

Chapter 1

ECONOMIC BEHAVIOR, DISEQUILIBRIUM AND STRUCTURAL CHANGE

From Micro Force to Macro Effect

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1. Why a conference like this?

Economics has grown as a discipline for more than two centuries. The remarkable economic developments of the industrial nations during the last one hundred years, however, still escape a scientific explanation. What were the causes of the great depression? Why have some countries moved ahead while part of the world is operating at technological levels predating the industrial revolution? What caused the shift from rapid growth to stagflation? And, what is responsible for the widespread decline in productivity?

In virtually all free world nations private business firms and dynamic market processes appear as the key engines of economic advance. Yet how much do economists understand about the way market economies work? The erratic and disappointing performances in most countries during the past decade, the disagreements among economists and business experts about the reasons for it, and the uncertain prospects for the future suggest the answer, 'Not enough for the needs of scientific economics; not enough for the needs of effective economic policy'.

Nonetheless, students of market economies have not been idle. They have contributed a rich variety of empirical findings, conceptual models and theoretical insights. Much of this work has elaborated the neoclassical paradigm using standard tools based on optimizing behavior in a competitive equilibrium or a comparative static framework. Two particularly important strands of work have infused macroeconomic analysis with microeconomic foundations in the hope that an improved basis for monetary and fiscal policy might be established. These are the theories of general competitive equilibrium and of Keynesian (non-Walrasian) fix price equilibrium.

For a number of reasons the hopes which motivated these efforts have not been fulfilled. In part this may be attributed to the fact that most of the work deals with static constructs best suited for describing processes which rapidly

attain stationary or steady states after a disturbance or a change in structure. The actual histories of market economies, however, suggest that such states are seldom, if ever, achieved. Instead, they exhibit more or less ceaseless motion that does not possess a balance among the constituent parts of the economy.

Both versions presume that economic behavior in equilibrium can be predicated on the assumed rationality of the human agent. Contrastingly, most of us would admit to numerous unwarranted expectations and judgments. Even those of us who are immune from such frailties see plenty of opportunity to improve the performance of others. Indeed, many economists believe that real world decisionmakers need help precisely because they don't base their decisions on economic analysis. To this may be added substantial experimental evidence, accumulated during the past two decades, that suggests strongly that human decisionmakers systematically and frequently violate axioms of rational choice. It would now seem clear that rationality, even though appropriate for characterizing an equilibrium, is a poor description of behavior.

The theories of competitive or Keynesian equilibrium, especially as refined and elaborated by the mathematical economics school, are concerned with the existence of prices that coordinate and balance the rational choices of households and firms. Neither explain price formation itself nor do either attempt to explain how the economy seeks out and achieves an equilibrium state. In short, they are not theories of how markets work. No one has been more candid in pointing all this out than some of the main contributors, for example Arrow, Hahn and Clower.

In one extreme yet influential form of the standard theory it is assumed that the relentless operation of rational expectations and rational choice within a market framework rapidly eliminates any systematic departure from competitive economic equilibria. According to this orthodox paradigm the real world is best thought of as a stable, market-mediated exchange mechanism among rational economic beings, whose effective operation would be assured but for the interference of non-market institutions and the intrusion of random, 'exogenous' shocks. This view, especially, is subject to the shortcomings previously pointed out. Yet, it is the source of a highly influential line of policy analysis in the profession.

This is not a satisfactory situation for our discipline! The findings of the standard economists of today are often clearly stated, and frequently backed up by rigorous analysis and elaborate econometric method. But they rest on foundations adequate only for a narrow range of questions. A host of problems confronting policy makers are left unanswered. This need for more useful foundations provides the *first reason* for organizing this conference on the Dynamics of Market Economies.

During the post-Keynesian, neoclassical revival various lines of inquiry

have emerged that re-emphasize classical concerns with dynamics and Keynesian concerns with disequilibrium. Much new work is focussed on how agents and institutions really do behave and what this means for the functioning of the entire economy. During the last quarter century economists have explored the nature of rationality and decision-making in firms. The interaction of boundedly rational economizing and environmental feedback has been modelled and analyzed in a variety of dynamic economic settings. Mechanisms of economic variation and selection have been introduced that mimic the working of competitive forces and explain the evolutionary character of decentralized economies. The nature of fix-price disequilibria has been explored and various mechanisms including rationing, market search and arbitrage have been examined. Computer models of microeconomic transactions and their relationship to macroeconomic movements have been designed and simulated, and so on. These are developments associated with many of the authors of this volume.

Additional research directions might be mentioned that are less related to dynamics, disequilibrium and economizing behavior but which contribute to the kind of understanding we are aiming for, even if many colleagues pursuing them do not seem to be aware of each other's existence. For example, the microanalytic simulation work associated with Guy Orcutt is characterized in part by attention to microeconomic, panel type data bases and emphasizes the benefits to be derived from modelling and carefully testing micro-unit behavior. Other work involving new theories of industrial organization, principal-agents, market signalling, regulation, games, collective action, and so on contribute elements of insight into the working of the business firm and of markets.

As far as we know, no one has attempted to bring all these strands of thought together into a single, coherent framework comparable to the neoclassical theory. Even if it were possible to do so, our objective has not been to achieve such a grand synthesis on the occasion of this conference. But we do at least aim for it. We believe that progress has been sufficient to justify bringing together some of these lines of inquiry, so that they might be compared, their common aspects noted, their several shortcomings and controversial features exposed. We hope that such an exercise will accelerate progress and enhance the possibilities for synthesis and unification.

That was the *second motivation* for the Conference on the Dynamics of Market Economies.

The themes of behavior, disequilibrium, structural change and the relationship between microeconomic forces and macroeconomic change are all central to Joseph Schumpeter's theory of capitalist development. Schumpeter was known not only for his contributions to theory but also for his emphasis on economic history and on institutional knowledge, an emphasis shared by Wicksell, Åkerman, Myrdal, Ohlin, Lundberg, and other members of the

Swedish school, who were equally insistent on the importance of the dynamic point of view. It is evident that attention to such matters is particularly important as one leaves the relatively simple intellectual world of equilibrium to explore the intricate, realistic world of economic behavior, disequilibrium and structural change.

To provide a forum for the discussion of economic theory in this broad context was a *third reason* for the conference.

So it was that an organizing committee was formed, a few representatives of important research directions invited, a program organized, the conference held at the Grand Hotel Saltsjöbaden near Stockholm, August 28–September 1 in 1983, the hundredth anniversary of Schumpeter's birth. Now the proceedings are presented in the form of this volume.

In section 2 of this introductory chapter we provide some tastes from the diverse menu to follow. In spite of the fact that the main contributions were written independently, the papers do contain commonalities and complementarities. Viewed as a collection they provide perspectives each of which adds understanding to an emerging, coherent body of thought. Each paper is of interest in its own right, but each has something to do one way or another with the themes of behavior, disequilibrium, structural change and the micro force to macro effect linkage. No doubt readers and, indeed, the several authors themselves will view the interrelationships among the studies in various different ways. In section 3 we have presented our personal expression of the major features of this emerging framework of thought and suggest some of the major problems for further analysis. Finally, in section 4 we reflect briefly on the implications for policy and welfare in the dynamic market economies.

2. The contributions

Any organization of diverse and creative works is to some extent arbitrary. Still it may be useful to group the papers according to major points of emphasis and we have done so as follows. Part I is concerned with general dynamic economic theory and models and with the coordination of micro actions into a coherent macro whole. Part II emphasizes particularly important micro activities, but especially innovation and technological change. The function of institutions in the market process and institutional change are the subjects of part III.

Let us begin with the first group. In chapter 2 Herbert Simon attacks the logical foundations of theories pretending to explain the movements of economic systems. He reviews the basic postulates of equilibrium economics and finds no one among them that posits mechanisms that restore an equilibrium once disturbed. One therefore is faced with the need to extend the theory 'to specify a mode(s) and rate(s) of adjustment'. He surveys quite

opposed approaches with that ambition, namely behavioral search theory and rational expectations theory. The latter approach, in Simon's view, requires a critical role for irrationalities to explain the stylized facts of the business cycle. But it does this in an ad hoc way. Behavioral search theory, on the other hand, is based on empirically verifiable principles of bounded rationality. It provides a coherent basis for modelling the behavior of the economic actors on whose decisions rest the macroeconomic effects of interest for policy. What is needed now, he argues, is an empirically derived micro theory of how expectations are formed and how attention, which directs economic search, is allocated.

The second paper in the group, chapter 3 by Richard Day, is concerned with the implications of bounded rationality for understanding economic change and development. He summarizes the basic features of this kind of decision-making as originally set forth by Schumpeter, later emphasized by Simon and developed further in the writings of (for example) Cohen, Cyert, Day, Eliasson, Leibenstein, March, Modigliani, Nelson, Williamson and Winter. The basic tenets are that (1) economic choice uses imperfect and costly information, (2) economizing behavior is subject to cognitive limitations, and that (3) these features matter in seeking an understanding of how economies work.

In particular Day argues that boundedly rational search behavior makes conventional economic equilibria locally unstable. This implies that disequilibrium mechanisms are required to maintain viability among individuals and organizations whose plans cannot always be executed, a situation that does not disappear with the passage of time so that their fundamental role cannot be ignored in an explanation of how economies work. These disequilibrium mechanisms (in addition to bargaining) include order-inventory-delivery adjustment procedures and institutions (stores, brokers, specialists) that involve periodic price adjustments. Within this framework structural change evolves continually as limited resources are exhausted or their costs elevated so as to force adoption of alternative processes using different inputs. This leads to a multiple phase or regime switching dynamics that takes place in response to changing relative scarcities and values. The Schumpeterian search for new combinations is superimposed on this already quite complicated dynamic process. Day argues that the underlying process is not only locally but globally unstable and would break down if new organisations, new decision-making rules and new technological possibilities are not created. The origin and necessity of the Schumpeterian entrepreneurial catalyst is related therefore to the global instability of economic processes.

In chapter 4 *Gunnar Eliasson* brings micro and macro explicitly together in a simulation model of the entire Swedish economy (MOSES). He discusses several theoretical issues in this context, emphasizing in particular the nature

of the Schumpeterian growth cycle. The model incorporates (1) a behavioral representation of decision-making within the business firm, (2) a population of specific firms, most of which correspond to actual Swedish establishments and (3) a market exchange sector interlinking the household demand and government sectors with the microfounded business sector. Both price-setting and quantity adjustments in response to price signals are endogenous and the engine of the macro growth cycle is a partly endogenous creation of Schumpeterian innovative rents at the micro level, fuelled by a Wicksellian capital market disequilibrium. The innovative rents drive the investment process in firms. Pure, technical advance is exogenous and associated with new investment at the micro level. Together with investment, technology, hence, forms an upper bound for economic growth at each point in time.

Eliasson's idea is that macroeconomic indexes used in policy analysis cannot be fully understood without reference to the distribution of income and interaction among microeconomic components. Both Schumpeterian and Wicksellian theories are, hence, combined in the form of a continuous turnover of temporary rents due to differential technological change among firms. Innovations perpetuate capital market disequilibria that drive the investment process, but are continuously competed away in the product, labor and credit markets.

Simulations of the micro-to-macro model are performed by varying the market regime, which is characterized by adjustment speeds and intensity of innovative behavior, holding everything else constant. It was found that high speed market processes increase output growth for long periods, but make the economy sensitive to disturbances that eventually generate a severe depression. It appears that continued micro diversity of structure and performance has to be maintained to achieve a stable, long-term growth process at the macro level. Such diversity can be established through innovative behavior at the micro level, new entry and exit and is mirrored by significant, continued wage and profitability dispersion. To put it in another way, a certain degree of micro *instability and inequality is needed for steady macroeconomic growth performance*.

In the next paper Robert W. Clower and Daniel Friedman introduce the trade specialist into a pure exchange economy as an institution for mediating decentralized transactions by means of explicit price and inventory adjustment rules. As a theoretical tactic the authors stay as close to the conventional Arrow–Debreu set-up as possible. At the same time they recognize Clower-type finance constraints and short-run rationing and arrive at an explicit dynamic model in which prices and stocks are endogenous state variables. Moreover, the auctioneer of competitive price theory is replaced by market traders that form an integrated part of the economy. In reality, such traders, to judge from recent research at the Industrial Institute (IUI) (see p. 86 ff.), may even represent the dominant economic activity in

an advanced economy, if measured by resource use. This reformulation of competitive theory makes the invisible hand of Adam Smith quite visible and marks a first departure from the ad hoc fiction of the Walrasian auctioneer and a definite advance in the development of a rigorous micro theory of markets. The authors first focus on the existence of stationary states and their relationship to competitive equilibria. They then derive conditions for local stability. Superficially, this contrasts strikingly with the preceding papers which emphasize bounded rationality, disequilibrium and instability. However, their paper forms an explicit link between different schools of thought, in this case dynamic disequilibrium market analysis and competitive price theory.

The above papers all share a microeconomic focus. In chapter 6 *Jean-Pascal Benassy*, on the other hand, presents an exercise in pure macroeconomics, using the conventional IS–LM framework augmented by adaptive expectations for investment demand and a wage adjustment relationship that responds to excess supply of labor (the Phillips curve). It is an example of adaptive, macroeconomic, disequilibrium theory that is compatible with the principles of behavioral economics, in contrast to the rational expectations school so much more in vogue in recent years. By reducing the macroeconomic model to very simple terms Benassy shows the existence of bounded periodic cycles.

In a note that closes this section Richard Day explores some aspects of economic theory when the underlying preferences of agents are recognized as depending on experience and for that reason become variables, and not merely parameters, in the dynamic process of decision and behavior. Economic equilibria can exist in such a framework and welfare concepts analogous to the conventional ones can be defined. But the author goes on to emphasize another possibility that allows for perpetual change in experience-dependent behavior. He shows that sequences of rational choices may display cyclic patterns or even wander in erratic patterns, tendencies which can depend on the wealth of the individual. He closes with some implications for intertemporal rationality and for the role of experience in general, dynamic, economic models. They reinforce the views of several of the authors of this volume that local stability conditions of general equilibrium, such as those discussed by Clower and Friedman, are unlikely to be fulfilled.

The next group of papers, part II, is organized around the general theme of Schumpeterian innovation.

Eric Dahmén discusses (in chapter 7) the implications of innovative behavior for what he calls the Schumpeterian transformation, or the change in economic structure brought about by continued search at the micro level for new information and new projects. He requires a broader definition of investment, one that includes research and development, and the reorganization of existing resources. Dahmén's 'development blocks' of complementary

technical and economic activity can release dynamic forces for fundamental change. Particular, innovative developments within such blocks may not be perceived *ex ante*. Yet they provide downstream opportunities that can be exploited by less creative entrepreneurship. Understanding the dynamics of transformation requires attention to institutional behavior, especially financial intermediation that facilitates or constraints innovative activity. Dahmén also calls for a marriage of Schumpeterian ideas with those of Wicksell about the relation between rates of return on real investment and a spectrum of money interest rates.

Sidney Winter extends (in chapter 8) earlier models of Schumpeterian evolution involving innovation, imitation and cost competition. He introduces an entry mechanism for new firms. His objective is to explain qualitative patterns in actual industry histories. The Nelson–Winter evolutionary theory on which the study is based substitutes the concept of routines for the usual production function. Technological, organizational and managerial innovations are all examples of changing routines through search within firms. Exit from the industry because of poor performance is a Darwinian selective mechanism that also causes behavior and technology to evolve. Two alternative Schumpeterian regimes are identified, one that was emphasized in *The Theory of Economic Development* and the other emphasized in *Capitalism, Socialism and Democracy*. In new firms individual entrepreneurs are the primary source of innovation. In established firms, internally routinized invention is the primary source. They are represented in the model by different parameter settings. Simulated model histories of the two regimes correspond rather well to Schumpeter's own descriptions set forth in his two major theoretical works.

The interaction of technology and economic forces within the machine tool industry is the subject of *Bo Carlsson's* case study of the 'Micro economics of organizations and productivity change' (chapter 9). He emphasizes the role that new inventions play in organizational innovation. In the early years of the industry, development of interchangeable parts enabled the organization of mass production, leading eventually to the introduction of automated, mechanized control after World War II. Recently electronic, computer aided control has been introduced. In contrast to previous developments it has enhanced the viability of relatively small scale economic production of complex, non-standardized objects.

Thomas von Ungern-Sternberg in his paper on 'Innovator protection and the rate of technical progress' (chapter 10) distinguishes between innovative and imitative technological change. He explores the incentive effects of patent duration on their relative importance by using a standard model of profit maximizing behavior. It illustrates the simplifying power of equilibrium assumptions that make possible precise deductions albeit in a simplified context. He finds that patent protection *may* have a salutary effect on

technical progress but need not because of possible adverse influences on the allocation of R&D resources.

In a concluding note to part II *Ove Granstrand* describes the characteristics of new, innovation-based firms in Swedish industry after World War II. It provides an empirical supplement to the earlier papers by Eliasson and Winter which explicitly modelled the effects of innovations on industrial development. Granstrand finds that old, large firms dominate innovations in Swedish industry after World War II, but there has been an increase in the acquisition by large firms of small, innovation-based firms. Even though the rate of formation of new innovation-based firms remains high their share in the total of firms appears to have declined suggesting a tendency in the long run for large, old firms to increase their dominance of innovative activity, in apparent conformity, at least for the period in question, with Schumpeter's later views.

The papers in part III deal with institutional aspects of the market economy.

In chapter 11 *Carl Christian von Weizsäcker* analyses the benefits from and the optimal structuring of 'rights' such as patents, copyrights and trademarks and 'relations' such as customer loyalty and the 'good-will' of a business. These items do not fit the usual concept of a good or of an object of production but they, nonetheless, possess an exchange value and play a natural part in the development of a market economy. A system of concepts based on Karl Menger and Eugene Böhm-Bawerk and much like those of John R. Commons is outlined. It provides for property in 'rights' and 'relations', that is, for restricted access, at least for a time, thereby creating values and incentives for innovation and competition. Such competition, driven by the possibility of profit, can contribute to general social welfare. The question as to the proper degree of governmental protection of the innovator naturally arises, and conventional marginal relationships relating private and social welfare are used to define it. Von Weizsäcker then goes on to discuss the static concept of social efficiency. He inquires into the possibility of a role for government to provide an initial impulse that would set in motion an innovation driven economic development. He finds that such a role should exist, of course, in those cases where the social benefits exceed the private returns, for example in markets where future returns will be much higher than present or where infrastructure is required if advantages of size (or scope) pertain. Finally, in an analysis of good will, an 'extrapolative principle' of human behavior is applied. Because it has a low information cost it leads to an incentive for businesses to fulfil positive extrapolative expectations of their prospective customers about product or service quality, thus providing the economic basis for the value in exchange of good will.

In chapter 12 *William N. Parker* in his essay of 'Capitalist organization

and national response to Schumpeter's century' approaches economic history broadly. He sees economic change as an interplay among economic, social and political forces. On the one hand, capitalism with its dynamic market mechanism depended critically upon sponsorship by state power so as to overcome feudal and corporate restrictions on individual initiatives and market adjustments. The market system in turn surpassed national boundaries and ultimately fostered economic forms that confounded international capital flows with the allocation of capital within conglomerate, multinational business units. In the meantime new social groupings emerged that focussed political pressures on the state, some of which were distinctly antithetical to the further development of the system, primarily because existing institutions failed to feed a 'spiritual hunger for a level of loyalties, of community, of solidarity' present in those very groups. Materialism in extreme forms was one of the most virulent responses. Yet, in the aftermath of the gigantic wars to which that materialism led, market mechanisms have continued to flourish, far more than Schumpeter would have thought likely. All of this would seem to point out the unpredictable, dialectal counterpoint brought about by the forces of growth and expansion and those of instability and violence.

Tad Rybczynski traces in chapter 13 the development of systems of finance, particularly as they exist in the industrialized, highly developed, market-oriented countries of Europe, Japan and the United States. In the early stages of industrial development investment was financed by the investor himself or by borrowing from friends, relatives or political allies. Next, banks introduced intermediation by collecting purchasing power from savers and lending it to investors. At a later stage financial intermediation was augmented by capital markets that provide for long term debt and risk capital (equity). Still later, financial markets were created that provide facilities for hedging financial risks and which obtain funds as much from other financial intermediaries using credit markets than directly from the savers. All of this comes about through an interaction of economic growth, technological advance and institutional development, including regulatory devices and the development of various financial instruments and techniques. This is illustrated by comparing the 'bank oriented' financial system of Europe and Japan with the 'market oriented' system of the United States and United Kingdom.

The concluding chapter 14 by *Dean Spinanger* deals with the hypothesis that modern welfare policies and labor unions have interfered with the efficient functioning of labor markets. He presents some evidence that both the general growth of government activity and specific welfare measures are associated with an increasing employment problem in the market economies. Earlier papers would appear to imply that governments must play a critical role in defining the institutions of property, in providing for public goods

and in regulating market activity with a view both to moderating debilitating fluctuations and encouraging productive innovation. This chapter emphasizes the possible negative effects of well intentioned but improperly designed policies on how markets work. It takes the view that a well functioning labor market can do more for social welfare than can misguided welfare policies that interfere with its allocative role.

3. Towards a theory of institutional change and disequilibrium growth

Gathering all those elements together we see the following picture of market dynamics. Economic activity is conducted by boundedly rational agents within organizations, whose efficiencies are likewise bounded by the rational limitations of their members and in addition by the costs and problems of communication, negotiation and conflict resolution. Decision-making, administration procedures, and organization structures, including those designed for exchange and productive activity, all emerge from a search through routines for feasible and efficacious alternatives. Search includes routine economizing among evoked alternatives in response to perceived economic conditions, various rules of thumb and trial and error experimentation. It also involves a creative input, discoveries of new things that sometimes precipitate change, sometimes make continued existence possible. This creative input is provided in concentrated doses by Schumpeter's entrepreneur and it allows the temporary existence of monopolies that form the resource base for investment and future innovative behavior and, hence, economic growth.

The process as a whole does not converge to an equilibrium but continues to evolve. And it is important to observe that this disequilibrium process is not fuelled only by exogenous inputs. Indeed, major structural changes that are conventionally treated as exogenous are an endogenous part of it, even though we currently find them difficult or impossible to model. Institutional change is a case in point. Institutions enter and exit. They reorganize, disintegrate and recombine. This institutional change is the major vehicle for productivity growth. With a long-term perspective, the institutions and the organization of markets simply can't be taken as given. And it seems to us, this is not just a matter solely within the domain of economic history. First, there is the question as to why new institutions are continually forming, something that would not happen in equilibrium. Second, there is the fact that much economic policy — and certainly the most important examples of it — involves the formulation of new regulatory, information producing, or decision-making organizations. To model the formation of new institutions is, therefore, a major task for economic theorists.

New activities and institutions come into being. Some grow and flourish, others decline or are abandoned with the passage of time. Institutions such

as those for creating and supporting private property, those of financial intermediation and those that condition labor markets in an effort to enhance social welfare may evolve in such a way as to hinder technological progress and, in the longer term, social welfare as well. All institutions derive their economic rationale from a monopoly position in one or more markets. Some monopolies are bad and some are the important contributors to economic growth. Above all, the workings of the selfregulatory forces in a dynamic market economy — the invisible hand if you wish — cannot be understood, but in the context of the institutional structure of the market economy, something made rigorously clear in the paper by Clower–Friedman. In any case institutions set the conditions at any given time for the next stage in the ongoing development process. It was interesting to note that the importance of exits and close-downs for short-term economic efficiency and long-term welfare was most vividly emphasized by one of the business leaders in the general discussion. It sometimes appears that governments in the advanced industrial world are the strongest conservers of old structures and pose the biggest barrier to the ‘creative destruction’ of obsolescent or redundant capacities. The proper scope and specific organization and management of government involvement in the market process is thus a delicate matter and one requiring a deep understanding of the fundamental dynamics of decentralized systems of production, exchange and economic development.

Part of this picture was painted already by Joseph Schumpeter, as has been emphasized elsewhere in this volume. But his inability to formulate the theory in a single, unified, mathematical form probably is responsible for his having been made a victim on the teaching agenda of western universities. Keynesian macro theory, the winner for several decades, was highly suited for econometric expression, but has fallen out of favor because of restrictive assumptions and a bad test record during the disorderly 70s. In the meantime, competitive equilibrium theory based on Walras has been neatly formalized, extended and embodied in empirical models such as Leontief’s input–output models on the one hand or the Scarf–Koopman–Hansen models of competitive general equilibrium on the other hand. As we have been reminded in section 1 numerous additional lines of inquiry have been and are being fruitfully pursued, but none has achieved the coherence or the wide-spread adherence of the ruling, equilibrium, comparative static methodology. Its intellectual strong-hold even on the economics profession sympathetic to a needed revision was all too evident from the discussion. The central message of the Walrasian tradition that all agents and markets are interrelated and that the macroeconomic outcome of any change in the system (in technology, government policies or preferences) depends both on how individuals behave and how they interact, should continue to be the central guiding vision of a new micro–macro, behaviorally realistic, dynamic

economic theory. For us, the static equilibrium theory is like the early box camera that demanded that one stopped and smiled for a picture. Comparative statics compares two such artificial 'poses'. Dynamics, like the moving picture camera, can portray action as it really occurs. And comparative dynamics enables two 'unfolding scenes' to be compared. Dynamics is difficult. Nonetheless, we think the general framework which we have outlined here should come to rule both the further development of theory and the formulations of policy.

Its further development will require six elements that are explicit in the chapters that follow. They are

- (1) a rigorous specification of boundedly rational, adaptive economizing,
- (2) formal models of dynamic market processes,
- (3) a specification of the technology of the system and how it changes,
- (4) a specification of how preferences are influenced by experience,
- (5) a formal description of algorithms that dynamically coordinate agent behavior, technology and the market process,
- (6) recognition of the importance and development of a means of analyzing institutional change.

The idea of economizing remains fundamental, and, of course, individuals and firms do exhibit rational behavior on the basis of the information they have and what they can make out of it. However, a doctrinaire application of optimization and of rational expectations is rejected in favor of an approach grounded solidly in the concept of bounded rationality. And after all, what rules *should* successful business decisionmakers abide? Should they follow rules derived from highly abstract and unrealistic theory, or should they simply use intuition and intensive trial and error search?

The economy as a whole is coordinated dynamically by market mechanisms and institutional regulations. As is underscored in several papers and in the discussion, the market process is composed not only of the actions of firms and households but of market and government institutions, many of which are involved in information producing activities. The latter may be the dominant production activity in an advanced industrial economy. At least that is what is suggested by recent research conducted at the Industrial Institute for Economic and Social Research. This, of course, contrasts with the usual assumption that information processing is immediate, free of charge and carried out without effort by an 'auctioneer'. In addition to information the market process may need stabilizing force, something to play the role of a 'boss', to function effectively. This seems to be suggested by the historical perspectives of Parker and von Weizsäcker. But it is not truly a 'boss' or Big Government, but quite the opposite that is needed, namely a system of ever changing institutions, social values and laws. These are to a large extent an

endogenous creation of the ongoing market economy. Government is only part of this institutional arrangement and perhaps not the most important part.

It is essential for effective economic change that this system be well conceived and responsive to unfolding events. Also, market institutions must change significantly over time in response to and in interaction with economic development. One cannot formulate good economic policy without taking these broad dynamic forces into account. Otherwise, one will continually observe unintended, endogenous economic and institutional obstructions of policies based on erroneous assumptions.

The action of the individuals and firms in the market process is fuelled in part by profit opportunities. For these profit opportunities to arise, technical change in different forms has to occur. Joseph Schumpeter made a point of the bunching of technical innovations as the major engine behind long swings in economic activity. He never really decided whether these innovations should be seen as an exogenous force, working on the economy or something that could be predicted from some generalizable theory. Dahmén, Eliasson and Winter opt for the exogenous alternative, in the sense that at the micro level the nature of the output of innovative change can't be predicted and is best modeled as a random input. Knowledge of the market regime, however, allows prediction of the general level of innovative activity, but not its content. From the long-run point of view, specific attributes of culture of a nation must be a prime explanation of its rate of economic progress. They determine a country's incentive system, the profit inclination of its inhabitants and firms, and the willingness and ability of the inhabitants to cope with change, points brought out in Parker's sweeping summary of the 'Schumpeterian Century'.

4. Implications for policy and welfare

In the discussion Robert Clower raised the question, how much welfare is lost to society in market regimes where contracts are not always concluded and when planned economic actions do not take place? How do such welfare losses compare with second best problems (the preoccupation of welfare economics), that is, when exchange takes place before a socially efficient point has been reached? These questions are important both from welfare and from methodological points of view. A stable equilibrium is the classical reference point in welfare analysis. In the disequilibrium world such stable reference points come about, if at all, only 'in the long run'. In the short run, when all policies have to be effected, the standard comparisons can't be made. Hence, dynamic normative economics needs a new benchmark. Yet, if complicated, uncertain and unpredictable microeconomic states are impossible to evaluate in the usual way how do we indicate the desired state for

policy-making authorities to strive for? What can replace the idea of a social equilibrium? And, if social equilibria cannot be controlled and compared, what is to be the basic function of government?

The starting point for an answer to these questions can be made by considering the fundamental attributes of disequilibrium. First, disequilibrium requires the existence of institutions that make continued activity possible when markets fail to clear, when plans cannot be carried out, when new technologies and new profit-seeking enterprises are to be set in place, when old institutions fail and their resources have to be reallocated to other agents and organizations. As an economy develops new points of disequilibrium stress emerge. When this stress becomes sufficiently acute, new institutions must be organized to alleviate them. *It is, thus, the provision for continual evolution through modification of old institutions and the creation of new institutions that must be the fundamental purpose of economic policy and the primary function of government.*

For example, the creation, modification or elimination of a given central banking system are fundamental policy acts. The choice of discount rates, reserve ratios or open market transactions are of a secondary nature. The development of such institution building strategies is nowhere provided for in conventional economic theory even if it is the every day concern of many members of the economics profession. It is high time that institutional economics in this sense be reinstated as an integral part of the discipline.

A second characteristic of disequilibrium change is in its anti-Pareto welfare nature: some agents are made worse off while others prosper. The creation, maintenance and modification of special institutions that prevent such anti-Pareto changes from accumulating to the extent that extreme disruption of the system is caused, and that ameliorate such performance so that no one must suffer unduly and so that most people can hope for an improvement in their lives some of the time, would appear to be the fundamental policy issue. To provide a theoretical foundation for the existence of such policy activity is an ambition of the present volume.

Examples of government policies devoted to the above stabilization and welfare objective are too well known to need elaboration here. They have accumulated to such an extent that modern market economies are usually thought of as 'mixed' economies or 'welfare states'. While designed for good socioeconomic purposes they can interact with the pre-existing constituent of markets and the government in such a way as to bring about new, unintended problems and pressures. For one example, industrial subsidies designed to preserve jobs seem to have led to productivity declines, lowered international competitiveness and lowered national welfare. For a second example, some economists argue that wage and other labor policies induce labor market inefficiencies that actually exacerbate an employment problem (see chapter 14 and the discussion following).

Clearly, government must be designed so that its own deleterious or ineffective institution building and policy formulation can be changed. Selection mechanisms corresponding to competition through market entry, and exit would appear to be fundamental. They must be designed so that appropriate agencies become aware of the need to avoid erecting barriers to socially productive forces that spontaneously emerge in the dynamic market process, just as its agents must also be on guard against those elements that crop up spontaneously to violate agreed-on rules for allowable economic conduct.

A third characteristic of disequilibrium is its role in making fundamental change possible, thereby fueling the growth process in a manner opposite to that of a steady state. Here it appears that too rapid change can eventually lead to too much stress, severe overshooting of equilibrium and even widespread economic breakdown. Too slow change, on the other hand, allows for the excessive build-up of pressures for improvement and for escape from low level income, high unemployment traps. General economic equilibria seem to have little to do with these aspects of change and shed little light on the attending policy issues. Certainly, the continual evolution of products, of production and consumption activity is an important part of the growth of welfare and it is here that the dynamic market economies that have retained important capitalistic, free enterprise institutions have excelled. It is not at all clear that adequate progress can be generated without such institutions. Indeed, it would seem to be increasingly evident that their adequate provision and appropriate regulation are as essential to the solution of human problems as are the effective functioning of redistributive and stabilization policies. The role of government, if any, is to provide for and to be a guardian and facilitator of decentralized market processes. This task seems to be just as important for economic development now as it was when Adam Smith argued the same case.

It is easier to identify these basic economic functions of government than to define the criteria that should guide their exercise. Perhaps it is a mistake to define these criteria with reference to an equilibrium, or for that matter with reference to any single quantitative index at all. Given the disequilibrium nature of economic evolution it seems to us that, at best, quantitative welfare indicators can serve as information in a much broader policy process. *The fundamental dynamic welfare purpose must be to use those indexes to identify and evaluate relative performances of individuals and groups (work and ownership categories, ethnic groups, socio-economic 'classes') with a view to designing policy such that most people are happy most of the time they belong to the system, and not to some other one, even though from time to time they may become worse off relatively or absolutely.*

It seems doubtful to us that this fuzzy goal can be effectively replaced by something more precise without contradicting the features of bounded ration-

ality and disequilibrium that characterize real world development and without contradicting the dynamic theory of that world. It seems even less likely to us that more precise limits to the function of government and policy can be placed. Like the dynamic market process the role, function and agencies of government interact and evolve in response to disequilibrium pressures. The closest we may ever come to Utopia is the design of market-based government systems flexible enough to allow the creative impulses of individuals and organization to flourish, to facilitate entrepreneurship, to provide incentives for productive work and efficient management, while at the same time providing for sufficient inertia in the system to prevent high speed change, overshooting phenomena and excessive uncertainty.