-than-average unemployment rates — New Brunswick, Nova Scotia, and Quebec — were actually above those in Ontario and Alberta at the time of writing. And commenting on the difficulties with policies of tax credits and incentives to employers to create new jobs, the Council, in its *Fourteenth Annual Review* (1977a), observed:

> An alternative possibility, aimed principally at unemployed youth, would be for the provincial and federal governments to widen their minimum wage differentials applicable to adults and young workers in order to encourage employers to hire more young people (p. 82).

The Economic Council might have observed also that some of the high-unemployment provinces have increased their minimum wages faster than the other regions. Between 1969 and 1976, for instance, Quebec increased its minimum by 124 per cent, while Ontario increased its by only 85 per cent. Quebec's minimum wage rate was $3.37 as of 1 October 1978, and this was the highest on the continent. In April 1979, it was increased to $3.47 (although the minimum wage for employees under 18 years remained at $3.07). Ontario's general hourly rate minimum wage was $2.85 from 1 August 1978.

A second point relates to the trade cycle. Studies have shown that minimum wages increase the vulnerability to cyclical employment of those affected by the legislation — mainly the teenage population.[2] Where there are no minimum wages, people can adjust their wages downward and price themselves back into employment when they face a fall in demand for their services. Legislated minimum wages take this possibility away from them. Since nothing is less downwardly flexible than a legislated wage, minimum wage laws increase employment fluctuations. It follows that the effect will be worse the higher the minimum wage. Since Quebec, Nova Scotia, and New Brunswick had higher minimum wages than Ontario and Alberta in 1977, they could, on this argument, expect to have greater *fluctuations* in unemployment. Further research is needed to check for this phenomenon in Canada. If it *is* demonstrated, then it would challenge to some extent the argument that disproportionate depression in some regions calls for selective *macro* policies.

But the main point that is being observed here is that responsible public and quasi-public bodies are now voicing apprehension about minimum wage policy in Canada and its provinces. Some authorities, too, are pointing to alternative welfare programs that promise to be much more efficient in achieving their target — programs that we discussed in our last section on policy. The federal department, Health and Welfare Canada (Federal Provincial Conference, 1975), has examined, for instance, a direct cash transfer program to assist people in need. The Ontario Economic Council (1976) has suggested that an income supplementation scheme should be used to assist the working poor. The same Council expressed, with surprise, in 1977:

> As yet such proposals have not been enacted. Indeed in recent years there appears to have been increased emphasis on the minimum wage. Where previously it was increased infrequently, it is now raised frequently and since 1965 has been rising faster than average wages (Ontario Economic Council, 1977, p. 43).

Concern over minimum wages relates to effects not only on particular wage groups but also on certain sectors of the economy. Thus on 1 January 1978, the federal Department of Industry, Trade and Commerce presented a paper to a meeting of federal and provincial tourism ministers claiming that increased Canadian minimum wages were partially to blame for Canada's $1.7 billion travel deficit in 1977.[3] Some authorities appear to be disturbed by the advance of Canadian minimum wages relative to those in the United States. American small businessmen, meanwhile, are not required to pay the minimum wage. And small businesses are a feature of the tourism industry.

The Ontario Economic Council (1977) has been among the most recent to complain that the minimum wage is not an effective instrument to reduce poverty. Reflecting several of the points that were reviewed in our previous chapter, the Council now emphasizes that the wage rate of an employee is not, and cannot be, related to his needs. "In Ontario, an unattached individual working full-time at the minimum wage rate will have an income above the Family Benefits Allowance for one adult. If however, the individual has a dependent, the income will be below the poverty line." A minimum wage also imposes considerable costs on members of the group it was designed to help: "The demand for workers falls over time as the minimum wage rises faster than the productivity of certain workers" (p. 43).

One of the earliest writers to argue the counter-productiveness of the minimum wage as a poverty-reducing policy was George Stigler, whose classic article appeared as long ago as 1946. Speaking at a meeting in California in 1977, however, he explained that today he would not devote his efforts to writing such a piece, for the emphasis has now switched from normative to positive economics.[4] The main question now is, Stigler continued, how to explain the existence of minimum wage laws as a phenomenon in politics. The implication of his remark was that, despite the well-known normative criticisms of minimum wages, it would be a singular event to find a typical democracy without them. In other words, economics now needs to extend its hypothesis from private markets to "political markets" and to examine the maximization of individuals in the political process in terms of the exchange of public policies for votes.

This new preoccupation is now apparent in Canada. The Ontario Economic Council (1977) concludes: "The interesting question is why the minimum wage continues to be used to assist the working poor" (p. 43). In attempting an answer, the Council pointed out that those who are denied employment because of minimum wages are a small fraction of the voting population and are not organized or adept at pressing their preferences politically. More important may be the other individuals who may gain indirectly from the minimum wage laws and who are more numerous or better organized than those directly affected. The Council detects that minimum wages are in the interests of three particular groups: trade union members, some protection-seeking employers, and some public servants working in the field of labour-management relations.

The trade union interest is explained as follows: "Organized labour benefits from higher minimum wages because such a change raises the price of labour which might be substituted for union workers and therefore helps to secure the jobs of the union members" (Ontario Economic Council, 1977, p. 44).

The protectionist employer groups are next described: "...Employers, who for various reasons find themselves locked into relatively high wage levels, gain from the protection afforded by minimum wage legislation against 'low-cost' competitors. Indeed, from the standpoint of both trade unions and many employers, minimum wage laws today, whatever the original intentions, serve a protective function analogous to that served by tariffs and quotas internationally: Both protect against 'low-cost' competition from relatively inexpensive labour" (*Ibid.*).

Goldfarb (1974, footnote 1) mentions the long-standing example of this phenomenon in America: The northern manufacturers have traditionally been in favour of minimum wages in order to protect them from the more competitively priced manufacturers from the south, the latter being better endowed with cheaper labour.

With respect to federal and provincial public servants who are advocates of minimum wages, the Ontario Economic Council argues that such individuals in the labour field sometimes see themselves as representatives of the interests of labour *vis-à-vis* capital (management). This gives them an added inducement to press for labour's interests as they perceive them.

This last argument seems to be more "sociological" than economic, for it tends to analyse in terms of groups or classes, whereas the economist focuses on *individual* behaviour. The question here is how public servants pursue their own, individual interests, rather than that of somebody else. West (1972) accordingly applied the newer "economics of bureaucracy" to the context of "bureaus" that are responsible for supervising and promoting labour legislation. According to this new discipline,[5] the bureau is more likely to be similar to a monopoly or monopolizing industry than to a competitive industry. Bureaus are typically financed by a dominant collective organization such as a government which supports itself by a compulsory contribution. The relationship between the bureau and its sponsor (the Treasury) is similar to that within a "bilateral monopoly." Among the predictions of the new theory is the proposition that members of the

bureau will undertake strenuous promotional activity. They will, in other words, attempt to sell their services to the sponsoring organization such that the demand curve for their services will be protected, if not increased (moved to the right).

Consider the likely behaviour of a bureau when faced with a proposition such as that made by Goldfarb (1974): the official advocates of minimum wage increases should, themselves, be placed in the witness box and put under the obligation to provide evidence that their policies will unambiguously avoid harm to any low-income family. According to the new theory, the bureau can be predicted to attempt to switch attention to the evidence provided by the independent researcher and to argue that he has not proved *his* case. The bureau will constantly place the onus on the latter to produce still further research. Meanwhile, it will presume that the laws continue to operate and will, itself, sponsor fresh research. This, however, will be allocated, almost exclusively, to bureau economists. Moreover, when presenting to its own government a survey of experience in other countries, the bureau will rely predominantly on the research and reports of foreign bureaus and avoid the work of public findings of independent specialists. When pressed to respond to independent research, it will often take an agnostic position. This will allow it to call for much more research, conducted preferably by its own officials so as to help further increase the bureau's budget. The costs of running the bureau itself will not be referred to in any of its own research studies.

A set of critical tests are obviously required before these theorems can be confirmed or refuted. It will be useful, here at least, to point to some pieces of evidence in our survey that seem relevant to the present discussion.

It has been observed, by Peterson and Stewart (1969), that in America the Labor Department is "both the administrator and a leading advocate of minimum wage policy." The Labor Department has, of course, had the ear of legislators for many years, and to some extent is able to shield itself from statistical criticism.

In Canada some "bureau outlook" is evident in the report published by the Canadian Association of Administrators of Labour Legislation (CAALL, 1968). The synopsis of this report concluded that consideration of the objectives, role, and effects of minimum wages were still far from settled. "Ignorance in this area is in large part because of a lack of research and information." But the implication of this verdict, that the authorities had been legislating blindly, was not brought out. The unspoken assumption through the report is that no suspension, freezing, or dismantling of the minimum wage machinery should occur. The laws should continue pending the new search for the effects of what the legislators are doing and have been doing. Clearly the dismantling of minimum wage machinery would reduce the size of the relevant bureau — whereas the new theory predicts constant attempts by bureaus to *enlarge*.

Despite the admission of ignorance, the CAALL report asserted (p. 4), "Research that is available in the United States and Canada indicates that minimum wages have rarely been raised to the levels where they cause 'serious unemployment.'" But the U.S. and Canadian research in question referred mainly to government-sponsored work, and this typically employed survey or cross-sectional techniques. These, as we have clearly shown in Chapter 4, are subject to serious methodological problems. The student of the economics of bureaucracy will here be tempted to offer another particular hypothesis: that bureaus select their techniques of investigation so as to produce results that conform to their own objectives. It is interesting that, of the seven Canadian studies we found in the 1970s, five reported no significant effect on employment (no serious unemployment) from minimum wage revisions. All five were commissioned by some level of government, four of them using survey and one using cross-sectional data. The two studies that reported significant reduction in employment came from independent university researchers using econometric methods with time series data (or pooled time series-cross-sectional data).

Politicians and their governments face the constraints of minimum voting requirements in order to survive. It is understandable that, in their calculus of things, they become sensitive to the arithmetic of majorities over minorities. It is for this reason, perhaps, that they and their departments feel reassured if minimum wage studies can show, as CAALL reported, no serious unemployment. The judgement of seriousness depends, of course, on who is making it. For the person in the minority who loses his job, the impact is serious to a degree of 100 per cent. On the other hand, this one unemployed person would not make serious problems for government operating under general voting constraints.

The same general attitude might explain a common philosophy among governments and their researchers that, in the words of Aykroyd in his survey: "It remains a debatable question whether the *total* loss of employment income suffered by workers who lose their jobs can be legitimately compared with the marginally higher incomes received by the *far larger groups* who retain their jobs" (Aykroyd, 1976, p. 9, emphasis added).

A prediction of the economics of bureaucracy is that bureaus will report independent findings in an obscure or misleading way. An example might be found in the Quebec Ministry of Labour's press release accompanying Fortin's (1978) study. It concluded that if the differential between the average industrial wage and the minimum wage in Quebec was kept at the level established since 1976, "the loss of employment [would] be reduced to a minimum." Fortin actually found (p. 86) that the increase in the minimum since 1976 had resulted in a *permanent* increase of unemployment of between 25,000 and 45,000, or 1 to 1.5 percentage points of the unemployment rate.

POPULAR REFERENCE OR RATIONAL IGNORANCE?

Thurow (1973) has asserted that "the minimum wage is as popular among the populace as it is unpopular among economists." If it is so popular among the populace, the question remains, how to explain it? Steindl (1973) claims that, hitherto, economists have innocently deduced that the matter is simply one of ignorance; that the general populace is not fully informed of the disemployment effects of minimum wage laws.

> The layman is assumed to believe that the demand for labour is perfectly inelastic and thus any increase in the real wage is unambiguously beneficial for every individual in the labour force...presumably, once the public is made aware of the pernicious employment effects of minimum wage laws, they will demand that they be abolished (Steindl, 1973, p. 133).

Economists, according to Steindl, thus believe the answer to be more resources devoted to educating the public about the law of demand. Rejecting this position as somewhat naïve, however, Steindl offers a more stark explanation: if those helped by the legislation outnumber those hurt, this simple fact is all that is necessary to predict the outcome. The lobby in support is simply bigger than that in opposition, so the utility-maximizing legislators will respond accordingly.

Specialists in the economics of politics have argued that the key voters are usually in the middle of the voting distribution and can be described as the median voter group. Such voters do not benefit directly by minimum wages since they already earn well above any proposed legal minimum. Their income may, in fact, be adversely affected. This is because the prices of the goods and services increase following minimum wage laws. Meanwhile nobody can deny that, in principle, the sensitivity of a member of the median group to the adverse price effects depends upon the extent of his knowledge of them.

If, in addition, we assume that the welfare of the poor enters the utility functions of members of the median voter group, it follows that they will be willing to have themselves taxed to some extent in order to finance transfers. And, provided they are informed and are aware of the law of demand for labour, they will clearly see minimum wages as an inefficient or, indeed, a counter-productive policy tool.

The question, however, is not simply a matter of spreading information. It is also one of the different intensity of motivation of different groups to become informed and to lobby the government. Median voters may be weaker than organized lobbies. We have seen that the Ontario Economic Council's belief is that there are at least three groups working to lobby governments in support of minimum wages. One of these consists of protection-seeking employers. But since there can be lobbies on the opposite side, the outcome is never *entirely* certain. Competition-seeking employers, for instance, will presumably provide an opposite lobby to the protectionists.

It is interesting that, in their new position paper on minimum wages, the Canadian Manufacturers' Association (1977) is now extremely critical. It concludes:

a. Minimum wages are a rather ineffective tool for achieving the goals for which they are intended.

b. A minimum wage is in effect a price-fixing device that works against the market mechanism of adjustment.

c. Although many of the effects of a minimum wage are impossible to measure statistically, these negative effects do exist.

d. It is unrealistic to ignore the real market forces in the economy, and to concentrate on legislated monetary increases as a device to alleviate the problem of poverty.

e. The known direction of the negative impact of minimum wages contradicts other policy goals of the government: for example, efforts to moderate inflation, maintain acceptable levels of employment, reduce levels of poverty, encourage balanced economic growth outside congested metropolitan areas, and foster development of small businesses.

f. Finally, a minimum wage is a solution to none of the problems which it attempts to solve, because it attacks the symptoms (for example, the low wages) and not the underlying real problems (p. 17).

Clearly, the balance of forces in politics in support and in opposition can change over time, and interesting questions remain concerning the prediction of future changes in the disposition of lobbying influence and in public information.

Browning (1978) argues that minimum wage laws are simply a specific instance of an application of the classic proposition in the theory of public choice. He predicts that in order to appeal to "rationally ignorant" voters, politicians will produce complex programs that have concentrated beneficial effects on a small group of voters and highly dispersed adverse effects on a large group of voters. It is true that, among the group of workers immediately affected by minimum wages, there are benefits to the majority. But, when we consider *all* individuals, we have to take into account the widely injurious increases of prices of commodities and services produced with unskilled labour. In this situation, too, there is an inducement to "log-rolling" — vote trading — either explicitly or implicitly. Minimum wage laws, Browning argues, are only one among literally thousands of economic policies which fit this general model. Other policies that have injurious effects on large numbers of people but fit Browning's general model include, he argues, tariffs, occupational licensing, price supports and floors, and many other types of special interest legislation (p. 93).

Voters are alleged to remain "rationally ignorant" because costs to them of obtaining all the information of all the diffused effects of a minimum wage policy are too high. Ignorance of the disemployment effects,

while important, is not the only factor. The average person is likely to be unaware of the indirect cost he bears in the form of higher product prices.

In this same vein, Browning offers what he believes to be the reason why voters do not support a cash transfer program which, as we have seen, is acknowledged by most economists to be a more efficient and equitable way of redistributing income. Browning argues that the average voter may *believe* that it is the employers who bear the cost of minimum wages in the form of reduced profits. Or again, there could be a "naive belief in the importance of monopsony or 'exploitation'" (p. 92).

Leffler (1978) also attempts to explain continued support for minimum wages on the lines of imperfect information. Observing that "it is well-known that minimum wages are in the aggregate inefficient" because of pronounced disemployment, he argues that, in order for those who benefit from them to succeed in having them maintained, there must be "differential incentives to affected citizens to gain information" (p. 352). Citizens who are only marginally affected by minimum wages will not have the incentive to become informed. Those standing to benefit, on the other hand, will have special incentives to lobby. The primary special interest group is unionized labour since minimum wages tend to increase the costs of non-union competitors.

Leffler repeats the argument of West (1977c) that even the poor who are disemployed may vote for minimum wages because they are often a technique of lowering the costs of establishing eligibility for increasingly generous public welfare programs. And although weekly welfare payments are usually lower than labour earnings in nominal terms, there may be little difference in real terms when work-related expenses are accounted for. In 1961, the U.S. *Social Security Act* was amended to include in the official definition of a deprived child those with unemployed parents. Consequently, and recalling their well-known disemployment effects, Leffler puts forward the hypothesis that minimum wages now significantly reduce the costs for many families of establishing eligibility for Aid to Families with Dependent Children (AFDC). Since not all states adopted the unemployed-parent provision, he was able to conduct empirical cross-section studies as a test. His results showed a high degree of correlation between the relevant variables.

We return to the point that, in the world that Leffler describes, redistribution is of an inefficient form since the donors could provide equivalent direct financial aid (for example, through negative income taxes or wage subsidies) at much less cost (since the national output need not be injured by disemployment). The barrier of imperfect (or assymetric) information facing the donors is alone responsible for the status quo. The future of minimum wages, on this argument, clearly depends on the maintenance of the information barrier. There are reasons to believe (see West, 1974, and 1977c) that it could soon be eroded. Leffler himself argues that the inefficiency of minimum wages is already "well-known." He also argues (pp. 345-46) that "the concept of downward-sloping demand curves does not seem so elusive that minimum wage supporters can fail to recognize the potential disemployment effects." But, if it is not elusive for this group, why should it be for other citizens such as taxpayers and consumers who bear the burden?

The new empirical studies of the 1970s on the disemployment effects of minimum wages seem now to be common currency in economic courses, at least in the United States. Keech (1977) provides examples of what he believes to be a "debate" in the economic textbooks. But only one of the textbook authors quoted by him supported minimum wage legislation, and he was writing over ten years ago.

Keech also appeals to opinion polls as evidence for the popular support in America for minimum wages. The most recent of the polls quoted, however, was for 1965. West (1977c) points out that in the twelve years since that time, unemployment, especially among teenagers, has increased markedly. Indeed, teenage unemployment had already begun to assert itself by the mid-1960s. This may explain, West argues, some of the *downward* trend in the popular support that opinion polls reveal. The ratio of support to opposition declined from 71 to 24 in 1947, to 55 to 39 in 1965.

The general argument is that, while current legislation might well continue to be supported by a present majority of voters, such support is neither unchangeable nor inevitable. The belief in some kind of "public choice theorem" that predicts *permanent* special interest legislation generally, legislation, for instance, on tariffs, occupational licensing, price support, and floors, is surely questionable. In Canada, the practice of resale price maintenance came and went, despite the special interest lobby in favour. Similarly, support for American fair trade laws have fluctuated severely. Tariffs were negotiated downward in 1979, while the subject of occupational licensing is receiving new attention under the anticombines policies.

While such matters remain a subject of speculation in the Canadian context, some hard research on American voter behaviour on this issue is now being conducted. So far, however, it is not particularly conclusive. Silberman and Durden (1976) published information on the economic factors associated with voting on minimum wages in 1973. They found, among other results, that the number of low-wage workers in a congressional district is positively associated with voting for higher minimum wages by representatives from the district. More recent work, however, by Kau and Rubin (1978) disagrees with these findings. They found that *higher* wages were associated with voting for minimum wages and that the presence of blacks (typically low-wage workers) was negatively and sometimes significantly associated with voting for minimum wages.

MINIMUM WAGES AND REGIONAL POLICY

As a final point of political analysis, we shall take note of an additional explanation that has recently been offered by Courchene (1978) of why politicians are motivated to vote for higher minimum wages.

Courchene argues that many provinces are in the process of enacting minimum wages "that on the surface appear to be much higher than warranted by economic conditions within their respective jurisdictions." His argument then proceeds in the context of the Economic Council of Canada's observation that "the minimum wages in three provinces that have always had higher-than-average unemployment rates — New Brunswick, Nova Scotia, and Quebec — were actually above those in Ontario and Alberta, traditionally low-unemployment provinces" (1977b, p. 228).

Echoing the same query of the Ontario Economic Council, Courchene asks: Why, in view of the fact that people in low-income groups are forced out of work by minimum wages, does the situation exist? His partial answer is connected with the fact that the unemployment insurance program now has "generous benefits" and involves significant disincentives towards work. An alternative welfare program such as the negative income tax would encourage work because people would always benefit compared with the unemployment insurance system whereby benefits are reduced dollar-for-dollar by each dollar of earned income.

The deeper reason why provinces with high unemployment rates can afford to have higher minimum wages, Courchene maintains, is that they do not bear the full economic costs of such a decision. The provinces do not bear the full costs of the resulting unemployment because they are helped by federal transfers such as equalization payments and unemployment insurance benefits, as well as the 50 per cent federal contribution to welfare.

Unconditional grants to the provinces would be preferable to the present federal-provincial cost-sharing format:

> Under this [unconditional grants] system, the provinces would have a pool of money that could be spent as they wished. They would think twice about raising minimum wages to levels that generate considerable unemployment and force people on to welfare because now they would be bearing the full cost of these welfare payments — funds expended on welfare would imply fewer dollars that could be allocated to other provincial expenditures (Courchene, 1978, pp. 21-22).

For this reason, Courchene concluded that the Economic Council's own recommendations do not go to the root of the problem. The Council argued:

> We recommend that, as part of a strategy of full employment, the ministers of labour in high-unemployment provinces gradually move to a situation where their minimum wages are not higher than in any province where unemployment is lower than the national average (1977b, p. 228).

The real way to get the provinces to enact more realistic minimum wages, Courchene insists, in contrast, is to place an appropriate set of incentives such that they bear the full economic consequences of their own actions. The setting of minimum wages is a prerogative of the provinces and pressuring them by recommendations will not succeed. With a system of unconditional grants, the provinces would bear the full economic consequences of their own actions on minimum wages and high minimums would result in "a drain on their provincial treasury or an increase in out-migration, or most likely some of both" (Courchene, 1978, p. 22).

Clearly, the subject of minimum wages is engaging increasing attention from modern students of the economics of politics. The results so far are obviously not entirely conclusive. But this should not be surprising in view of the fact that such work has only just begun. Meanwhile, there has been no obligation on the writers of this chapter to make any definite case one way or the other. Our main task, as before, has been to review the published writings to date, whether a consensus has yet been achieved among them or not.

7 Conclusions and Agenda for Future Research

Compared with other countries, research on the effects of minimum wages in Canada has hitherto been a relatively neglected area. The contrast between Canada and the United States is especially striking. In the 1977 amendments to the *Fair Labor Standards Act*, the Carter administration went as far as to establish a full-scale minimum wage study commission. Eight members of the commission were appointed in June 1978 and will eventually report on the effects of the law to the president and Congress. In our opinion, this is a good time to match the American provisions with full-scale future Canadian research projects, whether under the sponsorship of a special commission or not. Our findings indicate that continued Canadian government intervention in setting minimum wages is conspicuous in its lack of scientific underpinning, and deserves much more serious attention than it has been receiving. It will be helpful now to present our main findings in summary form below. These will be followed by suggestions for future priorities.

CONCLUSIONS FROM THE ANALYTICS AND EMPIRICS CHAPTERS

From our survey of the empirical work, to date, we reach the strong conclusion that there is no convincing evidence to refute the prediction that minimum wages cause reductions of employment (for young workers at least). We see no reason to disagree with the words of Welch (1978) that "...almost every serious scholar of minimum wages would argue on the basis of available evidence that they have reduced employment of those, particularly teenagers, who would otherwise earn low wages" (p. 33).

The evidence, therefore, indicates a labour market that is highly competitive, at least for that part of it that is affected by minimum wage legislation. The simple economic model of competition predicts that disemployment will follow any legislated minimum wage that is above the market level.

There appears to be no consistent empirical (or even theoretical) support for the argument that increases in the legislated wage prod management into adopting better methods to the extent that disemployment of labour is typically avoided (the shock argument).

The so-called "ripple" effect that minimum wages is believed to have on other wages in higher earning sectors has not been clearly demonstrated. In any case, no pure theory predicts that the highest gains from the ripple go to those closest to the minimum.

Reductions in the labour force participation rate are just as pervasive as employment effects (Swidinsky, 1978; Mincer, 1976). For this reason, there has been, down to 1978, a significant understatement of the impacts of minimum wage revisions, since previous studies typically used only *unemployment* levels as the index of impact.

From the more recent empirical work, it appears that the disemployment effects of minimum wage revisions do not occur all at once. The effects are lagged, and often the time lags can be long.

Some of the estimated elasticities of demand for labour are quite low and, by themselves, they show only small employment effects of minimum wage increases. It must be remembered, however, that only a fraction of even the teenage workers are *effectively* covered by the revision, while the elasticities are estimated for the entire cohort. A small reduction of the cohort employment level may translate to a wholesale layoff of the affected population and an unambiguous decline in the wage bill for the group in question.

The use of survey techniques to estimate the impact of minimum wage revisions is inappropriate since they do not permit the isolation of the minimum wage effect from other simultaneous events. The use of survey methodology would also appear to be unnecessary given the availability of data for more complete (and acceptable) econometric studies.

POLICY ANALYSIS CONCLUSIONS

The most quoted objective of minimum wages in the literature we have studied has been the redistribution of income towards lower-wage workers. Yet the evidence provides no support for the use of minimum wages as an antipoverty device. Some economic theory, meanwhile, points to counter-productive or perverse effects. Workers who are *effectively* covered by minimum wage revisions, as found in the United States, tend to be unattached or dependent so that there is very little relation between hourly wages and family income for workers earning low wages (Gramlich, 1976). We suspect similar findings for Canada.

The poverty problem is *aggravated* for those workers who are disemployed following a minimum wage increase. Disemployment, meanwhile, is in proportion to the ratio of the minimum wage to other domestic wages in Canada and to wages in other countries. An increasing number of observers have recently expressed concern that minimum wages in the less prosperous Canadian provinces are too high relative to those in the rest of Canada, and to those in the United States.

In Canada, the disemployment effect of minimum wages has been prompting increasing resort to the second best policy of direct government job creation. This is a government policy that attempts often to mop up the damaging effects of a prior government policy. The least costly solution is to go to the root of the problem and rectify the *original* policy.

Minimum wages appear to create a kind of job lottery. Those who see them as a means of obtaining a fairer distribution should presumably wish for at least equal distribution in the (job) lottery tickets. Unfortunately, the likelihood is that those with lowest productivity, such as immigrants who can speak neither English nor French, have fewer tickets and are likely to be consistent losers.

Some modern analysis predicts that full knowledge by policy makers of the perverse effects of minimum wages will not lead inevitably to their reform if the injured are in a political minority.

Proposals for minimum wage increases are traditionally accepted with no obligation by the policy maker (or his adviser) to produce convincing and systematically researched evidence that significant disemployment effects will not ensue.

The argument that higher minimum wages will encourage workers successfully to seek work and get off social assistance is unsupported. The evidence in Canada (Swidinsky, 1978) and the United States (Mincer, 1976) indicates significant *disincentives* via the discouraged worker effect whereby workers drop out of the labour force because of reduced expectations of securing employment.

It has not been demonstrated, even by the most sophisticated researchers (for example, Gramlich, 1976), that other methods of redistributing income, including the negative income tax or the wage subsidy, are not more effective than a minimum wage policy.

AGENDA FOR FUTURE RESEARCH

In the course of our critical review of the analytical and policy issues, we have had several occasions to point to the need for further investigation. It is now time to put these several items together with a systematic list of proposals that, in our view, deserve priority in any future program of research. We shall also draw further attention to the serious gaps in data provision in Canada, especially where these are in striking contrast to the United States. Indeed, we feel that the assembly of entirely new data is a necessary condition for progress on several of the following proposals for research action.

There is need for a simple measure of the effects that increasing the minimum wage, by up to 50 per cent higher, would have upon the poverty rate in Canada — based on the heroic assumption of no disemployment effects. This has already been done in the United States by Kelly (1976) who found only a small reduction in the poverty rate, even assuming zero change in hours worked. It is believed that, in Canada, there is a significant proportion of families below the poverty line with people in the labour force who experience no unemployment throughout the year. This may amount to about one-third of families living in poverty. The first measure we seek relates to this group exclusively.

Research is needed on the growth of the minimum wage coverage rate in Canada. A study could be made of the differential employment effects of minimum wages when significant special differentials were allowed in previous years in various provinces for such individuals as learners and students. Conversely, a reduction in these special differentials could be treated as an increase in the coverage rate. This rate increase could be measured and its effect analysed.

A Canadian test is required of the hypothesis, put forward by Kosters and Welch (1972), that minimum wages increase the vulnerability to cyclical employment of those affected by the legislation — mainly the teenage population. Since Quebec, Nova Scotia, and New Brunswick have had higher minimum wages than Ontario and Alberta, the hypothesis predicts that the former provinces will have had greater *fluctuations* in unemployment.

It would be helpful to make a study of the effects of provincial and federal jockeying for leadership in minimum wage rates. An increase in the ratio of provincial to federal minimums would predict a greater rate of disemployment in the non-federal sector. Comparison may also be made of federal/local minimums in the United States.

Estimates should be made of minimum wages as a percentage of average hourly earnings in manufacturing and projections made to 1981.

More systematic attempts should be made to examine the number of characteristics of persons who have hourly earnings of less than $3.50. Clearer estimates are also required showing the proportions of teenagers, part-time workers, heads of families, males and females, young and old among low-wage earners. Such evidence calls for data similar to that collected in the current population survey of the United States (see Welch, 1978, p. 13).

Tests are needed of the hypothesis that, as wages are forced upward, employers have fewer incentives to accommodate part-timers (see Welch, 1978, p. 23).

More precise estimates of the employment effects of minimum wages on Canadian teenagers should be obtained by adjusting for the proportion that is in the student class (see Ragan, 1977).

There is a need for a re-examination of previous Canadian studies that take into account variations in the time lags of minimum wage disemployment effects.

Some exploration is required of the effects of minimum wages on other factor prices. This would include a measure of the induced increased price of capital as more of it is demanded relative to labour and a study of the impact of minimum wage revisions on other wages (the ripple effect). The latter would entail a study of collective agreements, especially those relating to bargaining groups of under 200 workers, to observe the impact of minimum wage revisions on wage rates covered by collective agreements. As well, one could examine various contracts to determine the extent to which minimum wages are incorporated into the wage-setting process. Some contracts may specify, for instance, certain wage rates as "minimum wage plus x per cent." At a more aggregate level, it may be interesting to study the impact of minimum wage revisions on general wage ratios for specific sectors, for example retail trades or services.

A re-examination should be made of previous studies to take account of variations in the *participation* rate.

Work is required on the degree of compliance with minimum wages across Canada. An attempt should be made to derive a correlation between hourly wages and family income for low-wage workers. This would match the U.S. work of Gramlich (1976) for Canada. But such a program provides an example of the general need for new data. What is required, in this case, is the addition of question to those asked in the *Labour Force Survey* and *Consumer Expenditure Survey*. As a side benefit, this information could be used to study the levels of compliance with the minimum wage earnings in Canada — an area that has been quite neglected. In addition, minimum wages should be compared with average hourly wages in specific sectors such as the hospitality sector, manufacturing (general), retail trade, and manufacturing, including especially the specific cases of textiles, furniture, and food and food processing. This will give us some idea of the impact of any future revisions to the minimum wage.

Estimates are required of the impact of minimum wage revisions in conjunction with other social welfare programs, for example, unemployment insurance, social security, and mothers' allowance. For example, it is likely that the induced unemployment effect of the 1971 unemployment insurance revisions (see Grubel, Maki, and Sax, 1975) were exacerbated by the coincident revisions (in real terms) to the minimum wage rate. Both of these would be expected to increase the participation rates particularly among the secondary labour force.

On the other side of the coin are job creation programs such as OCAP and OYEP, which are nominally designed to enable inexperienced workers to acquire job-related skills. We have already reviewed the argument that the existence of such programs might well be due partly to the presence of legally imposed minimum wages. We have also summarized Courchene's contention that the purpose of such programs may be an attempt to shift the burden of unemployed workers from the provincial to the federal government. Further investigation is required to test whether any given province is motivated to act in the following sequence: first, establish such a program, then raise its minimum wage, after which it hires the extra unemployed itself (in fact many of the jobs under these programs were in the provincial civil service) for a period long enough to qualify for unemployment insurance payments. The hypothesis is that this course of action would lower the temporary unemployment rate and would shift the expenditure to the federal government. It would be interesting to study the retention rate under such programs to determine the extent to which they truly accomplish their stated aims.

A measure is needed of the impact of minimum wage revisions on the general price level and also on specific prices. In addition, the impact of minimum wage increases on the employment of students and part-time workers is required. Finally, a study is needed of the impact of minimum wages on job turnover rates, quit rates, and the job-search process.

Further analysis is needed to assess the nature and scope of non-employment adjustments to minimum wage revisions. This would readdress the X-efficiency argument. Such analysis should include some work on capital/labour substitution along the lines of the work by Kaun (1965).

Notes

CHAPTER 1

1 New Zealand, however, had given its district conciliation boards the power to fix minimum rates for "underpaid workers" two years earlier; the emphasis of this provision was on the prevention of industrial disputes.

2 The ratification of a Convention by a country is tantamount to its participation in an international draft treaty, although a member may denounce a Convention ten years after it comes into force, or at the end of every five years thereafter. A Recommendation "gives rise to binding obligations, but provides guidelines for national policies and actions" (ILO, 1978, p. 25).

3 The major hindrance to its passage was the long-debated problem of constitutional authority in labour matters, despite the fact that the Treaty of Versailles provided for a federal government to exercise its discretion regarding draft Conventions; it could then refer them merely as recommendations to provincial authorities. Prime Minister Bennett had secured ratification of the Convention in question and had incorporated it into his New Deal legislation of 1935; however, his Conservatives were defeated the following year, and Mackenzie King referred the New Deal package to the Judicial Committee of the Privy Council, which ruled that this law undermined the authority of the provincial governments, and so was *ultra vires*. Canada had thus ratified ILO Conventions over which it had no implementory power.

4 Canada, National Industrial Conference, *Proceedings* (Ottawa, September 1919), p. 105.

5 Canada, Department of Labour, *Labour Gazette* (September 1920), p. 1190.

6 Conference *Report* of the Eleventh Session, International Labour Organisation, p. 384.

7 Province of Ontario *Statutes*, 1920, Chapter 87 (An Act to provide for a minimum wage board with power to regulate in certain cases the minimum wages of women and girls).

8 National Industrial Conference Board, *Minimum Wage Legislation in Massachusetts* (New York, 1927), p. 5.

9 Massachusetts had been the first state to introduce minimum wage legislation in 1912, initially confining it to women; several other states followed suit over the next few years.

10 U.S. Congress, House, Committee on Education and Labor, *Report on Fair Labor Standards Amendments* (Washington, D.C.: Government Printing Office, 1977), p. 7.

11 See, for example, Ontario Federation of Labour, *Minimum Employment Standards in Ontario — A Study of the Exploitation of Low Wage Workers through the Minimum Wage Legislation*, September 1975; statement by President of Women's Lobby Inc. before U.S. Congress, House, Committee on Education and Labor (Subcommittee on Labor Standards) 24 March 1977; and statement by AFL-CIO Executive Council, 9 March 1977.

12 U.S. Congress, Senate, Committee on Human Resources, *Report* re Amendments to FLSA (Washington, D.C.: Government Printing Office, 1977), p. 9.

13 *New York Times*, editorial, 21 March 1977. See also Goldfarb (1974), footnote 1, p. 261.

14 This search may lead to changes in the flow of work and plant layout, the introduction of new machinery, dropping less profitable products or services and replacing them with new ones, upgrading the skills and productivity of workers, and so forth.

15 Testimony of Ray Marshall, U.S. Secretary of Labor, before the House Subcommittee on Labor Standards of the Committee on Labor and Education, 24 March 1977, p. 3.

CHAPTER 3

1 There are other characteristics of competitive markets such as free entry, abundant knowledge of price quotations, homogeneous products and factors, and so on. The price-taking characteristic, however, is the more relevant for our present discussion.

2 The theoretical circumstances where a minimum wage causes the expected return from search to increase is discussed in Lippman and McCall (1976a, 1976b).

3 Diagrams similar to our Figure 3-4 appeared in the work by M. A. Zaidi for the Task Force on Labour Relations in 1970 and in the collected papers presented to the Tenth Annual Meeting of the Statistics and Research Committee of the Canadian Association of Administrators of Labour Legislation (hereafter cited as CAALL) held in Ottawa in 1968.

4 This is the analogue to the excess supply *bc* at the minimum wage shown in the competitive model, illustrated in Figure 3-1A.

5 Policy makers, indeed, usually claim that they are avoiding fixing the minimum so high as to cause serious unemployment. And, as we shall demonstrate below, when, in the statistical debates, the issue usually turns on how much unemployment is attributable to the legislation, administrators seem to assume that they can satisfactorily resolve the problem if they can prove non-serious unemployment. If they confine themselves to this task, they are clearly not demonstrating *monopsony*.

6 Not that such a policy is unknown in history. The sixteenth century English Statute of Apprentices, for instance, contained the equivalent of *maximum* wage laws. And the legislation was couched in a philosophy which, arguably, was similar to the present day shock theory.

7 The process indicated in Figure 3-3 suggests a sequence of events different from that reported by Dhruvarajan. Whereas he argued that workers would initiate demands for higher wages, in fact, the diagram shows that it is the employers, competing against each other, who act first.

CHAPTER 4

1 Consider a simple arithmetic example.

Before the minimum wage increase:
Labour Force (L) = 1000
Employment (E) = 900
Population (P) = 2000

$$\therefore \text{Initial Unemployment Rate } (UR) = \frac{1000\text{-}900}{1000} = 10\%$$

$$\text{Initial Unemployment Ratio } (ur) = \frac{1000\text{-}900}{2000} = 5\%$$

After the minimum wage increase:

a. Employment falls to 800; there is no participation rate effect so $L = 1000$

$$UR = \frac{1000\text{-}800}{1000} = 20\%$$

$$ur = \frac{1000\text{-}800}{2000} = 10\%$$

The arithmetic changes are given by $\Delta UR = 10\%$
$\Delta ur = 5\%$

The unemployment ratio shows a smaller arithmetic increase for the same reduction in employment.

b. Employment falls to 800; there is a discouraged worker effect so $L = 950$

$$UR = \frac{950\text{-}800}{950} = 15.8\%$$

$$ur = \frac{950\text{-}800}{2000} = 7.5\%$$

The arithmetic changes are given by $\Delta UR = 5.8\%$
$\Delta ur = 2.5\%$

The unemployment ratio shows a smaller arithmetic increase for the same reduction in employment.

2 Kaitz argued the positive effect for non-white males aged 18 to 19 may have captured an improvement in employment opportunities as white males aged 16 to 17 were replaced by older non-white youths in response to a change in minimum wages. It may, however, indicate a non-compliance effect as whites, in general, are replaced by non-whites for whom compliance rates are likely to be lower. The equation for white females aged 18 to 19 exhibited many strange results such as a large positive coefficient for the variable representing the number of agricultural workers. It is not clear how agricultural employment should have an effect on teenage female employment specifically, and this result casts doubt on the particular estimated equation.

3 The uneven results obtained by Kaitz may be due to the fineness with which he partitioned the data. All survey-type data subject to sampling error and the magnitude of this error increases as the sample size is reduced. By defining very age/sex/colour-specific cohorts, Kaitz reduced his samples to a very small size for some. Welch (1978) notes that the standard error for the estimate of the employment of males aged 16 to 19 ("Negro and other races") was such that a quarter-to-quarter change of some 6 to 9 per cent lay within two standard deviations of no change at all (p. 35). This constitutes very noisy data and may have biased some of Kaitz's results.

4 These results are taken from Kaitz's estimates with quarterly data over the period 1954-68. When he used annual data over the period 1948-68, he found the minimum wage coefficient to be insignificant. There are two reasons for questioning this later work: (a) the period 1948-68 is very long and encompasses such phenomena as the Korean War and post-World War II adjustments. These may distort the early part of the sample; (b) where one is speaking of low-wage labour it is likely that the adjustment processes (hiring and firing, etc.) are very rapid and the use of annual data may obscure much of the adjustment process. We are sceptical of annual results which show such divergence from the quarterly results over a similar time period.

5 He states, "...interest resides solely in provincial differences in unemployment rates" (Maki, 1978, p. 4).

6 *The Labour Force*, Statistics Canada, Cat. No. 71001 (various issues).

7 Varies for each population group and is described when the specific results are discussed.

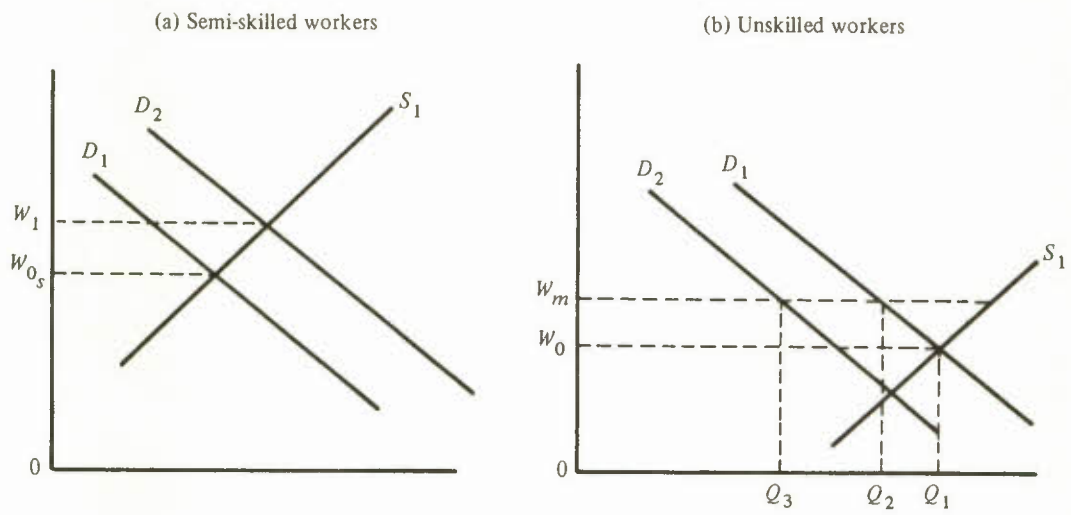
8 The existence of a systematic error component — the legal coverage is greater than or equal to the effective coverage — will lead to identification problems with respect to the intercept term as well as the usual problems of inconsistent slope coefficients arising from errors in the variables.

9 We wish to thank an anonymous referee for raising this point.

10 The ripple, as we have seen, is the effect that minimum wage increases have on wage rates of workers earning higher than the minimum. Suppose the latter are semi-skilled and minimum wage earners are unskilled and they are substitutes for each other at the margin. Based on the assumption of a comparative static competitive system, Figure 4-1a shows the upward ripple effect on the wage from W_{0_S} to W_1 after a minimum wage imposed on unskilled workers has increased the demand curve for semi-skilled workers to D_2. (The minimum wage W_m is shown in Figure 3-1b and does not affect workers in Figure 3-1a *directly* because the market wage therein of W_{0_S} is higher than the minimum.) This shift takes time to manifest itself. Hence, there is a delayed action or lag effect on the employment of unskilled workers. The latter were earning W_0 in Figure 4-1b before the minimum wage increase. The short-term effect of this increase (to W_m) is to reduce the number of jobs from Q_1 to Q_2. In the long run, the delayed demand *demand* shown in Figure 4-1a has its analogue of the demand *decrease* in Figure 4-1b. After this lagged effect, the number of jobs for the unskilled falls further to Q_3.

Figure 4-1

The Ripple Effect on Wages in a Competitive Product Market



11 Teenage female employment fell by 11.8 per cent.

12 This is in contrast to the reserve labour hypothesis or the theory of labour as a quasi-fixed factor (See Oi, 1962; and Miller, 1971). Both of these theses refer to skilled labour where the adjustment (hiring and firing) costs are high and so inventories are held in the form of underutilized labour. The labour force characteristics which prompt this behaviour are rarely shared by teenagers and so we expect teenagers to experience marked fluctuations in employment rates.

13 It should be noted that those advocating differentials are implicitly accepting that minimum wages cause adverse employment effects. A legitimate question, then is: should we have minimum wage rates at all?

14 This is a strange technique in itself. That one would wish to test an hypothesis with an equation that one *a priori* expects to be an incomplete specification of the model strikes us as rather suspect. If the correct specification should turn out to be equation (3) (accept Hypothesis 2), then the coefficients of equation (1) could not be accepted, and thus Hypothesis 1 is neither confirmed nor rejected with any degree of confidence.

15 The issue of a youth differential is also related to the problem of on-the-job training and human capital formation. This topic has recently received some attention (Leighton and Mincer, 1979) and will be discussed in more detail in the next chapter.

CHAPTER 5

1 Curiously enough, the acceptance of a minimum wage on these grounds was made by the critic of utilitarianism, John Stuart Mill. See West (1978).

2 Fantl and Whittingham (1970) found a substitution (in Ontario) towards 20 to 24 year olds. Welch and Cunningham (1978) found substitution away from the very young. Presumably some differential would reduce this bias.

3 Differentials for new workers learning the trade.

4 Most negative income tax schemes are designed to tax basic government support incomes by much less than 100 per cent. This results in increased incentives to work compared to conventional social security (insurance).

CHAPTER 6

1 Ontario, Ministry of Treasury, Economics and Intergovernmental Affairs (1978), p. 10.

2 Kosters and Welch (1972).

3 "The Canadian Tourism Industry," a report by the Sector Task Force to the minister of Industry, Trade and Commerce, July 1978.

4 George Stigler, Address to the Annual Meeting of the History of Economics Society, Riverside, May 1977.

5 See especially the version by Niskanen (1971).

Bibliography

ADIE, Douglas K. "Teen-age Unemployment and Real Federal Minimum Wages." *Journal of Political Economy*. March-April 1973, 81:435-41.

_____. "The Lag in Effect of Minimum Wages on Teenage Unemployment." *Proceedings of Industrial Relations Research Association*. 24th Annual Meeting, New Orleans, 27-28 December, 1971, pp. 38-46.

_____ and GALLAWAY, Lowell. "The Minimum Wage and Teenage Unemployment: A Comment." *Western Economic Journal*. December 1973, 11:525-28.

ALCHIAN, Armen A. "Costs and Outputs." In M. Abramovitz *et al., The Allocation of Economic Resources*. Stanford: Stanford University Press. 1959, pp. 23-40. Reprinted in W. Breit and H. M. Hockman (eds.) *Readings in Microeconomics*. 2d ed., New York: Holt, Rinehart and Winston, 1971, pp. 160-72.

ASHENFELTER, Orley and SMITH, Robert S. "Compliance with the Minimum Wage Law." *Journal of Political Economy*. April 1979, 87:333-50.

AYKROYD, C. "A Survey of Recent Canadian Minimum Wage Research." Victoria: B.C. Department of Labour, January 1976.

BALLANTYNE, Mr. *Report of Federal-Provincial Conference on Minimum Wage Laws*. Ottawa: King's Printer, 1923.

BARIL, Jean. "Les incidences d'une hausse de salaire minimum dans les secteurs à bas salaires et sur l'emploi en général." Background study prepared for Le Groupe de travail sur la politique de salaire et des conditions minima de travail. Quebec, 1975.

BECKER, Gary S. *Human Capital*. New York: National Bureau of Economic Research, 1964.

BLAUG, Mark. "Kuhn versus Lakatos or Paradigms versus Research Programmes in the History of Economics." *History of Political Economy*. Winter 1964, 7:399-433.

BLUM, S. *Labor Economics*. New York: Holt Co., 1925.

BRONFENBRENNER, M. "A Contribution to the Aggregate Theory of Wages." *Journal of Political Economy*. December 1956, 64:459-69.

_____. "Minimum Wages, Unemployability, and Relief: A Theoretical Note." *Southern Economic Journal*. July 1943, 10:52-59.

BROWNING, Edgar K. "Alternative Programs for Income Redistribution: The NIT and the NWT." *American Economic Review*. March 1973, 63:38-49.

_____. "More on the Appeal of Minimum Wage Laws." *Public Choice*. 1978 (2), 33:91-93.

BROZEN, Yale. "Minimum Wage Rates and Household Workers." *Journal of Law and Economics*. October 1962, 5:103-9.

_____. "The Effect of Statutory Minimum Wage Increases on Teenage Employment." *Journal of Law and Economics*. April 1969, 12:109-22.

_____ and FRIEDMAN, Milton. *The Minimum Wage: Who Really Pays?* Washington, D.C.: The Free Press Society Association, 1966.

BUNTING, R. L. "Employer Concentration in Local Labor Markets." Ph.D. dissertation, University of Chicago, 1958.

CAMPBELL, Colin D. and CAMPBELL, Rosemary G. "State Minimum Wage Laws as a Cause of Unemployment." *Southern Economic Journal* April 1969, 35:323-32.

_____. "State Minimum Wage Laws as a Cause of Unemployment: A Reply." *Southern Economic Journal*. January 1971, 37:372-73.

CANADIAN ASSOCIATION OF ADMINISTRATORS OF LABOUR LEGISLATION (CAALL). Report of the Tenth Annual Meeting of the Statistics and Research Committee of the Canadian Association of Administrators of Labour Legislation. Ottawa. 13-15 May. 1968.

CANADIAN MANUFACTURERS' ASSOCIATION. "Minimum Wages: Theory and Practice." Toronto, March 1977.

CASTONGUAY, Claude; BARIL, Jean; JEAN-LABERGE, Diane; and LEMIEUX, Louis-J. "Rapport du groupe de travail sur la politique de salaire et des conditions minima de travail." *Travail-Québec*. 11 May 1975.

COLBERG, Marshall R. "Minimum Wage Effects on Florida's Economic Development." *Journal of Law and Economics*. October 1960, 3:106-17.

COOK, Peter. "High Teen-Age Unemployment, Is It Linked to Minimum Wage?" *Financial Times of Canada*. December 1975, 8:4.

COTTERILL, Philip G. "The Elasticity of Demand for Low-Wage Labor." *Southern Economic Journal*. January 1975, 41:520-25.

COTTERILL, Philip G. and WADYCKI, Walter J. "Teenagers and the Minimum Wage in Retail Trade." *Journal of Human Resources*. Winter 1976, 11:69-85.

COURCHENE, Thomas J. "The Transfer System and Regional Disparities: A Critique of the Status Quo." London: University of Western Ontario, 1978.

DEPARTMENT OF INDUSTRY, TRADE, AND COMMERCE. *The Canadian Tourism Industry*. Report of Sector Task Force. Ottawa: Supply and Services Canada, 1978.

DEPARTMENT OF LABOUR. "Memorandum to the Interdepartmental Committee on the Minimum Wage." Ottawa, 1974.

DEPARTMENT OF NATIONAL HEALTH AND WELFARE. "Characteristics of Low-Wage Earners in Canada, 1971 and 1973." Ottawa: The Department, 1976.

DERRY, K. and DOUGLAS, P. H. "The Minimum Wage in Canada." *Journal of Political Economy*. April 1922, 30:155-88.

DHRUVARAJAN, P. S. "A Study of the Effects of the Ten Cent Increase on the Manitoba Minimum Wage Effective October 1st, 1972." Winnipeg: Manitoba Department of Labour, 1974.

DOERINGER, P. B. and PIORE, M. J. *Internal Labor Markets and Manpower Analysis*. Lexington, Mass.: D.C. Heath, 1971.

DONNER AND LAZAR RESEARCH ASSOCIATES. "An Analysis of the Low Wage Labour Market in Canada." Study prepared for the Department of Manpower and Immigration. Ottawa, 1975.

DOUTY, Harry M. "Some Effects of the $1.00 Minimum Wage in the United States." *Economica*. (N.S.), May 1960, 27:137-47.

ECONOMIC COUNCIL OF CANADA. *Into the 1980s: Fourteenth Annual Review*. Ottawa: Supply and Services Canada, 1977a.

_____. *Living Together: A Study of Regional Disparities*. Ottawa: Supply and Services Canada, 1977b.

_____. *People and Jobs: A Study of the Canadian Labour Market*. Ottawa: Supply and Services Canada, 1976.

FALERO, Frank, Jr. "A Note on Monopsony, Minimum Wages and Employment." *The American Economist*. Fall 1966, 10:39-42.

FANTL, Henry and WHITTINGHAM, Frank. *The Short Run Impact of the Thirty Cent Revision in Ontario's Minimum Wage on Five Industries*. Toronto: Ontario Ministry of Labour, Research Branch, 1970.

FEDERAL-PROVINCIAL CONFERENCE OF MINISTERS OF WELFARE. Working Party on Income Maintenance. *Federal-Provincial Security Review: Background Paper on Income Support and Supplementation*. Ottawa: Information Canada, 1975.

FELDSTEIN, Martin S. "Lowering the Permanent Rate of Unemployment." Harvard Institute of Economic Research, Discussion Paper No. 259. Cambridge, Mass.: Harvard University, 1972. Also as U.S. Congress, Joint Economic Committee, 93rd Congress, 1st sess., 18 September 1973.

_____. "The Private and Social Costs of Unemployment." *American Economic Review*. May 1978, 68:155-58.

FISHER, Alan A. "The Minimum Wage and Teenage Unemployment: A Comment on the Literature." *Western Economic Journal*. December 1973, 11:514-24.

FONTENAY, Alain de and WARSKETT, George. "The Welfare Effect of Minimum Wage: A Sectorial Analysis." Research Projects Group Working Paper. Ottawa: Department of Manpower and Immigration, 1976.

FORTIN, Pierre. *Une évaluation de l'effet de la politique québécoise du salaire minimum sur la production, l'emploi, les prix et la répartition des revenus*. Quebec: Ministère du travail et de la main-d'oeuvre, 1978.

FREE SOCIETY ASSOCIATION INC. "The Minimum Wage Rate Who Really Pays — An Interview with Yale Brozen and Milton Friedman." Washington, D.C.: The Free Society Association Inc., 1966.

FRIEDMAN, Milton. *Capitalism and Freedom*. Chicago: University of Chicago Press, 1962.

GILBERT, B. "Women in the Atlantic Provinces." Mimeo. Fredericton: University of New Brunswick, 1978.

GOLDFARB, Robert S. "The Policy Content of Quantitative Minimum Wage Research." *Proceedings of Industrial Relations Research Association.* 27th Annual Meeting, San Francisco, 28-29 December, 1974, pp. 261-268.

GRAMLICH, Edward M. "Impact of Minimum Wages on Other Wages, Employment, and Family Incomes." *Brookings Papers on Economic Activity.* No. 2, 1976, pp. 409-51.

GRAVETT, T. W. *Youth Unemployment and Minimum Wages*, B.L.S. Bulletin 1657. Washington, D.C.: Government Printing Office, 1970, pp 435-41.

GRILICHES, Zvi. "Distributed Lags: A Survey." *Econometrica.* January 1967, 35:16-49.

GRUBEL, Herbert G.; MAKI, Dennis; and SAX, Shelley. "Real and Insurance-Induced Unemployment in Canada." *Canadian Journal of Economics.* May 1975, 8:174-91.

GUAY, Ivan. "Is There a Minimum Wage?" *The Labour Gazette.* October 1975, 75:705-6.

GUILLEBAUD, G. W. *The Wages Council System in Great Britain.* London: HMSO, 1962.

GUNDERSON, Morley and KINLEY, John R. "Theoretical Analysis of the Minimum Wage." A paper prepared for the meeting of the Statistics and Research Committee of the Canadian Association of Administrators of Labour Legislation. Toronto: Ontario Department of Labour, Research Branch, 1968.

HAMERMESH, Daniel S. "Econometric Studies of Labor Demand and Their Application to Policy Analysis." *Journal of Human Resources.* Fall 1976, 11:507-25.

HER MAJESTY'S STATIONARY OFFICE. "A National Minimum Wage. An Inquiry." For the Department of Employment and Productivity, London, 1969.

HICKS, John R. *The Theory of Wages.* 2nd ed. London: Macmillan, 1963.

_____. *Value and Capital: An Inquiry into Some Fundamental Principles of Economic Theory.* 2nd ed. Oxford: Oxford University Press, 1946.

HOCKETT, D. C. "The Historical Development of the Minimum Wage Concept Outside Canada." Paper presented to the Statistics and Research Committee, Canadian Association of Administrators of Labour Legislation, May 1968.

Industrial Relations Research Reports. "Minimum Wages: Trends and Implications." November 1976.

INTERNATIONAL LABOUR ORGANISATION. *Conference Report of the Eleventh Session.* Geneva: ILO, 1928.

INTERNATIONAL LABOUR OFFICE. *International Labour Standards.* Geneva: ILO, 1978.

_____. *Minimum Wage Fixing and Economic Development.* Geneva: ILO, 1968.

JOHNSON, Harry G. "Minimum Wage Laws: A General Equilibrium Analysis." *Canadian Journal of Economics.* November 1969, 2:599-604.

JOHNSTON, John. *Econometric Methods.* 2d ed. New York: McGraw-Hill, 1972.

KAITZ, Hyman. "Experience of the Past: The National Minimum." In *Youth Employment and Minimum Wages*, B.L.S. Bulletin 1657. Washington, D.C.: Government Printing Office, 1970, pp. 30-54.

KALACHEK, Edward. "Determinants of Teenage Employment." *Journal of Human Resources.* Winter 1969, 4:3-21.

KATZ, Arnold. "Teenage Employment Effects of State Minimum Wages." *Journal of Human Resources.* Spring 1973, 8:250-56.

KAU, James B. and RUBIN, Paul H. "Voting on Minimum Wages: A Time-Series Analysis." *Journal of Political Economy*. April 1978, 86:337-42.

KAUFMAN, Jacob J. and FORAN, Terry G. "The Minimum Wage and Poverty." In John F. Burton *et al.* (eds.), *Readings in Labor Market Analysis*. New York: Holt, Rinehard and Winston, 1974, pp. 508-23.

KAUN, David E. "Minimum Wages, Factor Substitution and the Marginal Producer." *Quarterly Journal of Economics*. August 1965, 79:478-86.

KEECH, William R. "More on Vote Winning and Vote Losing Qualities of Minimum Wage Laws." *Public Choice*. Spring 1977, 29:133-37.

KELLEY, Florence. "Minimum Wage Laws." *Journal of Political Economy*. December 1912, 20:999-1010.

KELLY, Terrence F. "Two Policy Questions Regarding the Minimum Wage." Paper No. 3608-05. Washington, D.C.: The Urban Institute, 1976.

KING, Allan G. "Minimum Wages and the Secondary Labor Market." *Southern Economic Journal*. October 1974, 41:215-19.

KMENTA, J. *Elements of Econometrics*. New York: Macmillan, 1971.

KOSTERS, Marvin and WELCH, Finis R. "The Effects of Minimum Wages on The Distribution of Changes in Aggregate Employment." *American Economic Review*. June 1972, 62:323-32.

LALONDE, Marc. *Working Paper on Social Security in Canada*. Ottawa: Department of National Health and Welfare, 1973.

LEDERER, K. M. "The Minimum Wage: Some Questions and Issues." Working Paper. Ottawa: Department of National Health and Welfare, 1973.

LEFFLER, Keith B. "Minimum Wages, Welfare, and Health Transfers to the Poor." *Journal of Law and Economics*. October 1978, 21:345-58.

LEIBENSTEIN, Harvey. "On the Basic Proposition of X-Efficiency Theory." *American Economic Review*. May 1978, 68:328-32.

LEIGHTON, Linda and MINCER, Jacob. "Effects of Minimum Wages on Human Capital Formation." New York: Columbia University, Dept. of Economics, October 1979.

LESTER, Richard A. *Economics of Labor*. New York: Macmillan, 1941.

_____. *Economics of Labor*. New York: Macmillan, 1941.

_____. *Economics of Labor*. 2nd ed. New York: Macmillan, 1964.

_____. "Employment Effects of Minimum Wages." *Industrial and Labor Relations Review*. January 1960, 13:254-73.

_____. "Marginalism, Minimum Wages and Labor Markets." *American Economic Review*. March 1947, 37:135-48.

LIPPMAN, Steven A. and MCCALL, John J. "The Economics of Job Search: A Survey. Part I." *Economic Inquiry*. June 1976a, 14:155-89.

_____. "The Economics of Job Search: A Survey. Part II." *Economic Inquiry*. September 1976b, 14:347-68.

LOVELL, Michael C. "The Minimum Wage, Teenage Unemployment, and the Business Cycle." *Western Economic Journal*. December 1972, 10:414-27.

MACHLUP, Fritz. "Marginal Analysis and Empirical Research." *American Economic Review*. September 1946, 36:519-54.

MADDALA, G. S. *Econometrics*. New York: McGraw-Hill, 1977.

MAKI, Dennis. "The Effect of Changes in Minimum Wage Rates on Provincial Unemployment Rates, 1970-77." Paper presented at the Canadian Industrial Relations Research Institute Meeting, London, 1978.

MAPHANGOH, Steve Derrick. "The Potential Impact of Minimum Wages on Employment." Research Projects Group Working Paper. Ottawa: Department of Manpower and Immigration, 1976.

MCKENNA, Ian B. *The Long-Run Impact of the Thirty Cent Revision in Ontario's Minimum Wage on Five Industries*. Toronto: Ministry of Labour, 1973.

MILLER, Roger LeRoy. "The Reserve Labour Hypothesis: Some Tests of Its Implications." *Economic Journal*. March 1971, 81:17-35.

MILLIS, H. A. and MONTGOMERY, R. E. *Labor's Progress and Some Basic Labor Problems*. New York: McGraw-Hill, 1938.

MILLONS, J. N. and MOISAN, Y. "Criteria for Minimum Wage Determination." Ottawa: Department of Labour, 1974.

MINCER, Jacob. *Unemployment Effects of Minimum Wages*. Working Paper Series No. 39. New York: National Bureau of Economic Research, 1974.

_____. "Unemployment Effects of Minimum Wages." *Journal of Political Economy*. Part 11, August 1976, 84:S87-S104.

MOORE, Thomas G. "The Effect of Minimum Wages on Teenage Unemployment Rates." *Journal of Political Economy*. July-August 1971, 79:897-902.

MUNRO, John. "A Better Deal for Canada's Unorganized Worker." *The Labour Gazette*. August 1977, 77:347-53.

NISKANEN, William A. *Bureaucracy and Representative Government*. Chicago: Aldine, 1971.

OI, Walter. "Labor as a Quasi-fixed Factor." *Journal of Political Economy*. December 1962, 70:538-55.

ONTARIO ECONOMIC COUNCIL. *Issues and Alternatives 1976: Social Security*. Toronto: The Council, 1976.

_____. *Issues and Alternatives 1977: The Process of Public Decision-Making*. Toronto: The Council, 1977.

ONTARIO, MINISTRY OF LABOUR, Research Branch. *Minimum Wages and Social Security in Ontario*. Toronto: The Department, 1974.

ONTARIO, MINISTRY OF TREASURY, ECONOMICS, AND INTERGOVERNMENTAL AFFAIRS. *Youth Employment and the Ontario Economy*. Toronto: The Ministry, 1978.

OSTRY, Sylvia. "Economic and Technological Changes in the Sixties, Implication for Labour Standard Legislation: Wages and Hours: Antidiscrimination Legislation." Paper presented to the 23rd Canadian Association of Administrators of Labour Legislation Conference, 1964.

PERLMAN, Richard. *Labor Theory*. New York: John Wiley, 1969.

PETERSON, John M. and STEWART, Charles T., Jr. *Employment Effects of Minimum Wage Rates*. Washington, D.C.: American Enterprise Institute, 1969.

PHELPS, Edmund S. *et al*. *Microeconomic Foundations of Employment and Inflation Theory*. New York: Norton, 1970.

PIGOU, A. C., ed. *Memorials of Alfred Marshall*. Cambridge: Cambridge University Press, 1925.

RAGAN, James F., Jr. "Minimum Wages and the Youth Labor Market." *Review of Economics and Statistics*. May 1977, 59:129-36.

_____. "The Failure of the Minimum Wage Law." *Challenge*. May-June 1978, pp. 61-65.

RAWLS, John. *A Theory of Justice*. Cambridge, Mass.: Harvard University Press, 1971.

REES, Albert. *The Economics of Work and Pay*. New York: Harper Row, 1973.

RHODES, Frank. "A Study of the Impact of Minimum Wage Revisions on Selected Business Establishments in British Columbia." Victoria: B.C. Department of Labour, Research Branch, 1973.

ROBINSON, Joan. *Economics of Imperfect Competition*. New York: St. Martin's Press, 1969.

ROSS, B. W. "Some Economic Effects on Minimum Wage Legislation Relative to New Brunswick's Hotel, Motel, and Restaurant Industry." CAALL, 1968, p. 30.

ROYAL COMMISSION ON INDUSTRIAL RELATIONS IN CANADA. *Report*. Ottawa: King's Printer, 1919.

SILBERMAN, Jonathan I. and DURDEN, Garey C. "Determining Legislative Preferences on the Minimum Wage: An Economic Approach." *Journal of Political Economy*. April 1976, 84:317-29.

SISKIND, Frederic B. "Minimum Wage Legislation in the United States: Comment." *Economic Inquiry*. January 1977, 15:135-38.

SKOLNIK, M. L. "The Minimum Wage, Where Do we Go from Here?" Toronto: Ontario Ministry of Labour, 1977.

SMITH, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations*, 1776. Reprint, edited by R. H. Campbell and A. S. Skinner. Oxford: Clarendon Press, 1976.

STEINDL, Frank G. "The Appeal of Minimum Wage Laws and the Invisible Hand in Government." *Public Choice*. Spring 1973, 14:133-36.

STIGLER, George J. "Information in the Labor Market." *Journal of Political Economy*. October Supplement, 1962, 70:94-105.

_____. "The Economics of Minimum Wage Legislation." *American Economic Review*. June 1946, 36:358-65.

_____. "The Literature of Economics: The Case of the Kinked Oligopoly Demand Curve." *Economic Inquiry*. April 1978, 16:185-204.

SWIDINSKY, R. "Minimum Wages and Teenage Unemployment in Canada." Paper presented to the Canadian Industrial Research Institute Meeting, London, 1978.

TALBOT, Christine. "Characteristics of Low-Wage Earners." Staff Working Paper No. Z-7502. Ottawa: Department of National Health and Welfare Canada, Policy Research and Long-Range Planning (Welfare), 1975.

THUROW, Lester. "Toward a Definition of Economic Justice." *Public Interest*. Spring 1973, 31:56-80.

UNITED KINGDOM, Department of Employment and Productivity. *A National Minimum Wage* — Report on an Interdepartmental Working Party. London, 1969.

U.S. DEPARTMENT OF LABOR. *Youth Unemployment and Minimum Wages*. B.L.S. Bulletin 1657. Washington, D.C.: Government Printing Office, 1970.

VAN SICKLE, John V. "Geographical Aspects of a Minimum Wage." *Harvard Business Review*. Spring 1946, 24:277-94.

VIETORISZ, Thomas. "We Need a $3.50 Minimum Wage." *Challenge*. May-June 1973, pp. 49-62.

WACHTER, Michael L. "Comment on Paper by Edward Gramlich." *Brookings Papers on Economic Activity*. No. 2, 1976, pp. 454-59.

WEBB, Sidney. "The Economic Theory of a Legal Minimum Wage." *Journal of Political Economy*. December 1912, 20:973-98.

WEBB, Sidney and WEBB, Beatrice. *Industrial Democracy*. London, 1897.

WECHT, H. A. *Wage-Hour Law Coverage*. Philadelphia: J. M. Mitchell, 1951.

WEINTRAUB, Sidney. "A Macroeconomic Approach to the Theory of Wages." *American Economic Review*. December 1956, 46:835-56.

WEISS, Harry. "Minimum Wage Fixing under the United States Fair Labor Standards Act: The Working of the Industry Committees." *International Labour Review*. January 1945, 51:17-48.

WELCH, Finis. "Minimum Wage Legislation in the United States." *Economic Inquiry*. September 1974, 12:285-318.

_____. "Minimum Wage Legislation in the United States: Reply." *Economic Inquiry*. January 1977, 15:139-42.

_____. *Minimum Wages: Issues and Evidence*. Washington, D.C.: American Enterprise Institute, 1978.

WELCH, Finis and CUNNINGHAM, James. "Effects of Minimum Wages on the Level and Age Composition of Youth Employment." *Review of Economics and Statistics*. February 1978, 60:140-45.

WEST, E. G. "Direct Employment Programs: The New Canadian Policy Emphasis." *The Labour Gazette*. October 1977a, 77:433-35.

_____. "J. S. Mill's Redistribution Policy; New Political Economy or Old?" *Economic Inquiry*. October 1978, 16:570-86.

_____. "The Unsinkable Minimum Wage." *Policy Review*. Vol. 11, Winter 1980.

_____. "New Tests of the Efficacy of Minimum Wage Laws." *The Labour Gazette*. October 1975, 75:707-10.

_____. Shifting Public Choice on Minimum Wages." *Public Choice*. Spring 1977c, 29:143-47.

_____. "The Current Controversy on American Minimum Wages: The Lesson for Britain." Carleton Economic Papers No. 74-01. Ottawa: Carleton University, 1973.

_____. "The Evolution of Britain's Minimum Wage Policy; An Economic Assessment." *Moorgate and Wall Street*. December 1969.

_____. "Toward a Comprehensive Economic Theory of Minimum-Wage Laws." Ottawa: Carleton University, 1972. Reprinted in John Chant *et al.* (eds.), *Canadian Perspectives in Economics*. Toronto: Collier and Macmillan Canada.

_____. Vote Earning versus Vote Losing Properties of Minimum Wage Laws." *Public Choice*. Fall 1974, 19:133-37.

_____. "Why the Debate on Minimum Wages Matters for Britain." *The Banker*. December 1977b, 127:39-43.

_____ and McKEE, Michael. "The Economic Effects of Current Minimum Wage Legislation in the Maritimes." Research Study prepared for the Institute for Research on Public Policy, June 1979.

_____ and MILLER, R. LeRoy. *Economics Today, Volume I the Micro View, and Volume II the Macro View*. New York: Harper Row, 1978.

WHITTINGHAM, Frank J. "Measuring the Impact of a Minimum Wage." Paper prepared for the Meeting of the Statistics and Research Committee of the Canadian Association of Administrators of Labour Legislation, May 1968.

_____. *Minimum Wage in Ontario: Analysis and Measurement Problems*. Kingston: Queen's University, Industrial Relations Centre, 1970.

ZAIDI, Albert. *A Study of the Effects of the $1.25 Minimum Wage under the Canada Labour (Standards) Code*. Task Force on Labour Relations, Study No. 16. Ottawa: Privy Council Office, 1970.

The Institute
for Research on Public Policy

Economic Council of Canada