THE UNIVERSITY OF MANITOBA
FACULTY OF ARTS

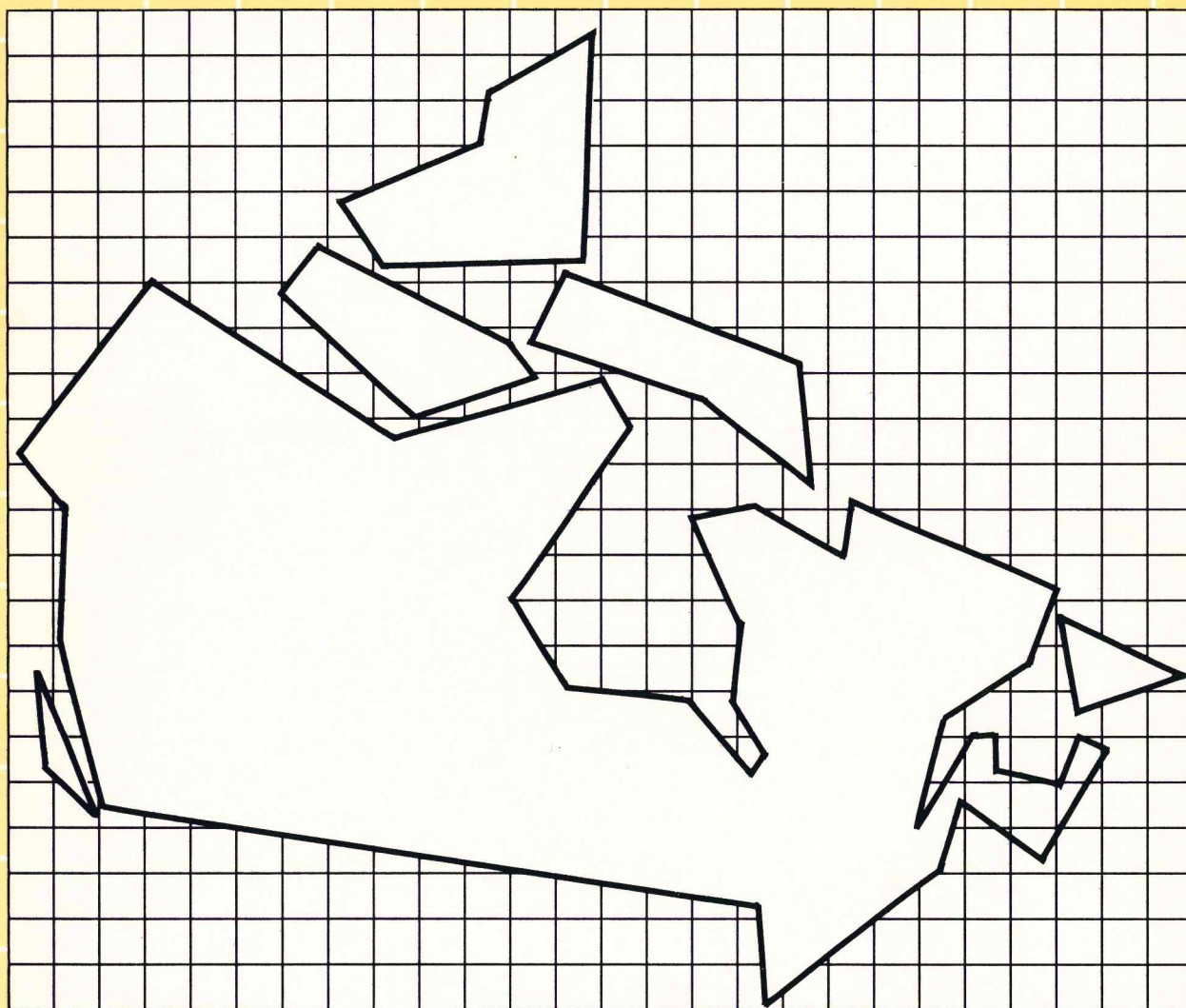**Institute for Social & Economic Research**

Macroeconomics: Theory, Policy and Evidence

Macroeconomics: Theory, Policy and Evidence

ISER Monograph Series/2

In the light of the deepening recession of 1982 the Institute for Social and Economic Research convened a group of distinguished economists to consider "Economic Policies for Canada in the 1980s". Over the course of two days, fourteen papers were presented examining all facets of macroeconomic policy. In addition, lively debate occurred late into the night between academics, students and government policy planners.

This monograph, one of a set of three, presents a number of papers and comments provided during the course of the conference. It is hoped that they provide economists and policy planners in the public private and academic sectors with a useful and stimulating reference as Canadians contemplate an "uncertain future".

ACKNOWLEDGEMENTS

Macroeconomics: Theory, Policy and Evidence

Edited by G. Mason

CONTENTS

1
Introduction and Overview

Greg Mason,
Director, Institute for Social & Economic Research,
University of Manitoba

Events of the seventies have profoundly shocked the consumer, investor, worker and politician. Whether it be the oil price shock or the apparent inability of government to assure stable and equitable growth, there is much public discussion and deep uncertainty about the future. Even in the spring of 1983, when recovery appears about to begin, no one dares make optimistic predictions.

This "reality check", has left scars on the economics profession, which in the sixties was characterized by an easy confidence in its ability to guide government into appropriate policies. No economist now feels completely comfortable in providing advice on the correct monetary or fiscal policy and the general public has grown increasingly sceptical and restive about the profession.

These essays appear, superficially at least, to offer quite disparate views of economic policy. Yet there is an underlying concern in all with the ability of economists to predict and proffer policy advice. Some, such as Brian Scarfe appear to feel that while a policy adjustment is warranted, caution against dramatic shifts in monetary or fiscal stances. Others such as Jack Weldon and Thomas Rymes are more deeply concerned about the ability of economists to provide objective judgment on central issues like efficiency.

Professor Rymes initiates the discussion with an examination of recent developments in neo-classical and Keynesian theories of policy formation. The purpose of his paper is to:

> set out ... modern developments in value theories and try to assess the fundamental policy implications of such theories.

Rymes argues that the economist can adopt one of three possible policy stances: one can act positively and provide the best estimate of the objective consequences of any given initiative; one can attempt to critique policy on the basis of efficiency employing the familiar Pareto optimal rules; finally, one can provide normative rules based upon a particular ethical framework. The concern in his paper is with the pos-

sibility of undertaking the analysis of efficiency using concepts of paretian optimality and cost.

Rymes considers four basic theories of value - the Ricardian objective cost framework, general equilibrium models, subjective cost theories of market imperfection and the Keynesian paradigm. The Ricardian approach is rejected and according to Rymes:

> The assumption that costs can be independently monitored...
> becomes increasingly strained as value theory is more inten-
> sively examined.

With respect to the general equilibrium framework, there is recognition that its formal elegance is admirable, but these also suffer from inherent defects which preclude their use in policy advice.

With the development of subjective cost theories based upon the theory of imperfect markets, and exemplified by the work of theorists such as Harold Demsetz, it may appear that a powerful policy basis has been forged. However, Rymes is concerned that a system in which the differences between private and social costs (the essence of imperfect markets) makes it impossible to independently appraise government intervention. If, by forming clubs, individuals and firms internalize costs, and indeed, if government can be visualized as a sort of club in which costs are subsumed, then it becomes impossible to make any sort of independent appraisal of public resource allocations. Also, any allocation no matter how perverse may still survive the Pareto optimal criteria.

Having examined and dismissed the three main contenders, Rymes then turns his attention to Keynesian theory. He notes that while the "fix-price quantity adjusting interpretation of Keynes leaves no room for value theory" Keynes was intimately concerned with the question of value. It is through the role of money, liquidity premia and consequent price formation that Rymes finds Keynesian theory able to offer some support to the economist who would make policy advice. A key stumbling block to the full development of a Keynesian value theory is that it carries the discussion in terms of aggregate price and quantities. Value theory however must be intimately concerned, by definition, with the determination of relative prices. Rymes concludes his essay with a cautionary note, arguing that Keynesian theory has potential to offer the economist a basis for policy, but it has not yet developed the necessary foundation to consistently predict micro-level impacts resulting from the manipulation of macro aggregates such as the money supply.

The second essay in this volume, takes a closer look at policy, and its theoretical foundations, by examining the recent trend toward privatization. Jack Weldon notes that in the past year or so, three broad indicators of this trend toward increased reliance on private market decision making have appeared. We seem to have abandoned full employment as a direct objective of government policy; the welfare state has been attenuated; and the trade union movement is being increasingly subverted. In particular the budget statement of April 1982 may be taken as a "datum" which chronicles the attack against social institutions.

In considering the nature of privatization, Weldon notes that the essence of the concept is "that the state should be reduced in its econom-

ic and social significance, although privatization sometimes emphasizes a general limitation of the capacity of the state to govern". Some interesting observations follow about the ambivalent attitude of Marxists toward the current dismantling of the state apparatus. Weldon notes that Marx predicted the collapse of the bourgeois state, and under socialism, government would "wither" away. According to Weldon, Marxists view privatization as a natural consequence of capitalism's self destructive tendencies, and it is inherent in the actions of a particular class attempting to remove constraints on profits. As a result, the current machinations perceived by Weldon surrounding the dismantling of the state are of no real consequence for Marxists.

He argues that Marx provides us with no insights about the immediate future of the capitalist state or bourgeois economy. The issue about privatization lies beyond conscious control since the forces which impel it tend to be endogenous. In other words, Marxists can really say very little about privatization, except perhaps to comment on its course.

From the analysis of privatization (in a Marxist light) the discussion shifts to a consideration of rational expectations. Certainly this particular hypothesis has formed much of the foundation of the monetarist critique of policy intervention, and interestingly aligns itself with the "mindless state" described by Weldon. David Laidler asks the question "did economics need the rational expectations revolution?"

Laidler argues that there are two hypotheses associated with the term "rational expectations". The first relates to individual behaviour while the second is concerned with empirical propositions about continuously clearing competitive markets.

> To say that agents will use all information that is freely
> available; take steps to acquire any other information for
> which the benefit outweighs the costs of acquisition; act upon
> such information to the extent they are free to do so; and
> hence, in the long-run when they are free to act on their in-
> formation will not make systematic errors, is not to say that;
> the world behaves as if all markets are competitive and con-
> tinuously clearing; all agents understand the workings and
> interactions of markets to the extent of being able to cor-
> rectly forecast the outcome for the economy of any exogenous
> shocks of whose nature they are aware; and that real fluctua-
> tions are the result of random errors in forecasting exogenous
> variables.

Laidler argues that most would find little to disagree with when it comes to propositions concerning how individuals attempt to rationally use information; the substantive disagreements occur over the statements about the operation of markets.

In assessing the rational expectation revolution, Laidler makes the case that much of this formal theory appears to have greater difficulty with phenomena such as "stagflation". The neo-Austrian school (Laidler's term for those who advocate the use of rational expectations) does not appear to explain the "stylized facts" of the seventies as well as Keynesian models.

The most important contribution of the rational expectations school of thought, according to Laidler, is that it provides a strong cautionary note against discretionary fiscal policy. This moves considerably beyond the simple caveats expressed by Friedman in the early sixties concerning the timing and magnitude of perceptual and implementation lags inherent in all policy interventions.

The answer to the question posed in the title "did economics need the rational expectations revolution" is equivocal. Certainly Laidler feels that this approach offers a more powerful microeconomic foundation for macro theory than previous neo-classical models, but the specific testable propositions about the existence and operation of continuously clearing competitive markets are a mixed blessing.

The problem addressed by Brian Scarfe is the very important issue of reflating the economy without inducing yet another round of inflation. For Canada this question is especially important since our domestic inflation rate has remained persistently higher than any of our industrialized counterparts.

Six "fundamental propositions" are presented to set the theoretical stage:

1. There is only one level of resource utilization which is consistent with model equilibrium and the maintenance of a constant rate of inflation.

2. The equilibrium rate of resource utilization ... does not respond to changes in the overall stance for fiscal and monetary policy.

3. The equilibrium rate of price inflation is entirely determined by the rate of growth in the money supply.

4. Except insofar as government budget deficits and surpluses lead directly to changes in the nominal stock of money, their only long-run impact is to alter the equilibrium real rate of interest.

5. Short run policy-induced deviations from the equilibrium rate of resource utilization are optimal only if the authorities have a sufficiently large rate of time preference.

6. In the longer-run equilibrium only nominal variables will be affected given "natural rate" assumptions.

The basic model employed by Scarfe is the standard Hick-Hansen version of the Keynesian framework on the demand side, coupled with an aggregate supply composed of the short-run inflation-unemployment tradeoff (inflation expectations augmented Phillips curve). The essential prescription favoured in this presentation is a "twist" of the fiscal-monetary policy mix of less fiscal stimulus coupled with greater monetary ease to produce lower overall real rates of interest with the attendant beneficial effects of increased investment activity and higher labour productivity. The monetary ease should never be permitted to

rise above the upper target band of 8%, but Scarfe argues on the basis of this simple model, that there is room for greater monetary ease.

The final paper in this monograph by John Helliwell, reviews what has been learned from the large scale econometric models constructed and employed over the last decade or so. First a review of the major development in macro modelling is presented. Helliwell acknowledges the theoretical challenges of the neo-classical school, especially as embodied by the "rational expectations" school, but questions whether these have or ever can be expected to provide much guidance on actual construction. As he notes, with their assumptions of full employment at trend levels of aggregate supply, they appear to be at considerable variance with modern experience. The next question considered is the problem of identifying the source of recent Canadian recession - is it imported or home grown? Using results from the MACE model, he argues that while the oil price shocks were important for determining our inflation, the recession experienced by Canada in the past two years was primarily due to the world recession. Another use of the macroeconometric models is the evaluation of the wage and price controls. Helliwell finds, using the MACE model once again, that the "net effect of the AIB was to make real GNP and employment higher, and to reduce nominal prices and both nominal and real wages below what they would have been". The National Energy Program (NEP) is also assessed and found to have offsetting effects on GNP growth with the major impact upon the distribution of energy rents.

Helliwell next reports on an evaluation of a number of major econometric models which have been constructed in the past decade. A broad group of fiscal and monetary policy simulations were attempted on each of these and their predictions compared on variables such as real expenditure multipliers and the ratio of average inflation effects over three years. There is a considerable variability on the size and timing of the output and price effects of fiscal policies. The recent generation of models, especially MACE and the Bank of Canada model tend to have lower real expenditure multipliers than the previous models constructed in the early seventies. With respect to monetary policies there is considerably less agreement among the models, and one even demonstrated a reduction in prices as a result of monetary expansion. All models generally indicate that the real and price effects of monetary policy are more delayed than for fiscal policy.

Throughout the monograph, the comments provided by the discussants are also presented. These both complement and qualify the positions taken by the major authors.

2
Keynesian and Neoclassical Value Theories: Some Implications for Policy*

Thomas K. Rymes,
Professor of Economics,
Carleton University

2.1 INTRODUCTION

It is an honour to present a paper to commemorate the many years of distinguished instruction and scholarship in economics of my former teacher, Clarence L. Barber. Of particular relevance to this Conference, Professor Barber has been and is a trenchant critic of monetary and fiscal policies in Canada. I do not offer here a criticism of or suggestions for policies. Rather I set out what I think are modern developments in value theories and try to assess the fundamental policy implications of such theories[1].

2.2 ON EFFICIENT POLICIES

An economist can offer three major services to governments:

1. He can be asked by governments: what would be the consequence of this tax, that change in M_1, etc.? Here, the economist will respond positively -- he can attempt to say how such government policies will enter into changes in the perceived constraints of the agents of the economy and, arguing on the basis of the assumption that the changes in the agents' economic behavior are tied to changes in the perceived constraints, will predict changes in behaviour of the agents and so provide the government with the information it seeks, namely, what are the predicted consequences of its policies? The economist as economist makes no comment on the measures proposed -- he merely provides estimates of the resultant changes in prices and quantities. He minds his p's and q's.

2. The economist can be critical of or recommend policies on grounds of economic efficiency. A Pareto-efficient allocation may, of course, be ethically indefensible but of two allocations, both (as far as can be told) of equal ethical defensibility and both of equivalent distributional considerations, if one allocation is Pareto-superior vis-a-vis the other then it will be the superior allocation if considered by the Government which will receive the economist's approbation and it will be the inferior allocation if also considered by the government which will receive the economist's criticism. For the government to be considering policies which, using the positive economics outlined above, can be said to represent Pareto-improvements, then I must be assuming that without that discretionary policy, the existing allocation could be said to be inefficient in the Paretian sense.

Some examples. Economists were critical of tariffs because of the resultant distortions (or Paretian-inefficient allocations) and movements to free or freer trade were commended[2]. Increasing and decreasing cost industries, it was recommended, were to be taxed and subsidized on grounds of improvements in welfare or efficiency. Predatory pricing was deplored because such practice permitted continued discrepancy between price and cost wherein private costs exceeded social costs. With predatory pricing, an inefficient allocation is said to exist and policy steps were commended to try to end such practices.

Involuntary unemployment exists when it is possible for a static competitive allocation to be such that increases in present consumption and increases in investment and thereby increases in expected future consumption can simultaneously occur so that monetary and fiscal policies are assessed in terms of their contribution to full employment effective demand Pareto-improvements.

A fully efficient allocation at the theoretical level requires, it is argued, a complete set of Arrow-Debreu contingent markets and the non-existence or non-completeness of such markets is evidence that an unfettered free market will not result in an efficient allocation[3].

I have drawn up examples ranging from the early literature dealing with the Corn Laws, through Pigou's Economics of Welfare, through one of the latest manifestations of Canadian anti-combines policy, through Keynesian policies to modern statements of general equilibrium to show that the consideration of Pareto-improving economic policies has long commanded much of the attention of economists. Who would not spend much time and effort on the possibility of making "everyone better off"?

3. The third service an economist can render to a government is to commend or be critical of economic policies which bring about allocations which entail uncompensatable changes in the distribution of income. There is no acceptable test to distinguish among such commendations or criticisms. Such commendations or criticisms would be normative and would reflect the personal values of

the economist and cannot be independently appraised. The recommendation of a beggar-thy-neighbour policy such as the optimum tariff for a small country entails the embrace of a welfare function in which the inhabitants of the small country are more deserving in some non-independently assessable way than the inhabitants of its trading 'partners'. The first two services are, however, open to independent assessment. Competing economists can be hired to provide theories or, more correctly, models of predictive content. Economists can also arrive independently, it would seem, at assessments of the gains (losses) involved in commending (criticizing) Pareto-improving (Pareto-reducing) policy allocations.

Hence economists debate whether one should follow monetary rules or discretionary monetary policy on positive grounds. Also, one or the other is commended on grounds of economic efficiency -- even if on the limited grounds, for example, of saying that efficient discretion entails more information than is or could conceivably be available and so rules are the better -- i.e., the more efficient -- way to conduct economic policy[4]. I classify the first two services the economist can render as positive and the third normative. The second might be better defined as quasi-positive up to the Paretian value-judgement because it is argued that propositions advanced in the second service are independently assessable -- i.e., independent economists, it is said, can estimate the Harberger triangles or the Bailey trapezoids; the quantitative measures of the efficiency losses in monopoly and inflation and therefore the efficiency gains involved in anti-trust and anti-inflationary policies. It is economic policy in the second sense with which I am concerned in this paper. In all cases, the room for policy commendations or criticisms stems from the assumptions that (a) private and social costs are different, and (b) the different private and social costs are independently measurable and assessable. It is as if differences between private and social costs can be metered in an independent way -- like the metre measure in France -- and those policy steps which reduce the measured discrepancy are to be commended and those which increase the measured discrepancy are to be criticized. Hence, as my colleague Professor Maslove argues in his paper for this conference, "incomes policies" are criticized by the majority of economists today because the gain in efficiency (the supposed reduction in inflation taxes) is assumed to be overwhelmingly offset by the losses in efficiency (the supposed departure of marginal rates of transformation and substitution through the increased fixity of relative prices which is a consequence of the incomes policies).

2.3 COMPETING VALUE THEORIES

The foregoing discussion on efficient policies is commonplace. Just as the purely positive service of predictive content is based on received value theory in economics so is the quasi-positive service of commending efficient and criticizing inefficient allocations. The question is, however, which theory of value stands behind the comparison of inefficient and efficient allocations.

Of the at least four theories of value competing for our attention in economics today, I distinguish the neo-Ricardian value theory, the objective value theory, the subjective value theory, and the Keynesian value theory. These theories compete for economists' attention in terms not only of their predictive content but as well as for their significance for policy. I examine them in ascending order of importance for this paper.

By the neo-Ricardian value theory I mean those economic theories (e.g., those of Kalecki, Sraffa, Pasinetti) which are based on objective costs but which, so far as I am able to tell, conceive at their most fundamental level the competitive net rate to capital, when it exceeds the growth rate of the economy, as measuring or monitoring not the reward for "waiting" but as being indicative of an essential degree of exploitation involved in the private ownership of the reproducible means of production[5]. This theory has positive economic content and certainly offers government the services of qualitative estimates of the strictly positive consequences of policies[6]. On the matter of policy, however, the neo-Ricardian theory, based as it is on a fundamental conflict between profits and wages, leads to policy recommendations that are normative[7]. The concept of Paretian-efficient allocations does not arise in this theory and for purposes of this paper I set that theory aside.

The second value theory I consider is the objective value or cost theory brought to its final formal elegance in the Arrow-Debreu statement of general equilibrium. The essence of this value theory is, given initial conditions, preferences and technology, there exists a vector of prices and quantities such that an allocation q* is Paretian-efficient in the sense that at the set of unique, stable and costless equilibrium prices, p*, p*q* > p*q*--i.e., any other allocation, q, is Paretian inferior. The prices are spot and present value contingent prices and the quantities spot and present contingent contracts (such as the promise to deliver an umbrella at time T if and only if it is raining at time T). This value theory assumes, explicitly or implicitly, that the price system is a mode of co-ordinating economic activity which is costless to use[8] and that the prices and quantities to be exchanged are all assessable independently by the observing (general equilibrium) economist. This value theory has no role for the firm, nor for money nor for the government and yet its formal structure would seem to permit the second policy service previously set out. Thus, it would seem to follow that, if somehow wedges are imagined to be driven between prices and costs -- in the general competitive equilibrium framework entailed in the p*'s and q*'s -- it follows that non-Paretian efficient allocations would seem to result. Clearly, however, in the costless price system world,

such inefficiencies cannot prevail. If the price system is deemed to be costless then, by assumption, there will be a complete set of markets.

If costs of the price system are introduced, then the supposed costs of transactions and costs of acquiring information amongst traders must be similarly assessable by the independent economist so that a comparison of (say) the costs of private managers of firms versus "public managers" can be made in determining whether or not the sets of p*'s and q*'s (the set of prices and quantities resulting in a market constrained by the costly absence of certain markets) can be described as a Paretian optimum[9]. Problems of moral hazard and adverse selection in (say) insurance arise because of asymmetry of costly information, itself arising because of the costs of measurement of the relevant characteristics of the goods and agents involved in exchange. It is not clear in such cases whether self-insurance and signalling involve inefficient allocations unless the costs of alternative methods (e.g., compulsory insurance) are and can also be enumerated by the independent economist.

The discussion so far implies -- indeed, any argument to the effect that an equilibrium is an inefficient equilibrium in the Paretian sense -- implies that the costs of the observed allocation can be independently monitored and assessed to so demonstrate non-optimality and that a superior allocation can have costs which can also be independently monitored and assessed to make the Paretian ranking. The metre of inefficiency must be objective. The set of prices, p*, which characterizes constrained optima I call the objective value theory. The assumption that costs can be independently monitored and assessed becomes increasingly strained as this value theory is more and more intensively examined.

For constrained optima, that is, for efficient equilibria characterized by costly transactions and costly information, it is not at all clear indeed what is meant by objective costs. A school of thought exists and is now, in my judgement, the dominant school of thought as far as developments in modern value theory is concerned, which argues that costs are inherently subjective. Lionel Robbins argued that economics as a science applies to:

> Every act which involves time and scarce means for the achievement of one end involves the relinquishment of their use for the achievement of another[10].

So cost is an opportunity cost and is what individuals perceive or believe they must give up in any act of choice at the time of making that choice. Robbins argued:

> It is really not possible to understand the concept of choice, of the relationship of means and ends, the central concepts of our science, in terms of observation of external data[11].

It was Robbins' insight that cost was subjective and was involved with every act of human choice which led to the extension of the argument far beyond the price system. The recognition that the use of the price system as a mode of co-ordinating economic activity involved costs

suggested the rationale for the existence of other modes such as firms -- the rationale was, of course, that the firm (within which allocations are effected by fiat) was less costly[12]. This was, of course, quickly followed by extensions to non-price system allocations such as the costly establishment of property rights[13] and to all aspects and institutions of human behavior[14].

The essence of the subjectivist theory of opportunity cost therefore is that since human behavior is related to the constraints as perceived by individual agents, then those agents will so coordinate their economic activity through all modes such as price systems, firms, etc., such that all differences between private and social costs are eliminated. In the objective cost tradition, the (mild) causal implication of equilibrium prices was that no allocation within the price system could be considered an equilibrium until, within that system, all gains from exchange had been captured[15]. That the allocation might be an inefficient one was because the further gains from exchange latent and objectively identified in that allocation could not somehow be captured within the confines, it was argued, of the use of the competitive price system. Yet this entailed the implicit assumption that the price system was incomplete or costly or both. Yet if the price system is supplemented by firms, implicit contracts, etc. because the price system is more costly as a means of further capturing the gains from exchange and the costs are subjective and not external -- not capable of complete appraisal by the independent economist -- then the grounds for the independent economist to offer policy commendations along Pareto-improving lines have been severely weakened.

We cannot eliminate the assumption that agents will seek to capture all perceived gains from costly exchange. That assumption is merely that agents maximize subject to perceived constraints or even merely that human behaviour is linked to perceived constraints. If we eliminate that assumption we eliminate the positive content of both the subjective (and general equilibrium objective) value theories. Once, however, we move away from objective independently assessable costs, as in the light of incomplete, imperfect costly information and knowledge we are compelled to do, then the distinction between objective and subjective theories of value becomes blurred and the operative value theory stands increasingly as the subjective opportunity cost theory. The consequences for the policy recommendations of the economist are, however, of considerable magnitude. The full implications of the argument have been, I believe, fully grasped by the latter-day Austrians:

> In a purely static framework, all opportunities for potential gains are efficiently exploited. Whatever is must also be efficient. Therefore, a static framework is ultimately self-destructive since it degenerates into a crude tautology and is thus unable to provide for desirable change[16].

It is a cardinal mistake to brush aside the "whatever is must also be efficient" argument as ideological or Panglossian. The argument emerges from a rigorous application of the positive aspects of the subjective opportunity cost theory of value. Support for my argument is drawn from

the many aspects of economic theory and policy service in my second
sense where the consequences would seem to be, for the purposes of this
paper, policy inaction -- or, as I shall argue, the endogenisation of
economic policy and hence elimination of discretionary policy.

Consider briefly some examples of the pervasiveness of the subjective
value theory and its consequence to Paretian efficiency policies. Since
Coase's seminal work on cost, the development of the theory has culmi-
nated in the proposition that the distinction between private and social
costs cannot be positively maintained (with obvious consequences to
those policies based on the supposed divergence). The so-called "trag-
edy of the commons", wherein such resources are supposedly over-utilized
(such as undue depletion of fish stocks in the open sea) vanishes when
it is realized that the imposition of property rights, which would elim-
inate the supposed inefficient utilization of the "common property"
would itself be so costly in the enforcement of such rights that it
would be more efficient to permit the maintenance of the common proper-
ty. A relentless application of the subjective opportunity doctrine
eliminates the supposed divergence between private and social costs[17].

> Two major conclusions emerge: first, that it is not possible
> to specify any class of transaction costs that -- given indi-
> vidual wealth-maximizing behaviour under well-specified con-
> straints that include exchange costs -- generate externalities
> that constitute deviations from an attainable optimum; sec-
> ond, that the concept of externalities - insofar as the word
> is intended to connote, ... the existence of an analytical
> proven market failure -- is void of any positive content but,
> on the contrary, simply constitutes a normative judgment about
> the role of government and the ability of market to establish
> mutually beneficial exchanges[18].

Based on the position that one is concerned with costs as perceived
by agents, then, arguments have emerged to the effect that "barriers to
entry", such as reputation of long-established firms, and so-called
"predatory pricing" are not practices inimical to economic efficiency
but rather indeed may be consistent with it[19]. Such arguments appear
in many ways but one common theme appears throughout. Professor Dem-
setz, when discussing barriers for entry, for example, argues that even

> ...careful treatments of the subject proceed as if the defini-
> tion of barriers can be tied quite easily to give purely ob-
> jective measure of the cost of doing business[20].

The burden of Demsetz's argument is that, when recognition of the sub-
jective nature of costs is paid to the problems of inefficient competi-
tors inherent in topics such as 'barriers of entry', it ceases to be
clear, indeed becomes impossible to demonstrate, that such competition
is inefficient or imperfect. Such arguments now in the literature rest
on the nature of incomplete and costly information. They are expressed
essentially in terms of opportunity costs as perceived by the immediate
participants in a market or economic activity who have the greatest in-

centive to minimize measurement costs, etc. rather than as independently
assessable costs as measured by disinterested independent observers. It
would appear no longer to be possible easily to demonstrate the presence
of inefficiencies in the Paretian sense -- and with such difficulties
the confidence with which economists can commend or criticize policies
appears to be steadily weakened.

Before concluding this section with my final example, I should point
out that supposed demonstration of inefficiencies in existing economic
relationships continue to appear[21]. Yet as soon as they appear count-
ers based on the supposed ambiguities associated with objective costs
can be predicted to emerge. A general problem can now be seen. Based
on what was considered as cost and assuming the economic agents would
also choose the modes of co-ordinating economic activity seen by them to
be open to them, the independent economist could, it was argued, identi-
fy a state of equilibrium as being an inefficient one. The independent
economist, it was argued, could see that there was an alternative way of
conducting economic affairs which would make "everyone better off". The
observing economist was then in a difficulty. All agents were hypoth-
esized to seek to capture all conceivable gains from exchange. Without
that assumption, objective and subjective value theories would have no
positive content. Yet the self-same agents were somehow in a state,
such as a grand prisoner's dilemma, where they could not, even though it
was profitable to do so, improve upon their allocations. Yet since the
observing economist does not assume more information than the agents
themselves an inconsistency emerged, explicable only by the argument
that the independent economist was somehow misconceiving the perceived
opportunity costs. Once that point was made, the rest followed -- and
the ground for economic policy service in my second sence was fatally
challenged.

Moreover, in a reductio ad absurdum, the subjective opportunity cost
position can be carried further. If agents form clubs, firms, etc. in
lieu of the use of the price system for the reasons that they perceive
such arrangements as being efficient, then the same arguments entail the
emergence and use of governments. Actions of governments -- more pre-
cisely the actions by elected representatives and appointed bureaucrats
of such agents, with all the costs of monitoring and measurements -- en-
tail economic efficiency. Collective economic policy becomes endogenous
and one is left with no more grounds to talk about "government failure"
than one had grounds to talk about "market failure". As part of this
argument the policy-adducing economist is then merely seen as one of
many inputs hired directly or indirectly in the process of efficient ec-
onomic activity. Discussion of discretionary economic policy becomes
empty by definition.

Many additional examples of this argument could be provided. I shall
introduce one more to explore the Keynesian value theory.

Keynes seemed to deduce the existence of an involuntary unemployment
equilibrium. Earlier I identified this in terms of Keynes' other defi-
nition -- an allocation from which, given tastes, technology and initial
conditions, it was possible to move in the direction of more both of
present and future consumption (in the form of investment). This cen-
tral idea of the General Theory has been under sharp and successful at-

tack and it is, I think, correct to say that the discipline now regards Keynes' deduction as unproved if not unprovable. The central problem was that, in the traditional opportunity cost theory of value, if perceived gains remained in existence, then a situation with involuntary unemployment could not be described as an equilibrium allocation. It must be on its way to elimination -- herein is the substance of the so-called real balance effect even if one takes into account the potential serious redistributional aspects associated with adjustments in money wage rates and prices should the agents perceive that flexible prices are one of the least cost ways of co-ordinating their activity and attempt to capture the gains inherent in the postulated situation of involuntary unemployment by reducing nominal values[22]. One does not have to postulate instantaneous price clearing or auction markets to appreciate (a) the ad hoc nature of some fixed price quantity adjustment models, or, more significantly, (b) the arguments to the effect that agents, given their costly perceptions of their constraints, leave prices relatively unchanged and adopt layoffs, excess capacity adjustments, etc., because they perceive such non-price modes of attempting to resolve inefficiencies as the least cost methods open to them.

An enormous literature has developed using this approach to Keynes' problem. I need not stress the main types of this argument. Treatments such as unemployment is voluntary search unemployment, measured prices fail to reflect the perceived shadow prices (costs) associated with implicit contracts, rational expectations, etc. abound. All such treatments are, of course, based on the subjective opportunity cost theory of value.

Consider the "equilibrium" business cycle. Agents with rational expectations will, of course, discount the effects of endogenous monetary policy. Unexpected changes in the nominal money supply will have 'real' effects because agents perceive more closely -- i.e., in a less costly way -- the change in the price of things in which they are specialized either as demanders or suppliers. An unexpected increase in the nominal money supply is associated, because of asymmetrical costly information, with firms perceiving a rise in the price of the goods in which they specialize as sellers and not a rise in the price of the many things they buy (labour and capital goods) as purchasers, workers perceive a rise in money wage rates and not in the prices of wage goods, producers of capital goods see the price of their goods increasing and increase output and purchasers of capital goods perceive the relative prices of capital goods falling and so buy more of the capital goods, banks perceive the nominal price of money services rise (though not relative to the price of consumer and capital goods) while purchasers of money services do not perceive the higher nominal price of money services (i.e., interest rates rise but not to the same extent of the prices of consumer and new capital goods) so that "real" interest rates are perceived to fall. The result of this incomplete because costly perception of the constraints confronting all agents is that there is a temporary increase in the volume of output of consumer and new capital goods industries and financial intermediaries and employment which persists in the form of correlated movements in output and employment because of the 'distortion' built into the capital stock by the original expansion of the out-

put of the new capital good industries and the perceived fall in "real" interest rates. The rest of the story unfolds as agents optimally perceive their "true" constraints -- and to the Hayek story of the business cycle one adds because of the costly perception of constraints the wrinkle that the Hayek story[23] is an efficient or equilibrium one[24]. The role for monetary policy is not discretion which may be confusedly perceived as unexpected but a rule which cannot, it is claimed, be misinterpreted. This argument can be criticized -- no wage rate or price indexes are published (or no one watches the money stock figures)[25]. For my purposes, however, the story of the efficient business cycle is evidence that the subjective opportunity cost theory of value can be employed to account for observations which heretofore would have been said by economists to be drawn from inefficient universes, open therefore to efficiency-improving policies.

I have documented, with just three examples, the argument that relentless and universalistic application of the subjective opportunity cost theory of value would seem to result in the ever-diminishing role of economic policy in the Paretian sense. One could advance the hypothesis that, fully understood, the subjective value theory has completely undermined the idea of efficient discretionary economic policy. If that is too strong, it can, I think, nevertheless be argued that acceptance of the subjective value theory shifts the burden of proof onto those who argue that there is a case for efficiency-enhancing economic policy.

2.4 KEYNESIAN VALUE THEORY

The final part of my paper is highly conjectural. Fix price quantity adjusting interpretations of Keynes leave no room for value theory[26] -- yet it was the subject with which Keynes was and which a Keynesian value theory must be concerned[27]. Yet, it is hard to ascertain just where Keynes can be said to part from the value theories previously set out -- though Keynes was not an objective value theorist. His concept of involuntary unemployment entailed the feasibility of simultaneously increasing present-consumption and, through increases in investment, increases in expected future consumption. As such, Keynes' proposition was in sharp contrast to Marshall's view that interest was the reward or price of waiting[28] or to the Fisherian view that the "real" rate of interest metered or measured the marginal rates of substitution and transformation between "permanent" consumption streams. In the foregoing neoclassical value theory, it is not possible, unless deceived by imperfectly understood differences between nominal and real rates of interest, for agents to obtain more present consumption and more net new investment simultaneously[29]. This was the reason for Keynes needing a theory of "the" rate of interest. The liquidity preference theory of the rate of interest entails that the major part of the yield on money (and, in a minor way, on other assets as well) consisted of a liquidity premium --" ... a potential convenience on security" for which there is " ... nothing to show for ... in the shape of output"[30]. In subsequent reconsiderations of Keynes' theory, money, which was supposed to bear a

liquidity premium par excellence, is deemed to be part of a deterministic or stochastic transactions technology so that the services of money are again part of the transformation between consumption streams. Very briefly, money -- either as a consumers' or producers' durable -- permits agents to obtain higher valued permanent consumption stream -- if we include in such valuations the effect of variance in the consumption streams. In the non-Keynesian analysis, change in money balances is deemed to involve the agent choosing, along his perceived budget constraint, amongst consumption streams -- the agent is deemed to be choosing one outcome against another, deciding one way or another. In Keynesian analysis, the agent is deemed now to be confronted with an incompletable knowledge of states, he is deemed to have some ignorance. In the traditional objective and subjective value theories, if the agent is postulated to be ignorant in Keynes' sense, then there is nothing these theories can say about his behaviour[31]. Yet Keynes did try -- he argued that money was a social contrivance through which agents could postpone the taking of a decision until they knew more. It was this facility of the holding of money which necessitated that a price be paid for parting with it, for parting with liquidity, which would be the liquidity premium. To Hicks, liquidity is a property of related or a sequence of choices. "It is concerned with the passage from the known to the unknown -- with the knowledge that if we wait we can (may) have more knowledge"[32]. Waiting in Marshall's sense and in Keynes' sense are related but they are different. In the traditional sense, the rate of interest is the price which is paid for waiting in the second of foregoing consumption in exchange for commitment; in Keynes, interest is the price paid for "waiting" in the sense of foregoing the commitment -- of delaying a decision until more is known. The contrivance of money fits the bill, it appeared to Keynes, because actually to commit in any other way or to attempt to postpone commitment in other forms could always involve an agent in loss when the time comes that he knows more and may realize on the earlier commitment or can now make the commitment postponed earlier. In our day, of course, the real value of money is eroded by inflation but, in writing about money rates of interest of assets in general, Keynes took into account the real yield of assets, their carrying costs and the expected rates of change in their money prices as well as liquidity premia. Inflation can therefore be fitted into the Keynesian scheme. Though other assets, such as capital goods, have liquidity premia as well, they in general must earn a rate of return not merely sufficient to compensate their owners for the foregone consumption but for the commitment made in the decision to acquire such assets, and to give up money. Thus, the liquidity premia on money (and to a lesser extent on other assets) must be a factor in the determination of relative prices in the Keynesian short-run. To summarize, the real rate of interest or rate of profit or price of waiting in the sense of switching among consumption streams, as a factor of production, enters the determination of relative prices or value theory in the Marshallian long run[33]. In Keynesian value theory (if one is said to exist), the Keynesian concept of waiting -- the ability to postpone the taking of a decision or the making of a commitment -- and the price which is paid for not postponing or for giving up liquidity must be incorporated into

the determination of relative prices in the short-run. It clearly enters the determination of the supply prices of all current outputs, produced partially with reproducible inputs, since the short-run marginal cost will include the short-run marginal user cost, itself a function of the interest rate, including the liquidity-premium on money[34]. Much remains to be done, however, in the development of a Keynesian value theory as the following concluding comments will suggest.

Why should "money" have the highest liquidity premium? Why should money be a "social contrivance"? The liquidity characteristic of money implies that it is a device in which the non-commitment of purchasing power is expected to be convertible into anything at the agent's choice at least cost. Other assets may also perform the role of money but upon realization may be expected to have fallen in price relatively to the desired "upon receipt of more information" choice of the agent. Then, clearly, money as such is an aggregator -- it is a means of generalized purchasing power. Similarly, agents may desire to substitute for ownership of many pieces of capital goods, property in which necessitates the costly knowledge of the movements in relative prices of capital goods to consumption goods, the ownership of equity claims. The value of equity claims, for instance, encompasses the value of many individual pieces of capital goods standing behind them. Owners of such claims need only monitor the smaller number of prices of equities and such equities, like money, are aggregators. Equities imply the existence of firms and firms are also in my sense aggregators.

Keynes' analysis was worked out with the concepts of aggregates. It is common to argue that such aggregates (as are used in standard macroeconomics) are mere simplifications, e.g., output is homogeneous, etc. I believe that Keynes tried to work with aggregates (e.g., money, firms, balance sheets) which were themselves thrown up or developed by the economic system. It is not satisfactory to use aggregate constructs only when the so-called conditions for consistent aggregation permit their use[35]. It is essential that economists develop theories as to why individual agents themselves construct and use aggregators[36]. A satisfactory theory of money[37] and Keynes' liquidity premium necessitates such a theory of aggregation. It cannot be maintained that we have such a theory today.

Governments, acting as collectivities of individual agents, act (in general) for policy purposes on aggregates. The Bank of Canada, for instance, has acted on the rate of growth of an aggregator, M , on the belief that a predictable response will be associated with another aggregator, the CPI (or possibly some other price index). Without a theory of aggregation in my sense, however, I would suggest that such policies may not yield their predicted responses.

To summarize, what I call neo-classical value theory, encompassing earlier objective and later subjective value theory -- aside from its traditional positive content which is not my concern in this paper -- was supposed to have the additional positive content of being able to provide the commendation or criticism of economic policies based on the independently assessable Paretian criterion. As that value theory has developed, it has become more progressively subjectivist. I believe the modern Austrian theory is its most rigorous formulation. As such, cost

depends upon what agents perceive their constraints to be. To postulate
the existence of an equilibrium allocation where perceived constraints
entail an equilibrium - i.e., no further gains from exchange are per-
ceived as attainable -- and yet at the same time to argue that the con-
strained equilibrium is Pareto inferior is to involve one in contra-
diction. The Austrians see this precisely which is why, for example,
there is in that theory no involuntary equilibria and all business cy-
cles are equilibria i.e., efficient -- manifestations. So far as poli-
cy commendations or criticisms based on Pareto criterion are concerned
it will be observed that adherence to the subjective opportunity theory
of value prevents the economist from commending or criticizing discre-
tional economic policy. Properly understood, I believe that the epis-
temological foundations of this theory, with its essentials of costly
knowledge and concentration on what agents can profitably be expected to
know in the way of constraints on their activities, entails the elimina-
tion of the concept of discretionary acts of economic policy.

Keynesian value theory may, if it can be constructed, permit us to
consider the implications of policy acts by government. The Keynesian
value theory, given its foundations on the role of money and liquidity
premiums in the determination of relative prices[38], rests upon the
conventional significance of aggregators such as money, firms, etc. We
may call Keynesian equilibria conventional equilibria -- and as such
governments may be able to play a role in determining the allocations
associated with such conventional equilibria. Without the requisite
value theory in hand, however, I do not think the case for Keynesian ec-
onomic policies can be said to be secure.

Notes

* A paper written for "Economic Policies for Canada in the 1980's",
    a Conference in honour of Professor Clarence L. Barber, sponsored
    by the Institute for Social and Economic Research, University of
    Manitoba on 28/29 October, 1982. I am grateful to Professor C. Ni-
    colaou for his comments at the Conference on this paper.

[1] This paper continues with a line of development of thought set out
    in my "Money, Efficiency, and Knowledge", Canadian Journal of Eco-
    nomics, XII, November 1979, 575-589 and "The Economic Analysis of
    Economic Policy", Carleton Economic Papers, 82-87.

[2] I ignore here propositions such as one (small) country even with re-
    taliation (but not with bribes) could make itself better off with
    tariffs. The economist commending protection by such tariffs for
    such a country is straying into the third service mentioned later.

[3] See F. Hahn, On the Nature of Equilibrium in Economics: An Inaugu-
    ral Lecture. Cambridge: Cambridge University Press, 1973.

[4] See Robert E. Lucas, Jr., "Rules, Discretion and the Role of the Ec-
    onomic Advisor", ed., Stanley Fischer, Rational Expectations and Ec-
    onomic Policy. Chicago: University of Chicago Press, 1980. For an
    efficiency argument for a monetary rule in which it is asserted that
    the optimal money supply rule may offset discretionary money supply
    policies no matter how great the finite gains from such discretion-
    ary policies, see M. Feldstein, "The Welfare Cost of Permanent In-
    flation and Optimum Short-Run Economic Policy", Journal of Political
    Economy, LXXXVII, August 1979, 749-768.

[5] See Joan Robinson, "A Neo Neo-Classical Theorem", Essays in the
    Theory of Economic Growth London: Macmillan, 1962.

[6] See A. Asimakopulos and J.B. Burbidge, "The Short-Period Incidence
    of Taxation", Economic Journal, LXXIV, June 1974, 267-288.

[7] See for example, Sawyer's argument that the central conflict between
    profits and real wages may be 'resolved' by "...shifting power from
    one side to the other", cf. M.C. Sawyer, Macroeconomics in Question
    U.K.: Wheatsheaf Books Ltd., 1982.

[8] John McManus, "The costs of alternative economic organizations",
    Canadian Journal of Economics, VIII, August 1979, 334-350.

[9] See, for example, the absence of discussion of the costs of private
    versus public managers in Joseph E. Stiglitz, "The Inefficiency of
    the Stock Market Equilibrium", Review of Economic Studies, XLIX,
    April 1982, 241-261.

[10] Lionel Robbins, An Essay on the Nature and Significance of Economic

Science, 2nd ed., 1935. London: Macmillan, 1952, 14.

[11] Ibid., 89-90.

[12] See R. Coase, "The Nature of the Firm", eds., G.J. Stigler and K.E. Boulding, Readings in Price Theory Homewood, Ill.: R.D. Irwin, 1952.

[13] R. Coase, "The Problem of Social Cost", Journal of Law and Economics, III, October 1960, 1-44. The key point of Coase's seminal work was that, if there were no costs of transactions or of establishing property rights then any net damage inflicted by any party on others would be fully compensated for without there being any allocation effects (distributional effects were assumed away). If I owned the rights to clean air, then other parties would pay me for its efficient use or non-use. If others owned the rights to clean air, then I should have to pay them and the extent of the use of clean air would not be affected by the allocation of the rights to the clean air. In this sense, the Coase Theorem is akin to the efficiency properties of a costless price system. If there were costs then the allocation of property rights would affect the allocation of clean air but subject to those costs and initial allocation of rights the use of clean air would be efficient.

[14] G. Becker, The Economic Approach to Human Behavior Chicago: University of Chicago Press, 1976.

[15] As Frank Hahn argued (op.cit., 7), traditional general equilibrium theory is motivated by a weak (?) causal proposition to the effect that

...no plausible sequence of economic states will terminate, if it does so at all, in a state which is not an equilibrium. The argument is straightforward; agents will not continue in actions in states in which preferred or more profitable ones are available to them nor will mutually inconsistent actions allow given prices to persist.

[16] G.D. O'Driscoll, Jr. and M.S. Rizzo, "What is Austrian Economics? A Survey", a paper given at the AEA meetings in Denver, Colorado, U.S.A., 5 September 1980, 32. See also J. Carr, F. Mathewson and J. McManus, "Everything is Optimal -- in its Own Way", Cents and Nonsense: The economics of Canadian policy issues. Toronto: Holt, Rinehart and Winston, 1972, Mario J. Rizzo, "Equilibrium and Optimality: Do We Live in the Best of All Possible Worlds", mimeo n.d., and M. McKee and E. West, "The Theory of Second Best: A Solution in Search of a Problem", Economic Inquiry, XIX, July 1981, 436-447.

[17] See S. Cheung, The Myth of Social Cost London: Institute of Economic Affairs, 1978.

[18] C.J. Dahlman, "The Problem of Externality", Journal of Law and Economics, XXII, April 1979, 43.

[19] See, for instance, F. Fisher, "Diagnosing Monopoly", Quarterly Review of Economics and Business, XIX, 1979, 7-33; S.C. Littlechild, "Misleading Calculations of the Social Cost of Monopoly Power", Economic Journal, XCI, June 1981, 348-363 and W. J. Baumol, "Contestable Markets: an Uprising in the Theory of Industry Structure", American Economic Review, LXXII, March 1982, 1-15.

[20] Harold Demsetz, "Barriers to Entry", American Economic Review, LXXII, March 1982, 47. See also his "The Antitrust Dilemma", ed. Karl Brunner, Economics and Social Institutions, Boston: Martinus Nijhoff Publishing, 1979, wherein it is argued anti-trust activity and regulation of monopoly practices -- based on objective cost criteria -- may, in fact, reduce economic efficiency.

[21] See the previously mentioned article by Stiglitz.

[22] J. Tobin, "Real Balance Effects Reconsidered", Asset Accumulation and Economic Activity: Reflections on Contemporary Macro-Economic Theory. Oxford: Basil Blackwell, 1980.

[23] It is, I think, also the Wicksell story interpreted by Leijonhufvud. See A. Leijonhufvud, "The Wicksell Connection: Variations on a Theme", Information and Coordination Oxford: Oxford University Press, 1981.

[24] Robert E. Lucas, Jr., "An Equilibrium Model of the Business Cycle", Journal of Political Economy, 83, December 1979, 1133-1144, reprinted in his Studies in Business-Cycle Theory. Oxford: Basil Blackwell, 1981.

[25] F. Hahn, Money and Inflation Oxford: Basil Blackwell, 1982, 84-85.

[26] Indeed, it was the ad hoc nature of the fix price assumption that led Barro and Grossman to question their earlier work. See R. Barro and H. Grossman, Money, Employment and Inflation Cambridge: Cambridge University Press, 1976.

[27] In the preface, Keynes argued that the General Theory was just that -- a general fundamental theory of value, of which the classical theory was a special case. cf. J.M. Keynes, The General Theory of Employment, Interest and Money, in the Collected Writings of John Maynard Keynes, VII. London: Macmillan, 1973, 22-23.

[28] For a modern recapitulation of this view, see J.R. Hicks, "Is Interest the Price of a Factor of Production?", ed. Mario J. Rizzo, Time, Uncertainty and Disequilibrium. Toronto: Lexington Books, 1979.

[29] In the previous discussion of the Austrian efficient trade cycle,

more consumption and net investment are undertaken with an unexpected increase in the nominal money supply because workers are "fooled" into surrendering some leisure, itself a consumption good. Evaluated at the "true" prices, the extra leisure foregone swamps the extra present consumption the workers experience so that the traditional story applies -- namely, increased net new investment is obtained at the expense of present consumption. The same argument applies to those modern theories which treat all unemployment as voluntary -- i.e., when unemployment rises agents are investing more in search and obtaining less present consumption.

[30] J.M. Keynes, op.cit., 226.

[31] Important criticism along these lines of the concept of uncertainty in Keynes is found in A. Coddington, "Deficient Foresight: A Troublesome Theme in Keynesian Economics", American Economic Review, LXXII, June 1982, 480-487.

[32] J.R. Hicks, "Money, Interest and Liquidity", The Crisis in Keynesian Economics. Oxford: Basil Blackwell, 1974, 39.

[33] This is where the significance of the recent capital controversy enters into modern value theory in the sense that an aggregative measure of "waiting", capital intensity, etc., will not necessarily be inversely related to the real rate of interest or rate of profit.

[34] For further discussion of this point, see Paul Davidson, Money and the Real World, 2nd ed., Toronto: John Wiley & Sons, 1978.

[35] For such conditions, see C.J. Bliss, Capital Theory and the Distribution of Income Amsterdam: North Holland, 1975, esp. Chapter 7, The Aggregation of Miscellaneous Objects.

[36] The development and use of aggregators such as the CPI, for instance, seriously weakens the content of the Austrian theory of the business cycle. The question is, though, why should profit maximizing firms and utility maximizing households through their collectivities (e.g., trade associations, labour unions) give up resources for the construction privately or publically of money wage rate and, of apparently even greater importance, consumer prices indexes?

[37] A start in this direction is A. Alchian, "Why Money?", Economic Forces at Work Indianapolis: Liberty Press, 1977.

[38] H. Townshead, "Liquidity Premium and the Theory of Value", Economic Journal, XLVII, March 1937, 157-169.

3
Comments on: Keynesian and Neoclassical Value Theories: Some Implications for Policy*

Costas Nicolaou,
Associate Professor of Economics,
University of Manitoba

As far as I can make out, one concern of Professor Rymes is with the implications of the subjective cost theory for the practice of what Rymes calls "quasi-positive" economic policy recommendations offered by economists; that is, recommendations economists usually make for movement from an inefficient position to a more efficient one (of equal or higher ethical value).

These Pareto-improving economic policies, argues Rymes, are an endangered species in an environment where subjective cost reigns. This is because, in such an environment, agents will collect costly information about alternatives and will take the action that appears to them to be the best available, i.e., the least costly or most beneficial among all known alternatives.

In a world without transactions costs it would be possible for agents to consider all possible alternatives, and in such an environment it would not be difficult to argue that the positions taken by agents represent efficient equilibria, since they will have taken these positions after examination and rejection of all possible alternatives.

In such an environment, then, there would appear to be no place for discretionary policy on efficiency grounds since the positions taken by agents would be themselves efficient.

If, however, information is costly to acquire, agents would be expected to stop short of complete information, i.e., at the point where the marginal cost of obtaining information equals or does not exceed the benefit from the information. This leaves some room for policy, I think, if one is prepared to argue that the policy authority has better information, i.e., that it is less costly for the authority to collect information as compared to the individual.

After having established the damaging impact of subjective value theory on discretionary policy Professor Rymes sets out to investigate an alternative value theory, one he terms "Keynesian". And although he calls that part of his paper "highly conjectural", he provides us with a fresh perspective on Keynes, different from the usual view of most macroeconomists.

For Rymes, Keynes was an objective value theorist, since he insisted that the system settled in unemployment equilibrium, an obviously Pareto inefficient position. In such a situation, the rate of interest does not measure the rates of substitution or transformation between present and future goods, since it is possible to increase both (i.e., increase both consumption and investment).

Again according to Rymes, the use of money balances for liquidity preference in Keynes' scheme is intended to postpone specific action until more information becomes available; thus, agents would not part with money without payment, the rate of interest. The rate of interest expresses the perceived benefits of waiting not in the Marshallian sense but in the Keynesian one of postponing action until more information becomes available; and this rate would enter costs and relative prices, hence the Keynesian theory of value.

My initial impression from Rymes' work is that his attempt to articulate a Keynesian theory of value appears to be of great significance not only for economic policy but also for a satisfactory theory of money. Moreover, his examination of the implications of the subjective cost theory for economic policy alerts us to the fact that attempts to produce quasi-Keynesian price inflexibility using standard microtheory (i.e., the subjective theory of value) may not establish any legitimacy for discretionary policy: this is because the actions taken by agents under any conditions can be defended as efficient equilibria by relentless application of the subjective cost principle (to borrow Rymes' words). The full construction of a Keynesian value theory is, therefore, much more urgent than it appears prima facie: without it we cannot easily construct alternative microeconomics that aggregate up to what the real world appears to be to some of us.

There remains, of course, the difficulty for subjective value theorists, which I pointed out in my comment on Professor Laidler's paper. Namely, that they postulate an idyllic process of information collection. If this is not the case, there might probably be room for policy, subjective costs notwithstanding. This because it may then be possible to argue that the information of the policy authority is more complete than that of the agents, and discretionary policy would therefore entail social gain.

4
A Critique of Privatization

J.C. Weldon,
Professor of Economics,
McGill University

With few exceptions, privatization advances steadily (Globe and Mail, May 3, 1982 - a review of the Thatcher programme.)

To be under the power of some one, instead of being as formerly the sole condition of safety, is now generally speaking, the only situation which exposes to grievous wrong ... Modern nations will have to learn the lesson that the well being of a people must exist by means of the justice and self-government of the individual citizens. (John Stuart Mill, Principles of Political Economy)

In fact, nearly all the programs that are advocated by economists to promote equality and combat poverty - and are often rationalized in terms of stimulating consumption - in actuality reduce demand by undermining the production from which all real demand derives ... "Give and you will be given unto." This is the secret not only of riches but also of growth.(George Gilder, Wealth and Poverty, wittily parodying Luke 7)

4.1   A PREAMBLE

In the federal budget of late June there was an open attack upon three of the principal supports of the society reconstructed from the War and the Great Depression. The direct pursuit of full employment was abandoned. The practices of the welfare state were reduced. The trade union movement was subverted.

None of the three supports had escaped earlier attacks, of course. Even by the beginning of the sixties the notion had gained ground that compensation for unemployment would substitute very well for actual employment, and during the seventies it became increasingly unfashionable

to propose any measures by which the State would create missing jobs. As to the welfare state, while undermining of its practices has been both more delayed and more theoretical, that undermining now has visible successes. The principle of universality has been the focus of debate, with the propositions often being advanced, first, that in this much wealthier society it has become too expensive to provide what a poorer society could afford, and second, that by retreating from universality to selective charity much more can be provided. And third, while the trade union movement was a principal support of the reconstructed society it was granted reciprocal support by that society for only a few years. At the best it has been approvingly tolerated, and more often only just tolerated. It now often finds its purposes again placed outside the law in some areas, and the spirit of the law in almost all.

Considered item by item the budget of late June did not _invent_ reactions against the interventionist State, reactions that were without precedent. The crispness and self-confidence, however, with which the great social programmes were reduced _en bloc_ may make June 28th a day to remember. On _full employment_ the budget spoke sufficiently in three sentences. "The onslaught of recession has triggered demands for a fundamental reappraisal of our economic policies ... Any departure from our broad policy approach has been rejected ... We have rejected massive fiscal stimulus and the abandonment of monetary restraint because this would only worsen inflation and aggravate unemployment."[1] On _the progress of the welfare state_, the budget limited "the indexing factor applicable to Family Allowances and Old Age Security"[2], and then with respect to Old Age Security not only expropriated a substantial sum from the real incomes of pensioners but moved the system away from universality and did damage to the all-important factor of trust. The welfare state functions or fails as those taxed today believe in the continuity of the rules: the compensatory transfers belong to an often distant future. In this same way, as well known, medicare has also been under siege. Then, on _the commitment to trade unionism_, the budget declared "pay restraint in the federal public sector", and set wage increases well below expected inflation for unionists - and all others - in the federal service. Other unionists have since been pressed into this unpredictable programme, recruited under successive improvisations. Where federal writ now runs unions are _free_, rather as in Poland, except to act as unions; and if this troubles workers, they can at least take comfort that a new experiment in "incomes policy" so long demanded is in place to substitute for their leaders' stubborn resistance to the higher wisdom.

This does not hint at admiration for the budget or its inspiration, but that is not the point. A review of its merits and those of its distinguished predecessors belongs to a different occasion. In the context of "privatization" the budget should be taken as a datum, as a phenomenon representative of the times. Thirty years ago, twenty years ago, such a statement of economic and social policy as that of June 28th would have been unthinkable. Public policy in Canada has certainly been "privatized" in its appearance and may have been "privatized" in its reality. At least three large questions are worth reflection.

Item, has there in fact been a substantial change in the actualities of policy? It may be, for example, that the supposedly interventionist State of the 'fifties was largely illusion, with the rhetoric of the times being descriptive of a collection of accidental events. If that is so, it may also be that in the large "privatization" affects nothing: the privatized State and the interventionist State are one. _Item_, if there has been a substantial change in the actualities of policy, has it been the result of calculated "privatization" or merely of novelties in policy associated with the vocabulary of "privatization"? It may be, that for short periods bursts of intervention by the State are _possible_, but that effective intervention is _impossible_ in a systematic way. _Item_, if there has been a substantial change, and if it has been a change politically chosen or politically imposed, has it enhanced welfare (in comparison, of course, with the welfare available from the interventionist State, or from some practical alternative)? The question requires some agreed test of enhanced welfare. It may be, with such a test accepted, that some clear superiority can be shown for "privatization", or for the interventionist State, or for some other social structure (of which forms of voluntary association seem to have the most durable credentials). I think we might move on from preamble to definition.

4.2   "PRIVATIZATION" AS A CONCEPT

Admittedly "privatization" is an extraordinarily ugly neologism, but it has become an important slogan, and a summary of an ambitious technocratic programme.

In the technocratic aspect it proposes that the economic and social structures of, say, Canada be speedily "privatized", changed in one direction and prevented from change of an opposite kind. I should define variables. "Privatization" in Canada would have much the same forms as it would have in any other economically advanced nation-state in which businessmen, capitalists and markets have a large place in determining events. The programme becomes more vague and hypothetical in settings further from the industrialized "Canadian" model, but seems to me recognizable in the debates about policy of almost any society. As to the desired direction of change, this consists of transferring authority, decision and power from the State to private organizations and especially (but _not_ exclusively) to the apparatus of the marketplace. The State is always to be reduced in its economic and social influence, although privatization sometimes emphasizes a general limitation of the capacity of the State to govern, and sometimes particular transfers of responsibility from public to private jurisdiction. Reduction of State authority within the programme is to proceed more or less rapidly, more or less voluntarily, and more or less completely: at the asymptote State authority may have vanished but may also be a basic authority of a subsistence kind, a State authority that supports everything but modifies nothing.

Those who would privatize, as each sees the others, must live with strange company (as is no doubt true of those who regard the programme

as barbaric or empty or both).   When Friedrich Engels[3] writes, of a
redeemed future, that "state interference in social relations becomes in
one domain after another, superfluous, and then withers away of itself",
he sees a society at the end of time only what Peter Kropotkin[4] af-
firmed (in his essay on the historic role of the State) has recently ex-
isted and can soon be reconstructed for an anarchic and by no means dis-
tant future.   Milton Friedman[5] describes in _Capitalism_ _and_ _Freedom_
(and many other writings) the methods and advantages of taking almost
every allocative and distributive function the State may possess and re-
locating them in markets adorned by equal opportunity. George Gilder[6]
speaks above in his inimitably Promethean style and does so in associa-
tion with John Stuart Mill[7].   Even in Canada, and without David Stock-
man to write his reviews, Donald Johnston[8] - as this is being pre-
pared, the president of the Treasury Board - adds an audible voice to
this diversified choir: in his still quoted "Fiscalimity" he decides
that Canada could be a great country "were it not for too much taxation,
too strong a bureaucracy, too much government, too much welfare, too
many politicians and too few statesmen".   Probably if those who would
privatize were divided into two groups,   according as their State is to
give way to private co-operation or to private self-interest, computed
from within each group, kinship would thereby be much improved.

4.3   SOME CONJECTURES BY MARX ON PRIVATIZATION

Karl Marx certainly had no high regard for the economic and social
structures of the capitalism he experienced or the capitalism he fore-
saw.   The "Canadian" model that I have used as the reference for priva-
tization would of course be merely a reasonably well defined stage in
the evolution of his "bourgeois economy". Marx's appraisal of that evo-
lution is a useful beginning here, for privatization can be seen as a
test of some basic Marxian conjectures.

I have in mind the arguments concerning crises. "Bourgeois economy",
claims Marx, develops in a contradictory way, in the fundamental sense
that its development must generate forces that will be fatal to the sys-
tem. Capitalism was not seen as unique in this life history. Self-ter-
minating evolution was built into precursor systems and would character-
ize successor systems (at least until class, like time had ceased).
Still, capitalism has been the system of the here-and-now, so that its
self-termination was the natural focus of Marx's analysis.   I do not
think there is any doubt about the general description Marx used for the
death of "bourgeois economy". Eventually there would be an economic and
social _crisis_ that could not be contained or resolved within capitalism.
Capitalism would inevitably create crises. They would vary in intensity
but would tend to _deepen_.   Capitalism would recover from all of them
save one.

Against the general description there are the specifics. It seems to
me there are three logical distinct explanations given for the ultimate
collapse.   Although they do not exclude each other, any of the three is
a sufficient cause, and each of the three is at one point or other the
single cause that Marx invokes.   The obvious question is whether the

three explanations have as a matter of _fact_ a shared origin - not that
clearly stated - in some still more basic feature of "bourgeois econo-
my".

The most conventional of the explanations, I suppose, is that which
is a composite of reasons to expect _cycles_ in trade and business.   "The
ultimate reason for all real crises always remains the poverty and re-
stricted consumption of the masses as opposed to the drive of capitalist
production to develop the productive forces as though only the absolute
consuming power of society constituted their limit."[9] On the face of
it Marx has chosen a simple underconsumptionist theory.   That must be a
misreading, though, because he has already complained that it "is sheer
tautology to say that _crises_ are caused by the scarcity of effective
consumption, or of effective consumers."[10] There is not space here to
chase down texts scattered through so lengthy a primary source, but in
rough terms the essential argument seems to be this.   Repeatedly Marx
points out (much as Malthus had done[11]) that in the complex circular
flows of "bourgeois economy" the likelihood of demands matching supplies
is vanishingly small. The system is competitive and so in a fundamental
way uncoordinated and fragmented.   At all times those capitalists who
supply commodities are driven to reduce costs so that they may remain
capitalists, and in reducing costs most use the complementary methods of
consolidation and concentration[12]. Accumulation is thereby accelerat-
ed, and fixed capital becomes more durable. Obsolescence is accordingly
always an inescapable threat to the outcome of decisions about produc-
tion: _supplies_ are generated under a notably _different_ _regime_ than are
demands.

Once some external shock or internal miscalculation has been experi-
enced, there is nothing mysterious about how a cycle can be generated.
Luxury goods will be sacrificed by capitalists who have failed to "real-
ize"[13] well produced products - very often massive and long-lived fix-
ed capital - in prices that have an equilibrium relationship to values.
The lost surplus value erases aggregate demand where it is most easily
erased.   Unproductive labourers[14] are dismissed, and like all labour-
ers who lose employment, take with them from the markets their demand
for necessaries.   From a sizeable shock or miscalculation there appears
crisis, and from crisis proper there follows collapse and stagnation.
The circular flow is interrupted not only by the immediate mismatching
of demands and supplies but also by hoarding in the face of uncertainty,
planned hoarding of money and unplanned hoarding of ordinary invento-
ries.   This explains the paradox of underconsumption. In every period
of collapse, consumption _ex_ _post_ will be low just as the reserve army
will be large. A door is opened for recovery because of the exceptional
depreciation of previous accumulations that stagnation produces.   In
general demand eventually revives and crisis gives birth to counter cri-
sis.

At a culminating stage, though, there is no recovery.   Accumulation
piled upon accumulation, and manifested in a falling rate of profit, al-
lows for a wider amplitude for cycles; and by a mixture of chance and
this widening of dangers a collapse is experienced too shattering to al-
low "bourgeois economy" to recover.

The capitalists are unable to organize a State in which collective action has much effect on ordinary cycles or is able to forestall the culminating cycle. So recovery owes nothing to economic policy. There is one open question that has to be posed, the question of how periodicity is controlled. "One may assume", says Marx, "that in the essential branches of modern industry this life-cycle [of industrial capital] now averages ten years ... [though] we are not concerned here with the exact figure ... This much is evident, the cycle [embraces] a number of years in which capital is held fast by its fixed constituent part."[15] Such then is the first explanation.

The second explanation can be described more briefly although it benefits from some of the most memorable of Marx's dicta. As consolidation and concentration proceed (for so far things are unchanged) "that which is now to be expropriated is ... the capitalist exploiting many labourers ... One capitalist kills many."[16] The enforced competition amongst capitalists is revealed by success or failure in reducing costs. For those who fail there is bankruptcy or forced sale, and the transfer of assets to those who succeed. Capitalism grows as measured by output, by productivity, by the number of employed workers, by the size of the reserve army, but it contains all the same a "constantly diminishing number of the magnates of capital" and a working class "disciplined, united, organized by the very mechanism of the process of capitalist production itself."[17] In brief, within the boundaries of a capitalistic nation-state the ranks of the capitalists are thinned by virtue of market forces, and the coherence of workers is steadily ·increased. "Bourgeois economy" becomes a system that is capitalistic only in name, for competition has virtually disappeared and the organization of a socialist state is already in place.

Under this explanation of collapse, centralization of capital and socialization of labour "become incompatible with their capitalist integument. This integument is burst asunder. The knoll of capitalist private property sounds. The expropriators are expropriated."[18] The capitalists again are unable to organize a State in which collective action is able to sustain capitalism.

Finally, as to the third explanation of why its own growth stifles capitalism, there is Marx's judgement about the ever growing domain in which capitalists compete. One should keep in mind that for Marx capitalism is always a system of production, that the many "capitals" the observer will note never coalesce into a single "capital", and that any single capital may at one time exist well inside the boundaries of a State, may sometime later be dominant throughout a State, and may later still cross State boundaries in a wide varieties of international forms. There will be international trade, the export of capital, colonial ventures, and overtly political growths in the style of Lenin's "imperialism"[19].

The process is unchanged in its simple, primary cause. Within a single "capital" each single capitalist must compete in the contest for survival, and perforce must use any method of cutting costs that comes to hand. Elaborate systems of credit were invented because they may provide advantages in costs, and then must be used by all who remain capitalists as the condition for their status. Colonies are used as

markets and then as suppliers of cheap labour and cheap materials, for no better reason but no worse than that in competition each capitalist must use any device another capitalist may use. Eventually the contest, the enforced contest in its institutional and political dimensions, intensifies to such an extent that one "capital" or many "capitals" are violently overthrown. Marx did not get much outside the domestic, private economic system in Capital, but where he did, was faithful to the far more ambitious review of capitalism projected in the Grundrisse. This third explanation of collapse therefore has a less focussed origin than the other two have, but it seems to me to come directly enough from Marx without having need of the complete but secondary support of Lenin.

I think the recital of the three explanations is clear enough evidence of what their shared origin in Marx's "bourgeois economy" must be. As a mode of production capitalism is inherently and finally competitive. As a consequence of this technological datum, capitalistic society is always competitive and fragmented. Workers compete with workers, and capitalists of one kind compete with capitalists of another, the industrial capitalist with the money capitalist and the money capitalist with the landlord. The most familiar form of competition is that between workers of all kinds and capitalists of all kinds, but "most familiar" though it is, it is also the focus of - in Marx's usage - contradiction. This central competition creates a class of workers, a class of capitalists, a class struggle, and so social arrangements that tend to produce collective activity embodied in unions on the one side and State apparatus on the other. Marx finds, however, that while "bourgeois economy" survives, the tendencies to collective behaviour are insufficient responses to the dissolving powers of competition.

Under any of the explanations of final crisis, competition amongst capitalists has persisted as both cause of the crisis and as the final, mortal impediment to cure. Collectivist intervention might repair imbalances between the demands and supplies of the system. An effective State apparatus might forestall the concentration and consolidation by which capitalists expropriate each other. The "many capitals" of the international sphere might find it possible to establish modus vivendi and become a single "capital". In no case does Marx think it possible that the suicidal forces of competition can be overcome. Collective action would preserve capitalism but collective action is not possible to capitalism. Marx conceives of the invisible hand as possessing Midas' touch. Where Smith saw competition as a feature of his society that needed to be nurtured, as a regime that called for a policy of natural liberty, Marx saw competition as inescapable in "bourgeois economy", both as to its influence in increasing productivity now and as to its inhibition of current welfare and future stability; and of all forms of competition, ironically that which is fatal will be the competition amongst capitalists.

"Privatization", in brief, for Marx would no more describe a policy or goals of "bourgeois economy" than would "natural liberty" or laissez faire. It describes the natural tendencies of capitalism, tendencies inextricably bound to a mode of production and its derivative social history.

4.4   PRIVATIZATION AND THE PURPOSELESS STATE

When our Canadian children are first given Marx's Capital to study, as
many of us must recall, I think they agree with their school teachers
that it is the mindlessness of the capitalistic State that Marx indicts
rather than its purposes or an overbalance of evil amongst individual
capitalists.   Competition creates a rate of exploitation, and then re-
quires industrial capitalists to invest the surplus of society not so
much to improve their situation as to maintain it.   There is for Marx
the great paradox that the contemporary mode of production is marvel-
lously capable of supplying commodities but has astonishingly little ca-
pacity to improve the lot of either the exploiters or the exploited. So
far as there is a State apparatus it is dominated by capitalists, but it
is not thereby converted into a purposeful apparatus, or into a collec-
tive expression of class interests.   Since at all times there is a
struggle amongst the classes (a distributive struggle in the main) it is
reasonable to think of the State as jointly but ineffectually cont-
rolled. Out of the dynamics of "bourgeois economy", the economic actors
will construct monopolies and cartels, will create trade unions, will
organize colonial enterprise and will take their places in the affairs
of a capitalistic State; but it is always from the pressure of competi-
tion that these shared activities result, and it is always to renewed
competition that they tend.   The capitalistic State might have much to
do were it an integrated entity, but it is in fact mindless[20].   Thus
Marx describes his State.
    My own ideological preferences are social democratic, so that I am
well aware that to concur in Marx's judgements on the abilities of the
"bourgeois economy" to provide itself with a State, is to confess to un-
real expectations about the scope of economic policy.   One need not ac-
cept those judgements, however, in order to believe that the questions
Marx has posed are as basic as they are topical. The "privatization"
that so many economists have come to recommend and that so many politi-
cians seek to apply is a prescription Marx would not deny them: for
Marx it would be a prescription they will gain whether they search for
it or not, and that will signify the chronic and desperate ills of their
system. Where the means of production in an industrial society are pri-
vately owned, there "privatization" is of the nature of things and hopes
and fears of a rational State will be equally silly. I have no inten-
tion, of course, of speculating about Marx's eschatology, and am ready
to accept decidedly narrower boundaries than Marx uses in assessing the
contest between State policy and privatization.   During the period since
the end of the Second World War the contest has in any event been suffi-
ciently intense in Canada to make recent and local evidence well worth
study. The tides have changed more than once since 1945.   Possibly the
Canadian State administers but cannot govern,   and should not govern if
it could. These are no longer propositions dismissed out of hand in the
political economy of Canada.

4.5   SOME DISTINCTIONS

Whether the degree of privatization is endogenous, or chosen, I leave
aside for the moment. It may seem, though, that since privatization re-
duces the authority of the State it is a recipe to diminish the extent
of the State, to contrive or at least applaud a smaller State. Certain-
ly the evangelists from our immediate neighbour use language that con-
veys such sentiments, and not least the evangelist-in-chief who speaks
so often about getting government off the backs of the people, of not
looking to the State for help in tasks the industrious should perform
for themselves, and similar formulae for lessening the State. Size,
however, is not purpose, and in itself seems to have very little to do
with privatization.   Undoubtedly the size of the State is a very diffi-
cult thing to measure, for its boundaries are vague and its structure is
heterogeneous. Quantification has many and arbitrary dimensions.   Even
in simple societies, though, as K. Polanyi[21] has convincingly evi-
denced, a multitude of resources are absorbed merely to keep the State
in being, a first charge more demanding than the claims of the market.
I know of no data to show any solid correlation between the size of the
State (measured perhaps by some count of real costs required for its ex-
istence) and whether it is mature or primitive, purposeful or mindless,
dynamic or immutable, egalitarian or greatly hierarchic. The State that
President Reagan or Prime Minister Thatcher bequeaths may be different
in its functioning than the State over which President Mitterand pre-
sides, but this difference will not be exhibited by changes in size in
the various apparatuses of State. Even in States the mind occupies very
little space. Parenthetically, one might note how confused and impor-
tant the programmes are which seek to decentralize the State and assign
public tasks to collective bodies as close to local, individual decision
as possible. He or she who seeks purpose and rationality in the demo-
cratic State looks to decentralization as strengthening this kind of
State in all of these dimensions. He or she who wishes privatization
looks to decentralization from an opposite view, as euthanasia of pur-
pose and intervention. From area to area, of course, either may be
right or either may be wrong. Opponents find themselves at times join-
ing in programmes where they really shared only slogans. The farce of
the propaganda for the negative income tax is a fine example. Decen-
tralization does not so much discriminate amongst alternatives as con-
flate them.
    Against the abstraction of the purposeless or mindless State a critic
can oppose more than one alternative, for at the least either the adjec-
tive or the noun can be disputed. Still deferring the vital question of
causation (that is, whether privatization is a policy or an event), I
observe that contemporary economists routinely invoke the notion of a
rational and purposeful State whenever they wish to add to the pure
theory of markets the pure theory of welfare.   They have found the idea
indispensable in every use of social welfare functions, in all discus-
sions of public choice, and in the construction of many varieties of
collective demand. This totally rational society constitutes as much of
a polar case for society collectively, as does economic man in reasoning
about private markets,   and is equally a formal construction to assist

analysis when behaviour and causation have been discovered. The economically rational State is collectivized precisely as economic man is privatized. The critic of privatisation, all the same, must know there are a myriad of economically rational States - as against the unique, _perfectly_ privatized system - and will have to classify them farther according to other qualities, perhaps along the dimension from the _oligarchic_ State to the _democratic_ State as the leading variable.

It has often been that the critic objects to the noun rather than the adjective, and proclaims the society that abjures the State entirely. Competition is not a force that can safely be exploited within the confines of a State, purposeful or not. Voluntary association, co-operation, the spontaneous creativity of anarchy, this is an alternative that must (or should, or will - for causation continues to be undecided) free humankind from motivations that are ignoble and from coercion that is unnecessary and oppressive. If an invisible hand mediates our affairs it is through our social sense it operates rather than our selfishness. The State is _the_ enemy. In more modest abstractions the State is an unhappy refuge while co-operation slowly displaces other forms of organization, or when voluntary association fails or is shattered.

Hear a little more from Peter Kropotkin and his bitter indictment. "The role of the nascent state in the sixteenth and seventeenth centuries in relation to the urban centres was to destroy the independence of the cities ... to pillage the rich guilds [and] by taking over the local militias and the whole municipal administration, crushing the weak in the interest of the strong by taxation, and ruining the country by wars." He closes without ambiguity: "_Either_ the state forever, crushing individual and local life, taking over in all fields of human activity ... or, the destruction of the state, and new life starting again in thousands of centres on the principle of the lively initiative of the individual and that of free agreement. The choice lies with you!" (Here there _is_ causation.) Earlier Kropotkin has observed explicitly the error of "confusing state with society", and the subtler error of confusing state with "government", and he has also noted that "so far as Europe is concerned, the state is of recent origin - it barely goes back to the sixteenth century ... [The] most glorious periods in man's history are those in which civil liberties and communal life had not yet been destroyed by the state, and in which large numbers of people lived in communes and free federations."[22]

For John Stuart Mill the guidelines to a co-operative future are on the one side pragmatic and on the other as visionary as anything in Engels. In his extensive reflections on the "Probable Future of the Labouring Classes"[23] he looks to a European experience he regards as already promising a new future. "The civilizing and improving influence of association, and the efficiency and economy of production on a large scale may be obtained without dividing the producers into two parties ... The speculations and discussions of the last fifty years, and the events of the last thirty, are abundantly conclusive ... The relation of masters and work people will be gradually superseded by partnership ... in some cases, association of the labourers with the capitalist, in others, perhaps finally in all association of labourers among themselves." This is a modest if incorrect projection. Mill has also ven-

tured the glowing projection on the co-operative world of the stationary state[24]. "The destiny of population necessary to enable mankind to obtain, in the greatest degree, all the advantages both of co-operation and of social intercourse, has, in all the most populous countries been attained ... Hitherto it is questionable if all the mechanical inventions yet made have lightened the day's toil of any human being ... They have increased the comforts of the middle classes. But they have not yet begun to effect those great changes in human destiny, which it is in their nature... to accomplish. Only when, in addition to just institutions, the increase of mankind shall be under the deliberate guidance of judicious foresight, can the conquests made from the powers of nature by the intellect and energy of scientific discoverers become the common property of the species."

The vision of Mill overlaps that of the princely anarchist, but it also sees at the end very much what V. Lenin claims to see. In his _State_ _and_ _Revolution_[25] Lenin draws upon Marx and Engels to conceive of a society where "it will become possible for the state to wither away completely... when people have become so accustomed to observing the fundamental rules of social intercourse and when their labour becomes so productive that they will voluntarily work _according_ _to_ _their_ _ability_ ...There will then be no need for society to regulate the quantity of products to be received by each: each will take freely 'according to his needs'." This world will be remarkably productive, it will have learnt voluntary association because of the disappearance of private property and of classes, and it will be a society without a State. It will, however, be the sequel not only to the capitalistic economy but to the society that manages collectively owned property under a transitional socialistic State. It will come into existence as history unfolds, an event which no one has ever promised or even thought to 'introduce' because it generally cannot be 'introduced'." Something very, very different from the interventionist State will develop from "bourgeois economy", but it will develop according to its own historical dynamics.

Despite the spectacular differences in how such authors and their works have been perceived, it is not at all artificial, I believe, to join the authors and to ascribe a strong pattern to their conceptions. Authors and conceptions alike are agreed that now or ultimately both State and competition must be expelled from renewed societies. Nor is it artificial to regard Mill as a leading intermediary in transmitting and improving on a theme that was continuously prominent from the one great European revolution to the next. The abstractions that Mill selected from his precursors were visibly influential in most of the meditations still to come. In his famous _What_ _Is_ _To_ _Be_ _Done_? Nikolai Chernyshevski[26] wrote of his appalling new men and women in language that might make one swear off reform forever; but if his novel is oppressively didactic it also communicated the abstractions from Mill to many - including Lenin - who had a certain knack for practical affairs. Here the pathbreaking husbands and wives set up co-operative workshops on the best examples from Mill. They are materialists, and as remorselessly utilitarian in word and honest in deed as Mill himself could hope. The new men and women lead all to a happy equality under voluntary association, and expect this marvel by applying the same faith in education

that Mill had. "And so history will begin again in a new phase. And
that will last until men say: "Now we are good", and then there will be
no longer any special type, for all men will be of this type, and it
wil¹ be difficult for anyone to understand that there ever was a time
when it was regarded as special and not as the common nature of all man-
kind."[27] It is true that this progress will be cyclical, and that suc-
cessions of new men and women will be needed before the co-operative
ideal is realized, but as against Marx the cycles create good men in a
good society instead of bringing a flawed society to an end. To build
or hope for a good society containing only men who are not good but or-
dinary, this would have been to defer too far to reality.

From Mill to Chernyshevski to Lenin of the State-that-will-vanish
seems no great distance, and measured in conceptual units rather than
historical units is perhaps no distance at all. Chernyshevski translat-
ed Mill[28], wrote the What Is To Be Done that was the favorite work of
Alexander Ulyanov, and that was then read intently by the brother the
Czar overlooked to hang. "It is the kind of book that influences you
for your whole life," says that Lenin who also wrote a prominent What Is
To Be Done. Pace Marx, there is some continuity here!

In all these co-operative societies, so different from "bourgeois
economy", humankind will have been able by education and instruction to
change the natures of its members, and will be able to free itself first
of the oppressive and then of the interventionist State. Education -
there must be teachers and those who are taught - is indeed the elixir,
for it transmutes the old materialism without disturbing its essence.
Canadian illustrations can hardly compete in a Canadian university with
these glorious inventions from abroad. Still, they exist. The Co-oper-
ative Commonwealth Federation of the depression and post-depression
years is usually thought of as the certain parent of the New Democratic
Party and as parent-like to social democracy throughout Canada. In a
practical way it was of a mind to do much more violence to Canadian
"bourgeois economy" than its softer successors have ever contemplated.
Its chosen name and its logical base, however, combine objections to the
mindless State that have been sketched above, and are by no means merely
the interventionist opposite of a privatized society. "Commonwealth" is
strictly contradictory of private wealth, and envisages social modes of
both production and of distribution. "Co-operative" is contradictory of
competitive, and is plainly applied in the style of Mill and according
to the considerable experience with co-operatives gained since Mill's
evidence was compiled. As "Co-operative Commonwealth Federation" was
being compressed into "CCF" its complete name was forgotten by all but
the most faithful; and although this compression represented distaste
for a cumbersome name, it seems also to have marked decline and failure
in the "co-operative" principle.

More topical, but perhaps not as much noticed, is the invocation by
Canadian governments, in these last dozen years, of voluntary associa-
tion over the whole domain of prices and wages. At the beginning of the
seventies there appeared "the institutionalized exercise in the co-oper-
ative determination of absolute prices (and the freezing of relative
prices) under the auspices of the Prices and Incomes Commission. There
have been ad hoc repetitions ever since until the revival of the idea in

the federal budget of June 28th last"[29]. The Minister of Finance then
announced that he was "urging Canadians to lower their demands for in-
come increases ... calling on everyone to help Canada make the difficult
transition from the 12 percent world that has mired us in recession to
the 6 percent world that will bring recovery ... Solidarity and sharing
built Canada ... I count on the willingness of all Canadians to bear
their share of the collective effort." Voluntary association is not ad-
mittedly to displace "bourgeois economy" entirely, for there is to be
that conscript army of federal public servants to stiffen the ranks, and
a general use of genteel blackmail to help the skeptical to believe. If
this lessens the connection with Mill a little, the official contention
that "solidarity and sharing" were building the Canada of 1867, even as
Mill wrote, more than compensates for that slippage. The immediate
task, too, of affecting prices and wages in every sector could hardly be
more ambitious vis-a-vis privatization: not only is the goal at the cen-
tre of the privatized economy, but to reach it by universal self-denial
needs a route unknown to "bourgeois economy". Prices and wages would be
determined twice over.

4.6   PRIVATIZATION AND THE INSTRUMENTS OF PUBLIC CHOICE

Of the alternatives available to the privatized society, therefore, it
is only the purposeful, interventionist, democratic State that I shall
consider in the remainder of this text. The discussion, again despite
Marx, will be kept within the framework of "bourgeois economy", although
in making this choice I am highly sceptical still of Marx and Mill rath-
er than persuaded beyond recall of their views of future realities.

Within "bourgeois economy" privatization is expressed in a political
programme, just as its social democratic antagonist is expressed in a
political programme; and since this is so, it begins with a preferred
myth, the picture of a system never part of human experience but well
known all the same by catch-phrases. For privatization the mottos are
"laissez-faire", or "free enterprise", or the "market system", and have
incorporated in them overtones of property rights, of maximum personal
and social welfare, and of a blessed rate of growth. Such matters in-
vite confusion with the works of Adam Smith and his predecessors, those
dynamic and turbulent works so eminently practical in their conception.
They belong much better with the abstractions of a hundred and twenty
years later. Vilfredo Pareto[30] has a far stronger claim to be the pa-
tron saint of the intermediate text-books than any of the classicists:
here is the "community" that is totally individualistic, that denies so-
cial purpose, that is wholly competitive in its basic logic, and that is
a set of deductions extracted from the presumption of equilibrium for
all demands and supplies[31]. Privatization is there given its ideal-
ized form.

In the political expression of privatization I suppose one strategic
consideration is bound to be an effort to freeze public policy, to make
the democratic State apparatus less able to function creatively, to dis-
mantle instruments of collective choice. There are now quite spectacu-
lar examples in the constitutional domain. The ability to legislate

day-by-day is to be taken from the State and subordinated to the management of pre-existing law. Constraints upon policy are imbedded into revised constitutions. The fact of California's "Proposition 13" was extreme and rare. The prospect of a constitutional requirement in the United States that Washington's budget be balanced has a different dimension. "The next amendment to the U.S. Constitution will very likely be the Republican right's perennial dream of forcing Congress to balance the Federal budget ... Codified as Senate Joint Resolution 58, the ... amendment seems a cinch to be approved by the full Senate" - so Newsweek reports how matters stood this July 26th. Here in Canada the months devoted to patriating the British North America Act and adding warranties about ancient rights were notable for the silence about the mechanics of maintaining the economic interventions of the welfare State, let alone about how any further advances could be made. Undoubtedly the motivations for decentralizing economic authority were many-sided, but it is arguable that in part (and even in Ottawa) a diminished capacity for any authority to be exercised was regarded with equanimity.

A less direct but probably more effective dismantling of instruments of public choice has been the exclusion of the trade union movement from the centre of society. In North America the union movement has almost always been resisted rather than assisted, hardly a favoured institution even under the protection of social democratic governments. For purposes of the interventionist State, I suggest, the unions have not been too strong but too weak and fragmented, diverted from their primary purposes at times to mere exercises in survival, and made vulnerable at other times to imposed and tainted leadership, of fumbling tactics industrially and politically. For better or for worse - it is not the value judgement that is being discussed - the trade union movement in Canada has allied itself with the interventionist, democratic State on almost every political issue one can think of, from support of the authority of that State as such, to support of the attempts of that State to intervene on everything from full employment and medicare to metric conversion and statutory holidays, and to exhortation of that State to pursue actively goals still left to the visionary corners of political programmes (those resolutions on the Third World and the ecology and nuclear disarmament that might seem daunting even to the hopes of a Chernyshevsky). To weaken such an ally would seem inevitably to weaken the interventionist State and to speed privatization. Privatizers have had no doubts about this relationship, but it has been surprisingly obscure to others. The "eighty" come particularly to mind.

It would seem that the purposeful, democratic State would surely realize that the attack upon its ally was an attack upon itself, and would accordingly have made it impossible to resist unionization wherever in industry it was wanted and in whatever degree. The reality, of course, is that in white collar occupations, in occupations where employment is transient and always at risk, in occupations where the doors to managerial positions are not closed, any individual's wish to join a union may be lawful but is prudent to suppress. The purposeful State could protest and insist on unionization but it does not; and such a durable spokesman for privatization as Ian Sinclair[32] can express some confidence of "the movement from the shop floor, from the working people ov-

erriding the union leadership", a phenomenon "in Great Britain ... apparent to everybody. Maybe it's coming here. And it's needed; some realistic attitudes are needed by everybody, business too." Mr. Sinclair is especially worth listening to on the point, for he speaks in the context of having just been "picked by Prime Minister Pierre Trudeau and Finance Minister Allan MacEachen to sell the Federal Government's new 6-and-5 percent wage-and-price constraint programme to the nation's corporate leaders." Even though other advocates of such programmes look longingly to the assistance they might gain from social contracts, and so from much strengthened trade unions, they join in the crunch with Mr. Sinclair and accept the programmes without the social contracts and without the trade unions.

That the opponents of the purposeful State would act against trade unions, I re-emphasize, is as certain as the failure of support for trade unions by the democratic State is surprising. In logic that State should supply support. In logic so should those who benefit from both trade unions and that State. In logic those who admire trade unions should not admire an A.I.B. or a T.I.P. In logic these things are so if the idea of the purposeful, democratic State has much strength. The failure of support for trade unions perhaps points not to a victory for privatization but to unreal expectations about the capacity of the State to organize any sustained purpose.

A third route to the neutralization of the State is followed from the opposite direction. The domain of "bourgeois economy" is enlarged so that its control of economic and social events is taken, ipso facto, to be correct and complete, in this way denying the political process the right to function in affairs already satisfactorily decided. Under such rules the interventions of the State are said to be at the best redundant but more often mischievous or destructive. It will be remembered that in his classic "Contribution to a New Theory of Just Taxation"[33] Wicksell had seen the engrafting of the democratic political process as essential to the tolerable functioning of an industrial society, and this even after institutional questions had been settled to allow markets to function efficiently, to determine original endowments, and to determine the consequent pattern of distribution. (I might interpolate that Wicksell made a much greater demand on "bourgeois economy" than this, for in the indispensable interventions needed to provide monetary policy and population control the purposeful State had to be a strong federation of nation-states. He offered as required solutions for the difficulties of "bourgeois economy" prescriptions that Marx would presumably have happily taken as proof positive of the impossibility of solutions.) Countless examples of the doctrine of privatization by exclusion are published every month, and if practice follows that doctrine with a lag, yet follow that doctrine it does. "But the fact is, the squandering and laziness routine in government simply would not be tolerated in the real world." So says K. Spicer (Montreal Gazette, June 23, 1982) as though reporting an axiom rather than developing an argument; and as speaks Spicer so does "commonsense" throughout the land. There is a "real world" constituted of markets in which the State is on the whole unnecessary machinery and a burden.

The part of this thesis (and its day to day applications) that is
concerned with the peculiar delinquency of those outside the "real
world" seems to me improbable and in any case beside the point.   Where
the thesis bites is in the privatized nature of this reality, for if the
State has only unreality to add to bourgeois economy, then one or other
of the messages of privatization has been confirmed. Perhaps the inter-
ventions of the State need not be repeated because the political process
has added to the markets few effects that are not illusory (subject to
the usual qualification, that bourgeois economy requires a State-in-be-
ing so that its markets are protected). If on the other hand the inter-
ventions affect events they can and should be checked.   In case of ties
the markets win and the State loses; and there are few ties.

Finally, in this matter of rendering the State ineffectual, there is
the almost automatic attempt in systems on the Canadian style to sepa-
rate large actors in the public economy from the State itself.   One
surely does not want politics to colour the behaviour of monopolies
merely because, say,   they are monopolies and have been nationalized.
Privatization, as far as I can see, has no stauncher friends than our
mammoth chartered banks and nation-wide railroad companies. It is taken
for granted, even or especially when a social democratic government has
a turn at office, that whatever is important to the economy and has come
into the possession of the State, that such an asset should be insulated
from State control as much as possible. Hydro-electric companies, hous-
ing corporations, banks, Central banks, railways, caisses des depots,
crown corporations of every other kind, all of these enterprises that
might arm the State in its economic and social purposes are to be sur-
rendered. For once the privatizer can correctly invoke the works of
Adam Smith as well as the name.   One thinks back to the struggle within
the New Democratic Party of a dozen years back (of which ripples re-
main), the struggle about whether any danger to Canadian purpose could
be imagined that was as great as the flow of direct investment from the
United States.   Experience since has revealed no intense interest by
Canadian governments in controlling enterprises of any kind: the expro-
priating foreigner may have been at the gates, but that hardly seems to
have mattered.   For many members of parliament and of the provincial
legislatures, I think it is fair to say that in their perception, eco-
nomic and social policies have become specialized activities that must
be sub-contracted to independent agencies. For them it would be a
nightmarish responsibility to bring the Bank of Canada or Hydro Quebec
under full political direction: let there be states within the State,
perhaps, but that must be the outer limit of public responsibility. For
the privatizer it would be supererogatory (or at least prideful) to at-
tempt to remove from State control enterprises already so safely sepa-
rated from interventionist use.

4.7   PRIVATIZATION AND THE WELFARE STATE

Let me turn from the effectiveness of the instruments of public choice
(successfully attacked, successfully defended, or whatever) to the pur-
poses of this State we are discussing, the interventionist, democratic
State operating within the boundaries of "bourgeois economy".   Without
investing much thought in categories, I shall comment first on arrange-
ments directed to taxes and transfers, whether in money or kind, then on
arrangements affecting the composition and total product of the society
(devices to affect the level of employment, the rate of growth, the vol-
ume of public goods and so on), and finally and pro forma on residual
arrangements (in which items not so mechanically economic can find a
place).

Social democracy is probably identified with the 'welfare State' more
closely than with anything else.   Privatization would return this con-
struction to the bits and pieces of the market-place.

Take as a first example the facts of hospital and medical care.   Few
whose memory carries back to the days before public care in hospitals
and public medical care were imbedded in Canadian life are likely to
dispute what a splendid achievement that use of taxes and transfers rep-
resented.   Few who look to the ghetto medicine on which our neighbours
to the South rely are likely to overlook how retrograde a return to such
crudities would be.   No-one, however, who reads of privatization by
means of deterrent fees[34], by means of the 'opting-out' of profession-
als, by means of extra billing, can be certain that the achievement is
permanent. In some measure the advances of the sixties are already cur-
tailed and for all that can confidently be predicted may be reversed en-
tirely.

It has been especially important that, from the time the reforms were
instituted it was well known that they had been roughed in, and on pure-
ly technocratic grounds, would require successive stages of improvement.
In unfinished form they were very likely to prove unstable, as has in-
deed been testified to by experience.   The State all the same did not -
or was inherently unable to - deal with the danger.   It was folly to
leave unsettled how to deal rationally with the claims of the profes-
sionals, as though the programme could be conceived of eternally as only
a defense against selfish privilege;   and it was equal folly to do so
little about the archaic institutional constraints on efficient medical
care. It was "folly" (in these and other instances) to do nothing if it
is accepted that there were required needs unaccomplished. It may be,
though, that the purposeful State was incapable of developing this par-
ticular purpose any further.   It may even be - as in this context has
always to be considered - that the "splendid achievement" was pretty
much of an accident into which we have chosen to see purpose, a splen-
did, transitory happening neither chosen "then" discarded "now".

Medical care gives a first example and a very important one.   There
are others of comparable importance, however, each with its differenti-
ated features of fact and theory.   From the earliest days of "bourgeois
economy" there were many aspects of the welfare State that had at least
a shadowy existence-in-the-small, and some aspects (financing the expen-
ses of the sovereign, national defense, the State-in-being) that existed

in-the-large. It has been well known from physiocratic times to the present that it is not possible, it is indeed meaningless, to say of this person or that in an interdependent society (epitomized by "bourgeois economy") that he or she produced such and such goods. It should be pointless then, a fortiori, to pose the further question of whether producing such and such goods would convey property rights in those goods, and to ask whether under various moral hypotheses those rights would be well-founded. In any event, distribution cannot take place in "bourgeois economy" without social decision of some kind about taxes and transfers. A centrepiece in the debate about taxes and transfers, I think, has been the obvious arbitrariness of solutions pressed against the obvious necessity for solutions. Competition is of the nature of things, but so is the State-in-being and the defense of the State-in-being, as Carl Menger[35] was careful to emphasize before axiomatizing pure market behaviour. A social consensus emerges to permit taxes to be paid and transfers to be collected, but it rests upon individual interests that are always in conflict. Popular notions on how the consensus should form have two predictable versions. There is the kind of second-best privatization borrowed from Adam Smith (the transfers support the State-in-being, and the taxation is as near as may be neutral vis-a-vis the market), and there is the more or less complete egalitarianism (an idea with many variants) taken as the economic corollary of political democracy.

I have already remarked on the primacy of education in the logic of the societies-without-a-State. For the welfare State, too, education has ranked almost as high, but of course as something that would flow from State purpose rather than substitute for it. Almost every issue one can think of touching privatization can be illustrated from the immense variety of experience Canadian society has had with primary education first, and then with education of all levels more recently. Some truly basic questions, however, may be more sharply posed in considering parallel experience with the old rather than the young, that is, Canadian experience with pensions. Here let me take notice of privatization ex definition, the affection for private schools. Inheritances through private schooling, I suspect, are nowadays easier to pass on than are inheritances in land. One sometimes wonders, although it is an unworthy thought, whether there is any simpler guage of how progressive one's friends are than how exclusive the schools are to which they send their children. Privatization directs society to elite schooling because it takes inherited status as a datum and knows no mechanism for interfering with the bequest of those kinds of wealth the market can transmit. Here, the instrument of privatization is not direct suppression in the budgets of universal schooling, but acceptance of the separatist schools. Where the separatist schools are of high quality, academically or as a door to status, then parents indeed face a dilemma however egalitarian their views in general may be. They will be reluctant to wait while schooling in general is constructed or reconstructed to high and equalized standards. Waiting will pass their children by, and in any case, however high general standards may be, selective schools - all those "difficult" left behind - will have higher standards still. In education the suspicion becomes harder to dismiss that the disputes about privatization are in the main disputes about original endowments.

The principal example I would give, however, is the contest about the leading basis of pensions in the country. It perhaps deserves a place because it so clearly illustrates the contending possibilities, that on the one hand there is a largely empty debate in which privatization is cheered or deplored, but in which the course of pensions will be largely independent of calculated, deliberate choices of policy, and that on the other hand, there is a normative debate under way in which the wish to privatize or to defeat privatization will have great practical consequences. My view, argued at length elsewhere[36], is that here the welfare state is not so much protected by positive economics - the language is then inconsistently normative - as it is the necessary consequence of the system. It was striking that in the wide ranging schemes of privatization in the early days of the Reagan regime an abrupt and unexpected check was experienced when the privatizers to the South attempted to tamper with the social security system. Further the positive economics revealed in this portion of the welfare state seems prima facie to have some force elsewhere, in logic wherever the population at large benefits from protection against incalculable contingencies. If this view is supported by events in Canada, the reduction in Old Age Security protection will prove an aberration, within a strongly evolutionary process towards continuity in living standards throughout retirement.

If privatization is sometimes a sham battle, in which our wishes interfere with our reason, it certainly does not follow that it is always so. In touching on the welfare state, I should report fascination with a favoured example by Friedman of why some touch of the welfare state must be retained: there are indeed madmen abroad even in the most privatized of societies, and for these exceptional people the market is not well equipped to provide remedy. One might almost say, those lucky madmen for whom a society will still exist, and for whom the State will have a human face. Where privatization may well not be a sham battle is where it touches the scope of the welfare state and the principle of universality: distribution and redistribution are normative surely in their ultimate origins and ultimate results.

4.8   A WORD ON PROPERTY RIGHTS

Privatization would give new force to property rights, and would make legal ownership and rights over what is owned more nearly co-extensive. I cannot think of a classical economist from Turgot to Marx for whom the mechanics of the alienation of property, the relation of the state apparatus to property, the technical and moral rationale of property rights, are not seen as fundamental to the scope of economic science, perhaps able to be described without hyperbole as the economic question of all economic questions. Friedman's justification, incidentally, for strengthened property rights, runs in terms of economic efficiency. I doubt there is much belief in any society that one's individual fortunes are more affected in any degree by efficiency that by where one begins with original endowments. A few thousand acres amply compensates for the marginal equalities.

4.9   A WORD ON EMPLOYMENT

Privatization would also inhibit the State from intervening to correct
the ills of the laissez faire economy, at least in any degree that might
impair the structure of power in the economy. In April, 1945, the Min-
ister of Reconstruction published the sparkling assurance that the "cen-
tral act of reconstruction was to maintain a high and stable level of
employment and income ... a primary object of policy ...[not thereby se-
lecting] a lower target than full employment." The assurance has
failed, for reasons that certainly go beyond a retreat to (or the fact
of) privatization. Few would dispute that the complexity of what was
promised was underestimated, and the growing, accelerating interdepen-
dence of this promise with competing promises was only partly under-
stood.

I believe all the same that the heart of the matter is that the as-
surance was repudiated as a retreat to (or as an aspect of inescapable)
privatization. The critical event was the election (chosen or forced)
of tolerated, compensated unemployment as a satisfactory substitute for
direct employment. The substitution belonged to the family of "cures"
of which, say, negative income taxes are a prime example.

4.10   A WORD ON WAGE CONTROLS

Since I have only recently written at length[37] on the use of wage con-
trols in this past dozen years I shall be brief here. The union move-
ment in Canada was certainly greatly nurtured by evolution in the late
'thirties in the United States, and then again by the non-privatized
economy of the war years at home. Whatever else wage-controls may be,
their compulsory enactment by the State seems logically to be the cre-
ation of an anti-union, designed to do what unions intend to do, only
replacing positive numbers with negative.

4.11   SOME CONCLUSIONS

Examples on all sides of these questions are abundant, and in any par-
ticular case should certainly be investigated as to their particulars as
something much more detailed than mere chapter headings. All the same,
it is time to come to some conclusions, even though in the context of
the limitations of a sketch of so wide a domain conclusions cannot pre-
tend to be more than tentative and explanatory. I return to the ques-
tions that Marx raised, for ex post they seem to me to point to funda-
mentals.

Item, on the great question of the ultimate fate of bourgeois econo-
my, I see nothing in local experience that tells us much. One would gu-
ess the answer lies in two sequences, one of which was largely foreseen
in Marx and the other of which, I fear, neither Marx foresaw nor none of
us here can foresee. There is the matter of third-world economies, and
the connections amongst bourgeois economics, the floating States of mul-
ti-national corporations, and the social tensions in the hinterlands of

bourgeois economy: on that evolution as a cause of instability Marx has
much to say, though from within Canadian experience I find the effects
wholly unpredictable. There is the matter - the second of the sequences
- of nuclear armaments. Bourgeois economy might explain catastrophe if
it comes, and were there explainers left alive for the needed analysis;
but I judge ex ante explanation via Marx or any other economist to be of
negligible value.

Item, on the lesser questions that suppose the economic and social
system as we see now is for better or worse all that we shall see, the
questions that appraise what may happen or be made to happen within
bourgeois economy, I conclude first that some substantial matters debat-
ed in the name of such language as privatization are in fact endogenous,
part of the positive properties of the system. This does not require
that the form or degree of these matters become fixed points in the sys-
tem, but only that they are reasonably predictable consequences of the
system. In terms of the world that we can examine and deal with I sup-
pose that in relation to Marx's questions they constitute a stabilizing
factor that mindlessness of the State does not negate public pensions,
perhaps, are a consequence of the system from the simple fact of its ex-
istence, and are not much affected by political choice.

Item, if this is accepted, it leaves over the matter of privatization
in a practical form. The residual question is whether governments can
govern, whether a democratic, purposeful State is an actor for whom a
role has been written, and so whether the privatizers in fact have an
opponent. It seems to me this is so. Governments can choose universal-
ity or selectivity in their social programmes, for example. Governments
can intervene or reject intervention in the allocation of investment.
Governments can foster trade unions or impede trade unions - and so on,
and so on. Governments, alas, in the jargon of the trade have always
two social welfare functions before them, that of the society and that
of the government: that government must face elections, must deal with
durable problems in short intervals of time, and must create an appara-
tus commensurable with the problems. The requirements are not necessar-
ily compatible. Even in the residual areas of policy Marx's questions
therefore carry a certain sting.

Notes

[1] Budget Speech, June 28th, 1982, p.3.

[2] Op. cit., p.5.

[3] F. Engels, Anti-Duehring, a translation from pp. 301-03 of the third German edition. I am making use of V. Lenin on the State and Revolution where some of the pithier citations on the withering away of the State are gathered.

[4] P. A. Kropotkin, "The State and Its Historic Rule", Selected Writings on Anarchism and Revolution, MIT Press, Cambridge, Mass., p. 212 et seqq.

[5] Popular versions of these influential theses are to be found in Friedman's regular contributions to Newsweek.

[6] The introductory citation (page 21 of this text) seems to me no more or less striking than this assessment on the dust-jacket of Wealth and Poverty from David Stockman of the administration currently enjoyed by our neighbour.

[7] The introductory citation is from Mill's Principles of Political Economy, p. 755 of Ashley's edition.

[8] I have the citation without yet being able to find the book itself, in a search that has been languid but will continue.

[9] K. Marx, Capital, Volume III, Chapter 30, p. 484. The edition used is that published in English by Progress Publishers, Moscow, beginning in 1954.

[10] Op. cit., Volume II, Chapter 20, p. 414.

[11] Marx had a harsh view of Malthus, but if he did not borrow from Part II of the Principles certainly repeats points that were well made by his predecessor. Inter al Malthus pointed to the vanishingly small probability that time consuming production would be closely matched by current demands, and was skeptical that convergence to equilibrium would be either speedy or assured - and was ready to praise unproductive consumption as a partial solution to failures in demand.

[12] "Concentration" and "consolidation" are not consistently used in the Marxian literature (nor does it much matter that the usages vary). For Marx, though, "concentration" is the growth of an enterprise by accumulation and "consolidation", its growth by combination and merger. See, for example, Capital, Volume I, Chapter 13.

[13] K. Marx. op. cit., Vol. II, Chapter 20, Section V.

[14] Ibid.

[15] Op. Cit., Vol. II, Chapter IX, p. 189.

[16] Op. cit., Vol. I, Chapter 32.

[17] Ibid.

[18] Ibid.

[19] For Marx see the early argumentation, e.g., in the Communist Manifesto. "National differences ... are daily more and more vanishing: owing to the development of the bourgeoisie, to freedom of commerce, to the world market ..." For Lenin see the continuing themes of "Imperialism, The Highest Stage of Capitalism".

[20] Marx frequently allows his indignation on his political purposes to transfer the focus to iniquitous behaviour by individuals. He frequently allows himself to speak of the capitalist State as a co-ordinator of capitalistic purposes. Nonetheless the system he described is not seriously affected by private motivation, for good or bad, and his State seems rarely to deal with problems deeper than the length of the working day.

[21] This judgement is based principally upon the Polanyi-inspired researches of M. Mendell, who is completing a doctoral thesis with me. The evidence seems overwhelming that as one looks at societies in general, first, there is a very large fraction of resources required (often absorbed "in kind") to allow any State to sustain itself, second, that the fraction is not monotonically connected to the complexity of the society, and third, that the manifestation of the apparatus is of a hierarchical kind.

[22] P. A. Kropotkin, op. cit., p. 264.

[23] J. S. Mill, op. cit., p. 763.

[24] Op. cit., pp. 746-51.

[25] V. I. Lenin, collection cited in footnote (3), pp. 111 et seq.

[26] N. Chernyshevsky, "What Is To Be Done?" originally published in St. Petersburg, 1863, cited here from B.T. Tucker's translation of 1883, printed with an introduction by E.H. Carr under "Vintage Books" of Random House, 1961. The title is the parent, naturally, of V.I. Lenin's programmatic but far from independent "What Is To Be Done?" which, with Lenin's correction, appears on April 1, 1902.

[27] Op. cit., p.175. Since this was written I have had the message of the Prime Minister of Canada from three talks in a similar vein. We are to become new men and women. In the nineteenth century it was perhaps not pure romanticism to imagine that example and education could create new men and women. Experience has made plain that it is with men and women as they are that society must fashion its programmes, and that new men and women are elitist phantasies.

[28] "The question of morality seemed to him to have been solved once for all by the English Utilitarians, known to him principally through John Stuart Mill, whom he translated." Chernyshevsky, op. cit., Carr's "Introduction", p. xii. I think Carr understates. The programme of Mill is borrowed (the Mill of second thoughts), and not simply the calculus of motive. On the transmission of this influence to V.I. Lenin, I have in mind such strong, direct evidence as that cited by L.H. Haimson, "The Russian Marxists and the Origins of Bolshevism", Beason Paperback, Harvard University Press, circa p. 98.

[29] See the beginning of this piece again, and recall the content of the addresses by the Prime Minister looking to voluntarism strengthened by conscripts. This does double duty, as an introductory citation and as part of the text proper. The notion that a spontaneous outburst of goodness can direct economic affairs as a substitute government seems to lie somewhere between the comic and the tragic.

[30] See the text and the mathematical appendix of V. Pareto's Manual of Political Economy, (originally 1903-06) in the translation by A.S. Schwier and A.N. Page (1971). For this reader the translation at times seemed inconsistent with the flow of the argument. In any case the device of reasoning back from assumed equilibrium to process rather than from process to possible equilibrium is Paretian, not Walrasian.

[31] Op. cit., the Appendix. The sequence of argument is perfectly plain when the structure is formalized.

[32] The quotation comes from a variously reported interview on Mr. Sinclair's new tasks. I confess to a certain regret. Can it be that only social democrats are left to defend some part of the market-place for the Canadian Pacific Railway?

[33] It dates from 1896, and is found, e.g., in Classics in the Theory of Public Finance, R. Musgrave and A. Peacock, 1958.

[34] For an interesting account of this aspect of medicare, and of other aspects discussed in the next few sentences - particularly the matter of leaving the programme half-finished and of pointing to the physician as scape-goat - see L. Soderstrom, Health Policy At A Crossroad, forthcoming from the Canadian Centre For Policy Alternatives, and initiated by the Douglas-Coldwell Foundation.

[35] Perhaps it is widely known, but it was news to me that the second version of Menger's Principles appeared in 1923 posthumously and was not translated. As with the information of footnote 21 the advice comes to me from M. Mendell's Polanyi-inspired researches. In 1933 when an edition was republished in English it was the first version accompanied by very unkind suggestions from F. Hayek about the inexplicable addition to the second version. The principal oddity seems to me an excellent and far reaching point thesis, namely, that economies widely conceived have a technocratic problem but not necessarily a scarcity problem: a State is always needed. Economies that experience scarcity (in relation to things that are known to exist!) constitute a narrower set, but necessarily also rely on a State-in-being.

[36] In the Jamieson lecture at the University of British Columbia, dated September 30, 1982.

[37] In the Jamieson lecture dated October 1, 1982.

5
Did Macroeconomics Need the Rational Expectations Revolution?

David Laidler,
Chair, Department of Economics,
The University of Western Ontario.

5.1 INTRODUCTION

If any development in economic theory has attracted more attention in the last decade than the rational expectations hypothesis, it seems safe to say that macroeconomists at least have not heard about it. Some authors (e.g., Begg, 1982) are now referring to a "rational expectations revolution" in the discipline and claims are being made on behalf of that revolution not unlike those which, once upon a time, were made on behalf of the Keynesian Revolution.

As its title suggests, this essay is devoted to assessing such claims from the standpoint of macroeconomics. This particular focus is important for two reasons. First, as Begg's readers are well aware, the rational expectations hypothesis has found, and continues to find, applications well beyond the conventional boundaries of macroeconomics per se and I shall not be concerned, for example, with judging the significance of the hypothesis for the theory of asset market behaviour in this essay. Second, and as Begg's readers are also well aware, many of the more striking results associated with the "rational expectations revolution" in macroeconomics have involved not one hypothesis but two: the rational expectations hypothesis per se, and the proposition that the economy may usefully be modelled as if it were made up of a series of continuously clearing competitive markets. It is these two hypotheses which together form the core of what is often, somewhat misleadingly, called "New Classical" macroeconomics. I prefer the label "neo-Austrian" and shall use it in this essay[1].

The two above-mentioned hypotheses are logically independent of one another, as the following examples ought to convince the reader. In a deterministic world, the proposition that agents hold rational expectations about the future time path of prices reduces to the assumption of perfect foresight about prices, and that assumption is present, albeit

more often implicitly than explicitly, in virtually all the fixed price level IS-LM analysis which permeated the last generation of macroeconomics textbooks. At the same time, some of Robert E. Lucas' pioneering work on inflation-unemployment interaction in a world of clearing markets (e.g., Lucas and Rapping, 1969) utilized a mechanical error learning mechanism to model expectations in experiments which rendered expectations formed in that way systematically erroneous. Nevertheless, it is the combination of these two hypotheses which gives neo-Austrian macroeconomics its particular flavour. When I pose the question: "Did macroeconomics need the rational expectations revolution?", I am really asking whether or not this branch of our subject needs to be reconstructed root and branch on the basis of these two hypotheses. Since such neo-Austrians as Barro (1979), Lucas and Sargent (1981) seem to be arguing unequivocally that just such a reconstruction is necessary, I do not believe that I am erecting a straw man in posing the issue in this way.

There are many ways of stating the rational expectations hypothesis. At one extreme, the phrase may signify nothing more than what Friedman and Schwartz (1982, p. 630) have called the "ancient idea" that, in making their decisions, agents will use all relevant and available information. Put in this way, the hypothesis is at best innocuous and at worst vacuous. All its content lies in the meaning one might attach to the words "relevant" and "available." The neo-Austrians attach very specific meanings to these words. To begin with, they attribute to agents correct knowledge of the structure of the economy in which they operate. If such knowledge is complete and there is no inherently stochastic element to the economy's structure, then this amounts to assuming perfect foresight, but if it is incomplete or if there is an inherently stochastic element to behaviour whose distribution is known, then it involves agents in making unbiased econometric forecasts of relevant variables. Furthermore, in arguing that, even though agents do not literally engage in sophisticated econometric forecasting exercises, they nevertheless behave "as if" they did so, the neo-Austrians gloss over the distinction (of which they are nevertheless aware) between expectations and anticipations, and postulate that the information which they attribute to agents will be acted upon. Furthermore, for neo-Austrians, the world of whose structure agents in question have so much knowledge is made up of clearing competitive markets.

As the reader will surely agree, when fleshed out in this way, the "ancient idea" of rational expectations is anything but vacuous, but it is also far from innocuous. Even if, for some people, the idea might lose much of its a priori plausibility and appeal, this is not a reason to criticize it. Quite the contrary: to specify the hypothesis in this way is to deny the empirical relevance of an enormous variety of a priori plausible and possible patterns of behaviour, and that makes the hypothesis a powerful scientific proposition. Whether it makes it a correct proposition in the sense that the empirical predictions which it yields are not refuted by available empirical evidence, however, is a different matter, and it is this issue of correctness that I shall mainly be discussing in the body of this paper.

5.2   MICRO FOUNDATIONS

Proponents of the "rational expectations revolution" argue that their approach to macroeconomics is not only superior to the "Keynesian" alternative on theoretical and empirical grounds, but also that it provides a sounder guide to the analysis of macroeconomic policy. On the theoretical plane, the claim is one of superior microeconomic foundations, and I shall now briefly discuss this claim. Though I have grave doubts about it, they stem only partially from disagreement concerning the criteria that one might apply in forming judgements here. Economics seeks to explain a wide variety of phenomena, some of them micro and others macro in nature, and I would not deny that the fewer basic hypotheses the subject needs to cope with these phenomena the better. The argument that the hypothesis of the rational maximizing agent, be it a firm, a household, or a biological individual, is a basic element in economic analysis does not bother me either. If a body of theory dealing with issues which we usually classify as macroeconomic - the determination of the level of employment, prices, etc. - can be shown to be compatible with this basic hypothesis, then so much the better, and if it cannot, then so much the worse.

Now it is certainly true that the behaviour relationships proposed by Keynes in the General Theory (1936) - notably the consumption function - were presented by him more as "laws" describing observable empirical regularities, than as consequences of individual maximizing behaviour. In its beginnings, macroeconomics did, particularly if judged by the standards of the 1980s, seem to lack firm micro-foundations. However, long before anyone had heard the phrase "rational expectations", work was underway to counteract this defect. Whether or not we nowadays would approve of the details of particular studies, there can still be no denying that Friedman (1956, 1957), Modigliani and his associates Brumberg and Ando (1954) (1963), Jorgenson (1967), Eisner and Strotz (1963), Baumol (1952) and Tobin (1958), to name a few important contributors, were all attempting to provide a basis in maximizing behaviour for relationships which, taken together, make up what we would usually recognize as a standard "Keynesian" IS-LM macro model; nor can there be any reasonable doubt that they largely succeeded in doing so. There is, that is to say, no fundamental incompatibility between the component parts of the standard IS-LM model and the maximizing postulate. To this extent, it does not lack micro-foundations.

There is, however, more to macroeconomics than isolated behaviour relationships. Any body of theory which deals with the economy as a whole must be concerned with the way in which individual agents, and groups thereof, interact with one another. It must have a foundation not just in the theory of individual maximizing behaviour, but also in the theory of markets. It is here that the microeconomic foundations of the two approaches to macroeconomics under discussion differ, and it is not hard to make the case that each one of them is, in its own way, unsatisfactory in this respect. The body of analysis pioneered by Patinkin (1965, Chapter 13), and Clower (1965) and brought to fruition, in various forms, by Leijonhufvud (1968), Barro and Grossman (1976) and Malinvaud (1977) was directed to showing that, if prices are slow, relative to

quantities, to respond to shifts in demand, then quantity changes, rather than price changes will play the role of equilibrating factors in markets generating Keynesian multiplier processes, which lead the economy towards "income constrained" positions of rest. In their turn, these positions of rest can be shown to be equilibrium positions of an IS-LM model[2].

Thus there is a clearly specified market theoretic foundation for standard "Keynesian" macroeconomics. We did not need a "rational expectations revolution" because this was lacking. Rather, the proponents of its neo-Austrian form ask us to embrace their revolution because they regard that foundation as unsatisfactory, resting as it does on a postulate which directly contradicts the market theory to be found in most microeconomics textbooks. There it is price changes, rather than quantity changes, which are the equilibrating factors in markets. If the flexible price general equilibrium model is the norm against which all other constructions are to be judged, then the sticky price postulate which underpins Keynesian macroeconomics certainly appears to be ad hoc[3].

On the other hand, I doubt if it would be difficult to find people to agree to the proposition that the assumption of complete price flexibility is also ad hoc. Certainly, if one is to make it, he must ignore the factors to which such economists as Keynes (1936), Hicks (1974), Tobin (1972) or Lipsey (1981) have pointed as providing a basis for price stickiness notably in the labour market, a basis, be it explicitly said, which treats such stickiness as the outcome of the rational maximizing behaviour of the agents operating in that market. According to this just mentioned body of work, the labour market does not conform to the competitive norm. Monopoly elements may be present, or, more fundamentally, externalities which stem from relative wages as well as their absolute level being an argument in individuals' utility functions. If factors such as these are admitted into the analysis, one cannot then develop a macro-theory by simple aggregation of individual experiments: instead interaction effects among agents become important. If the aim is to deduce macroeconomic predictions solely from propositions about individual behaviour, and that is, according to Lucas (1981), a key aim of his work, the competitive assumption must be maintained. His ignoring the micro-foundations of price stickiness is not therefore capricious, but is a necessary component of his research strategy, as it is of those other aspects of contemporary economic theory discussed by Rymes (1982) which treat the notion of externalities as vacuous.

Some theorists find a difficulty here, though. Frank Hahn (1982), in particular, has argued that a model of competitive equilibrium with all markets always clearing is not the easiest in which to justify a role for money. This might make a fastidious economist uneasy about using such a model as the basis for the analysis of the macroeconomic consequences of monetary disturbances. Of course it can be done, because money can always be introduced into such a model by assumption. Such a procedure however is yet again open to the charge of being ad hoc. Although attempts by such workers as Karekan and Wallace (1981) and Bryant and Wallace (1980) to find a foundation for monetary theory in the overlapping generations model of Samuelson (1958) represent an attempt to

avoid this particular pitfall, whether these attempts will prove successful or not must be a moot point at the moment, though the arguments of Hahn (1982) and McCallum (1982) to the effect that the model in question does not capture money's essential role as a means of exchange, and hence cannot be used as a foundation for a theory of money, seem to me to be very powerful.

That well-known term of disapproval "ad hoc" has turned up three times in the last page or so. The lesson here is surely straightforward: the market-theoretic foundations of macro theories of all varieties are, in the current state of knowledge, shaky. We did not need the rational expectations revolution because the micro-foundations of existing macro-theory were non-existent or widely perceived to be hopelessly flawed, though they were, and remain, incomplete. However, although the micro-foundations of the new macro-theory are certainly different from those of its older rival, and are more appealing to anyone whose training in micro-theory has stressed the competitive Walrasian model, they too can fairly be termed incomplete. The question of whether or not they are "better" is not to be settled on a priori grounds. It seems to me to be an empirical matter.

Before I turn to empirical issues, a word should be said about the arguments that Lucas and his associates have advanced for the superiority on theoretical grounds of the "rational expectations" notion per se over the mechanical extrapolation schemes that have so often been used to generate expectations variables in Keynesian models. Here I find little to argue about. It is of the very essence of macroeconomics that we need to understand the behaviour of the economy over time, and any macroeconomic model therefore needs a theory of expectations. Also, there is something very wrong with attempts to construct such a theory which arbitrarily assumes that agents ignore information which is available to them, whose relevance they can perceive, and upon which they are able to act. To the extent that macroeconomists had to be reminded of these simple truths, and we did, we certainly needed the "rational expectations" revolution[4]. The question, however, is whether, if we accept this part of the new doctrine, we also need to adopt what it offers us in the way of market theoretic foundations for macro-theory. It is to this, as I have already argued, empirical question that I now turn.

5.3 MODELS VS. "THE REAL WORLD"

As we have seen, the micro-foundations of the macroeconomics propounded by exponents of the rational expectations revolution are certainly different from those underpinning any "Keynesian" alternative. Though that gives us no reason in and of itself to prefer the newer doctrine, it does require us to take it seriously. Surely no one would argue with the proposition that it is healthy for macroeconomics that there be available alternative approaches to explaining the key variables with which it deals. If there do exist such alternatives, then their explanatory power ought to be compared wherever that is possible. From such comparisons we might expect to learn something both about our theories and about the world we live in.

It has been a frequent claim of the exponents of neo-Austrian macroeconomics that the experience of the 1970s - particularly in the United States, though experience has been sufficiently similar elsewhere to suggest that the claim might be more broadly based -- has constituted a crucial experiment in which Keynesian economics has been decisively refuted[5]. The particular facts to which they have pointed are the co-existence of high, and indeed, on average, rising inflation with rising unemployment and slow and declining rates of economic growth. These facts, we are told, are not what would have been or were predicted by the macroeconomic orthodoxy prevailing at the beginning of the decade. Rather, high and rising inflation was expected to coincide with low and falling unemployment, and with more vigorous real growth.

The first thing to be said about this claim is that whether it seems true or not depends upon one's perception of just what constitutes prevailing macroeconomic orthodoxy in the 1960s. To be fair to Lucas and his associates, they are explicit about this, and always refer to a style of macroeconomics, based on what Samuelson referred to as the "neo-classical synthesis", which is exemplified by virtually all large scale U.S. macroeconometric models. Nevertheless, this particular style of analysis does not exhaust the Keynesian legacy. Those who, in the 1960s, believed that inflation was a cost-push phenomenon caused by real income growth failing to keep up with the rising aspirations of the labour force would undoubtedly have predicted that a slow-down of real growth, such as the seventies witnessed, should be accompanied by high and rising inflation; and they would have predicted that attempts to control that inflation by demand side policies would have led to rising unemployment[6].

I do not refer to this particular brand of "Keynesian" economics because I am a sudden convert to it. I am not: I believe that certain other facts generated by the 1970s make it hard to accept. Even so, I draw attention to it in order to make the point that the evidence cited by Lucas and his associates refute only one, albeit once widely accepted, version of Keynesian macroeconomics, namely that in which price level and output behaviour are linked through a Phillips curve whose structure is such as to permit a permanent inverse inflation-unemployment trade-off. Such a relationship was certainly believed to exist by many during the 1960s and 1970s. However, it was not an essential feature of Keynesian macroeconomics; nor, crucially, is it a necessary implication of the price adjustment mechanisms postulated by the neo-classical synthesis.

As Lucas (1981) has explicitly noted, perhaps the most careful exposition of that particular brand of macroeconomics is Patinkin's (1956) (1965) Money, Interest and Prices. One of that book's numerous virtues was the care which Patinkin took to remind his readers that many of the results he generated were conditional upon expected prices being equal to current prices. Given his purposes, there was no need for Patinkin to modify this assumption, but anyone seeking to use his work as a basis for analyzing the macroeconomics of inflation should have seen the need to do so. To put the same point in another way, when Lipsey (1960) set out the underlying micro-theory of the Phillips curve, using the same Samuelsonian price dynamics as did Patinkin, he should have recognized

that the relevant price for his labour market analysis was not the money wage but the real wage. However, he did not.

The upshot of this elementary but pervasive error was that, for a while, many economists analyzed the endogenous dynamics of inflation on the basis of an implicit assumption that all agents believe inflation to be an exogenous constant! However, and the point is not sufficiently appreciated, this error was revealed and corrected by Phelps (1967) and Friedman (1968) before the 1970s generated any experiments, crucial or otherwise. No one who had read and accepted the basic thrust of those articles found anything in the 1970s to un-nerve him, nor did he need feel any uneasiness about adopting as the market theoretic basis of his macroeconomics the kind of analysis advanced, say, by Leijonhufvud (1967). What the 1970s experience did refute was the particular assumption implicit in far too much of the macroeconomics of the 1960s that money illusion can be a permanent phenomenon. That assumption should never have been a central characteristic of Keynesian economics, or of any other kind of economics for that matter.

Phelps and Friedman both made the basic point that inflation expectations would not remain constant during an inflationary episode, and in suggesting that those expectations would tend in fact to respond to experience, they also rendered existing orthodox models capable of generating that set of stylized facts known as "stagflation". However, in modelling expectations, the only nod that Phelps and Friedman made in the direction of any kind of rational behaviour was in imposing the requirement that an ongoing constant inflation rate would eventually become fully anticipated. In terms of the error learning scheme which they adopted, they insisted that the weights accorded to past inflation in forming expectations about the future sum to unity. Even this a priori requirement was too much for some exponents of the neo-classical synthesis, who subjected it to empirical test, found it apparently refuted, and so concluded that the long-run Phillips curve, though steeper than the short-run curve, still permitted an inverse inflation-unemployment trade-off[7].

Be that as it may, the claim of Lucas and his associates that early attempts at modelling expectations were mechanical, and their claim that maximizing principles can usefully be applied in this area are amply justified, although, one should note that much of the work in which adaptive expectations were used abounds in informal warnings about taking that particular hypothesis too literally or seriously. It was often presented as no more than a convenient first approximation to the modelling of endogenous expectations, not suitable for use in all circumstances, and probably inadequate at times when policies were changing[8]. But, and this is the crucial point, such warnings and qualifications did not impinge upon formal modelling exercises, and those who gave them showed no signs of appreciating that they were dealing with special cases of a general phenomenon which lent itself to formal modelling. To say, therefore, that those who used adaptive expectations did not take the hypothesis very seriously and recognized that there were many cases in which it was inadequate, is not to say that they understood the notion of rational expectations or appreciated its implications for macro modelling: they patently did not. Here we have

a clear instance in which economics undoubtedly needed one of the key ingredients of the rational expectations revolution.

5.4   MARKET CLEARING

To say that agents will: use all information that is freely available to them; take steps to acquire any other information for which the benefit outweighs the cost of acquisition; act upon such information to the extent that they are free to do so; and hence will not, in a long run when they are free to act on all their information, make systematic errors, is not also to say that: the world behaves as if all markets are competitive and continuously clearing; all agents understand the workings and interaction of markets to the extent of being able correctly to forecast the outcome for the economy of any new exogenous shocks of whose nature they are aware; and that all real fluctuations are the result of random errors in forecasting exogenous variables. The former set of propositions is a very general statement of the notion of rational expectations to which any reasonable person might assent, and the latter is a very specific application of that general notion, hedged around with particular assumptions both about the nature of the economy, and about agents' knowledge of it, at which that same reasonable person might balk.

Nevertheless, as I have already noted above, it is the latter set of propositions which forms the basis of neo-Austrian macroeconomics, and it should require more than the observation that one particular alternatively grounded macroeconomic model has failed to cope with a particular set of stylized facts to persuade us of the desirability of embracing rational expectations revolution which it embodies. We need to know that there is no third or fourth option available among macro-theories which can explain those same facts as well as the "revolutionary" model, or that, if there is, there exist other facts which enable us to reject those other options, before we can reasonably be expected to embrace that revolution.

We have already seen that, if explaining the stylized facts of the stagflation of the 1970s is all that is required, third and fourth options are readily available, though, of course, the "revolutionary" model also can explain both stagflation and its cyclical character. Nevertheless we need to look at other facts if we are to make further progress in selecting the most satisfactory model from the menu now available. I have already referred to that particular offshoot of Keynesian economics in which money wage, and therefore price level behaviour is treated as a sociological cost push phenomenon, and noted that such a model has no difficulty coping with the broad outlines of the stagflation of the 1970s. Though this branch of macroeconomics is not central to the topic of this paper, it is worth pointing out that my reasons for rejecting it are not - I hope - ideological, but empirical. Space will not permit me to do more than assert those reasons: namely the silence of this approach in the face of the clearly cyclical nature of the time path of both inflation and output, and its apparent contradiction by the outcome of policy experiments such as that embodied in

Mr. Anthony Barber's 1972 budget for the United Kingdom. Then an attempt to use fiscal and monetary stimuli to break through into sustained growth accompanied by lower inflation resulted instead in a short-lived real boom and a dramatic increase in the inflation rate. The Mitterand government in France seems recently to have provided us with a little more evidence of a similar character, this time uncontaminated by an oil price shock.

Be that as it may, let me now turn to the empirical evidence with which it is sufficiently difficult to reconcile the macroeconomics associated with the "rational expectations revolution" as to persuade me to reject that doctrine. As I have argued in considerable detail elsewhere (Laidler 1982, Chs. 2-3) certain stylized facts generated by the voluminous literature on the demand for money function create difficulties for the rational expectations revolution, particularly those aspects of it whose crucial basis is the clearing competitive markets hypothesis. As we all know, the empirical work on the aggregate demand for money function which uses annual and quarterly data systematically demonstrates the need to postulate some kind of lag effect in the adjustment of actual cash balances to their long-run equilibrium level if conventionally acceptable criteria of goodness-of-fit and so forth are to be satisfied. It is also apparent that it is very difficult indeed to explain such lagged adjustment solely in terms of expectations formation, though this may well be part of the story.

The difficulty is that the kind of portfolio adjustment costs, which are usually used to justify such lagged adjustment effects, would have no observable consequences in a model in which the supply and demand for money can be brought into equilibrium by the variation of a flexible price level. Price level changes cause real balances to vary for the individual agent without him encountering any adjustment costs. If the world really was made up of continuously clearing competitive markets, we would never observe anything but a long-run demand for money function (except for the consequences of expectation effects and distribution effects too). On the other hand, if the price level is slow to adjust, then it is easy to show that the long-run short-run distinction will be important as far as the observed behaviour of the demand for money function is concerned[9]. The facts I am citing are not quite fatal to the clearing markets rational expectations model, because sufficient ingenuity in manipulating distribution effects and expectations effects could reconcile it with the evidence (see Laidler 1982, Ch. 3). It is in difficulty however, in the face of stylized facts which are very easy to explain once price stickiness is postulated.

The basic facts of money-output-price interaction over the course of the business cycle also present problems. Neo-Austrian economics predicts that "anticipated" changes in the time path of the money supply, will affect only prices. "Unanticipated" changes on the other hand, though they too will cause prices to vary, will have output and employment effects as well as a result of individual agents misreading the signals being conveyed to them by prices. Thus, over the course of the cycle we might expect the consequences of changes in the monetary growth rate to manifest themselves predominantly in price level behaviour and only to a lesser extent in the time paths of real variables. Moreover

because all quantity changes in a neo-Austrian model are responses to signals given by prices, we should also expect quantity changes to be contemporaneous with or perhaps even to lag a little behind, price changes.

There is surely no better established stylized fact than that, over the course of the cycle, the first effects of changes in monetary growth rates are concentrated upon quantities with their effects on prices coming through only later. Despite this, attempts have been made to show that the neo-Austrian model is consistent with observed price-output behaviour. Thus the results generated by Barro (1978) are widely cited in this context. However, for him, "anticipated" money is the forecast of a regression equation heavily weighted with lagged values of the money supply, and it therefore varies very little when the actual money supply changes. Current fluctuations in the money-growth rate are thus modelled as being mainly unanticipated. Boschen and Grossman (1980) have argued that, because agents can read newspapers, contemporaneously published data on the money supply ought to form the basis of the anticipated money concept used to test neo-Austrian predictions. Anyone who finds this argument persuasive must regard Barro's anticipated money series as inappropriately constructed, and hence his evidence as suspect. Moreover, he must also agree that Boschen and Grossman's results, which show that money supply fluctuations that are reflected in contemporaneously published data nevertheless seem to cause changes in output and employment, while those that are not do not do so, weigh heavily against the neo-Austrian view of things.

Now with sufficient ingenuity in distinguishing between money supply changes which are observed but expected to be temporary and those which are observed and expected to be permanent, and in distinguishing between prices which are posted and those which are "really" charged, and so on, it would surely be possible to defend the neo-Austrian model against not only Boschen and Grossman's particular tests, but also against the general charge that it is incompatible with the stylized facts to which I have drawn attention. However, there is another problem arising from the nature of the demand for money function which ought to be raised at this point[10]. It is commonly accepted that the expected inflation rate is an important component of the opportunity cost of holding real balances, and it has been well known, at least since the seminal work of Cagan (1956), that ignoring real growth, when, in an inflationary environment, the rate of growth of the nominal money supply is cut, two consequences must follow if equilibrium is to be restored in the long run. First, the rate of inflation must fall, and second, the quantity of real balances must rise, which is the same thing as saying that the ratio of the price level to the nominal money supply must fall. It follows that, on average, between the initial situation and the new long-run equilibrium, the inflation rate must be below the rate of monetary expansion. The question arises whether we can say anything more definite than this about the time path of prices, and the answer is that we can. However, what we predict here is very different depending upon whether or not we postulate continuously clearing markets and rational expectations.

If agents' expectations are rational, in the sense that they understand the relationships between the money supply and the price level

which I have just outlined; if they are aware of the change in the
monetary expansion rate and expect it to persist; if all markets are to
clear continuously; and if we insist on the economy ending up in equi-
librium with a positive but finite stock of real balances; then the
outcome of the experiment we are considering is well known. The price
level will fall at once to a value compatible with the long-run equilib-
rium quantity of real balances determined by the new lower expected in-
flation rate and will thereafter rise at that rate, which is, of course,
equal to the rate of monetary expansion.

Now I am not suggesting that anyone should take the above, very spe-
cial, conceptual experiment literally, but it is nevertheless instruc-
tive. In particular, it reminds us that any anticipated change in the
rate of monetary growth will have consequences not just for the ongoing
inflation rate but also, if markets clear, should cause a step change in
the price level. For a number of reasons, this is awkward for the advo-
cates of the rational expectations hypothesis. To begin with, if the
step change in the price level was itself anticipated, that variable
would be taken, by market forces, instantaneously to zero in the case of
a cut in the monetary expansion rate or to infinity in the case of an
increase. To insist, as they do, on confining the outcome of such ex-
periments to situations in which a finite positive equilibrium demand
for real balances exists, rules out the anticipation of step changes in
the price level. However it does not also obviate the necessity for the
step change in question to take place. If a new inflation rate is fully
anticipated, the stock of real balances must change[11]. It goes almost
without saying that, in the real world, we do not observe anything which
remotely resembles such step changes in the price level, even in situ-
ations in which it can be asserted beyond any reasonable doubt that the
rate of monetary expansion has been cut, is widely known to have been
cut, and is widely expected to remain at its new lower level. The cur-
rent situation in Canada is a clear case in point, as is that in both
the United States and Britain. In this respect, the outcome of the
real-world experiments bears absolutely no resemblance to the pre-
dictions of the model advanced by advocates of the rational expectations
revolution.

Sadly, the outcome of those experiments bears a great resemblance to
the predictions of a model in which prices are sticky relative to expec-
tations, and expectations respond slowly to experience. In such a mod-
el, the first consequence of tight money is lower output and the infla-
tion rate falls only slowly. Once again, with sufficient ingenuity and
sufficient hedging around of the basic model with special assumptions,
one would probably be able to rescue the neo-Austrian approach. Indeed,
the Liverpool econometric model of the United Kingdom in which monetary
contraction leads to large increases in voluntary unemployment (see,
e.g., Minford 1980) represents among other things, an attempt to mount
just such a rescue. Nevertheless, we find that once again it is exceed-
ingly awkward to defend the desirability of the rational expectations
revolution in the face of evidence which gives the alternative theoreti-
cal framework no trouble at all.

the context of a simple but powerful model of the macroeconomic system
which has now gained wide acceptance. This model results from the
coupling of the Hicks-Hansen version of the Keynesian system, as the ag-
gregate demand side of the model, with an aggregate supply side consist-
ing of a short-run inflation- unemployment trade-off relationship, or
Phillips curve, augmented by the inclusion of inflationary expectations
with a coefficient of unity. However inflationary expectations are ac-
tually formed, as long as they are consistently based either on past in-
flationary experience or upon this experience coupled with "learning the
behaviour" of the modelled economy (that is, adaptively or rationally),
the model embodies the "natural rate of unemployment" hypothesis that
there is no long-run or permanent trade-off between higher levels of re-
source utilization and higher but steady rates of inflation.

Although many variations of this model exist in the literature, it is
useful for analytical purposes to have one clear-cut version in mind.
Our particular version is presented in the technical appendix to this
paper. It should not, however, be concluded that I necessarily share
the view that this model represents the best, let alone the only, way of
conceptualising the inflationary process in the context of the Canadian
economy, for reasons that will emerge in a later section of this paper.

7.2   SIX FUNDAMENTAL PROPOSITIONS

Certain fundamental propositions emerge from the model. These proposi-
tions may be summarized in the following way.

Proposition 1. There is only one level of resource utilization (as-
sociated with the "natural rate of unemployment") which is consistent
with model equilibrium and the maintenance of a constant rate of infla-
tion. Short-run deviations from this level of resource utilization are
generally associated with the falsification of inflationary expecta-
tions, and therefore with ensuing economic adjustments. These adjust-
ments imply that inflation tends to accelerate whenever high demand
pressure generates an unemployment rate which is less than the so-called
natural rate, and to decelerate (with perhaps less strength) whenever
lower demand pressure generates an unemployment rate which is higher
than the natural rate. Given any monetary and fiscal policy setting,
accelerations in inflation feed back in a demand-reducing way on the em-
ployment situation whereas decelerations feed back in a demand-increas-
ing way. In consequence, cyclical behaviour of both the inflation rate
and the unemployment rate is likely to be observed. One phase in an in-
flation cycle has the uncomfortable conjunction of rising unemployment
in the face of rising (or at least not falling) inflation. This awkward
phase is loosely referred to as a phase of inflationary recession, or
stagflation. On the assumption that this cyclical behaviour is stable,
the model economy eventually converges on the "natural rate of unemploy-
ment".

Proposition 2. The equilibrium rate of resource utilization may be
influenced by changing conditions in individual labour and product mar-
kets, but it does not respond to changes in the overall stance of fiscal
and monetary policy. If the "natural rate of unemployment" is to be re-

duced, supply side policies to increase the efficiency with which our labour and commodity markets operate are essential.

Proposition 3. The equilibrium rate of price inflation is entirely determined by the rate of growth of the domestic money supply. The state of conditions in the labour market has no influence on the equilibrium inflation rate. Thus, control of the rate of expansion of the money supply by the central bank is an absolutely essential ingredient in the fight to contain the rate of inflation within manageable bounds, and a permanent reduction in money supply growth is essential to any attempt to reduce the rate of inflation[2].

Proposition 4. Except insofar as government budget deficits and surpluses (or fiscal policy) lead directly to changes in the nominal stock of money, their only long-run impact is to alter the equilibrium real rate of interest, which is the difference between the nominal or market rate of interest and the expected (and, in equilibrium, actual) rate of price inflation. In so doing, government deficits and surpluses have important and often crucial longer-run effects on the structure of the economy. But as far as changes in the overall level of employment are concerned, over the longer-term fiscal policy is rendered ineffective by the complete "crowding out" of its impact[3].

Proposition 5. Short-run policy-induced deviations from the equilibrium rate of resource utilization are optimal only if the authorities have a "sufficiently large" rate of time-preference (that is, they are myopic or short-sighted). Otherwise, optimal policy consists in steering the economy to the "natural rate of unemployment", and staying there, preferably with as low an inflation rate as deemed desirable in terms of the short-run employment costs that may be associated with getting there. This dictates a "discretionary" monetary policy or "strategy of gradualism" only in the transition to equilibrium; thereafter, a fixed monetary growth rule should be applied.

Proposition 6. Although nominal or monetary shocks have real repercussions in the short-run transitional period of adjustment to these shocks, in longer-run equilibrium only nominal variables (like the rate of inflation or the exchange rate) will be affected given "natural rate" assumptions. Real shocks, such as rising world energy prices, are a different matter. In an open economy, the most important form of real shock is a change in the terms of trade (that is, a change in the ratio of the world price of the economy's exportable goods to the world price of the economy's imports). Since these shocks cannot be offset by exchange rate changes, there is no easy way of insulating the domestic economy from their impact[4].

7.3 COMMENTARY ON THE SIX PROPOSITIONS

These six fundamental propositions embody a strong dose of "monetarist" policy prescriptions. Yet they are derivable from any macroeconomic model which simply integrates the Hicks-Hansen version of the Keynesian system with an expectations-augmented "Phillips curve" trade-off relationship embodying the "natural rate of unemployment" hypothesis. In one sense, therefore, what separates monetarists from Keynesians is simply whether the emphasis is placed upon the longer-run consequences of macroeconomic policies, or the consequences for the day after tommorow, as opposed to only the short-run consequences for today and tomorrow. Clearly, on this reading, monetarists take a longer view than Keynesians. However, it should be noted that there are many Keynesians, particularly those in the disequilibrium camp, who would dispute this reading of the difference in viewpoint because it is based upon an inappropriately simplified model of the economic system.

These six propositions also underlie the progressive change in mood concerning the effectiveness of governmental fiscal policy (and to some degree monetary policy) as a means for altering the level of unemployment in the economy, or more generally as a device for "fine-tuning" the level of real aggregate demand. Indeed, with increasing regularity over the past few years it has been argued that attempts to "fine-tune" the economy will simply be destabilising, given the incomplete informational base from which policy-makers operate and the inherent lags involved in the policy-response mechanism. Even if a temporary abandonment of the "fight against inflation" could lower the unemployment rate by a small amount in the short-run, this would only be at the expense of a higher unemployment rate in the future if the inflation rate is once again to be stabilised. Thus, there is no long-run or permanent trade-off between higher levels of resource utilization and higher but steady rates of inflation. Long-run stability in the inflation rate implies that the only true trade-off is between unemployment today and unemployment tomorrow[5].

Two very perplexing questions can be raised about these policy prescriptions. First of all, if the "natural rate of unemployment" hypothesis has any empirical support at all (and in fact it does) [6], why does the natural rate of unemployment in Canada appear to be so high? Put differently, why is the rate of unemployment that appears to be necessary to prevent inflation from accelerating around 6.5 percent of the labour force? Part of the answer lies in the shifting relationship between the actual pressure of demand in the economy as implied by job vacancy rates, capacity-utilization rates and other labour and product market statistics, and the measured unemployment rate, due in part to substantial demographic shifts in the composition of the labour force and to the generosity of our unemployment insurance system which reduces the private costs of being unemployed and thereby increases the measured unemployment rate. But part of the answer must also lie elsewhere. Secondly, why does it appear to be so difficult to unwind an inflationary situation once it has gotten underway, despite lengthy periods of inflationary recession, or stagflation[7]?

The main reasons why the overall increase in the level of prices is so firmly entrenched in the Canadian economy despite our apparently numerous attempts to bring it under control are the persistence of long-standing expectations that inflation is likely to continue with us for some time to come, and the power of market institutions to influence the determination of prices and incomes. The momentum generated by our past inflationary experience is maintained by the powerful hold that inflationary expectations have on all economic agents, and the reluctance of any one group in society to settle for an income increase which is less than the expected inflation rate without any guarantee that the next groups to settle will do likewise. Entrenched inflationary expectations are difficult to eradicate from the system, especially when prices and incomes are determined by the free collective bargaining of a large variety of economic agents at discrete and overlapping time intervals. In consequence, it takes long periods of deficient demand, and associated high unemployment rates, to have much of a sustained impact on the overall rate of price inflation in the economy.

If the basic model and its powerful policy conclusions are to be challenged, it is essential that this challenge be aimed in one of two directions. The first is to challenge the statistical stability of the money demand function. Given the recent econometric literature on this topic, this route appears to be somewhat more promising than it once might have seemed; nevertheless, I would maintain that it remains a rather doubtful line of approach. The second is to challenge the microeconomic foundations and underlying assumptions of the expectations-augmented Phillips curve, and the associated "natural rate" hypothesis. In other words, our attention must be directed towards the underlying assumptions about labour-market behaviour and the determination of aggregate supply. To argue simply that there are adjustment lags here is, however, insufficient[8]. Although the adjustment to a "monetarist" equilibrium may be painfully long, and imply large-scale unemployment costs, this does not undermine the fundamental equilibrium propositions unless model equilibria are all rendered unstable in the process. This is, of course, an important qualification, since instability may well force the monetary authorities to intervene with a discretionary rather than rule-orientated policy. It is the stability question, and more specifically the question how monetary policy can be used to reflate the economy without rekindling inflation, that we examine in the following section of this paper.

7.4   THE REFLATION PROBLEM

In an earlier paper[9], it was demonstrated that the rules appropriate to an optimal monetary policy for a cyclical economy in transition are much more complicated than is ordinarily supposed. When one is trying to unwind an inflationary recession, although one may begin by gradually reducing the rate of growth of the money supply (m) so that it is below the inflation rate (p), thereby temporarily worsening the recessionary component, one may eventually expand the nominal stock of money at a rate larger than but close enough to the (hopefully falling) actual rate

of inflation to permit real output (y) and resource utilization to re-expand gradually through time as inflationary expectations are reduced. But it is by no means clear that a target equilibrium solution can actually be approached along a trajectory with a falling inflation rate and rising real output using monetary policy as the main economic instrument. Additional instruments may have to be introduced if reflation is to be possible without rekindling inflationary expectations and beginning the cycle all over again from an ever-worsening core inflation base.

The main problem appears to be one of stability. In the first place, it is well-known that models of the type we have been describing exhibit an inherent overshooting proposition which results from the fact that, because of asset substitution effects, high inflation equilibria are associated with lower real money balances than low inflation equilibria. Thus, if the new equilibrium resulting from an expanded growth rate m of the nominal stock of money is to be approached, along the path to equilibrium the actual inflation rate (p) must exceed m and therefore its own equilibrium level over some part of the response trajectory. In a similar manner, if the new equilibrium resulting from a reduced growth rate of the nominal stock of money is to be approached, along the path to equilibrium p must fall short of m (and therefore its own equilibrium level) over some part of the response trajectory. The inflation rate must, therefore, overshoot its equilibrium level before this level can finally be approached. In addition to this, it may well be that the approach to equilibrium is inherently cyclical rather than direct, but even in the case of a direct approach one will generally have to follow a trajectory with both p and y falling, or both of them rising.

All of this, however, assumes that the economic system is inherently stable. Although this may be true under the assumption of a constant monetary growth rule, if this growth rule were to be set at a low level relative to the current inflation rate, as would be the case in a "cold shower" approach to inflation control, the short-run unemployment consequences could well be severe. For this reason, the monetary authorities may prefer instead to introduce a policy of gradual reductions in the growth rate of the nominal stock of money, or a "strategy of gradualism". It turns out to be the case, however, that for a wide range of parameter values for the underlying response coefficients of a "strategy of gradualism" the model may become less stable and inherently more cyclical than it would under the "cold shower" approach to inflation control. On the one hand, the gradual decrease in the money growth rate that a "strategy of gradualism" implies may render any eventual reflation of real output impossible to achieve, with perpetual recession being the outcome. On the other hand, if one begins to re-expand the nominal stock of money at a rate larger than the actual inflation rate, as is required in order to reflate the level of real output in the economy, this may well lead to the rekindling of inflationary expectations, and/or the overshooting of the natural rate of utilization or real output target, and therefore to the generation of a new inflation cycle, in all probability from a higher core inflation base than its predecessor.

One may get a better intuitive handle on these remarks by considering a simple monetary growth reaction function which ignores lags in policy

response, namely (A) $m - p^T = \beta_1 (y - y^T) + \beta_2 (p - p^T)$, where y^T is
the target level of real output (or resource utilization), which for
consistency should be equated to the "natural utilization rate", p^T is
the target inflation rate, and $\beta_1 \le 0$, $0 \le \beta_2 < 1$ are the reaction coeffi-
cients attached to deviations in utilization from target, and deviations
in the inflation rate from target, respectively. A constant money
growth rule is obtained if $\beta_1 = \beta_2 = 0$, so that $m = p^T$ at all points of
time, whereas a "strategy of gradualism" results whenever β_1 and β_2
take on other permissible values. Although the case $\beta_1 = 0$, $\beta_2 > 0$
certainly implies a "strategy of gradualism", this case is always less
stable than the $\beta_1 = \beta_2 = 0$, or constant money growth, case. However,
since one would be unlikely to choose a "strategy of gradualism" unless
unemployment, as represented by negative deviations of utilization from
target, were costly, the choice of a non-zero β_1 reaction coefficient is
implied. Nevertheless, unless β_1 is chosen to be of appropriate size
relative to β_2, the "strategy of gradualism" may turn out to be less
stable than the "cold shower" case where $m=p^T$. When policy reaction
lags are introduced, this is even more likely to be so unless the form
of the reaction function is changed to add derivative stabilisation pol-
icy to the proportional policy that equation (A) implies.

Another danger with a reaction function of this form is that the real
output target, y^T, may be inconsistently chosen. Over-estimation or
under-estimation of the "natural rate of utilization" may easily gener-
ate target inconsistency, especially when economic disturbances which
affect the real side of the model economy are occurring. Indeed, real
shocks not only tend to increase the amplitude of cyclical fluctuations,
but also, in general, they render previously consistent target levels of
y^T and p^T inconsistent. In addition, it is possible that the failure to
maintain the economy on a path consistent with the eventual achievement
of targets which appear to be compatible from the vantage point of the
current time period may well set in motion expectational, behavioural,
and institutional shifts that render these same targets imcompatible in
future time periods.

The existence of inconsistent targets may also lead policy-makers to
introduce cyclical variations in the coefficient weights contained in
the monetary policy reaction function, and, therefore, to policies which
are built on shifting sands. More fundamentally, it may not be possible
to determine the appropriate weights to use in a reaction function with-
out taking into account the possibly shifting shape of the constraint
functions (and particularly the short-run inflation-unemployment trade-
off function or Phillips curve). Since in reality accurate information
on the underlying parameter values may not be available, this interde-
pendence of targets and constraints implies that the appropriate speci-
fication of the reaction function must inevitably depend upon an itera-
tive procedure of trial and error (or one's "experience"). But the
expectations of market agents may well be continuously disturbed as the
authorities experiment with alternative coefficient weights. Hence, at
least from this perspective, to strive to attain a constant money growth
rate may well be preferable to a "strategy of gradualism". At least it
is clear where one is aiming.

7.5   INTEREST RATES AND THE REFLATION PROBLEM

In the previous section, we stressed the notion that to reflate the lev-
el of real output in the economy requires expansion of the level of real
money balances. To achieve this, the nominal money supply must be per-
mitted to grow at a rate faster than the actual inflation rate for some
period of time. Thus, to continuously grind down the rate of monetary
growth may well prevent reflation from being possible. However, to stop
doing so and increase this growth rate instead may give a clear market
signal that rekindles inflationary expectations and begins yet another
inflation cycle. In this section, we consider the implications for in-
terest rates that these conundrums present. Certain background comments
on actual interest rate movements are first required.

At any point of time, inflationary expectations tend to be reflected
in nominal or market interest rates. In a general sense, and ignoring
important distortions in the tax system as well as the problem of dif-
ferences in inflation rates across microeconomic markets, interest rates
of 15 percent when inflationary expectations average 12 percent are no
more or less burdensome than interest rates of 3 percent when there is a
zero rate of expected inflation. The difference between a given nominal
interest rate and the expected inflation rate may be called the real in-
terest rate. This real interest rate is likely to be reasonably con-
stant from a long-run perspective. Nevertheless, it may be influenced
quite substantially in the short-run by the policies pursued by our mon-
etary authorities and by the pressure of government sector borrowing
from the money markets to finance on-going fiscal deficits.

The main reason for high market interest rates is the on-going core
inflation rate in the economy. However, the real component of market
interest rates will be pushed to a higher level whenever tight monetary
policies are used to combat an on-going inflation (especially unantici-
pated monetary tightness or tightness which is "not believed" because
the authorities have not yet made their stance "credible"), or whenever
the pressure of financing an on-going government sector deficit forces
real interest rates to rise. Thus, the main reasons for our recent ex-
perience of high market interest rates have been, first, inflation it-
self, secondly the use of tight monetary policies to combat the high
level of inflation, and thirdly the need to finance the substantial gov-
ernment sector deficit which arises from a recent history of looseness
in our fiscal policies[10].

Over the past three years, North American interest rates have had two
massive run-ups, peaking in the spring of 1980 and then again in the
early fall of 1981. They dropped precipitously in the summer of 1980,
and again over the last few months of 1981, with a continuation of this
downwards movement in the fall of 1982. Short-term interest rates have
been even more volatile than long-term rates, with the relative stabili-
ty of long-term rates being explained by the much closer tie between
these rates and firmly-entrenched inflationary expectations. Although
the interest rate swings in Canada have been kept somewhat smaller than
in the United States by using the exchange rate as a partial shock-ab-
sorber, the perceived need to prevent substantial swings in the interna-
tional value of the Canadian dollar has meant that we have had to import

the larger portion of the substantial interest rate swings occurring in the U.S. economy[11].

The main reason for the violence in the swings in North American interest rates is the switch in U.S. monetary policy to an attempt to control the growth in the money supply within fairly close target bands over short periods of time. With very tight monetary conditions overall, this has implied that small scale changes in the demand for money have had large scale effects on the price of money, that is, on interest rates. The resulting instability in U.S. interest rates has made life quite difficult for Canadian monetary authorities. Less volatility would clearly have been beneficial to the Canadian economy. It is, however, possible to argue that the Governors of the Federal Reserve System have now learned something from their recent experience with their attempt to control the growth rate of the supply of money within a narrow target band over short periods of time, and will be able to manage things in future with somewhat more care for interest-rate side-effects. In addition, North American money markets may now have adapted their expectation formation processes to reflect the new U.S. monetary control mechanism.

There can be no doubt that the high real interest rates of early 1980 led to the mini-recession later that year; their substantial fall in the summer of 1980 may also have generated the surprising but short-lived strength in the economy that we experienced in the first half of 1981. This strength, however, sustained a relatively high demand for money in the early part of 1981, and therefore helped to explain the record run-up in interest rates over the spring and summer of 1981. There can be no doubt that these record high interest rates killed the previous business expansion and pushed the North American economy into a full year of substantial economic recession. We therefore see that interest rates and the overall level of economic activity are inter-related in both directions. Economic expansions tend to lead to increasing real interest rates which themselves carry the seed which eventually turns the period of expansion over into an economic recession. Because there was such a substantial run-up in real interest rates in the latter part of 1980 and first part of 1981, the resulting recession has been much deeper than many we have recently experienced[12].

Given the downwards recessionary momentum in the economy, the normal corrective forces will not begin to generate a new economic recovery until lower levels of real interest rates are clearly established. Even with some easing of real interest rates, on-going inflationary expectations put a clear-cut floor on the extent to which nominal interest rates can drop in the current economic recession. Indeed, it is unlikely that we shall see substantial further reductions in nominal interest rates unless inflationary expectations can be broken.

This brings us back, inevitably, to the main conundrum of this paper. How can the growth path for the nominal stock of money be controlled so as to unwind inflationary expectations while at the same time permitting levels of real and nominal interest rates that eventually lead to the recovery of the levels of overall output and resource utilization? It should now be clear that my preliminary answer to this question is that in practice it cannot easily be done without the help of other ancilli-

ary policy instruments, and that, failing these, the best bet for achieving recovery without higher inflation is to follow, with reasonably close approximation, a constant monetary growth rule.

What should this rule be? In the current Canadian context, the appropriate M1 growth rate is 8 percent per annum, which is at the upper end of the Bank of Canada's current (4% to 8%) target range. To further ratchet down the target band would simply worsen the deep recession we are already experiencing; to allow the target band to re-expand would give a clearly perverse signal which would likely be incorporated into inflationary expectations. Since we have such severe unemployment, however, it is essential to be as expansionary as possible within the existing target band. Thus, to move M1 growth into the upper range of the target band (and to maintain it approximately in this position) seems to me to be the most appropriate stance for monetary policy to take at this (fall 1982) juncture. Given some small-scale but continuous downward drift in the demand for M1 balances, and a real income elasticity of money demand in the order of 0.75, an 8 percent growth rate for M1 balances would, at least, be consistent with the achievement of a 6 percent target inflation rate coupled with 3 - 4 percent real output growth. (Better still would be base control coupled with current or unlagged reserve accounting to achieve roughly this performance for M1, or perhaps M1B, growth.)

Interest rates and the exchange rate should be allowed to move endogenously as required by this over-riding medium-term policy rule. This suggests that slavishly following U.S. interest rates in order to maintain a roughly constant U.S. dollar exchange rate should ordinarily be avoided, particularly when the U.S. dollar is moving strongly upwards or downwards relative to third currency countries (who are also our trading partners). Canadian dollar depreciation as the U.S. moves into recession, and appreciation as the U.S. moves into an inflationary expansion, would then be the likely stabilizing result. It also suggests that some considerable interest rate flexibility (both real and nominal) must be permitted, but not quite the kind of extreme motions that we have recently imported from the United States.

Anchoring to a constant monetary growth rule would, however, perhaps be of less importance if we knew more about the actual magnitudes of the underlying structural parameters (and especially the lag coefficients) of the economy, or if the economy were not so subject to significant and unforeseen shocks. Optimal policy for a non-stochastic economy in slow transition because of substantial (but known) lag effects does not imply a constant monetary growth rule. However, informational uncertainties may well render the second-best max-min strategy of following a constant monetary growth rule (currently, say, at the 8 percent rate) to be preferred, since it generates results which are not too terrible regardless of the (possibly changing) magnitudes of the underlying structural parameters of the system.

Anchoring to a constant monetary growth rule would also be of less importance if we were able to get some other policies (including fiscal policy) moving in the right direction. The following section considers this matter in more detail.

7.6   ANCILLIARY POLICIES AND FUTURE PROSPECTS

The purpose of this final section is to examine briefly what refinements
in economic policy might be helpful if we are at least to reduce the
discomfort resulting from the simultaneous occurrence of continuing high
levels of unemployment and high rates of price inflation. In the first
place, one should note that inflationary expectations will gradually
ease downwards as lower demand pressure and higher unemployment begin,
albeit slowly, to work on the actual inflation rate. In addition, the
world market situation gives one some reason for optimism that commodity
prices, including world energy prices, should not present us with severe
cost-increasing inflationary shocks in the next year or two; indeed,
even with our slow internal adjustment of energy prices gradually to-
wards a level of world energy prices which will probably be falling in
real terms over the next couple of years, it is quite conceivable that
shock inflation will impart a negative thrust to the overall inflation
rate.

In the second place, one should note that one of the major reasons
for high inflation rates over the past six or seven years has been unex-
pectedly slower rates of labour productivity growth than were prevalent
in the 1950s and 1960s. There are many reasons for this, including de-
mographic changes in the structure of the labour force, a shortened work
week, high marginal tax rates, insufficient volumes of new capital in-
vestment, rising prices of complementary inputs such as energy, and sim-
ple mismeasurement, with an upwards bias, in the overall inflation rate,
which has consequently induced us, almost as a byproduct, to understate
real output and productivity growth rates. The resulting frustration of
the attempt by all workers to improve their living standards simultane-
ously has led to rising wage claims on an economy whose overall produc-
tivity performance has not been able to justify them in real terms. In
other words, low productivity growth has led to unexpectedly high infla-
tion rates and to unexpectedly high wage-demands to catch-up with price
inflation, thereby perpetuating the high inflation rate itself, since
wages are the predominant component in business costs. In the current
situation, however, there are good grounds for supposing that productiv-
ity growth will re-expand to some extent whenever the recovery in eco-
nomic activity begins, and this in itself will reduce the inflationary
effects that otherwise might accompany a business recovery.

On the policy side, the Government of Canada needs to support poli-
cies which expand both the productivity of the economy and the level of
real investment activity. Manpower retraining and the facilitation of
inter-regional mobility often have positive effects on productivity
growth. De-regulation of industry, especially including the energy sec-
tor, would also be highly desirable. Indeed, the Economic Council of
Canada has recently recommended that the 75 percent of world price cap
on domestic well-head prices for conventional crude oil be lifted in
light of the current flatness in world oil prices. This would not only
generate more revenues for the federal government which should definite-
ly be plowed back immediately by tax reductions in other areas to gener-
ate employment, but also it would help to ease further the continuing
damage done to the energy sector by the massive sectoral tax increase

imposed in 1981 through the impact of the federal government's National
Energy Program, one of most singularly perverse policy initiatives of
our time. Such a substantial tax increase was clearly inappropriate in
a time of inflationary recession, especially one which both undermined
the strength of the leading growth pole of the Canadian economy and se-
riously weakened the Canadian dollar at a time when it was difficult
enough to manage our monetary policy in the face of record high U.S.
interest rates.

Also important is the imposition of reasonably firm public sector
wage guidelines with at least some co-ordination across provinces,
largely because the market discipline imposed on most labour-using firms
in the private sector is clearly not so evident in the public sector of
the economy. Although it would be inappropriate to introduce a full-
scale prices and incomes restraint policy at this time, such a policy
may well be inevitable if wage guidelines prove to be a failure. But it
should not be expected that by itself a second medium-term controls pro-
gram would have much longer-term effect on inflationary expectations.

Our tax system needs substantial re-adjustment to accommodate high
inflation rates, in large part because inflationary expectations get re-
flected in nominal interest rates. Depending upon one's tax status, and
particularly the degree to which interest costs are deductible before
tax and one's marginal tax rate, high nominal interest rates have dif-
ferential real impacts. They can, therefore, affect the structure of
investment activity in the economy. The problem lies with a tax system
which does not recognize the difference between nominal and real inter-
est rates; equitable treatment would suggest that only real interest be
tax-deductible, or for that matter taxable since bondholders are also
excessively taxed on their nominal interest income, thereby reducing
structural distortions that arise from a tax system which has not yet
caught up with the existence of on-going inflation at substantial rates.
High real interest rates hurt, but, coupled with tax distortions, hurt
some groups more than others.

Finally, from an overall fiscal-monetary management perspective, we
have little choice but to persevere with a policy of constrained money
supply growth rates in order to contain the overall inflation rate.
Perseverance with this strategy, given good luck on the productivity and
supply-side shock inflation front, will eventually lower the inflation
rate. To give up the fight now would clearly be wrong-headed. Never-
theless, we have over the last few years been relying much too heavily
on one policy tool, monetary policy; federal expenditure policies have
been overly loose and at best useless in our anti-inflationary fight.

Although we cannot afford to loosen the monetary screws past the 8
percent upper target band, if the federal government were able to cut
back some of its discretionary expenditures as the recession eases, the
resulting twist in our monetary-fiscal mix towards tighter fiscal and
somewhat looser monetary policy could permit a lowering of real interest
rates, with beneficial side effects on the overall volume of real in-
vestment activity and the labour-productivity growth rate. Although the
exchange rate might depreciate to a small extent if such a policy twist
were clearly implemented, any inflationary side effects would be kept in
check by expanded productivity and improved business confidence. In

consequence, one should be able to couple higher levels of capacity-utilization and a lower unemployment rate with any given infla-tion rate. It requires, however, a long overdue recognition in Ottawa that both the growth in our federal expenditures and the size of the re-sulting bureaucracy have been and continue to be part of our problem. Although the resulting deficit is in fact overstated if appropriate in-flation-accounting were done for the interest paid on the national debt, and is not out of line when considered in relation to the depth of the current economic recession (although it is still perceived to be, and perceptions are important to the behaviour of capital markets), the fight against inflation would be so much more convincing if our federal authorities were actually to practice the belt-tightening they so often exhort others to practice. It would also end our almost total reliance on monetary policy and high real interest rates in our anti-inflationary fight.

Appendix A
Technical Appendix

A.1   THE BASIC MODEL

a)   The determination of real aggregate demand

The level of real aggregate demand, z, may be taken to be deter-mined by the relationship

1. $z = z(y, r, p*, f)$, with $0 < z_y < 1$, $z_r < 0$, $z_{p*} \geq 0$, and $z_f > 0$, where y is real output, r is the nominal interest rate, $p*$ is the expected rate of price inflation, and f is an ex-ogenous variable which may be taken to represent the stance of fiscal policy, as measured by the real government sector deficit. The nominal rate of interest may be assumed to be determined by inverting a money market equilibrium condition of the form

2. $M = P \cdot \ell(y, r, p*)$, with $\ell_y > 0$, $\ell_r < 0$ and $\ell_{p*} \leq 0$, where M is the nominal stock of money, P is the price level, and $\ell(y, r, p*)$ is the demand for real balances[13]. Differenti-ating (1) and (2) with respect to time and eliminating Dr across them (where $D \equiv d/dt$ is the differential operator) yields the fundamental demand side relationship

3. $(m - p)\frac{M}{P} = aDy + bDz + cDp* + dDf$, where $m \equiv M^{-1}DM$ is the growth rate of the nominal stock of money, $p \equiv P^{-1}DP$ is the rate of inflation, M/P is the level of real balances, $a \equiv \ell_y - z_y \ell_r/z_r \gtreqless 0$, $b \equiv \ell_r/z_r > 0$, $c \equiv \ell_{p*} - z_{p*}\ell_r/z_r \leq 0$, and $d \equiv -z_f \ell_r/z_r < 0$. Note that $a + b > 0$ since $0 < z_y < 1$.

b)   The determination of price-change expectations and the inflation rate

So far, our model consists of the basic reduced form equation, (3). We now explain the formation of price-change expectations, $p*$, and the determination of the actual inflation rate, p. Let

4. $(D + w)p = w\{\phi(y, g) + \theta p*\}$, with $\phi_y > 0$, $\phi_g > 0$, $w > 0$, and $0 \leq \theta \leq 1$, and

5. $Dp* = \gamma(p - p*) + \eta(m - p*) = (\gamma + \eta)(p - p*) + \eta(m - p)$, with
$\gamma > 0$, $\eta > 0$, where g is a shift parameter which represents the influence of supply-side disturbances on the short-run

Phillips-curve relationship, $\phi(y, g)$, and where γ, η and w are "speed of response" parameters. For simplicity, it is assumed that the natural rate of economic growth of the economy is zero, so that resource utilization and the degree of employment are directly dependent upon the level of real output, y, in a one-for-one manner. Thus, we have a standard expectations-curve-augmented Phillips-curve relationship in which institutional lags associated with long contracts are proxied by an exponential lag distribution with speed of response w, and in which the natural rate of utilization or unemployment hypothesis emerges when $\theta = 1$, which we shall assume throughout the remainder of this appendix, coupled with an expectations-determination mechanism in which the normal adaptive expectations process is generalised to allow observations on the growth rate of the money supply also to influence inflationary expectations. Equations (3), (4) and (5) together constitute a system of three equations in five basic unknowns, namely y, z, p, p* and m. It remains to specify the relationship between real output, y, and real aggregate demand, z, and the determinants of the money supply growth process.

c)   A simple stock-adjustment process relating y to z

Our model so far is incomplete because it does not specify the way in which real output, y, relates to real aggregate demand, z. Let s be the stock of final goods inventories that have been produced in the past but have not yet been sold. Then the change in this inventory stock, Ds, must be equal to $y - z$. This total change in inventories may be separated into desired (or planned) changes equal to $y - z*$, where z* is the expected level of demand, plus passive (or unplanned) changes equal to $z* - z$. For simplicity, $y - z*$ may be taken to be some proportion, $\mu > 0$, of the difference between desired inventories, s*, and actual inventories, s, while the change in the expected level of demand, Dz*, may be taken to be equal to some proportion, $\lambda > 0$, of the gap between actual and expected demand. Finally, one may assume that desired stocks are proportional to expected demand (or sales), so that $s* = hz*$, where $h > 0$ is the desired (or target) inventory-sales ratio. Of course, this is clearly an over-simplification, since s* should also have been taken to depend upon the rate of interest and expected price changes. This would, however, have complicated the analysis unnecessarily without much gain; and in any case it should be noted that, in a previous sub-section, z (and, hence, indirectly z* and s*) has already been taken to depend upon these variables. On these assumptions, it follows that one has a system of four equations in five unknowns, y, z, z*, s and s*, namely

6. $Ds = y - z$, $y - z* = \mu(s* - s)$, $Dz* = \lambda(z - z*)$ and $s* = hz*$, or $Ds = y - z$ and $Dy = (\lambda + \mu)(z - y) + \lambda\mu(hz - s)$ after elimination of the unobservable variables, z* and s*. The system may easily be solved into a single relationship between output, y, and demand z, of the form

7. $\{D^2 + (\lambda + \mu)D + \lambda\mu\} y = \{(\lambda + \mu + \lambda\mu h)D + \lambda\mu\} z$.
This equation explains how output responds to the level of real aggregate demand, given the simple inventory adjustment process at work. Clearly, if the system has settled down to a stationary equilibrium in which there is neither planned nor unplanned accumulation (or decumulation) occurring, y must be equal to z, and z* as well.

d)   The monetary growth reaction function

The general monetary growth reaction function we shall specify has the following form

8. $(D + \alpha)(m - p^T) = \alpha[\beta_1(y - y^T) + \beta_2(p - p^T)$
$+ \beta_3 \int_0^t \{p(\tau) - p^T\} d\tau]$,
where y^T is the target level of real output (or resource utilization), p^T is the target inflation rate, β_1, β_2 and β_3 are reaction coefficients attached to deviations in utilization from target, to deviations in the inflation rate from target and to accumulated deviations in the inflation rate from target, respectively, $\alpha > 0$ is an underlying "speed of response" parameter, and $D \equiv d/dt$ is the differential operator as before. Targets are specified to be consistent with the underlying equilibrium structure of the model. More particularly, p^T and y^T obey the relationship $p^T(1 - \theta) = \phi(y^T, g)$, which when $\theta = 1$ implies that y^T must be set equal to the natural rate of utilization given by $\phi(y^T, g) = 0$.

The rationale for this general reaction function comes from my earlier paper[14], in which an optimal reaction function is explicitly derived for a version of the current model in which the inventory-adjustment mechanism is ignored by the assumptions $\mu = 0$ and $\lambda \to \infty$ so that $y = z$, and the institutional contract lag in the Phillips curve is ignored by the assumption $w \to \infty$. An optimal policy, of course, has the characteristic that α, β_1, β_2 and β_3 all take on very special values which are derived as complicated functions of the other underlying parameters of the model. Here we are not concerned with optimal policy per se, but it is at least comforting to specify the functional form of our policy reaction function in a way which at least has the potential of being consistent with optimal policy for some versions of the model. Finally, the reason why the accumulated deviation in the inflation rate from target appears as a term in this reaction function is a direct consequence of the inclusion of inflationary expectations which adapt to actual observations on m and p in the underlying model.

One particular simplification of the reaction function may be obtained by assuming that $\beta_1 = \beta_3 = 0$ and $\alpha \to \infty$. In this case, the reaction function may be written as

9. $(m - p^T) = \beta_2(p - p^T)$,

where (consistently with a "strategy of gradualism") β_2 may be assumed to lie between 0 and 1. The money supply growth rate would then be a convex linear combination of the actual and target inflation rates. Thus, after a period of excessive inflation rates, a "strategy of gradualism" designed to reduce p toward p^T would require a negative growth rate for real balances (m - p < 0), but with m then declining in step with p until such time as the implied recession gradually led p down to p^T. Whether or not such a process would converge on target equilibrium, with or without overshooting, is a question we shall consider later in this appendix.

e) Some preliminary comments on the model

Our complete model now consists of the seventh-order differential equation system in y, z, p, p* and m, encompasing equations (3), (4), (5), (7) and now (8). This system embodies two well-known sources of potential cyclical instability, namely (a) stock-adjustment processes, and (b) the formation of price-change expectations. Many versions of our complete model, of course, ignore the possibility of disequilibrium in the product market and its consequential inventory repercussions. This is tantamount to the assumption that neither planned nor unplanned inventory accumulation occur. More explicitly, it is equivalent to the twin assumptions that $\mu = 0$ and $\lambda \to \infty$, implying y = z at all points of time. Output and real aggregate demand are then simply taken to be equivalent. This assumption clearly restricts the generality of the cyclical movements that the model may exhibit. It also affects the stability properties of the model, since two characteristic roots are thereby eliminated.

As will be seen in the following section of this appendix, our incorporation of the possibility of disequilibrium in the product market does not affect the equilibrium properties of the model. However, it may render unstable the equilibrium position associated with a given sustained rate of expansion in the nominal supply of money (the situation resulting from taking $\beta_2 = 0$ in the special case equation (9) above). In this case, a variable rate of monetary expansion based upon some appropriate feedback rule must be used if there is to be any possibility of economic stability. Of course, even this is problematical, since it also requires continual deception of market agents in order to be successful; put differently, it requires that agents do not learn the feedback rule and adapt their expectation formation processes to it.

A.2   FORMAL ANALYSIS OF THE MODEL

a) Model Equilibrium

The purpose of this complete section is to provide a reasonably formal analysis of the complete model, as given by equations (3), (4), (5), (7) and (8). To begin with, it is not difficult to see that, given f, g and p^T (and, hence, equilibrium m), the model possesses a unique equilibrium solution, $\bar{y}$, $\bar{z}$, $\bar{p}$, $\bar{p}*$ and $\bar{m}$, with the properties that

10. $\bar{p} = \bar{p}* = \bar{m} = p^T$, $(1 - \theta)\bar{p} = \phi\ (\bar{y},\ g)$ and $\bar{z} = \bar{y} = y^T$, given that y^T is a consistent target at which to aim. Notice that this solution is independent of f, whether or not $\theta = 1$. Hence, exogenous elements entering the equation for real aggregate demand, including fiscal policy, do not affect the equilibrium solutions for y, z, p, p* and m. Of course, they will affect the equilibrium real interest rate (r - p*), but complete crowding out of their effects on equilibrium real output occurs. However, it is important to notice that our analysis ignores the longer-run stock-balance considerations that would emanate from the existence of a governmental budget constraint. For example, if f refers to the real fiscal deficit, and if this deficit is wholly monetarily financed, then (ignoring primary-secondary considerations in the money market) Pf = DM, or f = m·M/P, and one may thus work either with f or with m as the basic policy variable.

Putting this possibility on one side, it is clear that the fundamental driving variables include m, the growth rate of the nominal stock of money, and those supply side disturbances which affect the Phillips-curve relationship through the g - variable. Notice, however, that in equilibrium the whole thrust of g - considerations is to affect y and z, but not p and p*. Moreover, in the natural rate case where $\theta = 1$, in equilibrium the whole thrust of m - considerations is to affect p and p*, but not y and z, although with $\theta < 1$, this is not so. Hence, in the natural rate case, the equilibrium state of the complete model is decomposable.

b) Dynamic Behaviour with a Constant Money Growth Rule

The dynamic behaviour of the model in the neighbourhood of its equilibrium position, as well as the question of the local stability of this solution, may be explored by linearising the system of equations (3), (4), (5), (7) and (8) around the equilibrium solution to obtain the fundamental matrix equation:

11.

$$
\begin{bmatrix}
\rho^2 + (\lambda+\mu)\rho + \lambda\mu & -(\lambda+\mu+\lambda\mu h)\rho - \lambda\mu & 0 & 0 & 0 \\
a\rho & b\rho & M/P & c\rho & -M/P \\
-w\phi_y & 0 & \rho+w & -w & 0 \\
0 & 0 & -\gamma & \rho+\gamma+\eta & -\eta \\
-\alpha\beta_1\rho & 0 & -\alpha(\beta_2\rho+\beta_3) & 0 & \rho(\rho+\alpha)
\end{bmatrix}
\begin{bmatrix}
y(0)-\bar{y} \\
z(0)-\bar{z} \\
p(0)-\bar{p} \\
p*(0)-\bar{p}* \\
m(0)-\bar{m}
\end{bmatrix}
=
\begin{bmatrix}
0 \\
0 \\
0 \\
0 \\
0
\end{bmatrix}
$$

since $\bar{p} = \bar{p}* = \bar{m} = p^T$, $\phi(\bar{y}, g) = 0$ when $\theta = 1$, and $\bar{z} = \bar{y} = y^T$, with p^T , f and g being given and exogenous. All partial derivatives as well as the level of real balances, M/P, are taken to be evaluated in the neighbourhood of the equilibrium position. Evaluating the determinant of the 5 x 5 matrix on the left-hand side of equation (11) and setting it equal to zero, one obtains the seventh-order characteristic equation of the system.

To keep matters somewhat simple, however, we first consider the fourth-order system obtainable by letting $w \to \infty$ and by using the simplified reaction function (9) rather than (8) in the case where $\beta_2 = 0$ and the growth rate of the money supply (m) is held constant (and equal to p^T). In this case, the quartic characteristic equation of the system is

12.
$$b\rho^4 + [(\lambda+\mu)(a+b)+\lambda\mu ha+b\eta]\rho^3$$
$$+ [(\lambda+\mu)(a+b)\eta+\lambda\mu ha\eta+(a+b)\lambda\mu+(c\gamma+M/P)(\lambda+\mu+\lambda\mu h)\phi_y]\rho^2$$
$$+ [(a+b)\lambda\mu\eta+(c\gamma+M/P)\lambda\mu\phi_y+(\gamma+\eta)(\lambda+\mu+\lambda\mu h)\phi_y M/P]\rho$$
$$+ (\gamma+\eta)\lambda\mu\phi_y M/P = 0.$$

The dynamic behaviour of the system in the neighbourhood of equilibrium depends upon the four characteristic roots (ρ) of this rather complicated equation. A necessary, but not sufficient, condition for local stability is that the basic coefficients of this polynomial all be positive. Since the only potentially negative elements within these coefficients are terms containing $\lambda\mu ha$ and $c\gamma + M/P$, the first of which relates to the positive feedback loop within the inventory adjustment mechanism and the second of which relates to the positive feedback loop within the price-expectations adjustment mechanism, all of the basic coefficients of the polynomial are likely to be positive provided that these two elements, if negative, are not large in absolute terms. If this is so, then there can be no real positive roots to the polynomial, and, hence, if the system is unstable it must be cyclically unstable; that is to say, any divergence from equilibrium must be associated with explosive oscillations, and not with a monotonic divergence.

The necessary and sufficient conditions for local stability (the Routh-Hurwitz conditions) are exceedingly complicated, and not much can be learned by exploring them qualitatively. However, large negative values for the $\lambda\mu ha$ combination and large negative values for the $c\gamma + M/P$ combination, relative to the other terms, tend to generate instability. This is particularly true the closer one is to the assumption of "perfect foresight" ($\lambda \to \infty$ and/or $\gamma \to \infty$) when $\mu ha < 0$ and $c < 0$. On the other hand, the faster is the di-

rect response of inflationary expectations to the monetary growth rate (through $\eta > 0$), the more likely in general is stability, given a simple monetary growth rule for m. This is particularly true if the inventory-adjustment mechanism is relatively slow. Nevertheless, the stability of equilibrium is essential to the validity (and the power) of the six fundamental propositions which we examined in the text; and this explains why we focus upon the stability question at some length, and in a version of the model which permits inventory fluctuations to occur.

If, however, the inventory adjustment mechanism is ignored by the assumptions $\mu = 0$ and $\lambda \to \infty$ so that $y = z$, the quartic equation collapses into the following quadratic equation, namely

13.
$$(a+b)\rho^2 + [(a+b)\eta + (c\gamma + M/P)\phi_y]\rho + (\gamma+\eta)\phi_y M/P = 0.$$

In this case, the equilibrium solution pertaining to a constant monetary growth rule will be stable, provided that the term $c\gamma + M/P$, if negative, does not dominate the second basic coefficient. Dynamic behaviour in the neighbourhood of equilibrium may well be cyclical, however. A complete phase-diagrammatic treatment of this simplified system has been presented by the author in an earlier article[15].

c) Dynamic Behaviour with a Monetary Growth Reaction Function
    para When a monetary growth reaction function with $\beta_3 = 0$ and $\alpha \to \infty$ is added back to this simplified system, the fundamental matrix equation becomes:

14.
$$\begin{bmatrix} (a+b)\rho & M/P & c\rho & -M/P \\ -\phi_y & 1 & -1 & 0 \\ 0 & -\gamma & (\rho+\gamma+\eta) & -\eta \\ -\beta_1 & -\beta_2 & 0 & 1 \end{bmatrix} \begin{bmatrix} y(0)-\bar{y} \\ p(0)-\bar{p} \\ p*(0)-\bar{p}* \\ m(0)-\bar{m} \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

thereby generating another quadratic characteristic equation of the form

15.
$$(a+b)\rho^2 + [(a+b)\eta(1-\beta_2)+(c\gamma+M/P)\phi_y+(c\eta-M/P)(\beta_1+\beta_2\phi_y)]\rho$$
$$+ (\gamma+\eta)(1-\beta_2)\phi_y M/P = 0,$$

which is equivalent to equation (13) if $\beta_1 = 0$ and $\beta_2 = 0$ (and, thus, $m = p^T$ once again). Comparing this equation with (13), it is clear that negative values for β_1 enhance the stability of the system as well as serving to reduce the amplitude of oscillations should they occur. Indeed, if β_1 is sufficiently negative, non-oscillatory convergence to the equilibrium solution can be assured. A similar situation would also arise if β_2 were negative. However, a "strategy of gradualism" implies a choice of β_2 which is between 0 and +1; by itself, such a choice for β_2 is clearly less likely to generate stability and strong dampening of oscillations than the application of a constant monetary growth rule. Thus, unless one takes the view that lower utilization levels and higher unemployment are seriously costly, a constant monetary growth rule is preferable to a "strategy of gradualism". Of course, it is precisely because of the unemployment costs that one would impose a β_1 which is sufficiently negative to re-establish the stability and direct convergence property that a "strategy of gradualism" $(0 < \beta_2 < 1)$ tends to undermine in comparison to the constant monetary growth rate case $(\beta_2 = 0)$.

Adding back a policy reaction lag to this simplified system generates a cubic characteristic equation of the form

16.
$$(a+b)\rho^3 + [(a+b)(\alpha+\eta) + (c\gamma+M/P)\phi_y]\rho^2$$
$$+ [\alpha(a+b)\eta(1-\beta_2)+\alpha(c\gamma+M/P)\phi_y+\alpha(c\eta-M/P)(\beta_1+\beta_2\phi_y)$$
$$+ (\gamma+\eta)\phi_y M/P]\rho + \alpha(\gamma+\eta)(1-\beta_2)\phi_y M/P = 0.$$

Notice in this case that β_1 and β_2 do not affect the second coefficient; unless the speed of response coefficient α is large, this second coefficient could be negative. In this case, the system is definitely unstable. Even if the second coefficient is positive, it may be difficult to choose β_1 and β_2 so as to satisfy the Routh-Hurwitz stability conditions[16], or to ensure that the solution path is either non-oscillatory or at least strongly damped. Most especially, large negative values for β_1 may be required; but this may well slow down the process of unwinding a serious inflationary situation. Thus, lags in policy responses make stabilisation policy more difficult to implement, and perhaps even perverse in its ultimate effect. As Phillips observed long ago, we may need to add a derivative stabilisation policy, which can affect the second coefficient, to the proportional policy already incorporated if stability and/or reduced cyclical fluctuations are to be achieved. Alternatively, it may be more useful to revert to a constant monetary growth rule. As additional com-

plications (such as inventory adjustments and labour contract lags) are added back into the model, this is likely to remain true. But for the time being we shall spare the reader this further analysis.

Notes

[1] In its nineteenth annual review, the Economic Council of Canada puts the same question in the following way: "The key question that must be faced is the extent to which an easing of the current restrictive stance of monetary and fiscal policy would facilitate a recovery in output and employment without bringing in its train a resurgence of inflation. There can be no doubt that labour markets are soft enough to exert considerable downward pressure on wages and that enough idle capacity exists to encourage restraint in price setting. The big question mark here, however, concerns the degree to which an easing of policy would worsen inflationary expectations and tend to cancel out any resulting benefits." Economic Council of Canada, Lean Times, Policies and Constraints, Nineteenth Annual Review, Ottawa, Minister of Supply and Services Canada, September 1982, p. xiii. At an earlier stage of the current inflation cycle, Tom Courchene put this same question the other way around: "The key question for the present is how to limit the real-side slack that is a by-product of the confrontation [between slower money growth rates and the on-going rate of inflation]." See T.J. Courchene, Money, Inflation, and the Bank of Canada, Volume II, Montreal, C.D. Howe Institute, 1981, p. 313.

[2] In an open economy with a managed flexible exchange rate in which the monetary authorities "lean against the wind" to reduce the amplitude of day-to-day movements in the foreign exchange rate, the growth rate of the money supply may be influenced by the state of the balance-of-payments in such a way as to keep the domestic rate of inflation in some appropriate relationship to foreign inflation rates and associated rates of monetary expansion. Even with a managed flexible exchange rate, there will be important tie-ins between domestic and foreign interest rate movements which will influence domestic monetary policies. We shall return to this point later, but it does not vitiate the conclusion that the growth rate of the money supply is the fundamental variable which governs the general trend rate of inflation in the economy.

[3] An expansion in government expenditure relative to taxation tends to generate changes in the real rate of interest which imply both lower exports relative to imports and lower real investment relative to domestic saving. Fiscal policy therefore has an important effect on

the equilibrium composition of the balance of payments, with higher government sector deficits (or smaller surpluses) always implying larger current account deficits (or smaller surpluses). Since private domestic investment and private savings will be affected by the stance of fiscal policy, particularly through its effect on the real rate of interest, this correlation between deficits and surpluses is a positive one, but should not be thought to be a "dollar for dollar" relationship. The "crowding out" effects of fiscal deficits are simply spread between the investment-savings balance and the current account of the balance of payments.

[4] Indeed, for an adverse terms of trade shock the temporary consequences will be to raise both the inflation rate and the unemployment rate. Any attempt at monetary accommodation to ease temporarily the burden on the unemployment rate will worsen the inflationary situation and, in the process, only postpone the inevitable unemployment consequences to a future period. Nevertheless, depending upon the policy choices made by the authorities in the face of this inter-temporal trade-off, adverse shocks to the real side of the economy may still in part be accommodated by variations in monetary policy. However, as we have suggested, monetary expansion to ease the output deflationary effects of these shocks, and thereby temporarily maintain employment, inevitably leads to a worsening of the price inflationary effects. There is, therefore, no escape from the stagflation consequences that such adverse terms of trade or relative price shocks generate. The distributional problem of sharing the real burden of adjustment to these shocks cannot be avoided by the use of monetary policy; indeed, this real burden of adjustment provides additional fuel to the inflationary fires which can only be kept in check if the rate of resource utilization is allowed to fall and the unemployment rate to rise, at least temporarily. By exacerbating the price inflationary consequences of adverse real shocks, monetary accommodation simply postpones the inevitable real adjustment problem; but on the political as opposed to the economic front, there may always be something to be gained in the short-run by postponing the agony. Finally, indexation of money wage rates to the consumer price index is clearly also an undesirable policy option in the face of an adverse terms of trade shock, although indexation to an index of domestic output prices need not have the same destabilising (and inflation-accelerating) effects in this context. Real shocks and indexation of money wage rates to the consumer price index are incompatible; in this sense, real shocks cannot be indexed.

[5] The viewpoint that unemployment is "inevitable" in the sense that there is little that macro-economic policy can do to prevent it from continuing clearly implies a conservative and characteristically anti-Keynesian evolution of economic ideology. Although it will be for students of the history of economic thought to explain how this evolution has come about, fundamentally it is related to the power of the simple model of the macro-economic system we have been discussing.

[6] Recent research by Craig Riddell and others clearly demonstrates not only that the Phillips curve is still with us but also that the "natural rate" hypothesis cannot be rejected. See, for example, W.C. Riddell and P.M. Smith, "Expected Inflation and Wage Changes in Canada, 1967-81", Canadian Journal of Economics, Vol. XV, August, 1982, pp. 377-394. amd David M. Lilien, "Sectoral Shifts in Cyclical Unemployment", Journal of Political Economy, Volume 90, August 1982, pp. 777-793. Further investigation of the role of catch-up effects, wage spillovers and inflation uncertainty in the whole inflationary process should prove interesting.

[7] These two questions are clearly inter-related. On the one hand, one might have come to the conclusion that the natural rate of unemployment is very high simply because of the difficulties experienced with unwinding an inflationary situation via the unemployment route (with or without wage and price controls). On the other hand, these difficulties might only reflect previous tendencies by policy-makers to under-estimate the natural rate of unemployment. Nevertheless, there are two important issues to separate, namely, to what extent is our current unemployment and inflation dilemma caused by an upwards drift in the natural rate of unemployment, and to what extent is it caused by the "long and variable lags" associated with unwinding the inflationary expectations of the community?

[8] What is fundamentally essential is to explain how adjustment processes in individual labour markets, which are largely concerned with relative wages, can give rise to absolute wage and price phenomena, thus explaining Canada's unemployment problem (and the size of the so-called "natural rate of unemployment") by unaccommodated and endogenous cost-push inflationary forces. This clearly is not easy to do. Recent research casts serious doubt upon this route for the rehabilitation of Keynesian economics. Nevertheless, if any serious challenge is to be made to the robustness of the "monetarist" model, whose stylised version has now apparently gained wide acceptance, including within the glass towers of the Bank of Canada building in Ottawa, it is along these lines that it will have to develop.

[9] See Scarfe, "Optimal Monetary Policy with a Trade-Off Function", Oxford Economic Papers, Vol. 31, March 1979, pp. 20-35.

[10] Although this last statement is true of both the United States and the Canadian economies, there are important influences on Canadian money markets and interest rates that emanate from the U.S. economy. These influences operate through the foreign exchange market. Whenever tight money in the United States leads to rising interest rates on the New York money market, the Governor of the Bank of Canada must choose whether or not to permit the value of the Canadian dollar (the exchange rate) to fall on the foreign exchange market as capital flows from Canada towards New York chasing the higher interest rates, a response which can only be prevented if the monetary screws are also tightened in Canada, thereby increas-

ing our interest rates to match the increase in New York. Generally speaking, in these circumstances, the Governor permits only a small impact to occur on the exchange rate. To do otherwise would tend to increase the cost in Canadian dollars of all those commodities that we must buy from foreign countries, and especially the United States, and this would add to our on-going inflation rate. It therefore follows that Canadian money market conditions will normally be permitted to tighten when U.S. conditions tighten, and hence that our interest rates tend to move in close parallel fashion with those in the New York money market. The reason for this is the strength and substantiality of the capital movements that would occur if we did not follow the U.S. lead in these matters.

The linkage between U.S. and Canadian interest rates, while close, is not perfect, largely because the Governor of the Bank of Canada normally tends to "lean against the wind", taking a small portion of any increase in U.S. interest rates in the form of a fall or depreciation in the international value of the Canadian dollar. In a similar manner, he also tends to permit a small portion of any fall in U.S. interest rates to appreciate or increase the value of the Canadian dollar. This "leaning against the wind" in an upwards direction is also not permitted to be too large since any substantial increase in the exchange rate would undermine the export-competitiveness of the Canadian economy, and therefore its ability to maintain a given volume of output and employment. Thus, under our current regime of managed floating exchange rates, with its implicit trade-off between permitting interest rates or the exchange rate to adjust in response to foreign monetary events, lies the age-old trade-off between inflation and unemployment. For this reason, a reaction function like equation (A) above is not inconsistent with the open economy framework.

[11] Average interest rates in Canada have remained above those in the United States reflecting Canada's higher on-going inflation rate and its continuing need for longer-term capital inflows to finance its investment programme and overall government sector deficit. In 1981, this differential was enlarged somewhat by the need to finance the Canadianization objectives and associated takeovers stimulated by the discriminatory tax and incentives system put in place under the National Energy Program; nevertheless, the financing of corporate takeovers also added to the softness of the Canadian dollar exchange rate over 1981 as a whole.

[12] Some of the symptoms of this recession have been rising levels of unsold inventories of durable goods, which have been made more difficult for business firms to carry given high interest rates, some commercial bankruptcies, increasing numbers of layoffs and rising unemployment rates. In addition to these, some commodity prices determined in competitive markets have weakened significantly. Planned investment expenditures by the corporate sector have been pared downwards in response to weakening levels of capacity utilization and reduced levels of corporate profits. These symptoms pervade most sectors of the North American economy. The reduction

in real domestic product, or aggregate output, and in overall employment will likely continue into the fourth quarter of 1982, though the recent easing of real interest rates will soon begin to push the economy towards at least a weak recovery.

[13] For a formal discussion of the rationale behind these specifications, see Scarfe, Cycles, Growth and Inflation, New York, McGraw-Hill, 1977, pp. 224-226.

[14] See Scarfe, OEP, 1979.

[15] See Scarfe, OEP, 1979.

[16] The Routh-Hurwitz conditions state that the characteristic roots of the cubic equation $k_3\rho^3 + k_2\rho^2 + k_1\rho + k_0 = 0$ all have negative real parts (as required for stability) if and only if the three principal minors of the matrix

$$\begin{bmatrix} k_1 & k_0 & 0 \\ k_3 & k_2 & k_1 \\ 0 & 0 & k_3 \end{bmatrix}$$

are all positive, provided (as may legitimately be assumed) $k_0 > 0$. That is to say, the necessary and sufficient conditions are $k_1 > 0$, $k_1 k_2 > k_0 k_3$, and $k_1 k_2 k_3 > k_0 k_3 k_3$, which, given $k_0 > 0$, imply $k_i > 0$, all $i = 0, \ldots, 3$.

In the present context, even if k_2 is positive, only particular choices of β_1 and β_2 may be able to satisfy the requirement $k_1 k_2 > k_0 k_3$.

References

Barber, C.L. and J.C.P. McCallum, Controlling Inflation, Ottawa, Canadian Institute for Economic Policy, 1982.

Courchene, T.J., P. Fortin, G.R. Sparks and W.R. White, "Monetary Policy in Canada: A Symposium", Canadian Journal of Economics, Vol. 12, November, 1979, pp. 590-646.

Courchene, T.J., Money, Inflation and the Bank of Canada, Volume II, Montreal, C.D. Howe Institute, 1981.

Economic Council of Canada, Lean Times, Policies and Constraints, Nineteenth Annual Review, Ottawa, Minister of Supply and Services Canada, September 1982.

Ekstein, O., Core Inflation, Englewood Cliffs, Prentice Hall, 1981.

Ferguson, B.L. and K.L. Gupta, "On the Dynamics of Inflation and Unemployment in a Quantity Theory Framework", Economica, Vol. 46, February, 1979, pp. 51-59.

Friedman, M., "The Role of Monetary Policy", American Economic Review, Vol. 58, March, 1968, pp. 1-17.

Friedman, M., "Monetary Policy: Theory and Practice", Journal of Money, Credit and Banking, Vol. 14, February 1982, pp. 98-118.

Hahn, F.H., "Monetarism and Economic Theory", Economica, Vol. 47, February 1980, pp. 1-17.

Laidler, D. et al, "Has Monetarism Failed?", Canadian Public Policy, Vol. 7, Special Supplement, April, 1981, pp. 215-264.

Lemche, S.Q. et al, "The Challenge of Inflation and Unemployment", Canadian Public Policy, Vol. 7, Special Supplement, April, 1981, pp. 143-214.

Lilien, D.M., "Sectoral Shifts and Cyclical Unemployment", Journal of Political Economy, Vol. 90, August 1982, pp. 777-793.

Lipsey, R.G., "The Understanding and Control of Inflation: Is There A Crisis in Macro-economics?", Canadian Journal of Economics, Vol. 14, November, 1981, pp. 545-576.

Mayer, T., The Structure of Monetarism, New York, Norton, 1978.

Modigliani, F., "The Monetarist Controversy: Or, Should We Forsake
    Stabilization Policies?", American Economic Review, Vol. 67, March,
    1977, pp. 1-19.

Okun, A.M., Prices and Quantities: A Macroeconomic Analysis, Oxford,
    Blackwell, 1981.

Parkin, M., "Canadian Monetary Policy and Fiscal Planning: Two
    Fundamental Inconsistencies", University of Western Ontario,
    Department of Economics discussion paper, May, 1982.

Purvis, D., "Monetarism: A Review", Canadian Journal of Economics, Vol.
    13, February, 1980, pp. 96-122.

Rasche, R.H., A.H. Meltzer, P.D. Sternlight and S.H. Axilrod, "Is the
    Federal Reserve's Monetary Control Policy Misdirected?", Journal of
    Money, Credit and Banking, Vol. 14, February, 1982, pp. 119-147.

Riddell, W.C. and P.M. Smith, "Expected Inflation and Wage Changes in
    Canada", Canadian Journal of Economics, Vol. 15, August, 1982, pp.
    377-394.

Scarfe, B.L., Cycles, Growth, and Inflation, New York, McGraw-Hill,
    1977.

Scarfe, B.L., "Optimal Monetary Policy with a Trade-Off Function",
    Oxford Economic Papers, Vol. 31, March, 1979, pp. 20-35.

Scarfe, B.L., "The Federal Budget and Energy Program, October 28, 1980:
    A Review", Canadian Public Policy, Vol. 7, Winter 1981, pp. 1-14.

Solow, R.M., "Alternative Approaches to Macroeconomic Theory: A Partial
    View", Canadian Journal of Economics, Vol. 12, August, 1979, pp.
    339-354.

Tobin, J., "Inflation and Unemployment", American Economic Review, Vol.
    62, March, 1972, pp. 1-18.

Waterman, A.M.C. and B.L. Scarfe, "On Applying Ockham's Razor to the
    Monetarist Controversy", Canadian Journal of Economics, Vol. 11,
    August, 1978, pp. 570-583.

8
Comments on: Monetary Policy and the Reflation Problem

David Slater,
Chairman,
Economic Council of Canada

The difficulties of the analysis and policies of analyzing stagflation implies it is really important we try to find insights from a number of approaches. Brian's paper is mainly a non-stochastic model analysis of the dynamics of macroeconomics systems and shocks and policies. It's an abstraction, it's a rough model of the relation of an equilibrium, of a deep disequilibrium system and of adjustments systems. Its basic message is that there is a high likelihood of overshooting and undershooting in the process of macroeconomic adjustment. There is a high likelihood, indeed almost a certainty that adverse conjunctures of inflation and unemployment will appear from time to time. In the sense in which the term is used in dynamic analysis there is a good possibility of potential instability of the system at least over some ranges of adjustments. Perhaps the policy implication is that a steady monetary growth rule is best - not a very good policy but maybe the best of a bad lot, but with the need for supplementation.

While there are empirical and substantive issues to raise about the model, there remain important insights. Even if we do not have economies which are subject to random and uneven shocks, the path toward equilibrium from disequilibrium will not be smooth. According to a wide range of forecasts, including those prepared by the Council, whatever paths of growth we have in an economy such as ours are not going to be steady.

If one is to attempt fine tuning of monetary policy at all, there may be very difficult transition problems when high unemployment and inflation occur together. Many are aware that in the context of simple monetary policy and discussion of the velocity of money, there has been much attention to the transition problem as one moves from higher to lower inflation. The recent meetings of the Canadian Economics Association in Ottawa (June 1982) had a number of impressive papers on the transition problem. These papers all pointed to the counterintuitive notion that the transition required both an acceleration in the rate of money supply growth and the deflationary track. What Professor Scarfe's paper does is to raise this rather counterintuitive issue from a more fundamental perspective of the dynamics of a macroeconomic model.

First a few comments on the model itself. The model and results do
depend upon the acceptance of some version of a Hick-Hansen aggregate
demand approach along with an expectations augmented Phillips curve on
the supply side. The natural rate of unemployment is also central. It
is important however to emphasize not the equilibrium properties of the
model, but its dynamics. All of us who fiddle around with this type of
analysis know that the time path and stability of adjustment depends
critically upon the parameter values chosen and shocks which are mod-
eled. I am reminded about the basic Keynesian models, and Pigou's con-
tribution, and a number of people alleged there is no such thing as an
underemployment equilibrium; eventually these Pigou effects will catch
up with the system and there will be a return to full "employment equi-
librium". The answer is maybe, but does it take 15 years and do we get
close in 5? Do these mechanisms of adjustment introduce unstability or
not? The same kind of questions must be addressed here. This is not a
criticism of the model proposed by Scarfe, but rather an indication that
we need a lot more careful and explicit work on the empirical side and
the analysis of the dynamics of these models.

Professor Scarfe does outline further directions for research. He
does note that "if the basic model and its powerful policy conclusions
are to be challenged, it is essential that this challenge be aimed in
one of two directions. The first is the challenge of the statistical
stability of the money demand function. Given the econometric litera-
ture on this subject, however, this route appears to be a non-starter.
The second is to challenge the micro economic foundations and underlying
assumptions of the expectations augmented Phillips curve and the associ-
ated natural rate hypothesis." My understanding of a fair bit of the
more recent econometric work on demand for money function is, that it is
far from a fixed conclusion that it is a highly stable function.

In speaking about the model Professor Scarfe makes the point if you
really want to get the real interest rate down, it is necessary to have
an expansion of the money supply. One must keep in mind that for the
purposes of this model a number of simplifications have been necessary.
When things like the tax system and the structure of fiscal instruments
and so on are included, it may very well be that some of these other
things do have some side effects on interest rates apart from changes in
the money supply. While this is a minor point it is something which
must be kept in mind when contemplating reality. In particular, for the
purposes of this model the tax system is set aside and the wedges that
are driven between income before and after tax and the bearing this had
upon real rates of interest, inflation rates and so forth. This is a
very large assumption and indeed if one is going to apply these models,
it is necessary to incorporate the tax system in the analysis. I do ac-
cept the view that initially, to develop the main lines of analysis the
abstraction made by Professor Scarfe is a good one.

The fundamental question of course, is whether the natural rate of
unemployment model is correct. I note two very unsatisfactory observa-
tions floating around this country at the moment. One is the prospect
mentioned in the Council's 19th Annual Review that there still be a sta-
ble unemployment rate of 10 percent coupled with an inflation rate of 7
percent over the next four or five years. Similar statements have

emerged from the Conference Board. Is it really true that the natural
rate of unemployment is 10 percent, rather than 6 1/2 percent that is
mentioned in this paper.

Now for a few empirical observations on the paper. One point made by
Professor Scarfe is that the fiscal stance in Canada has been too loose.
What is the evidence on that? Quite apart from inflation adjusted meas-
ures of government deficits, if you did nothing more than compute cycli-
cally adjusted measures of fiscal positions, you'd find for all govern-
ments together there would be a net surplus with the Federal deficit
being remarkably small. There has been no significant increase in real
government expenditure for some time, as measured by a percentage of
GNP. Increases in expenditures have been dominated by automatic respon-
ses to the weak economy and the vagaries of debt service. I would argue
that if you take the cumulative effects of changes in energy policy, the
discretionary change in Federal-Provincial fiscal stances, and expendi-
ture management, the general direction with respect to fiscal policy has
been deliberately toward tightness and restraint for some time.

In addition, a good deal of the discussion in the paper relates to
movements from a disequilibrium toward an equilibrium. The economy
seems to be always in a transitional position and the problem is really
one of identifying where we are in relation to that transition process.

I also note the massive effects that the capital outflows had upon
exchange and interest rates in 1981.

Finally with respect to the policy approach, Professor Scarfe is torn
between the notion maybe the best course for monetary policy is for a
steady growth rule, and the notion of some form of tailored interven-
tion. The upshot is what you think you really know. If you believe you
know what the dynamics are, what the responses to the various policies
in the real and expectations sense, and you think it is possible to im-
prove upon an unattended recovery, then intervention is desireable.
Professor Scarfe is pessimistic, in that he feels we should do some-
thing, but we do not know enough to pursue a better policy than a gradu-
alist supply growth rule.

9
Recent Evidence from Macroeconomic Models of the Canadian Economy*

John F. Helliwell,
Professor of Economics,
University of British Columbia

9.1 INTRODUCTION

The Canadian and world economies have more unemployed labour and capital than at any time since the 1930s, coupled with inflation rates and interest rates that have recently been at record or near-record levels. It is troubling enough to have such levels of unemployment and of inflation, but to have them both at the same time puts a double squeeze on the economy, on policy makers, and on economists. In this paper, I shall make some preliminary efforts to disentangle the causes of the current Canadian situation, and to assess some of the quantitative evidence about the likely effects of the Anti-Inflation Board (AIB), the National Energy Program (NEP) and monetary and fiscal policies. I shall use the MACE model (Helliwell et al 1982) as the main mechanism for assessing the external sources of the current economic situation, and for evaluating the AIB and the NEP, but I shall also try to draw on the available evidence from other macroeconometric models and other research efforts when assessing the impacts of fiscal and monetary policies.

The paper has six main sections. The first provides an overview of developments in econometric modelling over the past decade. The second section attempts to assess the importance of external causes of the inflationary Canadian recession of 1982. The next two sections attempt to assess the macroeconomic effects of two controversial federal policies, the Anti-Inflation Board of 1976-78 and the National Energy Program of October 1980, as modified by the federal-provincial energy agreements of September-October 1981. The two final main sections summarize the evidence, from several Canadian macroeconomic models, about the effects of government spending and of policy-determined changes in interest rates.

9.2 RECENT DEVELOPMENTS IN MACROECONOMETRIC MODELLING

The past decade has posed important challenges to macroeconomic modellers. One set of challenges has come from the world of events, and the other from the world of economic theory. The most challenging events of the world have been the 1973-74 and 1979-80 world oil price shocks, world-wide stagflation, and the highest real interest rates, the most excess capacity, and the highest unemployment rates since the 1930s. Accompanying these events was an inflation rate that followed a generally increasing trend over the decade. Most macroeconometric modellers of the 1960s lavished more attention on demand equations than on the production structures of their models. Even those relatively few models that had output and prices determined by production functions and utilization rates did not give special treatment to energy as a separate factor of production. The models were therefore ill-prepared to show the stagflationary effects of a very large increase in the relative price of an important factor of production. The large changes in relative prices, coupled with some short-run rigidity of energy use, forced macroeconomists to rethink their notions of capacity utilization, and to distinguish variations in the costs and profitability of different vintages of capital equipment.

At several stages over the past decade, substantial amounts of excess capacity have appeared, and yet the rates of increase of prices and wages have apparently been slower to fall than they were to rise. Modellers have had to disentangle the various explanations, including entrenched and possibly asymmetric price expectations, the existence of outmoded capital, and changes in previously established rates of improvement in technology and factor productivity.

From the theoretical side, conventional macroeconometric models have been attacked for their failure to embody so-called "rational expectations", whereby private agents are assumed to have knowledge of the structure of the economy, and of the processes disturbing it. If private agents are also operating under conditions of perfect competition, then rational expectations combine with competition to give the results of the "new classical macroeconomics", wherein the economy is always fully employed except for temporary deviations due to unforeseeable random events. Although "new classical macroeconomics" downplays demand factors as determinants of the level of output, the treatment of supply in these models has been almost trivially simple, with output being at last period's level adjusted by any unforeseen changes in the price of output.

The paradoxical feature of the recent theoretical challenges is that they have generally been at variance with the pattern of events, and have tended, to the extent that they have been influential, to make models less able rather than more able to deal with the major economic events and circumstances of the 1970s and 1980s. Thus the applied models of the "new classical macroeconomics" have assumed full employment (apart from surprises) at trend levels of aggregate supply, while the major economic upheavals of the past decade require models that can employ factor-based vintage models of supply to redefine potential output, and that can explain large and sustained departures from full employment.

Of the elements of the new classical macroeconomics, the only one that is supported by events of the last decade is its emphasis on the careful modelling of expectations. It is clear that the current recession has been so sharp and deep as to shatter the confidence of households, firms, and governments, and to lead to important changes in their spending behaviour. It will be surprising if conventional consumption and investment equations do not over-predict actual spending in 1982. It is even more likely that models based on "rational expectations" would over-predict spending in 1982. The current recession is probably changing the way in which expectations are being formed, but not in the "rational" way implied by the well-oiled functioning of a classical fully employed economy. It is understandable that expectations have changed, and inevitable that the households and firms are even less inclined than before to act as though they were assuming full employment as the basis for their current planning. Thus, although it is necessary for model builders to pay more explicit attention to ways in which expectations are formed, the recipes provided by "rational" or even model-consistent expectations are not likely to be of much help in explaining the widespread lack of confidence among spenders in 1982.

9.3 WAS THE 1982 RECESSION IMPORTED OR MADE AT HOME?

How much of the 1982 Canadian recession, and how much of Canadian inflation, are due to the world oil price shock of 1979-80 and the closely following recession in the major world economies? To obtain some idea of the importance of these external factors, we have done two alternative runs of the MACE model, one using actual 1979-81 and estimated 1982 values for world oil prices, and for real GNP and price levels in the United States and other OECD countries, and the second setting those variables to follow steady growth rates. In the "no oil shock" case, we have the world oil price growing at 10 percent per annum in and after 1979, all other foreign prices growing at 8 percent per annum, and real GNP growing at 3 percent in the United States and the rest of the OECD. It is also necessary to make some assumptions about what would have happened to Canadian energy prices and taxes if the world oil prices had not increased so rapidly in 1979 and 1980. Since Canadian oil prices had been increasing at $1 per barrel each six months towards the world price, and had exceeded 80 percent of the world price by mid-1979, the simplest and most natural assumption is that the Canadian price would have reached the world price and stayed there, without there being any subsequent changes to the tax and royalty structure.

Without the world oil price shock, and the subsequent world recession, the MACE results suggest that Canadian GNP in 1982 would have been more than 7 percent higher and consumer prices 4 percent lower. In the absence of the external influences, 1982 employment would have been 2.6 percent higher, the labour force .7 percent higher, and the unemployment rate 1.7 percentage points lower. These overall results reflect the net effects of an interplay of forces. Since Canada is a net energy exporter, the 1982 balance of trade in energy would have been about $2 billion smaller in the absence of the 1979-80 increases in world oil prices.

However, this would have been more than offset by larger non-energy exports and smaller interest and dividend payments to foreigners. Non-energy investment in 1982 would have been more than 18 percent higher, partly because of greater real demand with resulting pressures on capacity, and partly because of the lower nominal and real interest rates. Energy investment would have been slightly lower in real terms in the boom year of 1980, but slightly higher in subsequent years. The 1982 price of imported oil would have been $17 per barrel less, and the net wellhead price (after all taxes and royalties) about $2 per barrel less, but the general cost level would also have been lower, leading to a slightly higher level of investment in conventional oil and natural gas. In the absence of the 1979-80 world oil price increases and the subsequent increases in energy prices paid by Canadians, the average 1982 user price of energy would have been about 12 percent lower. Since the general price level would have been 4 percent lower, the relative price of energy would have been 8 percent lower. This combination of a lower relative price and higher real income would have increased 1982 energy demand by about 8 percent.

All of the above results must be treated as rough estimates, for they depend rather heavily on assumptions about how the world economy would have developed in the absence of the main features of the world recession. Nevertheless, they indicate a major role for external causes of the 1982 recession. Actual average annual real growth of Canadian GNP was less than 1 percent from 1978 to 1982. Without the external shocks, the MACE results suggest an average annual growth rate of 3 percent; three times as high as the actual rates and quite close to most estimates of Canadian potential output growth for the rest of the century.

To help separate the direct effects of the oil price shock from those of the resulting stagflation in industrial countries, we did another run in which the world oil prices rose (with the resulting conflicts and changes in Canadian energy prices and taxes) but industrial growth, general inflation rates, and interest rates in other countries followed their "no oil shock" paths. Avoiding the world stagflation would have made Canadian real GNP in 1982 5 percent higher, and consumer prices about 1 percent lower than they actually are. Thus, of the total Canadian stagflation caused by the world oil price shock and external recession, about two-thirds of the GNP loss was due to the induced world recession, while most of the extra inflation came directly from the oil price shock. The results indicate that although the oil price shock and the world stagflation both contributed to the Canadian stagflation, the world recession was the main cause of the Canadian recession and the oil price shock the main cause of the induced inflation.

9.4   THE EFFECTS OF WAGE AND PRICE CONTROLS

There have been several studies of the effects of the AIB on contract settlements, but there has been much less study of its impacts in a macroeconomic setting. The recent study by Barber and McCallum (1982) provides a step in this direction by estimating quasi-reduced-form price equations, thus attempting to combine the direct effects on wages and prices with the indirect effects flowing between wages and prices. Using the MACE model, we have taken a more structural approach. First, we looked for direct AIB and post-AIB effects in the equations for wages (which in MACE are measured as average annual earnings per employed person), for output prices, and for labour force participation. Like most others who have estimated wage equations using the AIB and post-AIB data, we found substantial direct effects on wages, and no evidence of a post-controls wage surge. Perhaps because our data are based on average earnings rather than wage settlements, we found direct effects only in the second and third years of the AIB program. These direct effects were about .03 in 1977 and .029 in 1978 in our equation (Helliwell et al., 1982, equation 3.1) for the proportionate annual change in wages. Given the .49 coefficient on the lagged change in wages, and the absence of any apparent post-controls catch-up effect, these direct AIB effects on wages cumulated to 7.4 percent of the wage level in 1979 and 9.5 percent in 1980. These effects, which are quite similar to those from other studies of the direct effects of the AIB on wage settlements[1], do not take account of the induced effects on prices, interest rates, expenditures, and so on.

To measure the macroeconomic effects of the AIB, we compared two runs of MACE, one with the AIB effects as estimated, and the other with the direct AIB effects removed. Comparison of these two runs suggest that without the AIB the average annual rate of growth of nominal wages from 1977 through 1980 would have been 5 percent greater, and the average rate of increase in consumer prices 3 percent greater. The associated effects on real GNP and the exchange rate depend significantly on how monetary policy would have reacted to the much higher rates of increase in wages and prices. In our no-AIB run, we have the Bank of Canada "leaning against the wind" and permitting some departure from the established monetary growth targets to dampen changes in the real rate of interest. Under this rule, the supply of high-powered money in 1980 in the no-AIB case is 5 percent above the actual amount. Even with this slightly accommodating policy, the additional inflation drives nominal and real interest rates well above their control solution values, thus leading to reductions in real GNP and temporary strengthening of the foreign exchange value of the Canadian dollar. Without the AIB, the MACE results suggest that in 1980 real GNP would have been 3 percent lower and nominal GNP 12 percent higher than they actually were, implying a 15 percent cumulative increase in the implicit price deflator for GNP. The unemployment rate would have been from .5 to 1.1 percentage points higher over the 1977 to 1980 period, and nominal interest rates would have been from 3 to 8 percentage points higher. Real interest rates would have been lower in 1977 and much higher thereafter, given our supposition that the Bank of Canada would have accommodated only a fraction of the increase in nominal incomes.

These results, which are rough in nature, and depend importantly on assumptions about the stance of monetary policy in the absence of the AIB, indicate that the net effect of the AIB was to make real GNP and employment higher, and to reduce nominal prices and both nominal and real wages below what they otherwise would have been. The impact on real wages reflects primarily the fact that the direct impacts of the AIB were on wages rather than prices.

9.5   THE MACROECONOMIC EFFECTS OF THE NATIONAL ENERGY PROGRAM

In section 2, it was noted that if world oil prices had not jumped up in 1979 and 1980 Canadian oil prices would probably have completed their convergence to the world levels and there would probably not have been a National Energy Program. Thus if we want to assess the macroeconomic effects of the National Energy Program itself, we need to conduct our experiments in the actual context of world oil prices and stagflation in the industrial countries. The tricky part of the assessment is to design some alternative non-NEP path for Canadian energy prices and taxes. There is also the issue of how to define the NEP. Does it involve just the NEP measures themselves, on the counterfactual assumption that these measures were acceptable to the producing provinces? Or should the macro assessment of the NEP include the retaliatory cutbacks in conventional oil production announced by Alberta two days after the NEP was introduced, the compensating additional import levy imposed by the federal government, the federal-provincial agreements of September-October 1981, the Alberta royalty adjustments of April 1982, and the federal NEP Update in June 1982? Our conclusion is that the NEP and following sequence of federal and provincial adjustments should be treated as collectively embodying the NEP, with this actual history being compared to a hypothetical policy path.

The next trick is to find a hypothetical policy path. We have chosen a fairly simple alternative to the NEP, based rather loosely on the pricing proposals made by the province of Alberta in the summer of 1980. The alternative policy involves annual wellhead price increases of $7 per barrel, in and after 1981, until the domestic price reaches 85 percent of the world price. The federal government is assumed to continue to finance the import subsidy out of general revenues.

One interesting point of comparison between the NEP and no-NEP cases is that energy prices paid by energy users are slightly higher with the NEP than without it. The NEP, as originally introduced, involved the maintenance of domestic prices substantially below world levels. Most of the subsequent revisions and compromises involved higher prices for energy users, thus increasing the size of the revenue pie to be shared by governments and the producing firms.

Because the energy prices paid by users are almost the same in the NEP and no-NEP cases, the macroeconomic effects of the NEP flow chiefly from the effect that revenue redistribution has on the spending and investment decisions of governments and of foreign and domestic energy companies. One potentially important line of macroeconomic influence

flows from the "Canadianization" aspects of the NEP. By converting the tax-based depletion allowance to an expenditure-based system of Petroleum Incentive Payments (PIP grants), and by linking the rate of incentive payment to the degree of Canadian ownership, the NEP encouraged oil industry investment by new firms, and by firms with greater Canadian ownership. This general incentive to Canadian ownership, coupled with the sharp increases in federal taxes under the NEP, and the direct role of PetroCanada, the federal government's oil company, led to substantial outflows of direct investment as foreign-owned firms sold all or part of their Canadian oil and gas interests to Canadians.

The MACE model includes an accounting for all of the pre-NEP purchases from foreign oil companies, which were responsible for increasing the Canadian-owned share of production revenues from 25 percent in 1975 to 35 percent at the time the NEP was introduced. We have a project underway to model the size, timing, and consequences of the post-NEP purchases by Canadians of foreign-owned oil and gas assets. In addition, there was also an increase in the extent of the foreign operations of energy companies operating in Canada. Many of the takeovers or "buy-backs" were financed by issuance of debt in foreign markets. The substitution of foreign-held debt for foreign-held direct investment causes a substantial worsening of the measured current account of the balance of payments, for two reasons. First, the "cost" of servicing foreign direct investment is measured in the Canadian balance of payments statistics as the flow of dividends, rather than as a flow of profits offset by a capital inflow of re-invested earnings. Second, when inflation rates are high, interest rates on nominal debts rise also, and therefore include a substantial element of capital repayment. Both of these measurement errors cause an apparent worsening of the current account of the balance of payments even if the price paid for the assets is the right one, in the sense of equalizing the present values of the interest and dividend streams. This measurement error may have real effects if it is taken as a signal of the direction and extent of the required future movements in the value of the Canadian dollar.

In the absence of measurement errors and resulting false signals, the "Canadianization" of the oil and gas industry will affect the value of the Canadian dollar adversely only if the price paid for the shares is too high, or if the drop in desired holdings by foreigners of Canadian oil and gas assets is not offset by corresponding increases in desired holdings of other direct or portfolio investments in Canada. Our research currently underway is designed to assess the extent to which the prices paid were too high or too low, in the light of various expectations about the future paths of oil prices and taxes. The current MACE modelling assumes separability of equity and debt capital flows, and separability between energy and non-energy investment within the direct investment category. Under these assumptions, purchase of foreign-owned energy firms by means of increased foreign debt will require higher Canadian interest rates, although the estimated interest elasticities of portfolio capital flows are sufficiently high that the required changes in interest rates are not likely to be very large. In any event, the macroeconomic experiments done for this paper do not include any explicit allowance for capital flows directly attributable to the NEP.

Aside from the energy price, energy demand, and revenue redistribution features of the NEP, we might expect to find macroeconomic effects flowing from changes in the pace of capital spending in the petroleum industry. There is little doubt that the post-NEP tax environment was disappointing to many oil and gas exploration firms. The energy agreements of September-October 1981 changed this situation materially in terms of incentives for new oil discoveries, by making a distinction between new and old oil and offering the world oil price for new discoveries. However, the fiscal regime remained fairly tight for old oil and gas, and there may have been some resulting cash-flow effects on investment spending, especially for those firms facing rising interest rates on new debt issued to finance previous acquisitions and investment. The MACE equations for oil and gas investment, which depend on after-tax netbacks on new discoveries, show higher netbacks without the NEP (by about $2 per barrel for oil, and 50c/mcf for gas, in 1983), and show 1983 energy investment higher by about 3 percent as a consequence. This estimate could be either high or low. Since the equations do not embody cash flow effects, they may understate the effect of the NEP on oil and gas investment. On the other hand, the gas investment equation does not take proper account of the growing inventory of discovered but unsold gas, and the NEP had its biggest negative impact on the return from natural gas. Thus the indicated no-NEP increase in investment is mainly directed towards natural gas, while the build-up of unsold gas would probably have held that investment down in any case.

In the light of the offsetting nature of the modelled macroeconomic effects of the NEP, it will not be surprising that the combined effects are not large. Real GNP is slightly larger in the no-NEP case, and the aggregate price level slightly lower, both by well under 1 percent. The price level is slightly lower without the NEP primarily because prices to energy users are slightly higher with the NEP than without it. Real GNP is higher in the no-NEP case partly for this reason and partly because of the higher energy investment. The results from the energy sectors of MACE show that the major effects of the NEP are on the distribution of energy rents rather than on the total size of either energy rents or of GNP.

With or without the NEP, the 1982 flow of economic rents from crude oil and natural gas is estimated to be about $27 billion. What the NEP does, relative to the no-NEP case reported here, is to increase the federal government's share by $6.9 billion, offset by reductions of $1.4 billion for energy users, $3.2 billion for the producing firms, and $2.2 billion for the governments of the producing provinces. We have made no attempt to model any consequences that the decline in federal revenues in the no-NEP case might have had for federal spending and tax rates. The behaviour implied by the model's current structure is that the federal government would have borrowed to finance the higher deficit and the governments of the producing provinces would have saved their additional revenues. If the federal government would have reduced its spending or increased other taxes in the no-NEP case, then this could have substantial macroeconomic implications that do not show up in our modelling.

John F. Helliwell

9.6 EFFECTS OF FISCAL POLICIES

Much of the interest in macroeconomic models lies not in their use in forecasting, in which model structure is in any event often overridden by add factors, but in their evidence about the effect of alternative policy choices. Interest is especially great in times like the present, when the economy is so far from full employment as to raise demands for active policies, but when fiscal deficits and inflation rates are already high enough to make governments chary of expansionary policies with uncertain and possibly counterproductive effects.

Over the past six years, there have been three Canadian comparative modelling exercises designed to reveal the major dynamic properties of Canadian macro models. The first project, whose preliminary results were presented at the June 1976 C.E.A. meetings (and the final results published three years later, De Bever et al. 1979) was primarily concerned with explaining why each model behaved as it did. The subsequent seminars, one in 1979 sponsored by the federal Department of Finance and one in 1982 sponsored jointly by the Department of Finance and the Bank of Canada, have drawn on a larger number of models and have been more narrowly focussed on what each model has to say about the effects of a fairly wide range of taxation, government spending, and monetary policies. A fourth source of information is provided by the Canadian segments of the various international linkage models.

Table 1 shows the first and third year government non-wage expenditure multipliers for the four models included in the 1976 project.

Table 2 shows the multipliers for the first three years for the nine models included in the 1979 seminar, while Table 3 shows the same information for the nine models used in the 1982 seminar. In all three tables, with the exception noted, the supply of money is held fixed.

For the experiments reported in Table 1 the exchange rate is held fixed, while for the 1979 and 1982 seminars the experimental assumptions involved flexible exchange rates. The right hand columns of the tables indicate the average inflationary effects (measured by the GNP deflator) as a fraction of the average GNP effects over a three year simulation period.

Table 4 shows the fiscal multipliers from the Canadian models in two versions of Project LINK, the OECD Interlink model, the Japanese Economic Planning Agency (EPA) world econometric model, and the Multicountry model of the U.S. Federal Reserve Board. These results involve a variety of exchange rate and monetary assumptions. Money supplies are held fixed in the Project LINK and MCM experiments, while interest rates are held fixed in the OECD and EPA results. Exchange rates are flexible in the OECD and EPA results, and fixed in the other experiments. Separate experiments the MCM model, and fixed in the other experiments. Separate experiments with the EPA model (reported in Tables 3.3 and 3.4 of Helliwell and Padmore 1983) show that endogenizing the exchange rate raises the fiscal multiplier for Canada by gradually increasing amounts, from 3 percent in the first year to over 30 percent in the third year.

Whether exchange rate flexibility increases or decreases fiscal multipliers depends on whether the price of foreign exchange rises or falls, and on whether devaluation raises or lowers real GNP. For most of the models, induced interest rate increases initially draw in almost

TABLE 1

Effects of Fiscal Policy: 1976 Experiments

| | Real Expenditure Multipliers | | Ratio of Average Inflation Effects to Average Real GNP Effects Over 3 Years |
	Year1	Year3	
Candide 1.2 M	1.70	1.65	.20
QFM	1.37	2.73	.29
RDX2	0.96	1.41	.70
TRACE	1.87	1.24	1.07
Mean	1.47	1.76	.56
Standard Deviation	.40	.67	.40

Simulation Period, 1961-1963.

Source: Helliwell, Maxwell and Waslander (1979, Tables 1, 2 and 3). The ratios in the right hand column are obtained by dividing the third year percentage shock minus control results for the GNP deflator by the average, over the three years, of the percentage shock minus control results for real GNP.

enough foreign capital to finance the induced imports, so that there is little change in reserves in the fixed exchange rate case, and little change in the exchange rate when the exchange rate is flexible[2]. For example, in the eight flexible exchange rate models used for the 1979 seminar, five exchange rates depreciated by 0.1 percent in the first year, one depreciated by 0.3 percent, one was unchanged, and one strengthened by 0.1 percent. By the third year, the exchange rate had depreciated by 1 percent or more in several of the cases. In almost all of the models exchange rate depreciation has an expansionary impact on both real income and prices. In general the proportionate increase in effect is greater for prices than for real GNP, so that exchange rate flexibility worsens the trade-off between output growth and inflation. For example, in the Canadian block of the Japanese EPA World Econometric Model, during the first three years of sustained government expenditure injection equal to 1 percent of real GNP, the average real multiplier under fixed exchange rates is 1.8 compared to 2.1 under flexible rates.

TABLE 2

Effects of Fiscal Policy: 1979 Experiments

	Real Multipliers With Fixed M1 And Flexible Exchange Rates			Ratio of Average Inflation Effects to Average Real GNP Effects Over 3 Years
	Year 1	Year2	Year 3	
RDX2-Bank	1.08	1.89	1.63	.46
RDX2-Finance	.99	1.31	1.54	.29
TRACE	1.56	1.49	1.50	.19
FOCUS	.92	.67	.55	.44
DRI	1.46	1.63	1.27	.29
SCQUEM	1.11	1.21	1.33	.13
CANDIDE (Informetrica)	1.85	2.38	2.41	.05
AERIC*	1.45	1.68	1.42	.06
CANDIDE-2.0 ECC	1.99	2.30	2.31	.05
Mean	1.38	1.62	1.55	.22
Standard Deviation	.38	.54	.55	.16

* Interest Rates and Exchange Rates Exogenous

Simulation Period, 1979-1981.

Source: Canada, Department of Finance, 1979.

In the third year, the expenditure price is 1.8 percent higher under fixed exchange rates and 2.8 percent higher under flexible exchange rates[3].
 One piece of additional evidence available only from the multilateral models is how much the Canadian expenditure multipliers should be adjusted to take account of the fact that Canadian policies influence other countries, leading to subsequent repercussions for the Canadian econ-

TABLE 3

Effects of Fiscal Policy: 1982 Experiments
Policy Change: A $1 Billion Increase in Non-wage Government Spending

	Real Multipliers With Fixed M1 And Flexible Exchange Rates			Ration of Average Inflation Effects to Average Real GNP Effects Over 3 Years
	Year 1	Year 2	Year 3	
RDXF	1.09	0.79	0.58	0.31
QFS	1.0	1.2	1.3	0.08
FOCUS*	1.37	1.70	1.74	0.22
DRI	1.44	1.56	1.23	0.49
TIM	1.67	1.72	-	-0.01
CANDIDE	1.98	2.26	2.24	0.08
CHASE	1.1	0.9	0.5	0.47
SAM	0.37	0.30	0.32	1.88
MACE	0.75	0.55	0.22	1.01
Mean	1.20	1.22	1.02	0.50
Standard Deviation	0.48	0.64	0.73	0.60

* With a mark-up price rule in effect
 Simulation Period 1982-84

Source: Bank of Canada and Department of Finance: Seminar on Responses of Various Models to Selected Policy Shocks, July, 1982, Ottawa.

omy. These repercussions are likely to be greatest for countries that are open and large, and are linked to trading partners with large internal expenditure multipliers. For countries like Germany and the United Kingdom, the linked own-country fiscal multipliers (which take account of the repercussions) can be from 10 to 20 percent higher than the un-

John F. Helliwell

TABLE 4

Effects of Fiscal Policy: Linkage Model Experiments

	Year 1	Year 2	Year 3	Ratio of Average Inflation Effects to Average Real GNP Effects Over 3 Years
LINK (a)	1.15	1.15	.79	.42
LINK (b)	1.38	1.36	1.37	
INTERLINK	1.27	1.49		
EPA	1.5	1.97	1.84	.36
MCM	1.04	1.00	1.00	.30
Mean	1.27	1.39		
Standard Deviation	.18	.37		

Source: Helliwell and Padmore (1982). Some of orignal results for LINK a), Hickman (1974); for LINK (b), Filatov, Hickman and Klein (1982); for INTERLINK, OECD (1980); fpr EPA, Amano et al. (1982); and for MCM, Helliwell and Padmore (1983). The simulation periods vary across the models, and are 1973- 1975 for LINK (a), 1979-1981 for LINK (b), 1980-1982 for INTER- LINK, 1974-1976 for EPA, and 1975-1977 for MCM (with similar results being obtained from 1979-1981).

linked multipliers. For Canada, however, the OECD and EPA models suggest that the induced repercussions are small enough to be safely ignored, since they increase the fiscal multipliers by 1 percent or less (Helliwell and Padmore, 1983, Table 3.2).

The results in Tables 1 and 3 show a substantial variability among models in both the size and the timing of the output and inflation consequences of changes in government spending. The average estimate of the real expenditure multiplier is about 1.5, with a standard deviation of .45 (taking the weighted average of the results in all the tables), without much change, on average, over the three year simulation horizon.

The evidence in Table 3 from the 1982 model comparison seminar suggests that average real expenditure multipliers in the first and second

years are about 1.2. The multipliers in the Economic Council's CANDIDE model and the Informetrica TIM model average 1.8 in the first year and almost 2.0 in the second year. At the other extreme, the two newer aggregate annual models with an explicit treatment of energy in their production functions (MACE and the Bank of Canada's SAM model) have multipliers that are below 1.0 in the first year and do not rise thereafter.

The estimates of the inflationary effects are even more widely varied, ranging from next to nothing (with CANDIDE) to as much inflation as additional GNP (with the EPA model), with the average being less than half as much inflation as additional GNP.

In the current environment of deep recession and substantial current government deficits, there is some concern, both inside and outside governments, that the positive employment and output effects of additional fiscal stimulus would be partially, and perhaps completely, offset by the impact of a larger deficit on the already fragile state of business confidence. While some models provide for a role for the size of the government's debt as a determinant of interest rates, none provide any channel whereby current fiscal deficits trigger private sector expectations of changes in the long-run size and distribution of national income. It is not clear how such channels should be modelled, or even whether they are important to those actually making household and business spending decisions.

9.7 THE EFFECTS OF MONETARY POLICY

The recent coexistence of high interest rates, both nominal and real, and sharp recession has once more focussed attention on the timing and nature of the impacts of interest rates on output and inflation. To what extent has tight money contributed to the current recession? What are the links between monetary policy and inflation? Most modern macroeconometric models involve something approaching proportionality between nominal GNP and some measure of the money supply, especially over the medium to longer term. Over the short and medium term the models differ substantially in their split between real and price effects of changes in the money supply. In the short term, most models show that changes in the money supply give rise to substantial changes in real and nominal interest rates, and hence to changes in the ratio of the money supply to nominal GNP.

Table 5 summarizes the evidence on monetary policy in Canada. The policy change in each case, except where noted, is a 1 percent reduction in short term interest rates. The results reported in Table 5 are from the 1979 model comparison seminar and from the Japanese EPA World Econometric Model, while the results in Table 6 are from the 1982 seminar. The first three columns show the resulting effects on real GNP during each of the first three years. The fourth column shows, as in Tables 1 to 4, the inflation/output trade off by reporting the average inflation effects as a ratio to the average real GNP effects over the three years of the policy. The fifth column shows the third year change in nominal GNP as a ratio to the third year change in M1 or a similar narrowly defined measure of the money supply. The sixth column, at the right hand

John F. Helliwell

9.8 CONCLUSION

The main purpose of this paper has been to see what can be learned, from recent econometric models, about the causes of the current inflationary recession in Canada, and about the likely effects of the main economic policies. The MACE model was used to measure the role of external factors in the current Canadian stagflation, to analyze the macroeconomic effects of the Anti-Inflation Board (the AIB, in force from October 1975-1978) and the National Energy Program (the NEP, introduced October 1980 and revised on several occasions since). The evidence indicated that the world oil price shock of 1979-80 and the world economic recession have together had the effect of reducing Canadian real 1982 GNP by 7 percent and increasing the consumer price level by 5 percent. The evidence in section 3 suggested that without the AIB the wage level in 1980 would have been 22 percent higher, consumer prices 13 percent higher, the unemployment rate .6 percentage points higher, and real GNP 3 percent lower. The macroeconomic effects of the NEP, by comparison, were found to be rather small, at least on the basis of the evidence assembled so far. If there are larger effects to be found, they may flow from the effects of the NEP on capital flows, and hence on the exchange rate and monetary policy, or from the impact of the NEP tax changes on the revenue positions of the federal and provincial governments.

Sections 5 and 6 presented a review of what recent macroeconomic models have to say about the real GNP and price effects of fiscal and monetary policies. Real government expenditure multipliers were found in the 1979 experiments to average about 1.5, over the first three years, with the proportionate effects on prices being substantially less than on real GNP. The set of models evaluated in 1982 gives more diverse estimates of fiscal multipliers, ranging widely about averages of 1.2 in the first two years and 1.0 in the third year. The price effects of fiscal policy, relative to the real GNP effects, in the 1982 experiments are almost twice as high as in the 1979 experiments. This reflects primarily the priorities of the new models added rather than changes in the results from one version to the next of the same model.

For monetary policy, there is somewhat less evidence, and it is diverse in nature. In general, the models indicate that the real and price effects of monetary policy tend to build up more slowly than for fiscal policy. Three years after a sustained 1 percent reduction in short-term interest rates, real GNP is higher by about .5 percent and prices lower by about .25 percent, with substantial variation among models.

Table 6

Effects of Monetary Policy on Output and Inflation: 1982 Experiments

Policy Change: A 1% Reduction in Short-term Interest Rates

	Effects on Real GNP			Ratio of Average Inflation Effects to Average Real GNP Effects Over 3 Years	Ratio of Third-Year Nominal GNP Effects to Third-Year Money Supply Effect	Induced Increase in The Price of Foreign Exchange Cc/US$ 3rd Year
	Year 1	Year 2	Year 3			
RDXF	0.26	0.53	0.55	0.72	0.46	2.72
QFS	0.19	0.39	0.46	0.86	0.39	4
FOCUS	0.35	1.16	2.42	1.27	0.73	11.7
DRI	0.09	0.30	0.30	0.71	0.94	3
TIM	0.24	0.38	0.41	-0.26	0.02	0.8
CANDIDE	0.0	0.13	0.25	1.125	0.33	1.1
CHASE	0.2	0.4	0.2	1.00	0.38	2.0
SAM	0.35	0.10	0.07	5.44	2.36	2.0
MACE	0.24	0.40	0.45	0.15	2.58	1.1
Mean	0.21	0.42	0.57	1.22	0.91	3.2
Standard Deviation	.11	.31	.71	1.65	0.92	3.4

Simulation Period 1982-84

Source:
Bank of Canada and Department of Finance: Seminar on Responses of Various Models to Selected Policy Shocks, July, 1982, Ottawa.

Notes

* An earlier version of this paper was presented at the Conference "Economic Policies for the 1980s", Winnipeg, October 28-29, 1982. I am grateful for the assistance of Mary MacGregor in preparing both the original and revised versions. In revising and updating Sections 5 and 6, I have been assisted greatly by comments and data from several modellers, especially Joan Head, Mike McCracken, and Ross Preston.

[1] Auld, Christofides, Swidinsky, and Wilton (1979) in their analysis of the effect of the AIB on wage settlements between 1975Q4 and 1977Q3 find statistically significant effects of 2.5 percent to 3.5 percent per annum, or .025 to .035 in terms of proportions. Reid (1979) shows somewhat larger effects, averaging .045 proportionate reduction in wage settlements during the AIB period. The more recent study by Riddell and Smith (1982) estimated the AIB effect to be .02 per year over the three-year control period. Their estimate of the cumulative direct effect is thus about 6 percent, slightly lower than that implied by MACE and most of the other studies. Both MACE and the Riddell/Smith study include two years of post-controls data, and neither finds any evidence of a post-controls wage bubble.

[2] This implies, in terms of the textbook diagram used to explain internal and external equilibrium, that the LM and BP curves have quite similar slopes, at least for the first year or two.

[3] Derived from Tables 3.2, 3.3 and 3.4 of Helliwell and Padmore (1983). Original results from Amano et al. (1982).

References

Amano, Akihiro, Akira Maruyama and Masura Yoshitomi, eds, EPA World Economic Model, Volumes I and II (Economic Planning Agency, Tokyo), 1982.

Auld, D.A.L., L.N. Christofides, R. Swidinsky, and D.A. Wilton, "The Impact of the Anti-Inflation Board on Negotiated Wage Settlements" Canadian Journal of Economics 12:1979, pp. 195-213.

Barber, C.L., and J.C.P. McCallum. Controlling Inflation: Learning From Experience in Canada, Europe and Japan. 1982, (Canadian Institute for Economic Policy: Ottawa).

De Bever, L., D.K. Foot, J.F. Helliwell, G.V. Jump, T. Maxwell, J.A. Sawyer, and H.E.L. Waslander. "Dynamic Properties of Four Canadian Macroeconomic Models: A Collaborative Research Project", Canadian Journal of Economics 12:1979, pp. 133-194.

Canada, Department of Finance (1979) Papers presented at seminar on policy simulations sponsored by the fiscal policy division of the Department of Finance on April 6, 1979. (Department of Finance, Ottawa) Filatov, Victor, Bert G. Hickman, and Lawrence R. Klein (1982) "Long-term simulations with the Project Link System, 1978-1985", in B.G. Hickman, ed., Global International Economic Models. (Proceedings of the 8th IIASA Symposium on Global Modeling).

Helliwell, John F., T. Maxwell and H.E.L. Waslander "Comparing the Dynamics of Canadian Macromodels", Canadian Journal of Economics 12:1979, pp. 181-94.

Helliwell, John F., and Tim Padmore "Empirical Studies of Macroeconomic Interdependence", Chapter 21 of P.B. Kenen and R.W. Jones, eds., Handbook of International Economics, 1983. (North-Holland, Amsterdam).

Helliwell, John F., R.N. McRae, P. Boothe, A. Hansson, M. Margolick, T. Padmore, A. Plourde, and R. Plummer (1982) "Energy and the National Economy: An Overview of the MACE Model" Presented to the Annual Meetings of the Canadian Economics Association, Ottawa, June 4th, 1982.

Hickman, Bert G. "International Transmission of Economic Fluctuations and Inflation", in Albert Ando, Richard Herring and Richard Marston, eds., International Aspects of Stabilization Policies. (Federal Reserve Bank, Boston), 1974, pp. 201-231.

OECD (1980) "Fiscal Policy Simulations with the OECD International
    Linkage Model: Incomes Policy in Theory and Practice" (OECD,
    Paris).

Reid, Frank. "The Effect of Controls on the Rate of Wage Change in
    Canada", Canadian Journal of Economics 12: 1979, pp. 214-27.

Riddell, W.C., and P.M. Smith. "Expected Inflation and Wage Changes in
    Canada", Canadian Journal of Economics 15: 1982, pp. 377-94.

Stevens, Guy, Richard Berner, Peter Clark, Ernesto Hernandez-Cata,
    Howard Howe, and Sung Kwack. "The U.S. Economy in an Interdependent
    World: A Multi-Currency Model" (Federal Reserve Board, Washington),
    1982.

10
Comments on: Recent Evidence from Macroeconomic Models of the Canadian Economy*

David Slater,
Chairman,
Economic Council of Canada

This paper is typical of the splendid work we have come to associate with Professor Helliwell. In the first part of the paper, he refers to a number of things we must keep in mind when attempting to construct macroeconometric models. To his list I would add that we must pay more attention to the relationships between financial and real sectors. Much work remains in this regard. Also, we should try to graft onto these econometric models some of the capabilities which are emerging from the general equilibrium models of tax and allocation. Third, there are some very serious gaps in the handling of the dynamics of macro models. We are not quite so crude as we once were in the handling of lagged relationships, however we still have a long way to go in developing the appropriate methods for modelling dynamic adjustment.

The partitioning that was done by John with his base model among the various kinds of factors, external and internal, such as the NEP and AIB, broadly speaking, did not give us surprising results. As is noted in the paper, the latest experiments with a number of the recently developed models does indicate some divergence in the treatment of quantity price-splits. These typically give less output and more price reaction as compared to models of a decade ago. As is noted by Professor Helliwell, in the analysis of the NEP, the effects on capital flows is not factored into the simulations, although this work is in progress.

The single thing which emerges from this paper, is that as long as we expect to get orders of magnitude and general indication of directions of change, then we are on the right track. If we expect precise forecasts of major indicators three or four years out we are going to be very badly off the mark.

Appendix A
Glossary

Add Factor- Used in the context of tuning simulation models. A model may consistently over- or underpredict actual values. This situation is often rectified by introducing a constant term in the equation which simulates poorly in a consistent fashion. Otherwise known as technical adjustment coefficient or "fudge factor".

Bourgeois Economy- A vaguely derogatory term used by by political economists (left wing) to describe a capitalistic economy.

Capacity Utilization Rate- Ratio of capital (plant and equipment) employed to the total capital stock.

Crowding Out Effect- Any hypothesis which states that increases in government spending lead to a rise in the interest rate. This has the effect of reducing or "crowding out" private investment so that the net effect on national income may be less than the amount of increase in government spending. In the extreme case, government spending completely displaces private investment so that the net effect on national income of this increased spending is zero.

Fiscal Policy- Tax and government expenditure policies designed to change the equilibrium level of income.

High Powered Money- The monetary base, currency in the hands of the public and bank reserves.

Induced Effects- A change in one variable which is caused (or induced) by changes in another variable.

M1- Currency plus demand deposits.

M1B- Currency plus all chequable deposits.

Macroeconometric Model- An econometric representation of a macroeconomic model.

Monetary Gradualism- A monetary policy which enacts incremental changes in money supply growth towards a target rate.

Monetary Policy- Control of monetary aggregates to achieve either stability in prices, exchange rates or interest rates. This is normally accomplished through open market operations.

Multiplier- The numerical coefficient showing how much above unity is the increase in income resulting from an increase in investment (public and private).

Natural Rate of Unemployment- The rate of unemployment associated with the equilibrium real wage. In this model, all unemployment is voluntary. Also termed the non-accelerating rate of unemployment.

Neo-Austrian Economics- Also called New Classical Economics. This school of economic thought assumes no wage or price rigidities and clearing markets. Economic agents fully understand the structure of the economy so that they know that demand shifts only change the price level.

Pareto Optimality- An organization of trades such that any change which makes some people better off makes some others worse off. That is, an organization is Pareto optimal if, and only if, there is no change that will make one or more better off without making anyone else worse off.

Phillips Curve- Depicts the tradeoff between unemployment and price-wage inflation.

Positive Economics- Economic analysis which proceeds by empirical testing. No normative or value judgements are made in policy prescriptions.

Quantity Theory of Money- A definitional statement which equates nominal GNP to the flow of money. $MV = PQ$ where M=supply of money, V=velocity of money, P=price level and Q=output. By rearranging terms we obtain $P = kM$ which is the statement that inflation is a monetary phenomenon.

Rational Expectations- A class of models in which individuals understand the structure of the economy and fully anticipate the effects of changes in macroeconomic policy. In effect they are able to correctly guess the impact of announced changes in monetary and fiscal policy. Monetarists use this assumption to argue that the central bank cannot run an independent monetary policy.

Reaction Function- A mathematical function which depicts how observed behaviour varies (or reacts) with changes in policy in the environment.

Real Interest Rate- Observed interest rate minus the rate of change in the price level.

Reduced Form Equation- Structural econometric models are composed of behavioural equations (eg. the consumption function) and identities (Y = C + I + G + (X - M)). Behavioural equations are composed of endogeneous variables (effects) and exogenous variables (causes) on both sides of the equations. A reduced form equation is the result of a mathematical manipulation in which the endogeneous variable is made a function of only a set of exogenous variables and a random error term.

Stagflation- Concomitant high rates of unemployment and inflation.

Stylized Facts- The reduction of complex reality to a smoothed set of facts. For example, inflation rates actually are different for every consumer simply by virtue of their varying consumption behaviour (none of us buys exactly the same set of goods). Thus, the inflation rate as measured by the consumer price index is a "stylized fact". Aggregation of diverse economic indicators into a single leading economic indicator of the business cycle is also a stylized fact.

Appendix B
Facts and Figures on Economic Performance of Canada since 1970

TABLE 1

OUTPUT AND PRICE INDICATORS

MONTH	GNP	REAL GNP	PERCENT CHANGE REAL GNP	PERCENT CHANGE GNP DEF	PERCENT CHANGE IN CPI	PERCENT CHANGE IMPORT PRICES	OUTPUT PER PERSON EMPLOYED
MAR70	19679	20526	.	.	.	.	2.61
JUN70	21221	21875	.	.	.	.	2.76
SEP70	22748	23582	.	.	.	.	2.96
DEC70	22037	22407	.	.	.	.	2.82
MAR71	20892	21428	4.4	2.9	1.9	-0.4	2.68
JUN71	23176	23178	6.0	3.5	2.4	0.7	2.87
SEP71	25563	25376	7.6	2.7	3.5	3.9	3.11
DEC71	24819	24468	9.2	3.5	5.0	3.0	2.96
MAR72	23470	22946	7.1	4.8	4.7	4.2	2.76
JUN72	25965	24907	7.5	4.2	4.1	2.9	2.99
SEP72	27999	26323	3.7	5.4	5.2	2.2	3.15
DEC72	27800	26072	6.6	5.6	5.1	3.4	3.07
MAR73	27070	24917	8.6	6.5	6.0	3.8	2.87
JUN73	29898	26581	6.7	8.6	8.1	7.1	3.01
SEP73	33371	28170	7.0	9.8	8.6	9.8	3.21
DEC73	33221	28144	7.9	11.6	9.1	10.7	3.15
MAR74	32433	26430	6.1	13.6	10.3	15.5	2.93
JUN74	35698	27831	4.7	15.6	11.4	18.3	3.06
SEP74	40799	28926	2.7	16.9	10.8	22.5	3.15
DEC74	38598	28491	1.2	15.0	12.5	25.8	3.08
MAR75	36359	26298	-0.5	13.0	11.3	22.6	2.86
JUN75	39496	27913	0.3	10.3	10.3	18.1	3.00
SEP75	45975	29760	2.9	9.7	10.6	12.5	3.18
DEC75	43513	29034	1.9	10.2	9.5	6.4	3.08
MAR76	42439	27783	5.6	9.8	9.0	2.7	2.93
JUN76	46762	29743	6.6	10.7	7.8	0.8	3.14
SEP76	52367	31449	5.7	9.0	6.5	-0.2	3.30
DEC76	49463	30274	4.3	8.7	5.8	1.2	3.19
MAR77	47308	28475	2.5	8.1	7.4	7.6	2.98
JUN77	50793	30079	1.1	7.1	7.8	10.7	3.12
SEP77	56729	32044	1.9	7.1	8.4	14.3	3.30

MONTH	GNP	REAL GNP	PERCENT CHANGE REAL GNP	PERCENT CHANGE GNP DEF	PERCENT CHANGE IN CPI	PERCENT CHANGE IMPORT PRICES	OUTPUT PER PERSON EMPLOYED
DEC77	54038	31164	2.9	6.0	9.5	16.5	3.20
MAR78	52017	29398	3.2	6.5	8.8	13.6	2.98
JUN78	56016	31070	3.3	6.1	9.2	12.3	3.12
SEP78	62764	33454	4.4	6.4	8.6	12.1	3.33
DEC78	59693	32269	3.5	6.9	8.4	14.6	3.17
MAR79	58375	30597	4.1	8.0	9.3	14.1	2.98
JUN79	63794	31975	2.9	10.0	8.9	11.8	3.10
SEP79	70902	34085	1.9	11.2	9.6	14.9	3.26
DEC79	68505	33193	2.9	11.8	9.8	14.5	3.14
MAR80	66464	30977	1.2	12.1	9.3	16.1	2.93
JUN80	70194	31823	-0.5	11.3	10.1	18.4	3.00
SEP80	78705	34030	-0.2	10.6	10.7	14.1	3.17
DEC80	76506	33637	1.3	10.3	11.2	11.8	3.11
MAR81	74869	31695	2.3	10.3	12.5	11.8	2.90
JUN81	79896	33452	5.1	9.1	12.8	12.2	3.04
SEP81	90735	35485	4.3	9.9	12.5	12.0	3.24
DEC81	85838	33908	0.8	11.1	12.1	8.4	3.13
MAR82	80771	30654	-3.3	11.2	11.6	5.0	2.86
JUN82	84072	31629	-5.4	10.8	11.2	3.5	2.99
SEP82	94543	33794	-4.8	10.3	10.4	3.9	3.23
DEC82	89539	31980	-5.7	10.4	.	3.8	3.07

PERCENT CHANGES ARE FROM ONE QUARTER TO SAME QUARTER LAST YEAR
GNP IS EXPRESSED IN MILLIONS OF DOLLARS

SOURCE: STATISTICS CANADA, CANSIM-UNIVERSITY BASE

TABLE 2

GENERAL ECONOMIC INDICATORS

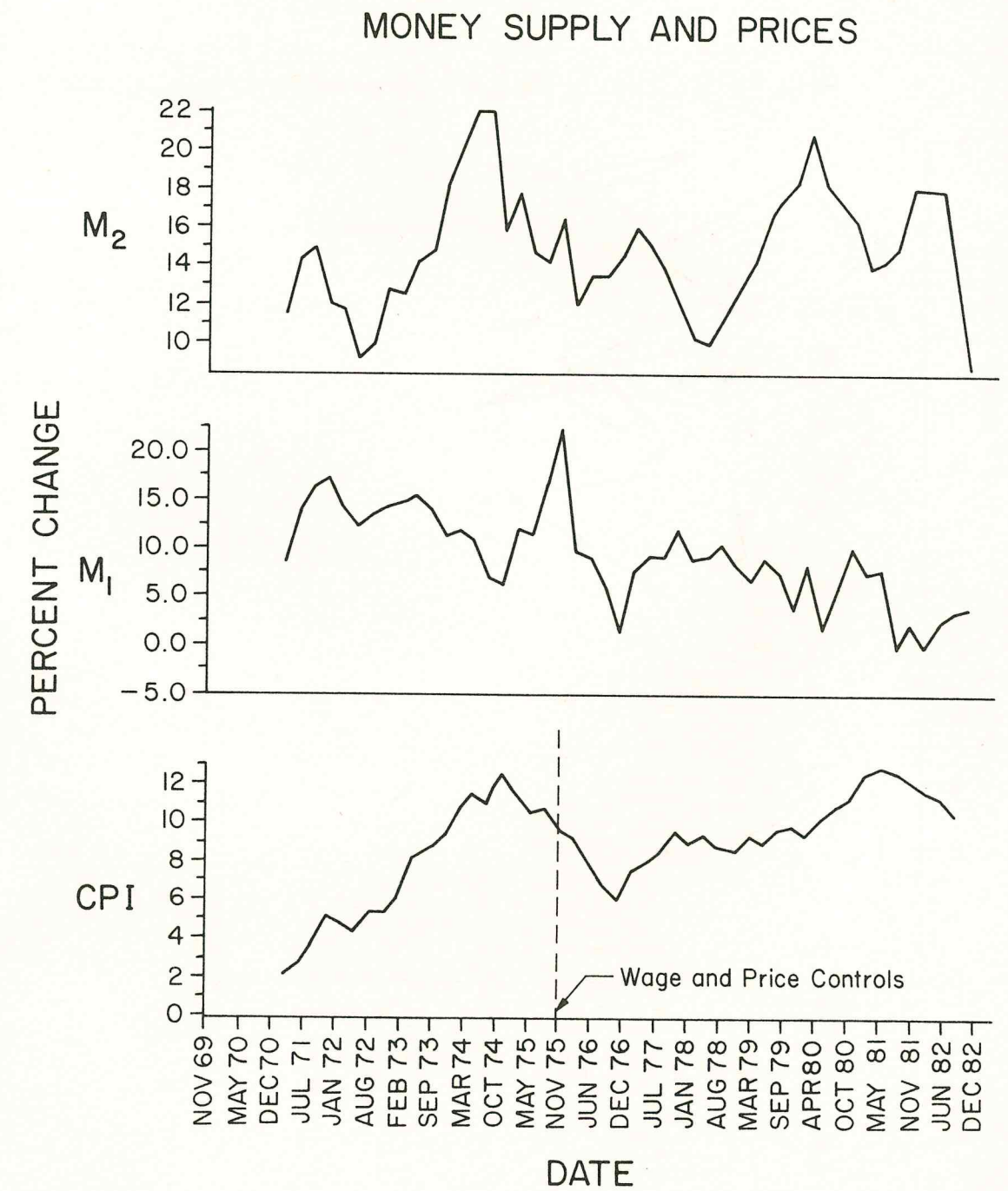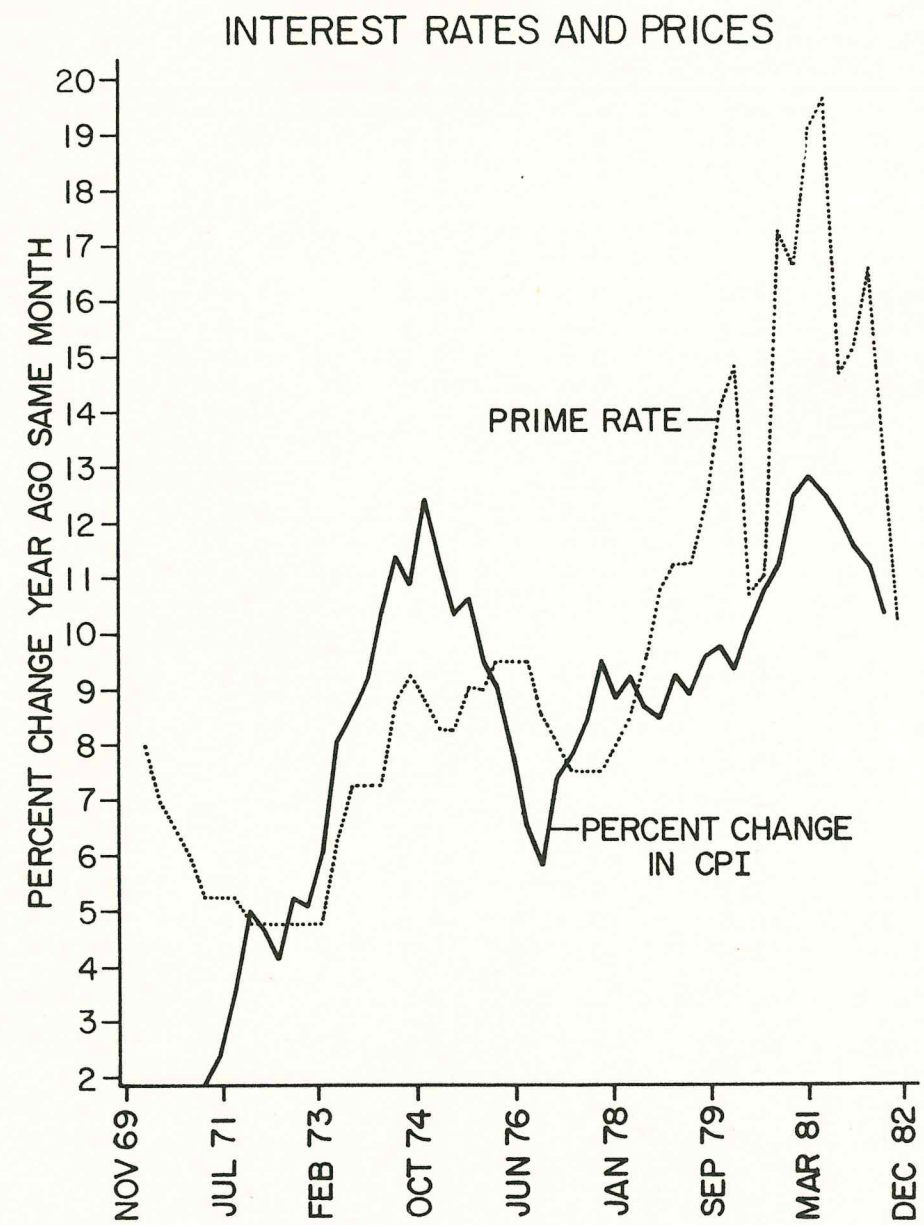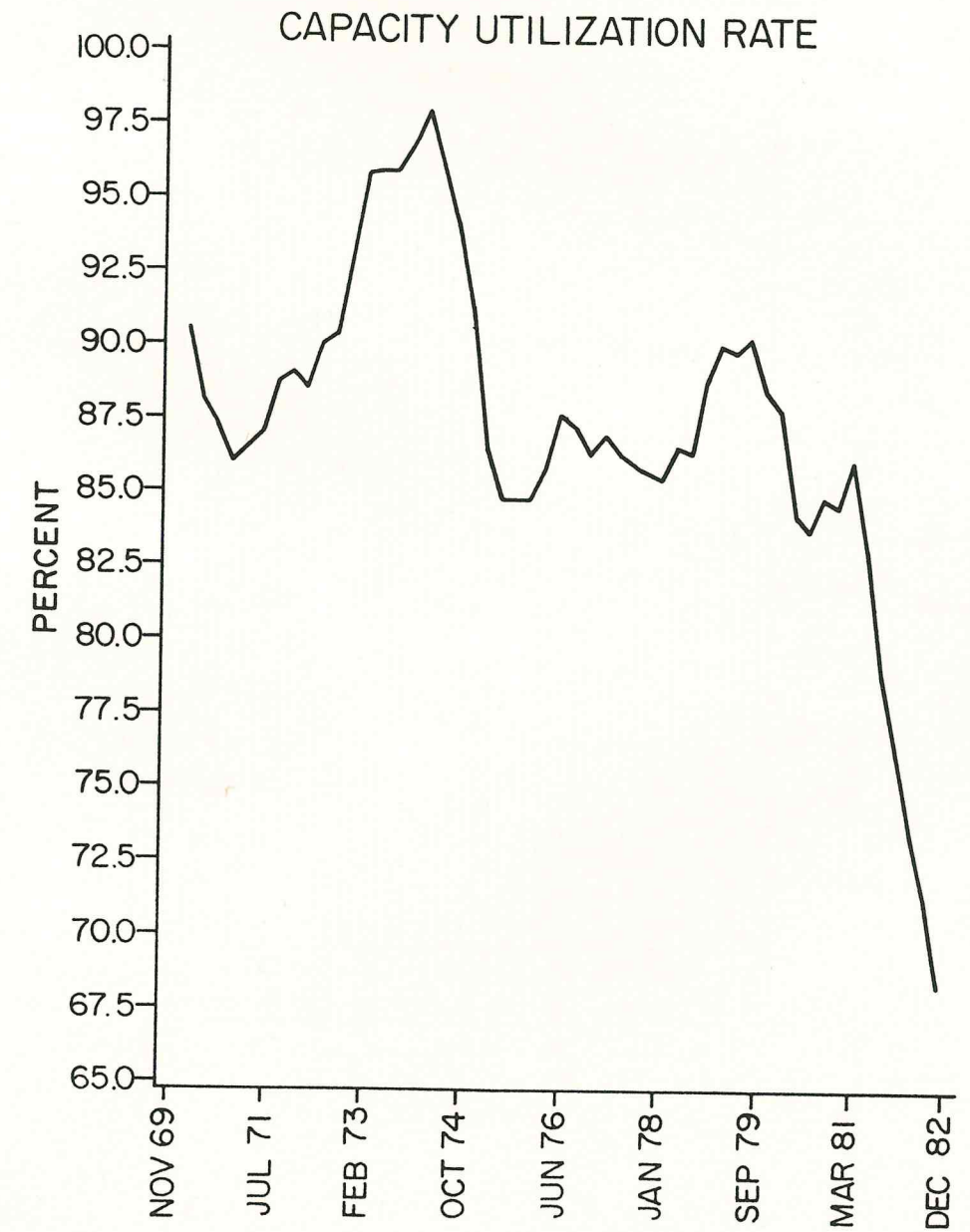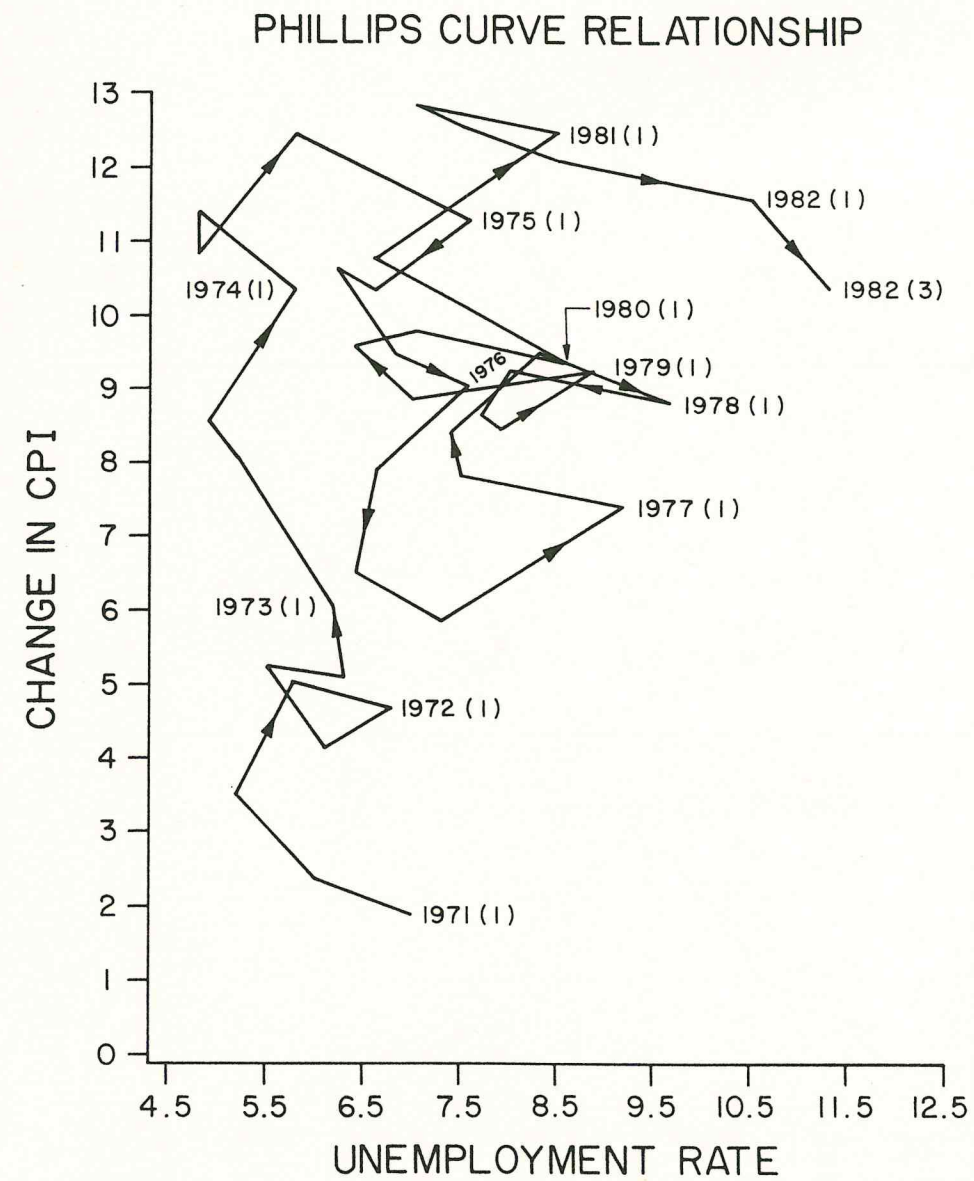|	UNEM-PLOYMENT RATE	EXCHANGE RATE	PERCENT CHANGE IN M1	PERCENT CHANGE IN PRICE PER UNIT LABOR COST	PRIME RATE	PERCENT CHANGE IN WAGES	CAPACITY UTILIZATION RATE	REAL RETAIL TRADE
MAR70	5.9	1.07	.	-0.2	8.0	.	90.6	0
JUN70	6.0	1.04	.	-0.3	7.0	.	88.1	0
SEP70	4.9	1.02	.	-0.4	6.5	.	87.2	0
DEC70	6.1	1.02	.	-0.6	6.0	.	86.0	0
MAR71	7.0	1.01	8.9	-0.6	5.3	7.8	86.5	0
JUN71	6.0	1.02	13.9	-0.3	5.3	8.8	87.0	0
SEP71	5.2	1.01	16.5	0.1	5.3	6.8	88.7	0
DEC71	5.8	1.00	17.4	0.5	4.8	4.1	89.1	0
MAR72	6.8	1.00	14.2	0.5	4.8	2.6	88.5	7733892
JUN72	6.1	0.98	12.3	0.4	4.8	1.6	90.0	8210992
SEP72	5.5	0.98	13.6	0.2	4.8	2.8	90.4	8025027
DEC72	6.3	1.00	14.3	0.1	4.8	4.1	93.3	8292330
MAR73	6.2	1.00	14.8	0.3	4.8	3.8	95.8	8334071
JUN73	5.2	1.00	15.5	0.6	6.3	3.4	95.9	8438802
SEP73	4.9	1.01	14.1	1.0	7.3	1.6	95.9	8306721
DEC73	5.2	1.00	11.2	1.0	7.3	-0.6	96.7	8623084
MAR74	5.8	0.97	11.8	0.9	7.3	0.4	97.9	8790600
JUN74	4.8	0.97	10.8	0.9	8.8	0.8	95.9	8853185
SEP74	4.8	0.99	7.0	0.8	9.3	4.0	93.8	8997780
DEC74	5.8	0.99	6.2	0.3	8.8	3.9	91.1	8717851
MAR75	7.6	1.00	12.2	-0.3	8.3	5.9	86.3	8998867
JUN75	6.6	1.03	11.5	-0.7	8.3	7.0	84.7	9028520
SEP75	6.2	1.03	16.2	-0.8	9.0	6.0	84.7	9177630
DEC75	6.8	1.01	22.2	-0.6	9.0	5.8	84.7	9493710
MAR76	7.6	0.99	9.7	-0.4	9.5	6.5	85.7	9244995
JUN76	6.6	0.97	9.1	-0.3	9.5	6.8	87.6	9570091
SEP76	6.4	0.97	6.2	-0.2	9.5	5.3	87.2	9492543
DEC76	7.3	1.02	1.2	-0.2	8.5	6.6	86.2	9616158
MAR77	9.2	1.05	7.5	-0.1	8.0	3.5	86.9	9560525

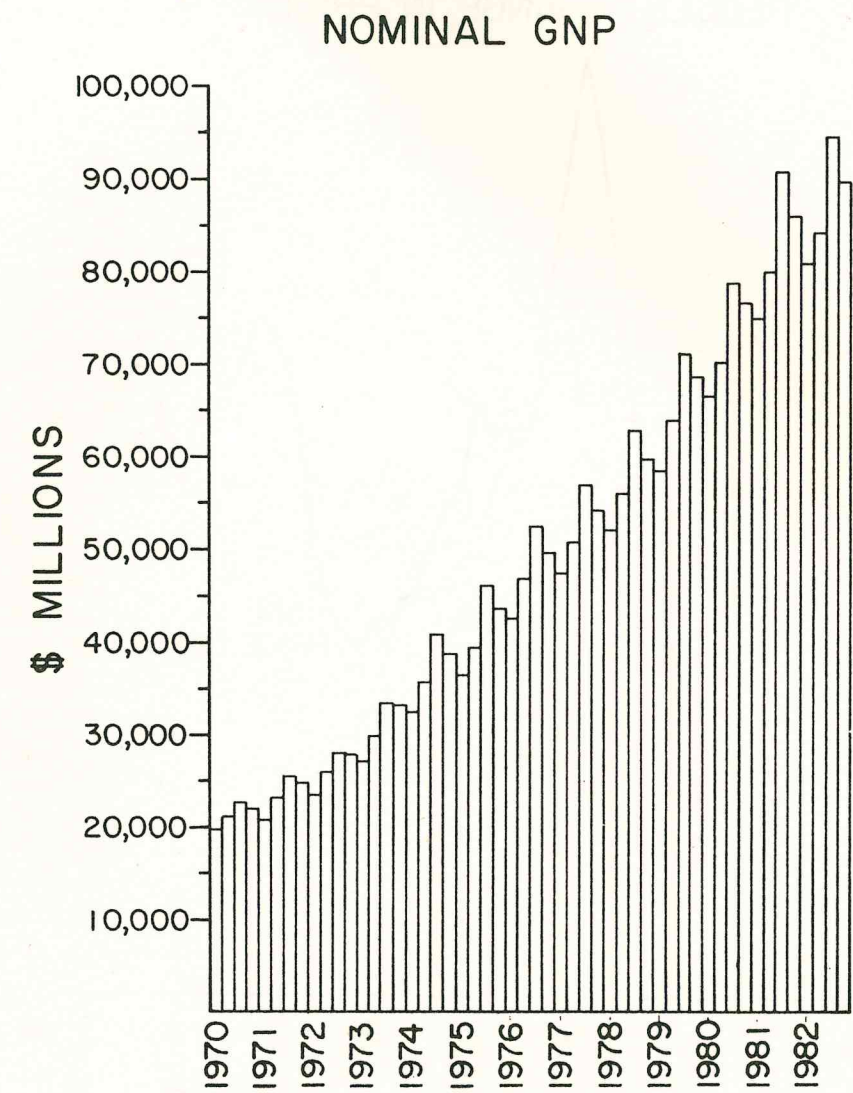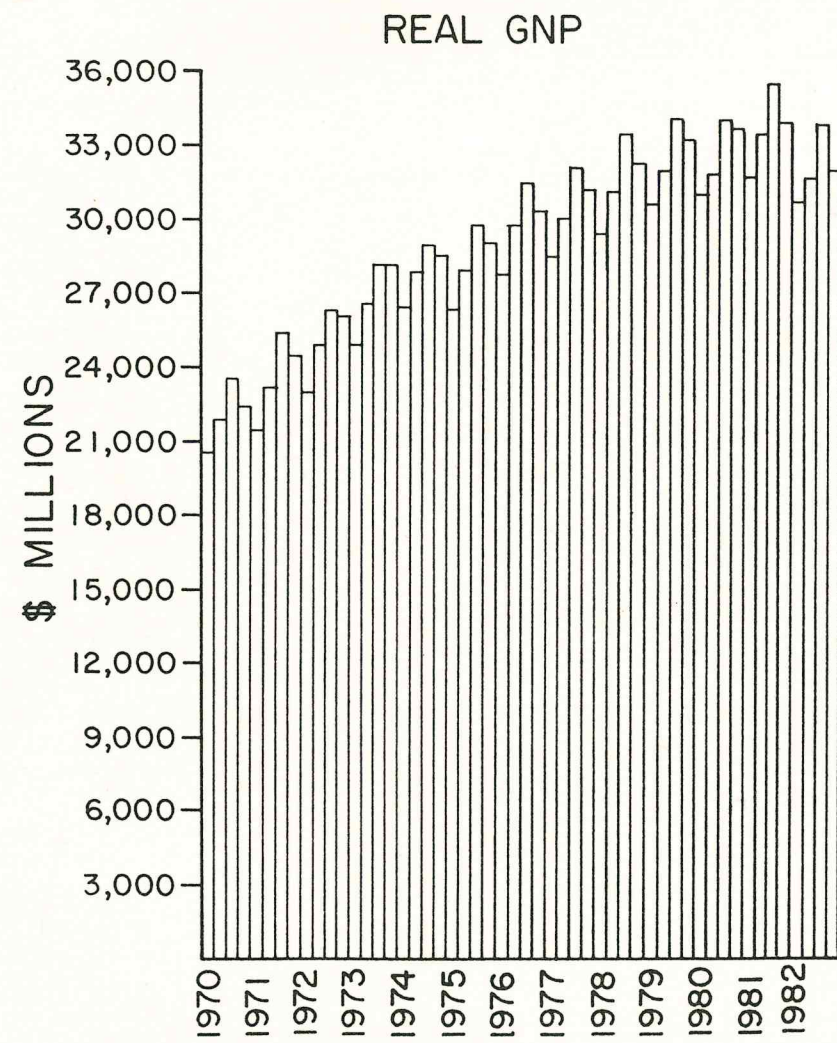TABLE 2

GENERAL ECONOMIC INDICATORS

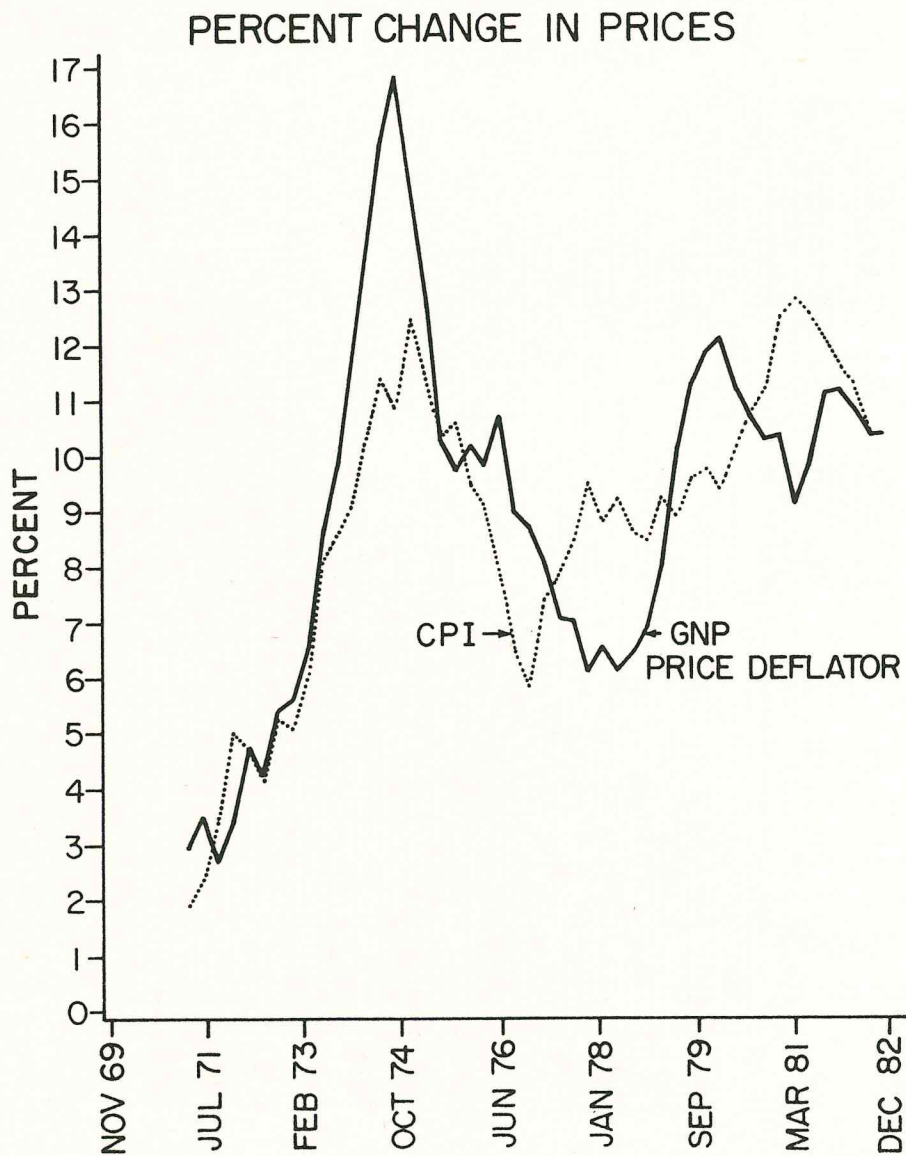|	UNEM-PLOYMENT RATE	EXCHANGE RATE	PERCENT CHANGE IN M1	PERCENT CHANGE IN PRICE PER UNIT LABOR COST	PRIME RATE	PERCENT CHANGE IN WAGES	CAPACITY UTILIZATION RATE	REAL RETAIL TRADE
JUN77	7.5	1.06	9.2	0.1	7.5	3.3	86.3	9405964
SEP77	7.4	1.07	9.1	0.2	7.5	2.6	85.9	9455039
DEC77	8.3	1.10	12.0	0.2	7.5	-0.1	85.6	9528161
MAR78	9.7	1.13	8.8	0.2	8.0	-1.3	85.4	9592301
JUN78	8.0	1.12	9.1	0.4	8.5	-3.3	86.5	9723145
SEP78	7.7	1.17	10.6	0.6	9.5	-1.9	86.3	9867014
DEC78	7.9	1.18	8.3	0.7	10.8	-1.1	88.8	9803238
MAR79	8.9	1.17	6.6	0.8	11.3	-0.6	90.0	9953748
JUN79	7.0	1.17	9.1	0.8	11.3	0.0	89.7	10007018
SEP79	6.4	1.17	7.5	0.6	12.3	-0.2	90.2	10062658
DEC79	7.0	1.17	3.5	0.4	14.0	-1.4	88.4	9934646
MAR80	8.6	1.17	8.4	0.3	14.8	0.9	87.7	9847769
JUN80	7.5	1.15	1.5	0.2	10.7	0.2	84.2	9622656
SEP80	6.6	1.16	6.1	-0.0	11.0	0.2	83.6	9904386
DEC80	7.1	1.20	10.4	-0.1	17.3	1.3	84.8	9978388
MAR81	8.5	1.19	7.4	-0.0	16.6	-1.3	84.5	10111374
JUN81	7.0	1.20	7.7	0.1	19.1	0.6	86.1	9927646
SEP81	7.5	1.20	-0.6	0.1	19.6	0.2	83.0	9738560
DEC81	8.5	1.19	2.3	-0.1	14.7	0.5	78.8	9646740
MAR82	10.5	1.22	-0.3	-0.7	15.1	1.7	76.1	9327538
JUN82	10.7	1.28	2.4	-1.0	16.6	-0.2	73.5	9154679
SEP82	11.3	1.23	3.5	-0.6	13.2	-0.2	71.2	9143156
DEC82	12.7	1.24	3.8	-0.1	10.3	.	68.3	.

PERCENT CHANGES ARE FROM ONE QUARTER TO SAME QUARTER LAST YEAR
CHANGE IN WAGES IS AN UNWEIGHTED AVERAGE OF THE CHANGE IN HOURLY WAGES IN MINING, MANUFACTURING AND CONSTRUCTION
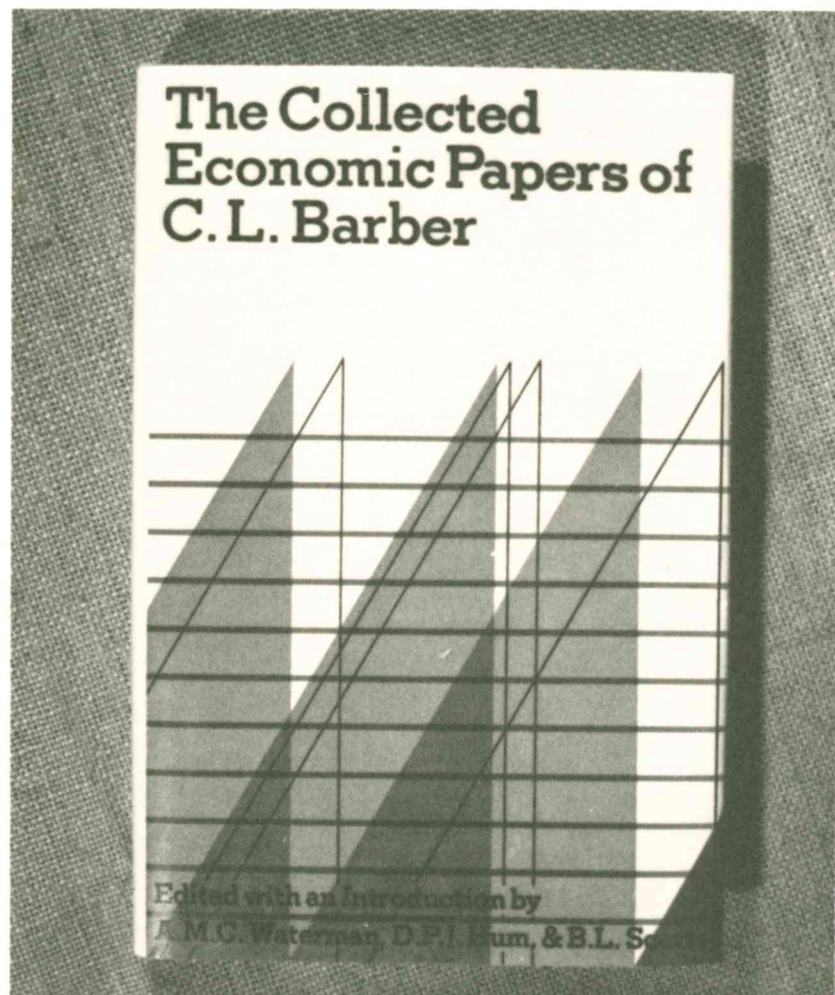
SOURCE:STATISTICS CANADA, CANSIM-UNIVERSITY BASE

INTEREST RATES AND PRICES

MONEY SUPPLY AND PRICES

PHILLIPS CURVE RELATIONSHIP

CAPACITY UTILIZATION RATE

REAL GNP

NOMINAL GNP

PERCENT CHANGE IN PRICES

**Collected Economic Papers
of C.L. Barber,**
edited by A.M.C. Waterman, D.P.J. Hum,
and B.L. Scarfe, this 1982 book includes
21 of Dr. Barber's papers; available in
hardcover, $20.