

Masudul
Alam Choudhury

The Principles of
Islamic
Political
Economy

A Methodological
Enquiry

Also by Masudul Alam Choudhury

**CONTRIBUTIONS TO ISLAMIC ECONOMIC THEORY
THE FOUNDATIONS OF ISLAMIC POLITICAL ECONOMY
(with Uzir Abdul Malik)
ISLAMIC ECONOMIC CO-OPERATION**

The Principles of Islamic Political Economy

A Methodological Enquiry

Masudul Alam Choudhury

*Associate Professor of Economics
University College of Cape Breton, Canada*

Foreword by John C. O'Brien

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This book is dedicated to the world scientific
community

The same religion has He
Established for you as that
Which He enjoined on Noah –
The which We have sent
By inspiration to thee –
And that which We enjoined
On Abraham, Moses, and Jesus:
Namely, that ye should remain
Steadfast in Religion, and make
No divisions therein.

(verse 13)

Chapter XLII: 'Shura', or Consultation

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Foreword

Dissatisfaction with the positive approach in economics, the elimination from the subject matter of anything savoring of value judgements, and the failure of social economists to produce a paradigm for the economy which would precipitate a scientific revolution in the history of economic thought has led Masudul Choudhury to direct his attention to the creation of such a paradigm with the aid of institutions founded in and following the teachings of the Quran. The author claims that his approach runs counter to those of the classical economists, the neoclassical economists, Marxism and Keynesianism.

In the present work, therefore, Choudhury has directed his attention to an analysis of the political economy of Islam rather than to an analysis of pure economic theory. The author here is endeavouring to break with modernism and use instead a simulative general equilibrium methodology where his principle of ethical endogeneity can be expounded and social choices may therefore be explained in the realm of political economy, rather than by way of the hypothetico-deductive model of the modernists. This latter method of scientific explanation was described in the Manifesto of the Vienna Circle (*Der Wiener Kreis*), first published in 1929. The distinguished scientists who comprised this group – for example, Moritz Schlick, Otto Neurath, Hans Hahn and Ludwig Wittgenstein, among others – advanced the view that the logical structure of a scientific theory could be described apart from its content. Their verifiability principle, a claim that the significance of a scientific proposition is rooted in experience and observation, automatically excluded from the field of investigation questions of metaphysics, ethics, aesthetics and religion. These views have become basic to today's modernism.

The constant agitation among economists, therefore, about value judgements, about the distinction between what is and what ought to be, has led to the present Islamic paradigm. The nature of the economist's dilemma where values – particularly ethical values – are concerned, is to be seen from the following observations by a Nobel Laureate in economics. The view generally accepted and widely disseminated by the mainstream economist is that values are rooted in the individual's tastes and are therefore not a matter for rational discussion. This view is embodied in the Latin tag, *de gustibus non est disputandum*. Admitting that value-free economics is an ideal and

possibly honoured in the breach, Milton Friedman asserts the view that such a breach 'does not alter the fundamental point that, in principle, there are no value judgments in economics' (Friedman, 1967, p. 86). If there are no value judgements, then economics is a science of means, one without ends. In the words of Max Weber: 'it can never be the task of an empirical science to provide binding norms and ideals from which directives for immediate practical activity can be derived' (Shils and Finch, 1949, p. 52).

The present work of this Islamic scholar is, of course, replete with value judgements. This can be seen from the abundance of phrases that point to a distinction between right and wrong, between good and evil, and references to what ought to be. In the Glossary of Arabic Terminology we find the Arabic equivalent of such English expressions as these: hereafter; an agency for guiding the ethical functions of the market system; things permitted and forbidden under Islamic law; highest level of ethical perfection; essence of goodness; consensus of the Islamic community in all affairs of life; belief in God as the creator of the universe.

In order to make such value judgements, Choudhury has been obliged to reject the mainstream economist's distinction reflected in the demarcation criterion which distinguishes between science and non-science, between the meaningful and the meaningless. Choudhury's venture into the metaphysical was the forbidden land of the logical positivists. The members of the Vienna Circle 'employed the verifiability principle of meaning primarily as a needle to puncture metaphysical pretensions in science and nonscience alike' (Blaug, 1950, p. 11). (Referring to the criticism of metaphysics by Rudolf Carnap in his *Philosophy and Logical Syntax*, and that of Ludwig Wittgenstein in his *Tractatus* and posthumous *Philosophic Investigations*, a distinguished historian of science challenges their stance with the following *Standpunkt*: 'What is particularly important to keep in mind in this respect is that notwithstanding the insistence of some, metaphysics, while being a step beyond science, is not a step beyond nature. Metaphysics is metascience but not metanature or a study independent of nature': Jaki, 1966, pp. 356-7.) Falsifiability, the demarcation criterion of Karl Popper, has, of course, superseded that of the Vienna Circle, which was verifiability (Caldwell, 1991, p. 2).

In the Islamic approach to political economy, many assumptions are made which can be neither verified nor falsified but nevertheless are accepted by millions of individuals as unquestionably true. Choudhury here discusses the economic order, not in isolation from

the rest of society but in the broader context of the Islamic political economy which is the responsibility of the *ummah*, the faithful Islamic community of Muslims, and the *shura*, a group empowered to take action anywhere in the social order in order to advance the well-being of the Islamic community. In this institutional approach, the members of the *ummah*, men of great erudition and high principles, are obliged to exhort their brethren to take the righteous path in all of life's endeavours. The *shura* is responsible for noting the evolution of ethical principles relative to the body politic and in keeping with the demands of the ecological order. In so far as the *shura* notes the evolution of ethical principles, it is then possible with the passing of time for these to be ratified by the *ijma*. The consensus reached in this way eliminates the confusion which has overtaken the Western hemisphere in the matter of evolving ethical principles.

The strictly rigorous value-free approach of the modernists would, of course, reject the methodology of Choudhury. Terence W. Hutchison would have excluded this approach on the grounds that it dealt with pseudo-scientific knowledge. Hutchison's avowed intention was to demarcate genuine scientific knowledge from other types of knowledge such as Fascist totalitarianism, the Marxist theory of history, and so on (Coats, 1983, pp. 8-9). Hutchison's approach, nevertheless, was lauded in certain respects by Maurice Dobb, a Marxist who approved Hutchison's 'wholehearted attack on time-worn dogmas, [his] snouting of scholasticism and the plea for concrete study of actual data' (Coats, 1983, p. 17).

In this work, Choudhury has substituted for the economic man of the classical economists *homo economicus*, the man of the Quran. No longer does one have to theorise about the behaviour of an individual who is activated wholly and entirely by his self-interest. An individual whose behaviour is based upon the teachings of the Quran is continually exhorted to do right instead of wrong, good instead of evil. The distinction between right and wrong is to be seen in the divine laws of the universe, laws which have perdured the test of time and been passed down to all humankind by the great prophets of antiquity. These laws extend into all corners of life and are ratified and extended by way of the Islamic community's consensus, *ijma*. Where setbacks have occurred as a result of social change, the Nation of Islam is called upon to shoulder the responsibility for the problems that have presented themselves. People in the Quran are human beings with all the foibles of human beings, and capable of error. The distinction between the good and evil in humankind is regarded as a

social phenomenon. It is held that the environment is responsible for inculcating in us those new values which transform us for better or for worse. 'The new Islamic environment would make all individuals morally good, self-actualising and exponents of material and moral progress,' writes Choudhury.

The view that the environment is responsible for our becoming better or worse seems to have a precedent in the history of economic thought. This view attributes our shortcomings not to ourselves but to our environment, our society. Thus, Malthus refers us to the views of William Godwin in his *Enquiry Concerning Political Justice* (1796, 2 volumes).

Godwin claims that the institution of private property is responsible for creating in us a spirit of oppression, a spirit of servility, and a spirit of fraud. Such undesirable qualities are inimical to intellectual progress. Their concomitant evil is the acquisition of such vices as envy, malice and revenge. According to Godwin, such evils would disappear, and selfishness would vanish in a land of plenty. Without any reason for contention, asserts Godwin, hostility to one's neighbour would disappear (Malthus, 1986, p. 65).

For Malthus, a decrease in inequality in the distribution of private property would be directed mainly at agriculture. An increase in the production of food would lead to an increase in population which, in turn, would eliminate 'the plenty' the people had once known and enjoyed. Now says Malthus, '[T]he spirit of benevolence, cherished and invigorated by plenty, is repressed by the chilling breath of want. The hateful passions that had vanished, reappear . . . The temptations to evil are too strong for human nature to resist' (Malthus, 1986, pp. 68-9).

Godwin was not the only scholar to incline to this view. Both Marx and Engels attributed the imperfections of human beings to the imperfections of society. With the abolition of alienation, a new spirit will emerge. 'If man is social by nature, he will develop his true nature only in society, and the power of his nature must be measured, not by the power of separate individuals but by the power of society' (Marx and Engels, 1956, pp. 176-7) Relative to this interpretation of human nature, an Australian philosopher makes the following observation: 'Marx erred in his belief that evils are the result of external determinism and incompatible with the "truly human" essence of man' (Kamenka, 1962, p. 114).

In connection with the role of the *shura* in overseeing change in the market mechanism so as to attain the ethico-economic goals of the

Islamic political economy, the words of John Maurice Clark, the President of the American Economic Association in 1935, are relevant. On the question of whether economics should be value-free he claimed that economics had one thing in common with ethics: [I]t deals among other things with the relative values of qualitatively-different ends' (Clark, 1950, p. 45). In this regard, economics deals with the actual valuations of the people, not with how those valuations ought to have been. It does not follow, therefore, that the science of economics 'must accept the verdict of the market as final for its purpose' (Clark, 1950, p. 45).

With reference to the market mechanism which operates freely in the USA, rather than under the watchful gaze of the *shura* in the Islamic political economy, J.M. Clark notes that economics is a science of means ready to be put at the people's ends. The danger in this situation lies in the fact that the market mechanism 'is not a passive instrument, but a social institution, which acts as if it had a life and purpose of its own, independent of those of the people who operate it, and doing things to them that none of them planned or desired' (Clark, 1950, p. 48). Unless the market mechanism is to be our master rather than our servant, we must be very clear about our purpose (Clark, 1950, p. 48). The paradigm of the Islamic political economy leaves no doubt about its purpose. It has a goal; it has an ultimate end. It is described at length in the Quran. In this regard, it can be stated categorically that the paradigm of the Islamic political economy does not eschew values, that it is clear about the ends to which the means of the economy are to be directed.

In the constant tension that is to be found in discussions regarding the best method of procedure to be followed in the sciences and the emphasis on modernism, one of its most articulate spokesmen put it this way: 'If one cannot reason about values, and if most of what matters is placed in the value half of the fact-value split, then it follows that one will embrace unreason when talking about things that matter' (McCloskey, 1985, p. 184).

Nevertheless, the Islamic paradigm here reveals an ethical theory whose content is not without an empirical foundation and relevance. (With regard to the role of the Quran and ethical values in this study, and the logical positivist's strictures against metaphysics, ethics and aesthetics as worthy of scientific study, the following critical statement of the accepted methodology appears to have its place here: 'Modernism promises knowledge free from doubt, free from metaphysics, morals, and personal conviction. What it is able to deliver

renames as scientific methodology the scientist's and especially the economic scientist's metaphysics, morals, and personal convictions. It cannot deliver what it promises': McCloskey, 1985, p. 16.) An intensive empirical study has been included in this work by an author who is not only a prolific writer and an able economist but also a gifted mathematician, a work in which econometric equations have included not only a set of socio-economic variables, but also a set of variables relative to ethical policy. In this analysis the author has accomplished his goals of revealing the scientific and quantitative relevance of the principle of ethical endogeneity, and has used a scientific approach in his analysis of ethico-economics. Finally, he has provided a theoretical basis for socio-political action, one which has already been empirically verified in the case of Malaysia, a modern democratic Muslim country. Masudul Choudhury is to be congratulated for a fine and original study.

*California State University
Fresno, California, USA*

JOHN C. O'BRIEN

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MASUDUL ALAM CHOUDHURY

Glossary of Arabic Terminology

<i>Akhira</i>	hereafter
<i>Al-hisbah (Al-hisbah fil-Islam)</i>	social regulatory agency for guiding the ethical functions of the market system in early Islamic society
<i>Bait al-mal</i>	public treasury
<i>Dhimmi</i>	non-Islamic minority entrusted with protection and treatment of full citizens in the Islamic state
<i>Hadith (Ahadith)</i>	sayings of the Prophet Muhammad
<i>Halal</i>	permitted things under Islamic law
<i>Haram</i>	forbidden things under Islamic law
<i>Ihsan</i>	highest level of ethical perfection
<i>Ijma</i>	consensus of the Islamic community on all affairs of life facing the community at any time
<i>Ijtehad</i>	authoritative Islamic research and deliberations on all affairs of life based on the Quran, authentic traditions of the Prophet Muhammad, and analogy
<i>Islah</i>	essence of goodness
<i>Israf</i>	wasteful consumption and production
<i>Jizya</i>	tax paid by the non-Islamic minority to the Islamic state in lieu of the Islamic wealth tax of <i>zakah</i> and exemption from compulsory military duty to the Islamic state, as otherwise required of all able-bodied Muslims under the Shari'a.
<i>La israf</i>	against wasteful consumption and production
<i>Muamallat</i>	worldly affairs
<i>Mudarabah</i>	profit-sharing system between labour and capital owners using the principle of economic cooperation in the enterprise
<i>Mudarib</i>	participants and shareholders in a <i>mudarabah</i> venture

<i>Mujtahid</i>	the learned one in the Shari'a and legally capable of passing valid judgements in <i>Ijtehad</i>
<i>Muquarada</i>	investment certificates issued by Islamic banks and financial companies in secondary Islamic capital markets
<i>Murabaha</i>	foreign trade financing done by Islamic banks to mobilise resources when alternative real investments for mobilising funds do not exist
<i>Nisab</i>	minimum allowable deduction
<i>Qard-e-hassanah</i>	financial loans without interest charges
<i>Qiyas</i>	legal analogy made by reference to past rulings using <i>Ijtehad</i> on an issue confronting the Islamic community at any time
<i>Quran</i>	the Divinely revealed book on the Prophet Muhammad, believed by Muslims to be the universal book of knowledge to all humankind
<i>Riba</i>	literally meaning an addition over and above the market value of a good; thus applied to mean financial interest but can also be applied to mean profiteering
<i>Sharee</i>	participant in the decision-making process of the Shura and charged with the interpretation of the tenets of Shari'a.
<i>Shari'a</i>	Islamic law
<i>Shirakah (Musharakah)</i>	equity participation practised by Islamic banks
<i>Shura</i>	the embryonic consultative assembly of Muslims in all forms of organisations comprising the Islamically learned and representing all walks of life and empowered to address all affairs of life facing the Islamic community at a time, and in this way offering rulings on matters of <i>Ijtehad</i> and <i>Ijma</i> .
<i>Sunnah</i>	totality of the traditions (sayings and practices) of the Prophet Muhammad, comprising the second source of the Shari'a after the Quran

<i>Taqwa</i>	God-consciousness
<i>Tawheed</i>	belief in the oneness of God as the substantive essence of universal order
<i>Tawheed-al-Uluhiyyah</i>	the belief in God as the Creator of the universe
<i>Tawheed al-Rububiyyah</i>	the belief in God as the Guider of universal order
<i>Ulema</i>	the Islamically learned and pious
<i>Ummah</i>	the Islamically conscious community of Muslims
<i>Zakah (Zakat)</i>	annual wealth tax in Islam levied on all forms of financial savings, jewellery, livestock, incomes and forms of wealth held in liquid form after payments of obligations

Introduction

The Quranic principle of social change is based on the continuing struggle of right against wrong, on the establishing of the righteous path in all functions of life, and on the promise of a victory for truth over error. The Quran thus invokes mankind to enjoin what is right and forbid what is wrong. The standard of right and wrong is taken by the Quran from the scale of Universal Godly Laws that it claims have been passed down by the great prophets of antiquity to all humankind. These laws have set unique standards of truth, justice and fair dealing for all nations of the world over time. These laws are developed in detail to apply to all functions of life and, in the Islamic context, they are further extended by authoritative Islamic research (*ijtehad*) and ratified by consensus (*ijma*). The medium for *ijtehad* and *ijma* is the Islamic consultative body, known as the *shura*.

The important function of the *shura* is not only to evolve a structural transformation process of the Islamic social order in the short run; rather, it is also entrusted with the responsibility of carrying out this function over the lifetime of nations, while developing more dynamic and advanced forms of ethical interactions between Islamic polity and the great ecological order. A subsystem of this total social order is the market environment. The responsibility of this Islamic structural change is thus bestowed upon and shouldered by people of high Islamic commitment, motivation and learning, who carry on the process from generation to generation through eternity.

The history of humankind in general and of Islamic socio-political movements in particular have been chequered by ups and downs in the process of change. But in Islam, it is not the physical setback of the movements that constitutes any semblance of defeat, for truth is abiding, immortal; instead, it is the lethargy and dormancy of the Islamic movement that results in a moral void in the affairs of society. The success of the Islamic movement, on the other hand, lies in devotedly, consciously and wisely rising to the call of establishing righteousness in the social order. Those who shoulder this great responsibility make up the nation of Islam (*ummah*).

The belief in the one, true and ever-existing God, as the creator and guider of the Universe (*Tawheed al-Uluhiyyah* and *Tawheed al-Rububiyyah*), the primacy of His laws in the social and cosmological orders, and their practical implementation in the affairs of the

world, constitute the foundation of the *ummah* and its functions. In this light, therefore, the study of Islamic economics must necessarily be embedded in the broader study of the Islamic political economy. The above-mentioned goals of the Islamic political economy are manifest conceptually and practically in the responsibility of the *ummah* and the functions of the *shura* that the *ummah* constitutes.

The appropriate approach to the study of Islamic economics being the Islamic political economy, the assumptions, instruments or institutions, methodology and results of social ordering are bound to be significantly different from the received economic doctrines. The most important in the order of distinctions are to be seen in the neoclassical economic doctrine, classical economic doctrine (including Marxist doctrine), Keynesian economics and offshoots of these. The closest connection with Islamic political economy is the school of humanistic institutional economics.

The principles of Islamic political economy are also different from the Kantian and Ruskinian type of thinking that have recently entered studies in humanistic economics. The distinction arises in terms of the Kantian, Ruskinian and Maslowian belief in the dual-self, and the Quranic belief in the eternal goodness of people and the non-existence of a dichotomy between Islamic laws and the righteous laws of the social order.

In the concept of the dual-self, Kant dichotomises a human being as a split entity with 'one foot in the sensory kingdom of nature, and the other in the intelligible or comprehensible kingdom of reason'. In Kant, a man is separated between his 'noumenal' self and the phenomenal self. Ruskin as a social reformer envisaged the structural inadequacy of the market system to eliminate economic injustice in society. He too, like Kant, equated the laws of this world with the laws of the devil, and equated the laws of 'faith, generosity, honesty, zeal, and self-sacrifice' with 'poetical phrases'. In Maslow, a social psychologist, one finds a hierarchy of values culminating in what he calls self-actualisation. In this hierarchy of values, it is satisfaction of basic material and social needs that leads finally to moral or self-actualisation needs.

The Quran presents a model of a human being who is capable of repeating mistakes, but who is not a condemned entity. The Quranic distinction between good and bad in humans is not shown as an impersonal, but rather as a societal, phenomenon. It is indeed the environment that has been shown to determine values and transformation in the individual, for better or for worse. Thus it is the environ-

ment which must be transformed collectively by individuals through their exercise of God's laws. The new Islamic environment would make all individuals morally good, self-actualising exponents of material and moral progress. The Quran, when it narrates the historical events of destruction of nations, points to their socially moral deprivation. The Quranic principles emphasise God's bestowing of continued opportunity to individuals for their ethical reformation. Thus we do not find the assumption and the implications of the dual-self in the Islamic model of people, the environment, the social order and the political economy.

The central role played by the *shari'a* in transforming society, while upholding the individual rights of humankind, makes the market place predominant in the structure of the Islamic political economy. Yet this market environment is different from the hedonistic market place. It is an engine of ethical transformation of consumption, production and distributional values in concert with the overseeing institution of the *shura* and other social regulatory agencies of the Islamic market environment.

The principles of Islamic political economy are therefore distinct from those of received economic and social doctrines. Consequently the methodological foundations are distinct. The high scientific nature of its methodological inquiry endows the field of Islamic political economy with the potential of the future scientific revolution in the annals of thought. This point is attested first by the distinctly new assumptions, instruments or institutions of the Islamic economy, which are seen to be internally consistent with each other. Second, the ethico-economic goals of the Islamic political economy are consistent with the shuratic institution of change. Third, the Islamic political economy establishes a special kind of general equilibrium ethico-economic system. Fourth, the extension of the principles and working of the Islamic economic system is seen in all sectors of the domestic economy and in international economics. Furthermore, the normative and positive elements of the Islamic economic models are empirically viable, and they lead to important policy results.

In this book it is our objective to develop the substantive and methodological foundations of the Islamic political economy. We will then rigorously elaborate on the five areas mentioned above. In the attempt we will establish the Islamic political economy as a well-pronounced framework of a scientific revolution in the annals of thought.

To help accomplish our objective, this book is divided into two

parts. The first part develops the theoretical foundations of the principles of Islamic political economy. The second part develops the applied and policy-theoretic perspective to combine with the descriptive aspects of the theoretical structure.

Chapter 1 formalises the role of the *shura* and the principles and instruments/institutions of the Islamic political economy in establishing the Islamic theory of value and social price formation. The basis of Islamic theory of value is shown to emanate from the process of social consensus formation, evolving out of interactive feedback loops between polity and market environment. A rigorous comparative study is done on the theory of value.

Chapter 2 develops an Islamic theory of social choice and social welfare. The important aspect of the social welfare model here is the formalising of interrelationships among (market) state variables and (ethical) shuratic policy variables. The nature of Islamic social consensus formation in the *shura* and the two-way interaction between polity and the market environment is further formalised. With the Islamic social welfare function and the constraints being well defined, a dynamic Islamic social welfare maximisation problem is fully studied.

Chapter 3 introduces the ethico-economic perspective of cost-benefit analysis into an Islamic formalisation of cost-benefit analysis. The focus here is to examine the prevailing ideas among Islamic economists about the concept of opportunity cost of resource allocation. We then establish the rationale for using a viable measure of opportunity cost in the Islamic social cost-benefit model. This measure of the discount rate is formalised in the context of the contingency-goal/priority-time dependent cardinal social welfare function established in Chapter 2 for the Islamic economy. The discount rate is shown to be a function of the state variables and policy variables in the Islamic political economy, and is a function of the profit rate and price level in the Islamic capital market. Having properly defined the Islamic social welfare function of the cardinal type and the cost-benefit model based on the state variables and policy variables, a social welfare maximisation problem with the cost-benefit condition is fully analysed.

Chapter 4 expounds a theory of the Islamic profit-sharing system under economic cooperation known as *mudarabah*. The nature of share capital financing of *mudarabah* is explained. The adjustment between demand and supply of *mudarabah* finance, the nature of risk-diversification, the relationship of optimal resource mobilisation and of factor utilisation to the profit-sharing ratios (and thereby the

profit rate) are rigorously formalised. *Mudarabah* is shown to play a critical role in equitable resource distribution in the Islamic economy. In this context, a generalised dynamic optimal resource allocation and distribution problem of the Islamic economy is shown to lie in the application of the Islamic net social cost–benefit model to the problem of resource allocation through *mudarabah*. The Islamic theory of *mudarabah* is comparatively evaluated with other forms of cooperative profit-sharing institutions.

Chapter 5 examines an application of the Islamic form of humanistic institutional economics in resolving the great economic problems of contemporary times. These problems are studied from theoretical and real perspectives. The important issues of integrating distributive equity with economic efficiency, the interrelationship between state variables and policy variables through the shuratic feedbacks between polity and the market environment, and the basic needs prescription of development, are invoked in the Islamic approach to resolving the great economic problems in an integrated way. The theoretical perspectives of resolving the great economic problems are shown to be in bridging gaps between theory and policies in the political economy. Here the normative and positive nature of Islamic economics is examined in light of the scientific evaluation of a paradigm.

Chapter 6 begins the applied section of this book. Here the principal features of the Islamic macroeconomic model are developed in keeping with the principles and instruments of the Islamic economy. A cardinal type of the social welfare function formalised earlier in the text is made the basis for the derivation of first-order relations among the critical state variables and policy variables of the Islamic economy. These derived equations are then examined for expected interrelationships among the state and policy variables in the Islamic economy. The appendix to this chapter introduces the computational concept of the effective rate of *zakah* (a wealth tax). This is used to establish the equivalence between the *zakah* rate and revenue in the cumulative wealth formation sense, and the annual rate of tax on incomes and the revenue from income taxes.

Chapter 7 undertakes an actual quantitative exercise in positive Islamic macroeconomics. The regression estimations are repeated with various choices and combinations of critical variables. The final results are explained in relation to the established theoretical results for various sectors of the Islamic macroeconomy. Detailed statistical analysis of the empirical results is carried out to establish their degree

of reliability and power to explain the critical interrelationships in the Islamic economy. The case study of Malaysia is taken as a good example of an economy devoting itself to a long-run Islamic economic transformation.

Chapter 8 is a policy-theoretic examination and study of Islamic policy prescription for the Islamicisation of the Malaysian economy, which is found to have taken good steps in this direction. The policy perspectives of Islamic macroeconomic model estimations are studied in relation to the Malaysian New Economic Policy (NEP) and the Fifth Development Plan. The implications of Islamic policies as regards attaining distributive equity and economic efficiency in the Malaysian economy are elaborated upon.

Part I

The Theoretical Foundations



1 Islamic Economic Thought in Comparative Perspectives: Towards an Islamic Theory of Value

It is our purpose in this chapter to formulate the theoretical foundations of Islamic economic theory in the following areas in comparative perspective: (a) the theory of value and price; (b) social policy development endemic to the formation of value and price; and (c) internal consistency between the principles/assumptions and the theoretical system explaining value and price formation. The comparative economic paradigms that we will consider here are classical and neoclassical thought, Marxist doctrine, the Keynesian school and the post-Keynesian schools. Several other contemporary developments in these areas will also be comparatively discussed. The emphasis of this chapter will be on the theoretical foundations of the subject matter, with a view to bringing out the methodological problems of the three areas mentioned above.

EXPLANATION OF FOCAL CONCEPTS

Let us first explain the concepts underlying the three areas we have pointed out as the focus of this chapter. The concept of value in economic theory is generic to the evolution of market price and also plays a central role in explaining the allocation of resources and distribution of the output of production. One can at once see that value theory is attached to value judgements surrounding the assumptions of the given economic system being used to explain price formation, production and distribution. On the side of price formation, it will matter whether we are treating demand prices or supply prices. When demand prices are addressed, it is customary in the literature to associate value theory with maximisation of consumer utility function or a consumption-based social welfare function.¹ When supply prices are addressed, it is customary to associate value

theory with the maximisation of a managerial or firm utility function. Now, if prices are further assumed to evolve out of a market clearance process involving large numbers of buyers and sellers, then value theory suggests a global utility/social welfare maximisation problem such that a set of demand prices can be determined out of the marginal utility to consumers, which in turn can be equated with the marginal utility to sellers. Seller prices can be shown to evolve out of these latter types of marginal utilities.²

There are other ways of representing value theory in terms of price formation. The social aspect of price formation is one such alternative. Here we are faced with a question: Can utility/social welfare function be used to redescribe the methodology of price formation, or should an axiomatic, and finally, a public-choice type of decision-making framework be used to address the question?³ The answer to this question will depend very much on the way that philosophical, epistemological and social issues on value formation can be introduced into the utility/social welfare function and other similar frameworks.⁴ The relationship of these imponderable elements to prices of tangibles in an intertemporal framework of allocation and distribution of resources must be established. It then becomes necessary to redefine the premise of utility/social welfare formulation, moving away from interpersonal comparisons and ranking of options on the basis of the transitivity principle. Instead, the introduction of these new forms of welfare concepts must be capable of addressing the following dual problem in an integrated way: institutional social pricing and policy formulation, and the income or resource distribution problem. There must be a logical link between these aspects of the value theory in this comprehensive sense.⁵

Overall, therefore, the theory of value and price that is being inferred here is not simply based on the market mechanism. Rather, value here is taken in the broadest sense of including institutional norms, epistemological rules and social considerations which comprise the non-market phenomenon and inescapably find their way into the social decision-making process of price formation, the nature of production and distribution. The important point to note here, however, is that in spite of this normative approach to the problem of value and pricing, the focus is still on evolving a set of market prescriptions with the help of social prices. Social prices will be shown later to evolve out of social consensus formation; they are not market determined in the *laissez-faire* sense, but are still an alterna-

tive form of efficiency indicator in the allocation and distribution of resources within a market setting.

We next turn to an explanation of the process of social policy formulation that uses the method of social price formulation as the foundation of value theory and prices. Social policy domain here is taken in the broadest sense to include both economic policies and ethical ones. The great question of establishing socially desired types of consumption preferences and production menus, and evolving the distribution principles out of these, will be shown to underlie social policy formulation.⁶ This relates to the use of social prices as indicators of policy considerations arising out of social consensus on policy matters. The important point to note here is that, like the evolution of social prices, the process of social policy formulation in the above sense is aimed at the growth and sound functioning of the market.

Finally, the idea of consistency between the assumptions and working of the social pricing–social policy system will be explained here in terms of the particular economic system, addressing specified objectives and using methods for evaluating the internal relationships for logical connectedness. A methodological problem will then be developed in this area.

A REVIEW OF THE LITERATURE ON COMPARATIVE THEORY OF VALUE AND PRICE

Classical Economic Thought

In contemporary economic thought the Ricardian school of the classical period is associated with the theory of value and prices. Briefly, the price of a good is shown in this system to be equivalent to the value of labour time in economic production. Thus the output of production is shown to be totally used up in wage payments to workers, profits to owners of capital and rents to owners of primary resources.

Dealing with the Corn Economy of the time, Ricardo pressed for a repeal of the Corn Laws in favour of industrialisation. His arguments in favour of this were, first, that with the principle of *laissez-faire* being applied to market price formation, the British economy would be opened to competition in the world market. This would lead to a

drop in the price of corn, and result in a smaller share of the price being paid out in wages. The capitalist and rentier would not change their shares of profits and rents in the price of corn. The squeeze would be borne totally by the workers and this would lead to their impoverishment.⁷ The second point raised by Ricardo was that with a growing population, as was generally to be found in a predominantly agricultural economy, the per capitem share of labour in the total wage bill would fall, leading again to its impoverishment, while benefiting the capitalist and rentier. In arguing this way, Ricardo borrowed from the Malthusian theory of optimum population and wage determination.

In the manufacturing sector, Ricardo saw a direct link between the profit rate here and the agricultural profit rate, the two sectors being interdependent. Thus, with the profit rate falling in the agricultural sector due to lower prices of products and population pressures, the profit rate in the manufacturing sector would be pulled down. In the long run these returns will tend to be equated with the marginal type of land and the marginal type of manufacturing activity. Basically, then, what this kind of analysis suggests is the paradigm of profit maximisation that can be achieved in the manufacturing sector, leading thereby to capital formation and economic growth. But, in all these, the share of labour is treated as a residual of output after the rentier and the capitalist have taken their share; they would deduct the rent and the profit before wages are determined.

In the Ricardian economic system labour would necessarily be worse off with an increase in population. His tripartite division of total output and price (unit cost of production) among the rentier, the capitalist and the worker, must necessarily assume the capitalistic forms of institutions that prevail and thrive in this type of production environment.

This Ricardian mentality in economic thought extends to a similar scenario in international trade theory. The implications here are that population growth would give rise to immiserising growth in a country using a labour-intensive production menu, and there will be a welfare-decreasing effect of population increase on the terms of trade of that country. The explanation for this scenario is again linked to the residual problem of wage determination and its effect on the national income in the Ricardian type trade model.⁸

The dismal conclusion of the classical long-run models of value theory and price determination is that population growth and long-run depressive trends in agricultural prices and rents/profits are

inevitable. One must now note that such a deduction about the declining rate of profit is the result of the classical assumptions of profit maximisation in a capitalistic economic system with residual wage determination. This was considered necessary during the Industrial Revolution that was sweeping England at the time. Capital formation in the manufacturing sector was emphasised over the agricultural sector. One must also note that in such a system, *laissez-faire* being upheld, there is no scope for market regulation and therefore no scope for the social contravention of equity to co-determine social prices in an alternative scenario of efficiency. The classicists, in the name of Adam Smith's invisible hand principle, had rejected the scholastic concept of just prices.⁹

The classical school has therefore nothing to contribute to the comprehensive paradigm of value and price in the social pricing-social policy sense. The implications of the classical analysis in this area are misleading and inappropriate, and should consequently be avoided. It is a pity that many economists in the developing countries had resorted to such models as the Harrod-Domar model of economic growth, the Rostovian linear stages model and the steady state growth model, which are simply given versions of the classical models of growth ineptly fitted to answer the problems of economic development.¹⁰

Neoclassical Economic Doctrine

The economic system of the neoclassical school revolves around the marginalist principle. There was no theory of value in this school of the comprehensive type to explain social price determination. Price formation evolved out of marginal utility on the demand side. The supply price was taken in the classical sense as the market price. Equilibrium prices evolved out of the market adjustment between demand and supply prices and quantities, such that the consumer utility function and firm's profits were maximised simultaneously. What this mathematical dual problem of consumption and production implies is that market forces with minimum intervention would establish perfect harmony between the consumer and the producer. On the other hand, with market intervention would come suboptimal levels of economic welfare and output. Thus there is a trade-off between economic efficiency and distributive equity in resource allocation in the neoclassical doctrine. As with the classical school, the neoclassical doctrine of marginalism did not contribute to

the theory of distribution. The market alone was assumed to be a social arbiter for optimal resource allocation.

There are basic contradictions in the objective criteria of neoclassicism and its inheritance of the profit-maximisation objective from the classical school. The contradictions arise due to the acceptance of the type of tripartite distribution of output, in which wage determination appears as a residual process. Resource allocation is then explained in terms of the resulting concept of economic efficiency as being optimal and welfare-maximising. Any market intervention in this process was unwanted. Consequently, for the same reasons as in classical economic thought, the neoclassical economic doctrine is incapable of formulating a comprehensive theory of value and prices in the social pricing—social policy sense. The neoclassical damage to the foundation of such a value theory and pricing is extensive.

Received welfare economics and social choice theory founded on the neoclassical tradition are found to be equally inadequate in answering the comprehensive concept of value and price in the social context. Myrdal reflects on these neoclassical offshoots in the following words:

Hundreds of books and articles are produced every year on 'welfare economics', reasoning in terms of individual or social 'utility' or some substitute for that term. But if the approach is not entirely meaningless, it has a meaning only in terms of a forlorn hedonistic psychology, and a utilitarian moral philosophy built upon that psychology. I have always wondered why the psychologists and philosophers have left the economists alone and undisturbed in their futile exercise.¹¹

Thus, if welfare economics and social choice theory in their neoclassical mould are steeped in hedonistic utilitarian moral philosophy, then the same system of analysis is equally incapable of extending itself to the greater issues of ethics and values as the foundation of social pricing. Here, the New Institutional Economics (NIE) is subsumed within this criticism, the reason being that Arrow's conceptualisation of an organisation is still based on perfect competition assumptions; the capitalist organisation is the focus of study; and efficiency ramifications as found in the neoclassical school are the basis of his transaction-cost-minimising model of the behaviour of NIE. The gripping nicety of the neoclassical school is ever-present in NIE. Consequently it is impossible to tackle in this system

the questions posed by the comprehensive value theory based on social pricing—social policy considerations.

A Methodological Diversion

Before leaving this section, we will now pose the following question: although the neoclassical type of utility/social welfare function is unacceptable and inappropriate for a comprehensive analysis of value, could such a criterion be improved upon or could similar criteria be introduced to explain the impact of a list of socio-economic factors underlying value formation in the comprehensive sense, and then to generate prices out of these criteria? The answer is yes.

Here we will examine some cases of mathematical functions that, although they are called utility indexes, are used in ways different from the neoclassical concept of utility functions, and which can be used with different economic goals in mind. The first one of these is the Harsanyi type of cardinal utility function.¹² Some variations of this type of welfare index will also be considered. Another type of utility function that includes distributive equity in it is given by Rescher.¹³

A cardinal utility is here taken as a welfare index measured in terms of some critical socio-economic variables. This index simply indicates the level of social welfare across the economy, given values for the socio-economic variables. The values assumed by the socio-economic variables can be probabilistic in nature, and would then be subject to certain contingencies of occurrence. The indices so defined are not used for interpersonal comparisons of utilities (by this is meant the ranking of subjective consumption preferences of individuals or groups of individuals by the transitivity principles) for, if proxy variables or imponderables expressing the state of ethical and moral standards of society are introduced in this welfare index, the index would then rank social well-being in terms of socio-economic variables and ethical policies. The socio-economic variables and ethical targets not being of the interpersonal type, the welfare indices cannot be used for interpersonal comparisons of utilities.

Another type of cardinal utility is derived from interactive decision-making among large sets of agents. The result is shown in a tree-model of probabilistic decision-making. What emerges now is a weighted welfare index of critical socio-economic variables that allow for ranking of decisions but which do not lend themselves to

interpersonal comparisons of utilities. Matters of ethics and values are introduced in this framework of cardinal welfare by prescriptions of certain given laws or rules governing the decision-makers. These prescriptions objectively represent the ranking of the welfare indices of the critical socio-economic variables, subject to the interpretation of the laws and rules. This idea turns out to be like Harsanyi's rule utilitarianism.¹⁴

Still another variation of the cardinal type of social welfare function is the Gordon type.¹⁵ In this, critical state (socio-economic) variables and target variables (policies) appear as explanatory variables.¹⁶ Gordon takes these variables at the macroeconomic level, as rate of growth, price level and unemployment. It is my view that such aggregative forms of cardinal utility indices do not explain the process of value formation in the comprehensive sense. Value formation starts essentially at the microlevel of individuals and institutions. The macrolevel forms of cardinal indices must be made to reflect these microlevel ethical transformations. In such a case only can the cardinal welfare index answer the critical questions of social transformation taking place under the impact of the governing laws and rules pertaining to consumptions, production and distribution.¹⁷

Next we consider the problem associated with Rawls's type of welfare index with distributive equity in it. Rawls states that society can be considered to be well-off if the needs of the poor are improved upon even if this leads to a decrease in the economic welfare of the rich.¹⁸ The social welfare frontier is then endowed by L-shaped indifference curves in basic needs and luxury goods.¹⁹ What this means is that there is no trade-off, but rather complete independence, between the menu of basic needs and the menu of luxury goods facing society. Society can then use two sets of state and policy variables to pursue these menus independently.

Problems arise, first, due to resource constraints that must necessarily generate trade-offs in this neoclassical framework. Second, there is a problem of aggregating these L-shaped indifference curves intertemporally. If society is continuously faced with L-shaped indifference curves then, over time, there being no shift in the state and policy variables towards the consumption menus, there will not be any change in the production possibility curve either. The points of social equilibrium lie on a homeothetic expansion path, meaning that there is no relative improvement in the social status of the poor and the rich, although both gain in absolute terms. Social change cannot occur in such a situation. Consequently, Rawls's goal of distributive

equity cannot be realised. There is no social transformation of consumption or production menus, and therefore none of distribution. The formalisation in Rawls's type of welfare function is of a neoclassical essence. This has been criticised earlier as being incapable of yielding answers to the issue of value and price formation in the comprehensive social pricing-social policy sense.

The rationalisation for using a mathematical function – call it utility, social welfare or any other – for measuring the socio-economic betterment of society, and to rank alternative states and policies, means that we must necessarily reject the neoclassical marginalist approach. This is so because of the inability of the marginalist approach to answer questions of value and price formation in the comprehensive sense.

The next question, then, is must we also abandon the maximising objective? The answer to this is a selective negative. If neoclassical methodology is to be rejected in developing the comprehensive theory of value and price, then surely the maximising principle based on ordinal utility, normal profits and discounted time-dependent income streams must also be abandoned. However, consider the social objective of improving the economic status of the poor in society, the control of pollution and social evils, the consumption and production of social goods having the characteristics of appropriate production and social control of production, and so on. In such cases the objective criteria are again optimising ones. But now they include both state and policy variables. The concept of a trade-off between equity and efficiency is avoided, in favour of policies (such as manpower policies, incomes policies, distributional policies) that can establish an intertemporal equity-efficiency simultaneity or balance.²⁰

Thus rejection of the marginalist approach in developing a comprehensive theory of value and price formation does not necessarily negate the validity of optimising objectives. The partial differentials of the optimising problems now only explain the properties of curves, but are not related to price formation. Instead, it is the simultaneous relationship between the state and policy variables that would monitor the ethico-economic system to its desired optimum state.²¹

Marxist Labour Theory of Value

Marx was the product of the Ricardian school, in that he addressed the theory of value that Ricardo had studied. The innovative twist was that in explaining the labour theory of value Marx identified two

forms of capital that take part in the production process: first, constant capital, used to replace depreciated capital during the production process, and thus to maintain the productive capacity; second, variable capital, used for paying wages to workers. The result of these two types of capital formation was both to produce socially required product using socially required labour and to produce an excess amount of product for generating an economic surplus, using excess labour. The surplus is returned to capitalists and rentiers only (not to workers), while the socially required output is returned to workers. Marx further said that the surplus is used for four specific purposes: (a) to buy more productive capacity; (b) to buy more luxury goods; (c) to pay interests and rents on capital; (d) to pay 'unproductive' labour.²²

In the Marxian system the social price of a good must equal the unit cost of socially required output. The question of whether there is actually an economic surplus and, if so, how it is distributed (and how it should be distributed), are questions inimical to a critique of Marxist theory of value; it should be replaced by an alternative in developing a comprehensive theory of value and price. We will now address this topic.

The neoclassicists reject Marx's dichotomy of socially required labour and unproductive labour. They argue that 'unproductive labour', comprising rentiers and capitalists, does play a role in production although not necessarily by participating in the work force. Sraffa accepts the Marxist dichotomy, but shows the surplus to be made up of rents, profits and wages.²³ The issue more fundamental to the problem of distribution of the surplus is, therefore, intrinsic to the nature of the producing institution.

Marx focused on the capitalist and rentier institutions. In this situation, three conditions can attain: first, there can be perfect competition, in which case there is obviously no scope for surplus to exist. The neoclassical version of the product exhaustion theorem answers distribution as resource allocation. Second, when imperfect competition and monopoly exist in the product and labour markets, then economic surplus will arise. The alternative then is to alter the pattern of production from competition to economic cooperation and profit sharing. Labour would participate with owners of capital and itself become a decision-making unit, owning capital. The surplus is now redistributed to labour. In the limiting case of the non-wage economy, with perfect profit sharing under cooperation, the surplus disappears. Third, during the transition phase from imperfect com-

petition to perfect cooperation, wage labour will exist. The alternative in this case would be to impute a value to the input of labour time as an investment in the production process made by labour. Then this value of labour time would be used to prorate the shares of profit on the basis of wages received and the share of the invested labour time. The surplus is again reduced to zero in this case.

In all cases we therefore find that the surplus is either non-existent or can be totally redistributed by a change in the production menu from an imperfectly competitive one (including monopoly, monopsony) to a cooperative one on the basis of profit sharing. Two further points must be noted here. First, the alternative production process that will redistribute the surplus must be oriented to the production of socially appropriate goods, and must be based on the social control of production, in which case workers and owners would have equal rights of participation in management and production. Second, in the case of assetless workers/peasants, they will still hold equal rights in decision-making by virtue of their invested share of the value of total labour time.

The analytical weakness of Marx's economic analysis of the surplus can be further seen in his transformation problem. For an extensive criticism of Marxian theory of value with respect to the transformation problem, showing the inadequacy of this theory in explaining wage determination and the embodied share of wages in price formation, one can refer to Blaug.²⁴ Here we intend to bring out two specific concerns with the transformation problem: first, note that the organic composition of capital in Marxian system not being constant spells the inability of the value rate of profit to equate with the money rate of profit.

Consequently, direct prices, which play a role in producing socially reproducible output, must diverge from market prices in the short run. With increasing money wages in this system, not yielding to the Malthusian optimum population condition (Marx had to abandon this theory to construct his labour theory of value), direct prices will increase and labour will come to have a higher share of the Sraffian type of surplus value. Consequently, the impoverishment of labour in a market economy will cease and, at the point when social cooperatives can be formed, will disappear. This latter long-run market change can occur via another medium as well.

To investigate, we consider the product prices, which are a certain multiple of direct prices. In Marx's transformation theorem the implication is that in the long run these product prices converge to

market prices, and in so doing eliminate the surplus.²⁵ This is simply a classical version of long-run market equilibrium. By the arguments presented earlier, this long-run classical equilibrium situation is inadequate in explaining the comprehensive concept of value theory and price formation.

A further contradiction arises out of Marx's transformation theorem, being now one of converting direct prices into product prices. That is, if direct prices are proportional to labour value, then how is it that product prices do not reflect labour value? Consequently, if direct prices diverge from market prices, how is it that product prices would converge to equilibrium prices? The only possibility for resolving this contradiction is for the 'rate of exploitation' to go down and for the organic composition of capital to go up. This would then make profit rates tend downwards and equalise, both in value terms and money terms. When this happens, the Sraffian type of surplus suggests that labour share in output will increase and its impoverishment will decline. In the limit of institutional change to cooperatives, the surplus will completely disappear.²⁶

The above-mentioned basic flaws in the Marxist transformation theorem, along with the invalidity of his labour theory of value in a global context (except in the case of corporate capitalism), shed doubt on the applicability of this paradigm in realistically explaining distributive equity in relation to social consumption and production menus. Consequently it cannot explain the ethico-economic foundations of the comprehensive value theory and price formation.

Keynesian School

Of most contemporary economic doctrines the Keynesian school comes nearest to answering the questions of ethics and values in the economic system. This is so because the Keynesian school opens up the economic system to policy issues. Among the types of policies that can be considered are social policies, addressing ethico-economic goals. However, there are two fundamental problems in the Keynesian system as regards comprehending the ethico-economic elements of analysis. First, we recognise that the social welfare function in the macroeconomic sense is of the cardinal type defined earlier, and is, therefore, objectively useful for decision-making on social issues emanating from the given socio-economic condition, social-price formation and policy simulations surrounding these. However, if ethics and values are to be considered as the principal

foundation of social price formation, then the building blocks of the micro-ethico-economic state and policy variables influencing social consumption, production and distribution must reflect themselves in the macroeconomic social welfare function as well.²⁷ This is referred to as the microeconomic foundations of macroeconomic theory in the literature.²⁸

Post-Keynesian Economic Thought

Here, we will first discuss the monetarist and Keynesian debate and then work out the consequences of this on the comprehensive theory of value and price. The monetarists, led by the Chicago School under Friedman, argue that the economic system must not be put under fiscal intervention. They argue that fiscal intervention generates price expectations that cause inflation. On the other hand, they argue in the quantity theory of money that if the small scale of money supply is maintained and prices are allowed to adjust to this, then there would be no fear of inflation. The monetarists thus stand for a *laissez-faire* economic system very like the classical school.

The Keynesians, on the other hand, argue that in spite of money supply being targeted by the monetarists, there could be gaps in investment leaving unused the money created. This happens when investor confidence is low and spending is not forthcoming, in the economy. Unutilised money supply will generate inflation. They also argue that when investor confidence is low and spending is not forthcoming then governments need to stimulate aggregate demand through such measures as reduction in tax rates, incomes policies and several other types of social policy.²⁹

The arguments between the two schools in respect of inflationary price movements are similar. In the Keynesian school it is the demand-pull type of inflation that arrests permanent price increases by either pushing up equilibrium levels of income to full employment levels of income by a one-shot fiscal expansion, or by reducing a high level of equilibrium income to the full employment level. Here, a market force is seen to be in action. Aggregate demand is seen to go down because prices are too high, hence the aggregate demand curve shifts to the left.

On the other hand, the monetarists argue in favour of an 'unanticipated' supply of money, one that would not leave time lags over which price expectations can be formed. Such rational expectations would not result in price spirals. Thus, by targeting the 'unanticipated'

money supply and causing measured reduction in the rate of interest to meet this type of money supply, the monetarists are addressing the same type of non-inflationary movements in the price level as the Keynesians.³⁰

The policy implications of the two schools are, however, quite different. To the monetarists market process is the champion of social arbitration. This is the long-run classical and neoclassical approach once again; hence, there can be no social policy impacts addressing the issue of distributive equity in the monetarist regime. Furthermore, the neoclassical equity–efficiency trade-off is back. The focus of the comprehensive idea of value theory in the social policy–social pricing sense is lost.

The post-Keynesian economic system is, therefore, seen again to be a better alternative to social policy formulation. However, it is still not adequate in explaining a comprehensive theory of value for, being a macroeconomic approach to social policy formulation, it does not address the microlevel issue of value formation, which alone is instrumental in the ethical transformation of consumption and production menus, or evolve the distribution problem out of this.

This concern is raised by Thurow in another way.³¹ He refers to the problem raised by the flexible nature of microeconomic market prices on the one hand and the macroeconomic nature of inflexible price indices on the other. Thus arises the problem of aggregation from the microlevel to the macrolevel. The effect is profound because, if the two types of prices are not of similar nature, the output aggregation and distribution issues addressed at the two levels are then quite disparate and unresolvable. Here, we are referring to all forms of prices: product prices, wage rates and interest rates. This is the inadequacy of the Keynesian school in formulating the comprehensive theory of value, with social pricing and social policies being central to it. In other words, the post-Keynesians do concern themselves with the social policy aspect of economic activity, but not the social pricing aspect.

Summary

We have now covered a vast area of economic thought respecting the central focus of economic analysis: the theory of value. We have criticised all received theories of value in the light of the alternative, more profound and more important concept of value: that is, the comprehensive theory of value based on social pricing and social

policy considerations. It was argued that these aspects of the theory of value can address the issue of the ethical transformation of the consumption menu, the production menu and, evolving out of these, the distribution menu. The basic problem in received economic theory as regards formulating this concept of value arises from relegating the economic process to a purely market process, either under perfect competition or under imperfect competition. It also arises from the intrinsic problem of aggregation of microlevel economic preferences, prices, output and other variables, to the macrolevel.

Instead, what we should be looking for in a comprehensive value theory is a cardinal social welfare approach, from which a set of consumption, production and distribution menus can be derived and subjected to policy simulations. We have also pointed out that the problem of economic surplus manifests itself because of the capitalistic kind of institution that is questioned. The alternative to this is the competitive-cooperative institution, wherein the principle of redistribution of the surplus among workers and owners of capital through a profit-sharing system under cooperation wipes out the surplus.

This brings us to an alternative theory of value and price formation given by Islamic economics. Value theory will now be shown to stand out distinctly as a new paradigm of social pricing-social policy formulation. The Islamic economic system is an ethico-economic system *par excellence*. As such any value theory developed in it must necessarily explain the comprehensive theory of value.

THE ISLAMIC ECONOMIC ALTERNATIVE TO THE THEORY OF VALUE AND PRICE

We refer back first to the original objectives of this chapter: namely, the development of a comprehensive theory of value; the determination of social prices based on this theory of value, and establishing interrelationships among the principles/assumptions; and the working of the theoretical ethico-economic system of Islamic economics. In this section we will first address the issue of social policy formulation from an Islamic economic perspective. Then we will explain the process of social price formation emanating out of this social policy formulation process. After this we will integrate the two to formulate the comprehensive theory of value.

Islamic Process of Policy Formulation

Islamic economics is endowed by its cogent set of principles/assumptions and a set of policy instruments that make these principles work in the Islamic economy. The guiding laws and rules governing these principles and policies are the Islamic Laws (*shari'a*). The institution that undertakes the policy-theoretic process in this system is a consultative body known as the *shura*. The *shuras* are very decentralised and democratic in form. They extend to all departments of the economy. Decision-makers in a *shura* would comprise scholars of divinity (*ulemas*), the educationalists, government, employers, labour, and community members and others.

The process of policy formulation is interactive among the participants, and decisions are constantly evaluated. Each group of decision-makers brings with it a set of preferences on economic matters. These are developed from some cardinal welfare indices to which they have recourse. These are functions of critical socio-economic variables and a set of policies in conformity with the *shari'a*. The *shura* then deliberates on these issues and ranks the welfare indices with policy inputs of its own.

The final social welfare index emerging from the *shura* is thus a function of socio-economic variables (state variables) and a set of policy variables. The preferences generated in one department-specific *shura* is subsequently passed on to higher levels of *shuras*, which further consider these decisions and policy objectives before passing the interactive decisions to still higher levels of *shuras*, finally ending with the nationwide *shura*. In this way we have stages of decision-making corresponding to the lower and higher levels of *shuras*. The final process of consensus formation is known as *ijma*. The process of decision-making in different levels of *shuras* is formalised in Table 1.1.

Note that the values of $W(k)$ and W must be positive in order to meet the expectations of the *shura* under the guiding laws and rules of the *shari'a*. But in any given sequence of interactions among decision-makers at different levels, no claim of optimality in the neoclassical sense is made. Instead, the decision-making being iterative, it establishes continuous loops of feedback among the groups of decision-makers representing the market view, and the stages of *shura* representing both the market view and the polity. Thus the net result of the *shura* deliberations is to come up with several dynamically evolving sequences of optimal decisions. Each one of these

Table 1.1 Integrated decision-making in Shuras

Stage 1	Stage 2	Stage 3
Made up of sets of decision-makers in the first stage of decision-making.	First stage <i>shura</i> evaluation leading to a decision criterion.	Final stage of the <i>shura</i> decision with social index determined.
Let $x(i, j, k)$ denote the i th socio-economic variable in the social welfare index of the j th decision-maker in the k th <i>shura</i> .	Let $W(j, k)$ denote the final form of social welfare index from this stage of the <i>shura</i> .	$W = W(w(1), w(2), \dots, w(n_3))$
The welfare index so presented is denoted by $w(j, k) = W(x(1, j, k), x(2, j, k), \dots, x(n_1, j, k))$	$w(k) = W(w(1, 1, k), w(2, 1, k), \dots, w(n_1, 1, k), w(1, 2, k) \dots w(n_1, n_2, k))$	

$i = 1, 2, \dots, n_1$ number of variables; $j = 1, 2, \dots, n_2$ number of decision-makers; $k = 1, 2, \dots, n_3$ number of *shuras* or stages of *shura*. It is possible for some x s to be zero. This happens when some individual presentations are not accepted by the *shura*. This case will be referred to as one of 'irrelevant preferences'.

decisions is later improved upon to yield better decisions as the feedback loops between the market and polity continue. This two-way interaction between the market place and polity under the guiding laws and rules of *shari'a* forms the endogenous type of ethico-economic order in Islamic economics.

This concept of ethical endogeneity is shown by the process of social policy formulation emerging out of market-reflected values in one stage, and in the subsequent stage the market activity is remodelled after the social policies. As the *shura* deliberations continue, social policies at one stage give rise to a better ethico-economic order in the market place. This is then followed by the improved market reflection giving rise to better social policies. Thus we have the endogenous ethical transformation of the social order in Islam.³²

The market regulation is carried out by the Islamic institution of *al-hisbah*, which takes the responsibility of carrying out the ethico-economic supervision of the market.³³ In this way the market process of value formation as well as the guidance of polity in this are both maintained in the Islamic economic order.

The guiding set of Islamic economic principles under *shari'a* are taken here as the principle of *Tawheed*, the principle of total felicity maximisation, with the temporal part linked to the supreme felicity in the hereafter, and which is shown as an Islamic certainty. Then comes the principle of work and productivity, and finally the principle of distributive equity. The consistency among these principles can be established.³⁴ The point may simply be summarised here.

The crowning principle of *Tawheed* endows the Islamic economic system with constraints on individual ownership and enunciates the supreme need for social justice and brotherhood among humankind. God is the ultimate owner of everything in the universe, so humankind is shown in this framework as the vicegerent of God in this world, entrusted with the rightful use of resources, such as primary resources and produced resources and goods. Thus no absolute ownership can be claimed by people. Next, acts of righteousness in this world are the criteria for earning supreme felicity in the hereafter. This too becomes a binding constraint on establishing distributive equity, ethical menus of consumption and production and all that go with these. The principle of work and productivity is necessary to generate output, growth and efficiency in the production system, by minimising the free-rider problem among the able-bodied in Islamic society. Without work and productivity no output can be formed, and no wages and profits generated. Hence this principle is necessary to bring about distributive equity in the total economic system. Finally, we have the principle of distributive equity as the goal of the social order with respect to ethical orientation in consumption and production.

On the side of policies we have a package that mobilises the Islamic economic system around its principles and goals. This comprises profit sharing under economic cooperation (*mudarabah* in the domestic economy, *murabaha* in the international economy), abolition of interest (*riba*), payment of wealth tax (*zakah*) and abolition of waste in consumption and production (*israf*), together yielding the intertemporal consumption–investment menu. Again, the internal consistency of these policy instruments among themselves and with the guiding principles of Islamic economics are elaborated elsewhere.³⁵

Here, we can simply state it as follows: the goal of distributive equity necessitates that output be maximised and shared. This is made possible by mobilising capital through the institution of *mudarabah*, whereby the replacement of interest on money capital by

cooperative profit shares taken by workers and owners of capital introduces a multiplier effect on capital mobilisation.³⁶ This process is further augmented by the elimination of leakages through consumption and production of unwanted luxury goods which create ostentations but little benefit. Next, the fact that the instrument of *zakah* militates against hoarding and the saving of money capital and wealth gives a further multiplier effect on resource mobilisation and distribution.³⁷

Price Process in the Islamic Economy

We will next study the topic of social price formation in the Islamic economic system, and then show that this is intrinsically related to value formation as explained above. Here the starting point of the analysis is the idea of iterated social equilibrium evolving out of the decision-making framework of the *shura* towards ethically transforming consumption preferences and the production menu, and the bringing about of distributive equity through these.

Note that the cardinal indices of *shura*-specific welfare functions comprise consumption, production, income and wealth variables, along with other socio-economic variables. Some of these appear as those actually existing in a given state of the economy; others are prescriptive ones as they are made to comply with socially desired types of menu. These latter types of preference are further formed through interaction among the three stages of *shura* in the iterative processes, leading to a series of social equilibria. Thus the consumption, production and distribution menus can now be derived from the first-order conditions of social welfare maximisation carried out in the cardinal and policy-iterated sense. These targets are then subjected to *mudarabah* under economic cooperation. The market system is upheld. Therefore cooperatives in the Islamic economy are found to exist in the midst of economic competition. Here competition takes place: for example, in establishing the proper control of production, or in producing the social goods with a force of innovativeness akin to the pure market economy. Such a system is thus referred to as a competitive-cooperative one.³⁸

Due to the nature of economic cooperation under *mudarabah*, labour in all forms (that is, those with initial endowment of assets or the assetless ones) will likewise cooperate with owners of capital and the rentiers under a contract to share profits in proportion to the value of invested assets and the value of labour time. This share

would change continuously as assetless workers come to own assets, and as those initially with assets (as well as the owners of capital and the rentiers) come to own even larger amounts of assets.

Thus an economic profit always must exist in this system, but this economic profit is not of the nature of Marxian, Sraffian or Ricardian surplus, the reason being that all profits are shared and thereby redistributed among the participants of production. Consequently there is no so-called 'unproductive' labour in the Islamic economy which Marx talks about in regard to the appropriation of surplus by capitalists not participating in the socially necessary form of production. Furthermore, the Islamic overseer of the market-place activity, the institution of *al-hisbah*, establishes social control of appropriate production menus under the tenets of the *shari'a*.

The Islamic economy does not have interest-bearing transactions and businesses. The intertemporal evolution of the Islamic society is thereby towards greater formation of real assets than formation of ostentatious and luxury goods.³⁹ It can now be seen that all the prognosis given by Marx (with regard to the use of the surplus by capitalists) does not apply to the Islamic economy. Therefore, the Islamic economic profit not being a surplus, price formation based on it is explained in ways different from the classical and neoclassical methodology.

Price formation in Islamic economics is now formalised as follows: we define the Islamic economy as the triplet topological set with an endowment of wealth and conditioned by the *shari'a*,

$$E = (C, P, D; W|S), \dots \quad (1.1)$$

Equation (1.1) means that the economy is fully described by the interactive activity among consumption C , production P , and distribution D , given wealth formation W under *mudarabah* and the guiding laws and rules of the *shari'a*, S ; C , P and D further evolve out of the cardinal social welfare maximisation problem facing the *shura* over iterated state variables and target variables.⁴⁰

We can represent the consumption C -function as

$$C(QC1, QC2, QC3, p1, p2, p3) = 0 \dots \quad (1.2)$$

yielding three consumption functions – for QC1, QC2 and QC3 – in terms of the other two. Also,

$$QC = QC1 + QC2 + QC3 \dots \quad (1.3)$$

where QC denotes total consumption; $QC1$ denotes the menu of basic needs, and can be further disaggregated into types of goods; $QC2$ denotes the menu of comforts, and also can be further disaggregated; $QC3$ denotes the menu of luxuries (lowest preference, but not ruled out), and also can be further disaggregated; and $p1, p2, p3$ are the demand prices (now taken as price indexes) for each of the types of goods, respectively. The system of equations derived from (1.2) and (1.3) is uniquely solvable in $QC1, QC2$ and $QC3$, provided the solution exists.

The production P -function is represented as

$$P(QP1, QP2, QP3, p1', p2', p3') = 0 \dots \quad (1.4)$$

Any one of the outputs can be expressed in terms of the other two.

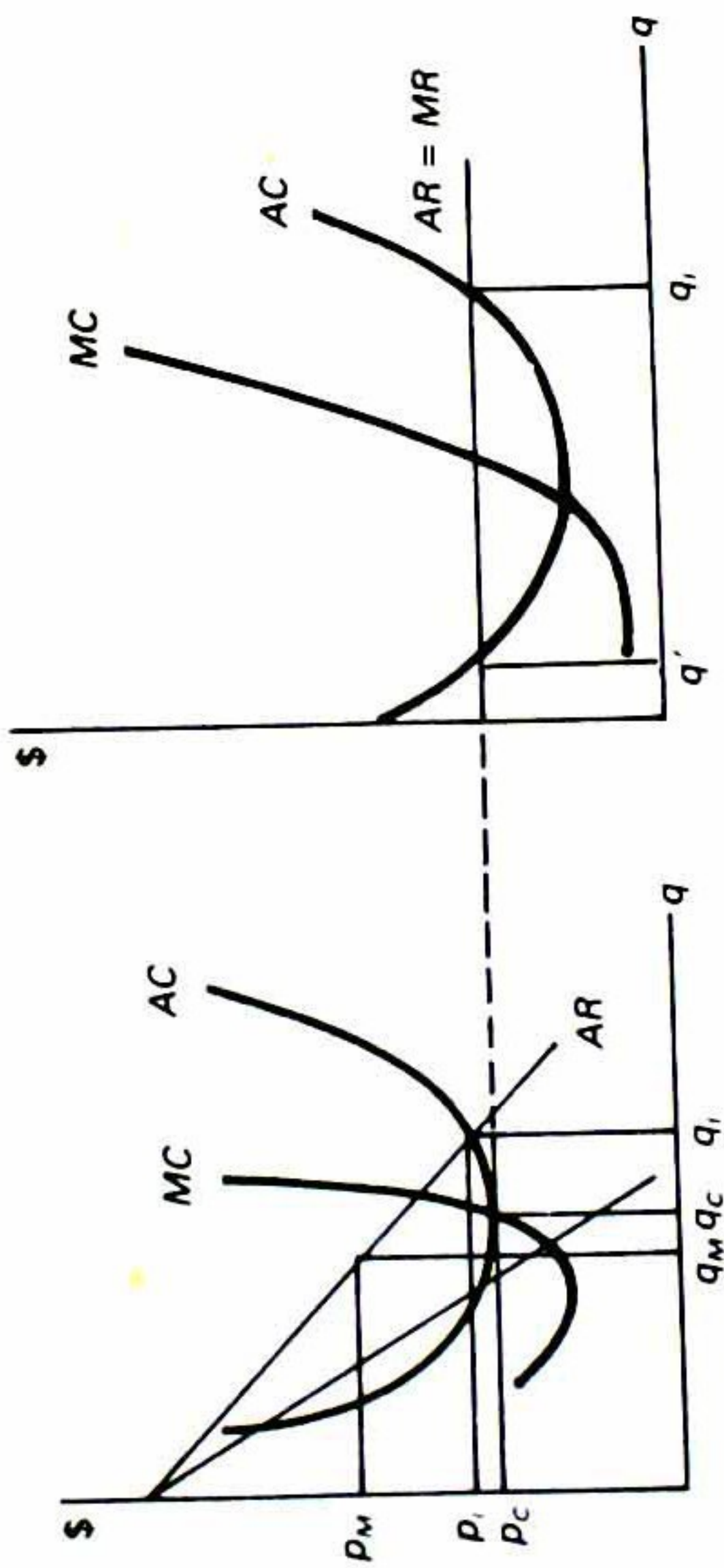
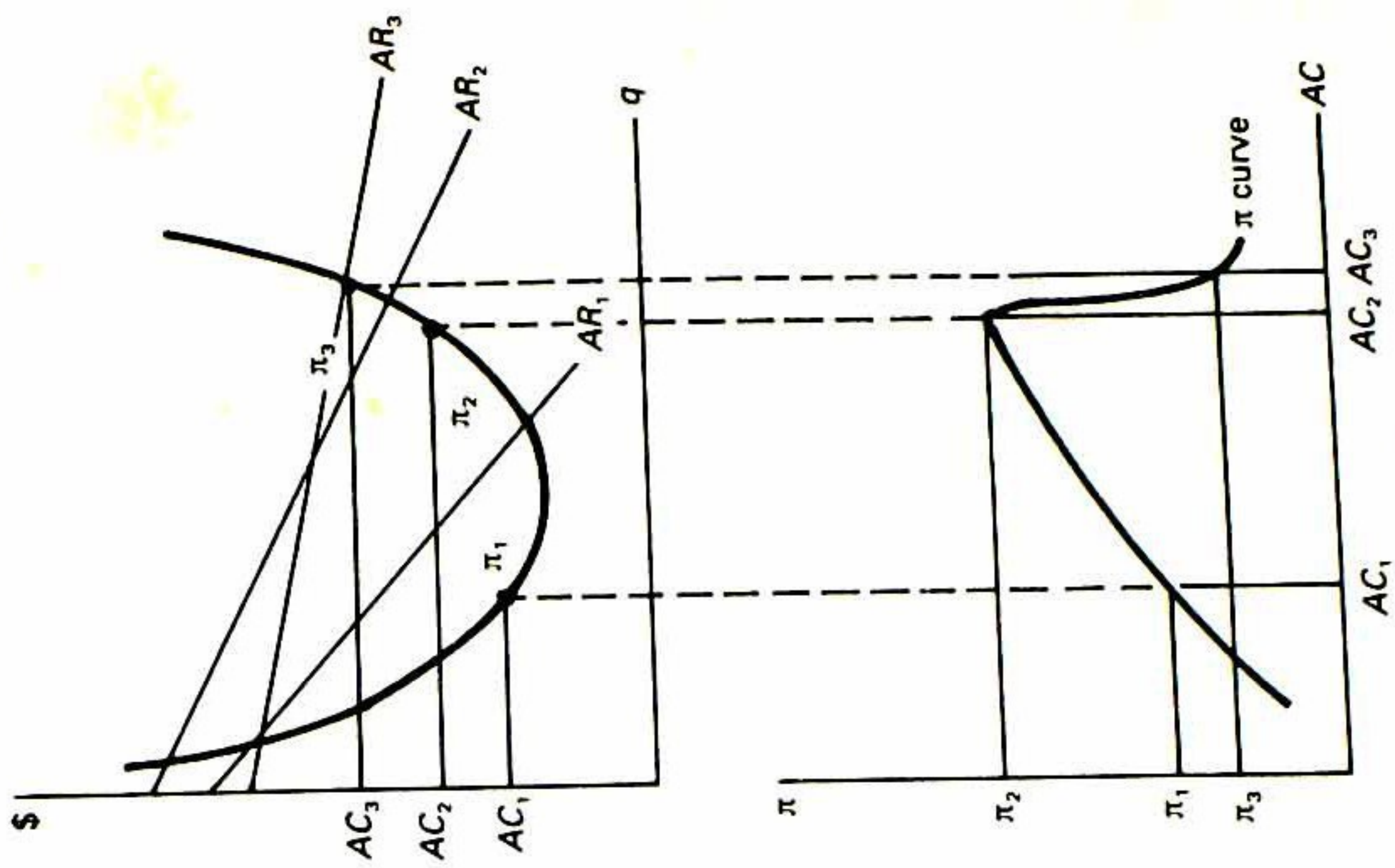
$$QP = QP1 + QP2 + QP3 \dots \quad (1.5)$$

The system of equations derived from (1.4) and (1.5) is uniquely solvable in $QP1, QP2, QP3$, provided the solution exists.

In the above system of equations, QP denotes total output; $QP1$ denotes output of basic needs, and can be further disaggregated; $QP2$ denotes output of comforts and can be further disaggregated; $QP3$ denotes output of luxuries and can be further disaggregated; $p1', p2', p3'$ are price indexes for the three types of goods, respectively.

The production system in Islamic economics has the additional feature of average cost pricing. This is necessary to rationalise the principle of sharing profits by averaging them out among all the participants.⁴¹ The use of the average pricing rule also must imply that there have to be economies of scale in the production function in order to generate the extra amount of output for purposes of distributive equity and not sheer resource allocation, which leads to product exhaustion by factor payments. The average pricing principle is shown in Figure 1.1.

Next, in order to establish social prices in a competitive-cooperative system, we must see how supply prices must adjust to demand prices. In the three-sector system we have above, one of the prices (say, of basic needs) can be taken as the numeraire price. Then we



- P_C : competitive price
- P_M : monopoly price
- P_I : Islamic price
- q_C : competitive output level
- q_M : monopoly output level
- q_I, q' : Islamic output level
- q : unacceptable output level in the Islamic economy
- q : general output level
- AC : average cost
- MC : marginal cost
- AC_1, AC_2, AC_3 : three cases of AC
- AR : average revenue (demand curve for firm's output)
- MR : marginal revenue
- AR_1, AR_2, AR_3 : three cases of AR
- π : profit level (area bounded by AC-curve and AR-curve)
- π_1, π_2, π_3 : three cases of π corresponding to AC_1, AC_2 and AC_3 respectively, and AR_1, AR_2 and AR_3 respectively.

Figure 1.1 Average cost pricing principle in Islamic economics

have two price relatives to solve from the following equilibrium relations:

$$\left. \begin{aligned} QC1 &= QP1, \\ QC2 &= QP2, \\ QC3 &= QP3, \\ QC &= QP, \end{aligned} \right\} \dots \quad (1.6)$$

These are four equations in four price relatives ($p2/p1$, $p3/p1$, $p2'/p1'$ and $p3'/p1'$) and can therefore be uniquely determined in terms of quantities.

We have thus linked up value theory with the social pricing theory in the Islamic economy. For now, equilibrium prices (as determined above) depend upon ethically determined consumption and production menus, which also contain the distributive goal in average pricing process. Also, these basic menus are capable of continuous iteration under *shari'a* rules facing the *shura*. The process of iterating social equilibria in this sense is the core of the Islamic concept of value theory and social price formation in the comprehensive ethico-economic sense. To this we now turn.

Before undertaking this exercise we should first point out that the continuous feedback taking place between polity and the market place through the principle of democratic decentralisation under *shura* sets in motion a progressive development of the ethico-economic system. This means that at every stage of social equilibrium the system is capable of signalling back to polity a higher order of ethical and socio-economic development. On the basis of these signals, polity in turn is capable of formulating better social policies. The feedback continues. This is the principle of ethical endogeneity earlier referred to and is the core of a truly ethico-economic system.⁴² The concept of punctuated ethico-economic equilibria based on the principle of ethical endogeneity is fully conformable with the formation of social prices and values in the Islamic economic order.

To bring out this conformity we present here a mathematical formulation of the principle of ethical endogeneity in a simpler form.⁴³ We use the consumption and production menus again and rewrite them as follows:

$$C(QC1, QC2, QC3, QP1, QP2, QP3, p1, p2, p3, p1', p2', p3', e1, e2, \dots) = 0 \dots \quad (1.7)$$

$$P(QC1, QC2, QC3, QP1, QP2, QP3, p1, p2, p3, p1', p2', p3', e1, e2, \dots) = 0 \dots \quad (1.8)$$

$$E(QC1, QC2, QC3, QP1, QP2, QP3, p1, p2, p3, p1', p2', p3', e1, e2, \dots) = 0 \dots \quad (1.9)$$

These extended forms of the menus given earlier mean that consumption and production menus are conditioned by ethics formed through *shari'a* rules and policies. These equations also imply that consumption and production are interdependent through the supply and demand effects in the product market. Expression (1.9) means that the ethical set, E , is formed through a learning process emanating from loops of feedback between polity which formulate targets for the ethical variables ($e1, e2, \dots$) and the market, and which set values for the consumption and production quantities. This is indeed the essence of ethical endogeneity.

The ethical set must now be further characterised. Note that as it stands in its generalised form it is denumerable.⁴⁴ Furthermore, it is shown elsewhere that the ethical set is unbounded, unlike the consumption and production menus, which are bounded sets.⁴⁵ Consequently, the ethical consumption set and the ethical production set evolving out of the above system of relationships are unbounded and denumerable.

These raise problems of (a) continuity and differentiability of the functional forms shown; (b) defining stable equilibrium in the ethical consumption and ethical production sets; and (c) generating bounded simulations between the state variables (consumption and production menus) and the policy or target variables (ethical variables). To circumvent these problems, we apply shari'atic rulings in economic matters at any one stage of policy formulation, to selected priorities only. For instance, as was earlier mentioned, the Islamic economic policy package can centre on profit sharing under cooperation (*mu-darabah*); or abolition of interest (*riba*) in stages, signifying the role of ethical endogeneity in finally eliminating interest from the Islamic economy; or the economy-wide institution of *zakah*, and the abolition of wasteful consumption and production (*israf*). When the Islamic economic and social systems continue to evolve in these most important directions, the ethical policies can be further extended to more detailed policies, such as foreign trade financing, capital market instruments, cost-of-capital instruments for project valuation, and so on.⁴⁶ In this form of selective advance with policy package in the

Islamic ethico-economic order, the set of ethical policy variables are reduced to denumerable ones. However, the unboundedness property still remains because of the limitless levels of ethical perfection possible in this system, which further develop feedbacks between the polity and the market environment.

To the ethical consumption-production menus we now add the ethical distribution menu given as,

$$\left. \begin{aligned} r'_i x &= \pi_i (p \cdot P - r_i x) \dots \\ \text{i.e. } r'_i x + r_i x &= \pi_i p \cdot P + (1 - \pi_i) r_i x \dots \end{aligned} \right\} \quad (1.10)$$

(implying profit sharing),

$$x_q / x_s = b, \dots \quad (1.11)$$

where b is a technological constant, and $q, s = 1, 2, \dots, n^2$. With the above process of social consensus formation, the decision set can be represented as follows:

$$D = ((\bar{x}, \bar{e}): \bar{x} \in \cap Xa, \bar{e} \in \cap Ea) \dots \quad (1.12)$$

where, \bar{x} is the vector of state variables belonging to the socio-economic variables set, $\cap Xa$; a denotes the a th decision-making group out of a set of decision-making groups; \bar{e} is the vector of ethical policy variables belonging to the set, $\cap Ea$. Social consensus formation takes place in the sets $\cap Xa$ and $\cap Ea$. Any other decisions outside the domain of these sets comprise conflict sets (also referred to here as 'irrelevant preferences'). This is represented by the complementation of these sets. Let the symbol for complementation be \sim .

Let the correspondences between the state variables and the target variables be denoted by

$$\theta_1: \cap Ya \rightarrow \cap Xa, \text{ i.e. } \theta_1(\cap Ya) \subseteq \cap Xa, \dots \quad (1.13)$$

$$\theta_2: (\cap Xa)^{-1} \rightarrow \cap Ya, \text{ i.e. } \theta_2(\cap Xa)^{-1} \subseteq \cap Ya, \dots \quad (1.14)$$

The Jacobians, $J(\cap Xa)$ and $J(\cap Ya)$ are non-zero, because the mappings on the social consensus decision-set are 'on to' and non-trivial as shown above.⁴⁷

The conflict decision-set is likewise represented by

$$\bar{D} = ((\bar{x}', \bar{e}'): \bar{x}' \in \tilde{\cap Xa}; \bar{e}' \in \tilde{\cap Ya} \quad (1.15)$$

The conflict mappings on this set are represented by

$$\tilde{\theta}_1: \tilde{\cap}Ya \rightarrow \tilde{\cap}Xa, \text{ such that } \tilde{\theta}_1(\cap Ya) \subseteq \tilde{\cap}Xa) \dots \quad (1.16)$$

$$\tilde{\theta}_2: (\tilde{\cap}Xa)^{-1} \rightarrow \cap Ya, \text{ such that } \tilde{\theta}_2(\cap Xa)^{-1} \subseteq \tilde{\cap}Ya) \dots \quad (1.17)$$

It is quite possible that $(\theta_1 \cap \tilde{\theta}_1)$ and $(\theta_2 \cap \tilde{\theta}_2)$ are non-null sets. Such cases lead to social disequilibrium arising out of social conflict. On the other hand, the decision-set D leads to social equilibrium arising out of social consensus.⁴⁸ The topology of social consensus formation and social conflict are shown in Figures 1.2 and 1.3.

Islamic Value Theory and Social Price Formation Considered Together

We have now established the foundations of value theory in Islamic economics as formed from an institutional viewpoint of ethics and values undertaken by a large set of democratic and decentralised decision-making groups. The decision-making under the guiding principles of *shari'a* in the *shuras* uses interactive cardinal welfare indices and, on the basis of this, ranks the options. From the best option so chosen are evolved the general equilibrium analysis in prices, quantities, consumption, investment, the expenditure sector and the monetary sector. The cardinal type of social welfare index developed is similar to that in macroeconomic social welfare analysis, but without taking the classical and neoclassical routes, while the relevance of the Keynesian analysis is cautiously upheld. In the second phase of analysis, prices are evolved from the consumption, production and distribution functions derived from the optimal cardinal social welfare index. They contain state and policy variables, as shari'atic ethical policies are continuously regenerated in this ethico-economic system.

The Islamic theory of value based on social pricing and ethical policies enunciated under the *shari'a* is now seen as a distinct departure from the received theories of value in the various schools of thought. One last school in this area needs to be brought into this comparative analysis, and that is the NIE of Arrow.⁴⁹

An examination of the structure of NIE points out a clear orientation to a 100 per cent efficiency-based economy with the relevant behavioural properties of the enterprise under perfect competition. The following are the main features of NIE:

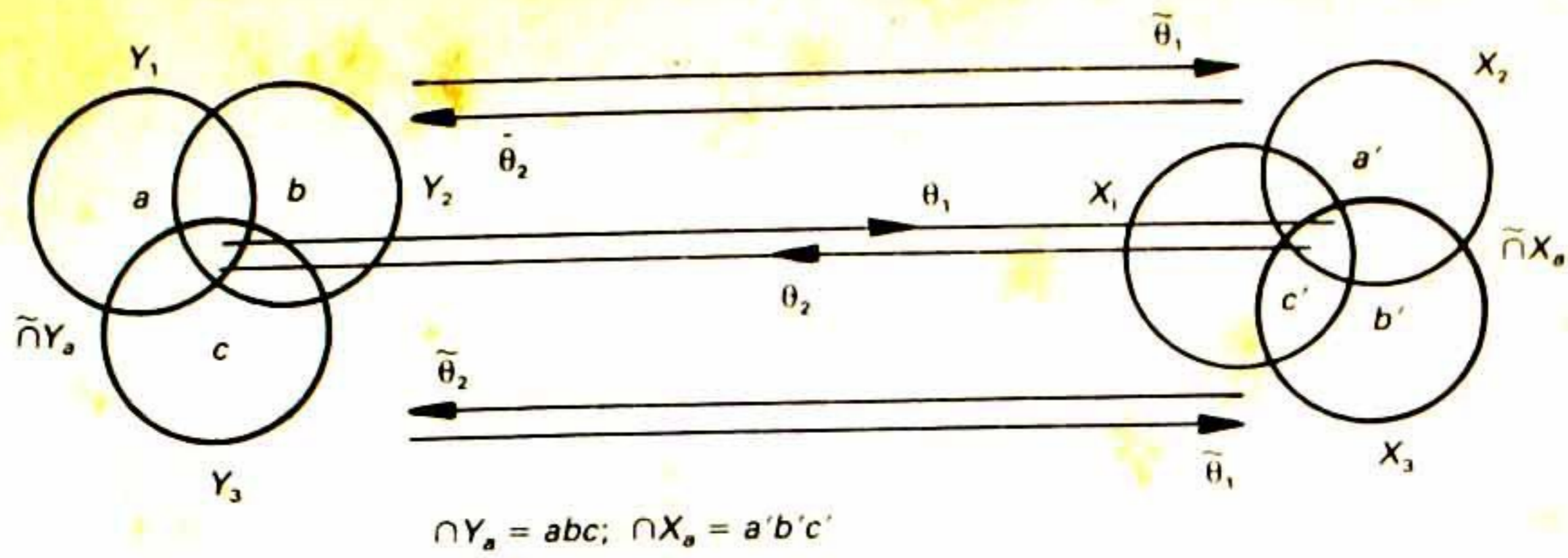


Figure 1.2 Social consensus

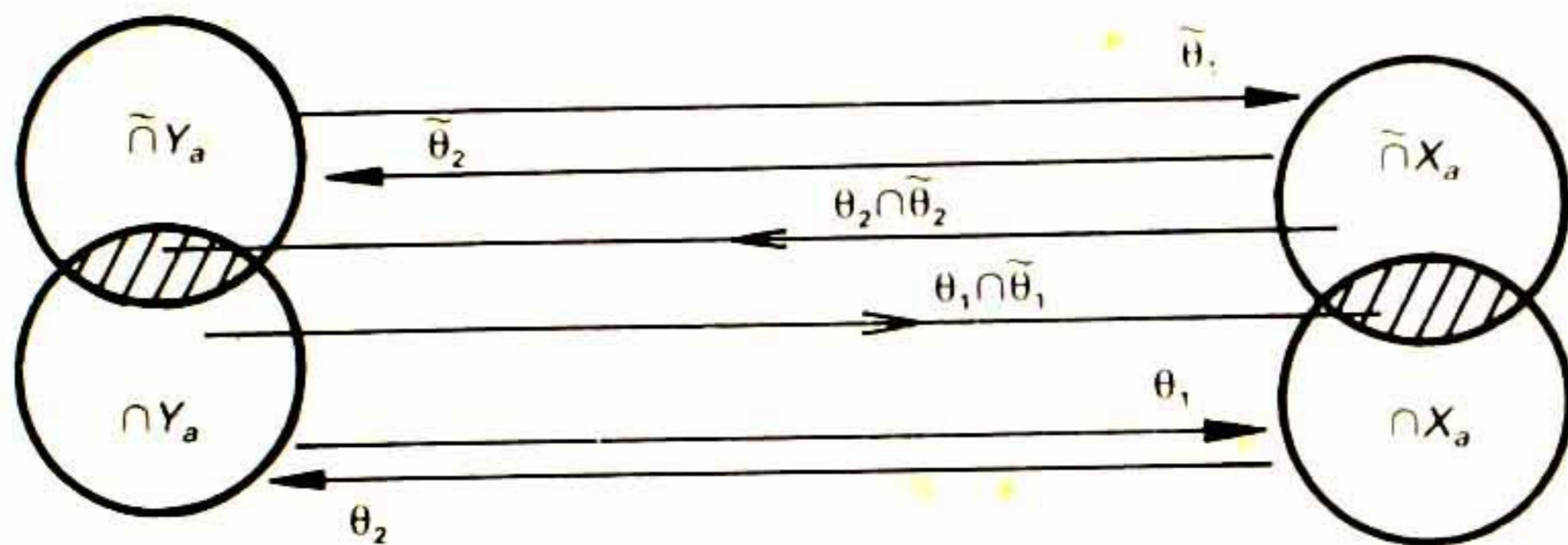


Figure 1.3 Social conflict

- (a) institutions are required to have 'profound efficiency ramifications';
- (b) capitalist institutions are seen as the most important type to study;
- (c) the objective of the enterprise is seen to be the minimising of transaction costs;
- (d) institutions are required to respond to the 'behavioural attributes' of human actors.⁵⁰

There is nothing in these features of NIE to suggest any powerful determinants of distributive equity in resource allocation and in making the institutions and economic organisations capable of bringing about social change through ethics and values. On the contrary, the features of NIE reinforce the Samuelsonian version of the firm's production function with symmetrical inputs of capital and labour which, according to Marglin, are seen to be incapable of explaining

the hierarchy of the decision-making process undertaken in the social organisation.⁵¹

Whitaker, commenting on Arrow's contributions to organisational theory, finds that in spite of the profound theoretical richness social choice theory gained in Arrow's hands, his *Limits of Organization* addresses invisible organisations and the optimising behaviour of such organisations under conditions of certainty and uncertainty with perfect competition.⁵² Thus Arrow's discussion of organisation 'conveys merely a broad vision rather than a specific theory. Speculation is on a grand scale, with few clues as to how the general perspective can be applied to concrete cases and issues, let alone to the formulation of precise refutable hypothesis.'⁵³

The institutional aspect of Islamic economics in value and social price formation is quite different from those of NIE. The principal distinctions arise from the Islamic economic assumption of a competitive-cooperative system instead of perfect competition, and from the primal feature of ethical endogeneity which does not allow for globally stable equilibrium in the dynamic sense as might be invoked under Pareto optimality in NIE. Resource allocation in the Islamic economy, because of distributive equity, would necessarily lead to second-best resource allocation. Consequently there is no trade-off between equity and efficiency in the Islamic economic arrangement, while NIE has this as its intrinsic feature.

Summary

In the second part of this chapter, Islamic theory of value and social price formation has been shown to be a distinct landmark in the age-long development of value theory. Islamic economics being essentially an ethico-economic system *par excellence*, its theory is therefore based on the principle of ethical endogeneity. This principle has been shown to be the backbone of ethico-economics and transcends the received approach to value theory in the ordinarily known social economics.⁵⁴ It is a principle that evolves directly out of the Quranic law of growth and decay of society in accordance with its ethical advance or degradation, respectively.⁵⁵

The three parallel important areas needed for a comprehensive theory of value are shown to exist coherently in Islamic economics. These are, first, the explanation of a comprehensive value formation in terms of an institutional mechanism intrinsic to the Islamic social order. Second, Islamic social price formation evolves out of this

ethico-economic value theory and, in this respect, is shown to be determined under conditions of ethical consumption menu, ethical production menu and distributive equity. Third, the social price formation and ethical policy formulation in the Islamic economy are shown to lead to a general ethico-economic equilibrium which evolves out of social consensus formation under the guiding principles of the *shari'a* through continuous feedback loops between socio-economic state variables (the market) and policy variables (policy targets of the Islamic polity). On the other hand, the complement of social consensus formation is social conflict. The condition attained now is one of social disequilibrium.

A COMPARATIVE VIEW OF ISLAMIC ECONOMICS AND CHRISTIAN ECONOMICS

There is a claim among the North American social economists, led by the Association of Social Economics, that Christian values emanating from the Bible and papal works are capable of founding a Christian economics. To examine this proposition and how it compares with the Islamic principles of political economy, we turn to 'Christian Economic Policy and the Role of Economic Science', by A. McKee, a leading proponent of this school.⁵⁶

McKee's main objective in this article is to examine the possibilities for formulating economic policies which are 'authentically Christian'. The author states in this regard that:

- (i) Certain broad policy objectives may be identified as Christian, since they are only a restatement of principles.
- (ii) Application of social principles become contingent or uncertain at some point, whereupon they cannot necessarily be identified as Christian . . .
- (iii) While the social sciences will normally cooperate in developing secondary criteria and measures, there are no scientific grounds on which economics – which depends for its autonomy on the consensus of a self-appointed elite – may absolutely veto the march into application of socio-theological principles.

Proposing these observations regarding Christian economic policy, McKee puts forward the following arguments (the arguments are interjected by my own comments). Values arising from mainstream economic thought are embodied in the special assumptions of

received schools of thought. They take the essence of 'faiths' in these systems. Hence they enter the paradigms as prescribed notions. Therefore, if these kinds of value (now taken as prescribed faiths) can be accepted in the insular and intellectually elitist development of economic science, then there is no reason why alternative values, such as those reflecting 'a fundamental moral code, plus its relation to God', cannot be made the basis of alternative principles and values in social science. Indeed, was economics not a branch of moral philosophy in its inception? Were not its goals to address socio-economic problems of society at large? Were not the methods of that economic science derived from both the natural laws as well as the positive laws?⁵⁷ Thus any pursuit of knowledge, if it be a truly scientific one, cannot be identified with an insular development of the discipline. It cannot set up a wall of hegemonic protection around it, barring the possibility of developing and then analysing alternative value systems, principles, goals, assumptions and methodology.

All this is quite non-Schumpeterian, non-Robbinsian, non-Friedmanian and non-Samuelsonian.⁵⁸ That is all right in the name of scientific inquiry, which accepts no mortal finality in its search for truth. Gray writes about such a spirit of scientific inquiry in the following words: 'Economic science, if it be a science, differs from other sciences in this, that there is no inevitable advance from less to greater certainty; there is no ruthless tracking down of truth which, once unbarred, shall be truth to all times to the complete confusion of any contrary doctrine.'⁵⁹ McKee recognises the folly surrounding the autonomous nature of economic science in his article. He then goes on to write that 'As in the case of economics, theology may be considered an autonomous "science"' as well.

The hegemony of the elitist discipline of economics is seen by McKee in the exclusive understanding and use of mathematical logic, regression models and similar analytical methods by a closed group of economists. He considers such methods as deceptive in the realm of value analysis in economics. In his view (which is not clearly explained in his article), the inadequacy of the quantitative methodology in answering value questions in economic science makes such approaches inappropriate for policy formulation. McKee's rejection of such a taxonomy, rather than its critical evaluation on given problems, makes him opt for a descriptive methodology for Christian economics. McKee's emphasis on a descriptive or 'positive' approach in economic science and policy formulation appears to stem from his

difficulty in incorporating God and the concomitant principles, goals, institutions and assumptions in an analytical system.

Highlighting principal economic policy, McKee refers to the Christian holy books and traditions that relate 'social principles to the natural law and related concepts of justice'. He then comes up with full employment as the key Christian economic policy. He quotes from a source, 'Full-employment is the foundation of a just economy.'⁶⁰

McKee then invokes a neoclassical analysis of the NAIRU (non-accelerating inflation rate of unemployment) to look at the policy of full employment from the perspectives of a Christian moralist, proposing a 5–6 per cent rate of unemployment. On the other hand, the passage from a right-to-work principle to a full employment policy is not explained in the alternative framework of Christian perspectives.⁶¹

The second important Christian economic policy invoked by McKee is the right to hold property. Here the principle of redistribution is considered to be marginally effective and to be subsumed under the 'secondary rules and ends' that make the Christian character of the application of the principle 'uncertain or imprecise'. In other words, beyond broad general principles, the nature of specific policy measures are shown to point out neither a distinctive Christian economic policy nor a distinctive goal and methodology in McKee's Christian economic system.

Above all, McKee points out in his paper (presenting no reason for it), that for a Christian policy 'to be properly so [it] must be derivable from no other premises, say Islamic, secular humanist etc. On such reasoning many general principles would lose their commonly presumed character.'

From the above overview of McKee's paper it can be seen that there are obvious inconsistencies in the arguments presented by that author with respect to Christian economics. These inconsistencies lead to the irrelevancy of the entire direction of arguments as regards a rational exposition of the subject matter of Christian economics.

The greatest difficulty arises from the contradiction posed between McKee's criticism of an autonomous economic science in the face of Christian principles and assumptions in this area, and his enunciation of a dogma forcing the Christian values by a deliberate exclusion of all other values. This is the same type of hegemony by a club or group which is tantamount to a dogmatic treatment of economic science and

policy formulation, known in economic thought as dogmatic positivism.⁶²

The same framework of McKee's arguments presents difficulty in understanding his discarding of the quantitative approaches to policy formulation in preference to a descriptive one in Christian economics. This sort of argument amounts to dogmatism in the field of methodological inquiry. In such a doctrinal view of the protagonist, one finds the dangers of an incomplete and analytically weak idea of Christian economics being propounded by a leading figure in this field. Finally, by failing to delineate the alternative framework, goals, principles and methodology, the author undermines the very objective he had sought under Christian economics: 'to put God first, with all other goals in a subordinate role'. The policy formulation of Christian economics by McKee is thus seen to be a weak and internally inconsistent exercise.

CONCLUSION

We have covered two important areas in this chapter: first, the comparative theory of value in received economic theories has been examined. None of these received theories are found to explain the comprehensive idea of value theory and price formation as enunciated in ethico-economics. It is shown that without this ethico-economic concept of value theory and social price formation, the problem of distributive equity cannot be solved in the received economic systems. Second, we have shown that in contrast to these theories of value, the Islamic economic theory of value and price formation stands out as the only known ethico-economic approach to this area. The system of relations playing important roles in this Islamic ethico-economic system are developed and their logical links established, both between themselves and in the economy-wide sense. This yielded the ethico-economic general equilibrium system for the Islamic economy. The Islamic analytical economic system, endowed with its principles and policy instruments, was also compared with the claimed Christian economics among the North American social economists. Here, too, we note the superior analytical power of Islamic economics as a distinct approach to the analysis of value theory, price formation and also the key element in all these: distributive equity.

2 The Ethico-Economic Social Welfare Function of the Islamic Economy

SOME QURANIC INJUNCTIONS ON CONSUMPTION, PRODUCTION AND DISTRIBUTION

The general theory of social choice and social welfare function in ethico-economics will be particularised for the case of Islamic economics. The starting point is to define the set of state and policy variables and construct the social welfare index on the basis of this.

In the *shari'a* the guiding principle of the economy is to prefer distributive equity to maximisation of economic efficiency *per se* as a conflicting economic goal. In this regard the Quran says, 'Let not your wealth become confined to the rich among you.'¹ At the same time, the Quran invokes exploration of resources in the universe, as well as participation in production and consumption, in the following verses:

Behold! In the creation of the heavens and the earth; in the alteration of the Night and Day; in the sailing of the ships through the ocean for the profit of mankind; in the rain which God sends down from the skies, and the life which He gives therewith to an earth that is dead; in the beasts of all kinds that He scatters through the earth; in the change of the winds, and the clouds which they trail like their slaves between the sky and the earth; here indeed are Signs for a people that are wise. [Sura II, v. 164]

With regard to the Islamically-prescribed production and allocation of resources, the Quran says,

O you who believe! Give of the good things which you have honourably earned, and of the fruits of the earth which We have produced for you, and do not even aim at getting anything which is bad, in order that out of it you may give away something, when you yourselves would not receive it except with closed eyes. [Sura II, v. 267]

As regards moderation of consumption, the Quran says, 'O you people! Eat of what is on earth, lawful and good; and do not follow the footsteps of the Evil One, for he is to you an avowed enemy' [S. II, v. 168]. What comes out of these Quranic injunctions concerning consumption, production and distribution includes strict compliance with Islamically correct consumption and production, in order to increase the welfare of the buyer as well as of the seller; consumption and production of Islamically correct goods (avoiding carrion, hog meat, drink and drugs, pornography, gambling, usury and so forth); exercise of distributive equity in the allocation of wealth and resources; and moderation and balance in production and consumption. The verses also point to the semblance of abundance and balance in the resources of the world; and constant reminders to us to discover the universe.

ISLAMIC SOCIAL CHOICE THEORY

Consumption, Production and Distribution in the Light of Islamic Economic Principles .

These Islamic perspectives in consumption, production and distribution can now be viewed with respect to the main assumptions (principles) and instruments of the Islamic economy. The Quran considers the Islamically requisite acts of consumption, production and distribution in relation to the felicity people attain from them, first in this life through acts of righteousness and then, through this, the attainment of supreme felicity in the hereafter.² They are therefore treated as acts of worship. On the other hand, Islamically non-requisite acts in these areas are treated as disbelief, and are equated with the habits of the devil,³ Thus, in the relationships between the main principles of the Islamic economy, felicity is attained through acts of labour and production and distributive equity. The compliance with the *shari'a* in these areas establishes the principle of the unity of God as the creator and sustainer of the universe (the principle of *Tawheed* and brotherhood). The environment of Islamically-requisite production is established under the institution of cooperation and *mudarabah*. Moderation and Islamically-requisite consumption are established by the instrument of avoidance of waste *israf*. The instrument is equally applicable to

production) Distributive equity is established by the mandatory Islamic wealth tax (*zakah*).

The Islamic theory of social choice must necessarily centre around the above-mentioned principles and establish social ordering in terms of them. We now turn to a formalisation of this area. The tenets of the Quran, the traditions and sayings of Prophet Muhammad (*sunnah*), and the periodic consensus of the Islamic community or of religious scholars (*mujtahid*) in authoritative Islamic research, using the process known as *ijma* or *ijtehad*, are the tenets that govern individual preference formation in the Islamic economy.

Consumer sovereignty is relegated to these tenets in the Islamic social order. The implementation of the rules and conduct of the *shari'a* are left to an extensive consultative decision-making process under a body known as the *shura*. The consultative body exists at various levels of institutions and societies, and is structured and integrated all the way up to the highest echelons. In the ideal case this highest echelon is the world nation of Islam (*ummah*). In this way the process of implementation of the *shari'a* becomes a democratic and decentralised process, but the agenda of implementation is derived from the Quran and its exegesis, and not by the coercive will of the state to serve other interests. The state cannot legislate new laws. It only implements and secures the Islamic laws, together with the findings of *ijtehad*, surrounding the interpretation of the Islamic laws by the *shura*.

Now, since consumer sovereignty is ruled out in the Islamic economic system, Islamic social choice would not be based on interpersonal comparison of utility. In fact, the idea of utility is now replaced by the idea of felicity, in the sense of intertwining individual welfare with social welfare. The Islamic democratic voter does not decide on the basis of individual preferences, but decides rather on the basis of shuratic deliberations which finally emerge out of mutual consultations in strict compliance with the *shari'a*. It is therefore the shuratic social preference that reflects the social choice of the nation.

Social consensus formation through the shuratic process of decision-making is thus a reflection of the collective weal of a populace in accordance with the Islamic laws, which now raises the question as to how non-compliance is treated in this system. Take as an example the case of the non-Muslim minority in the Islamic state. The idea of 'independence of irrelevant preferences' is applicable here. This means that if we take three social states, A (avoidance of drinking

alcohol by the Muslim majority), B (preference for drinking by the non-Muslim citizens), and C (preference for drinking alcohol by non-Muslim citizens and some Muslim citizens), then if $A > B > C$, and then if option C is removed from the social ordering, it does not change the ordering of $A > B$.⁴

What this idea of 'independence of irrelevant preferences' means is that, in the Islamic state, the rights and privileges of the non-Muslim are guaranteed and protected to the extent that is afforded to Muslim citizens. The non-Muslims are dealt with leniently and compassionately, unless they are subversive of the Islamic state and the *shari'a*. In that case the *shari'a* administers the same punishment to the non-Muslim citizens as would be meted out to a Muslim citizen under similar circumstances. It is for this reason that the non-Muslim citizen of the Islamic state is called a *dhimmi*, meaning that he or she is under the pledge of God, under the pledge of the Prophet (Islamic state) and under the pledge of the Islamic community. The non-Muslim is guaranteed all these rights on payment of a tax known as *jizya*, just as the Muslim citizens are required to pay the wealth tax of *zakah*.⁵

As the *shari'a* addresses the important subject matter of non-Muslim citizens' rights and obligations in an Islamic state, it is therefore not necessary to consider a separate set of preferences in abrogation of the *shari'a* from any quarter. Consequently the social preference of the *shura* does not change by removing social preferences unwanted by Islam. This means that social preferences are of the definite type and are not averaged over the preferences of disparate groups in the Islamic state. Such objective social preferences do not take part in interpersonal comparison of utilities and are not of the von Neumann–Morgenstern cardinal type ('expected' or average preferences over different groups of individuals), so the idea of cardinalistic social preferences and social welfare function is really based on the measurable form of the social welfare function defined by a set of critical socio-economic indicators or indices constructed by these sets of variables. Also, for the same reasons and particularly because of the non-existence of consumer sovereignty, there is no relevance for ordinal social welfare functions based on individual utilities of consumption or incomes. Consequently, the first-order conditions of Pareto optimality do not apply in the case of the Islamic social welfare function.

The optimisation of the Islamic social welfare function takes place in terms of the grand social welfare function, which evolves out of the

collective and finally integrated social welfare indices of the group-specific shuratic social welfare functions. This, however, does not imply maximisation of each of the group-specific social welfare functions while maximising the grand social welfare function. Consequently, neither the von Neumann–Morgenstern assumptions nor the Harsanyi assumptions on additivity of cardinalistic social welfare function hold.⁶ However, because individual preferences are now transformed through the shuratic process of decision-making to conform with social preferences, the following theorem can be applied to establish the additivity of the shuratic social welfare functions into the grand social welfare function: there exists a social welfare function such that its expected value is maximised with respect to preference choices conformable with given social preferences. The social welfare function is then unique up to a positive monotonic transformation.⁷

There is, however, the problem of accommodating interdependent social welfare indices in this additive social welfare lemma. In the Harsanyi type of additive form, the assumption of extreme egalitarianism which attaches equal probabilities to each social welfare index makes the above possible. In the Islamic economy, the probabilities associated with the additive forms of social welfare indices would mean the occurrence of states of nature and policy variables depending upon the occurrence of given contingencies or priorities/goals. These contingent probability measures provide the linkages among the social welfare indices in the shuratic sense. Such a formulation shows that there are significant differences between the additivity concept of the social welfare function in the Islamic economy and those given by Harsanyi and von Neumann–Morgenstern.

To summarise, these differences appear because of the nature of social welfare indices in the Islamic economy; the redefinition of the cardinalistic social welfare function as a mathematical relationship of the social welfare indices; the non-existence of Pareto optimality conditions in the Islamic economy resource allocation problem; and the existence of a well-defined interdependent shuratic social welfare function, the interdependence among social welfare indices being explained by contingent probability measures.

The cardinal form of the social welfare function in the Islamic economy requires the proper determination of the shari'atic critical socio-economic indicators in response to the principles and instruments/institutions governing the Islamic economy. In turn, this would determine the index of the critical variables. Among the

important state variables to be chosen are employment (denoted by increasing numbers employed), income distribution (denoted by increasing relative incomes shares of lower income groups in the population), moderation in consumption (denoted by a declining consumption/investment ratio), profit sharing (denoted by an increasing profit-sharing ratio), and transformation of wage labour into profit-sharing non-wage labour (denoted by a declining wage/profit-share ratio). Among the important policy targets to be chosen are price stability (denoted by low rates of inflation), economic growth (denoted by the real growth rate of output) and, above all, ethical policies (denoted by appropriate technology, a basic needs regime of consumption, distributive equity achieved through disbursement of *zakah* and elimination of interest in financial transactions). Social consensus formation, which is a most important characteristic of shuratic decision-making, demands that there are interrelationships between the set of state variables and the set of policy variables. Finally, in the intertemporal framework of decision-making, and over various contingencies of nature, the social consensus formation translates into the principle of ethical endogeneity. This is a key ethico-economic principle explained in the earlier chapters.

FORMALISING THE INTERRELATIONSHIPS AMONG STATE AND POLICY VARIABLES

We now formulate this interrelationship among the social state variables and ethical policy variables in the context of maximising the grand social welfare function in the Islamic economy. We proceed as follows:

Let a decision set in the Islamic ethico-economic system be defined by

$$D = ((\bar{x}, \bar{y}): \bar{x} \in \cap Xa, \bar{y} \in \cap Yb) \quad (2.1)$$

where $\bar{x} = (x_1, x_2, \dots, x_n)$ denotes the vector of state variables; $\bar{y} = (y_1, y_2, \dots, y_m)$ denotes the vector of policy variables; a denotes the number of decision-makers involved in consensus formation; Xa denotes a set of state variables for the a th decision-making group; and Yb denotes a set of decision variables for the b th decision-making group.

The principle of ethical endogeneity gives rise to the following mappings:

$$\theta_1: \cap Yb \rightarrow \cap Xa, \text{ i.e. } \theta_1(\cap Yb) \subseteq \cap Xa \quad (2.2)$$

$$\theta_2: (\cap Xa)^{-1} \rightarrow \cap Yb, \text{ i.e. } \theta_2(\cap Xa)^{-1} \subseteq \cap Yb \quad (2.3)$$

Here the Jacobian, $j(Xa) \neq 0$. Thus, the differentiability properties of the function, θ_2 , on the set, $\cap Xa$, establishes non-zero partial differentials of θ_2 . However, the mappings being on to (not comprising the whole image sets of the mappings θ_1 and θ_2), $\theta_2 \cdot \theta_1 \neq 1$ (identity mapping). The significance of the on to mappings is that the decision set can be augmented by a larger set of state variables and policy variables as society moves up into higher levels of ethical perfection. Besides, there are interactive relations between these two sets along the optimal trajectories towards optimal social transformation. This optimal social transformation is denoted by

$$T = T(\bar{x}, \bar{y}) \quad (2.4)$$

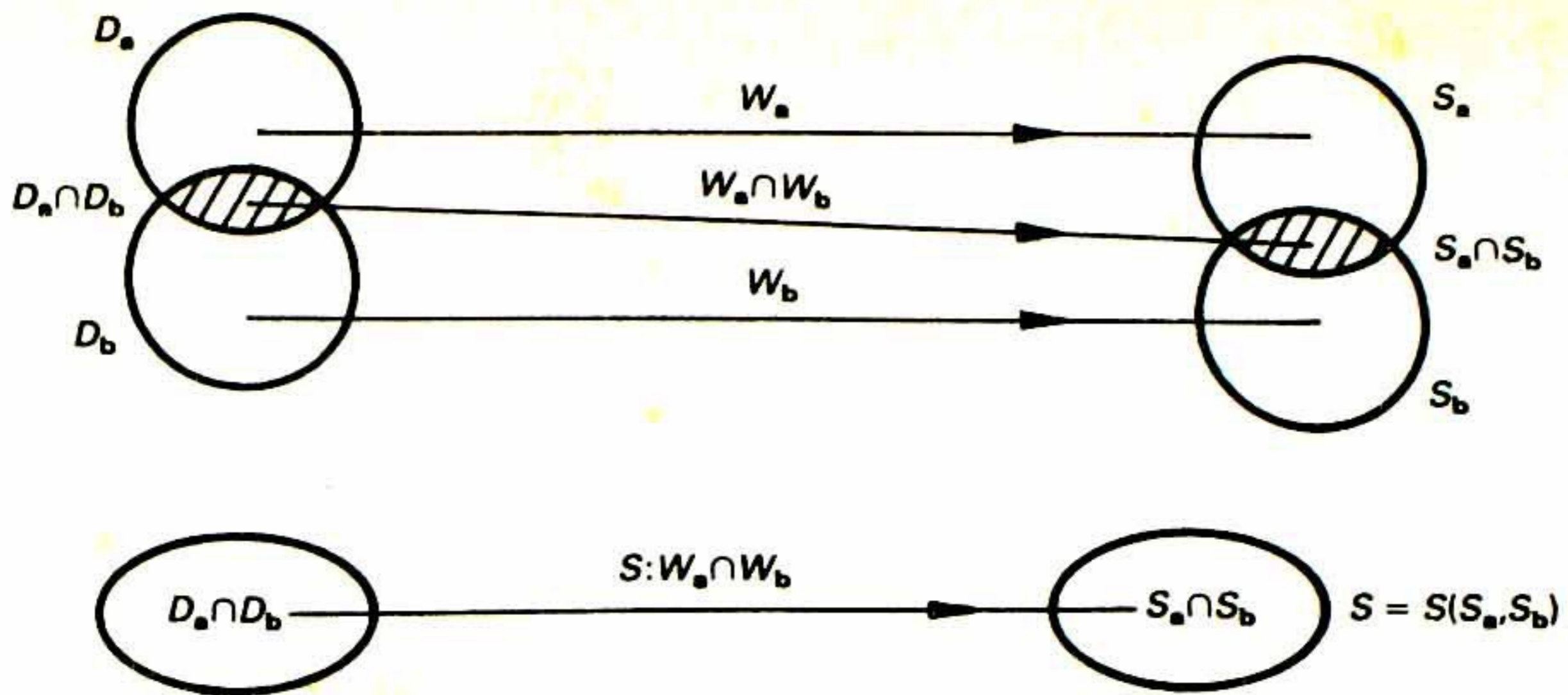
The ethical target set, $\cap Xa$, and the ethical policy set, $\cap Yb$, can both be shown to be compact (closed and bounded).⁸ This makes the social welfare function, $T(\bar{x}, \bar{y})$, well defined on the decision set.

In the light of these interactive relations among the state variables and policy variables, their relationships are of the form

$$y_i = h_i(x_1, x_2, \dots, x_n), \text{ with } \partial h_i / \partial x_j > 0, \\ i = 1, 2, \dots, m; j = 1, 2, \dots, n.$$

The well-defined shape of the social welfare function under the given interrelationships between the state variables and the policy variables can be shown in the simplified Figure 2.1. The case of social conflict, which explains the principle of independence of irrelevant preferences in the Islamic economy, is also explained by Figure 2.1.

Our next point is to investigate how the interrelationships between the above-mentioned critical state variables and policy variables explain the relationships of social consensus formation as shown above. In the set of state variables, employment and income distribution are directly improved by the institution of profit sharing, as more and more of wage labour is transformed into non-wage labour of the profit-sharing type. It will be shown in Chapter 4 that this type of transformation is in fact more efficient than is the case in a wage economy. In Islam the institution of *mudarabah* is essentially based on cooperation and the production of appropriate goods with



D_a denotes the decision (policy) set for attaining target state variables or a vector of state variables, a .

D_b denotes a similar decision set for the vector of state variables, b .

$D_a \cap D_b$ denotes the common decision set for state variables.

W_a denotes the welfare mapping of D_a on to the social welfare set, S_a .

W_b denotes the welfare mapping of D_b on to the social welfare set, S_b .

$W_a \cap W_b$ is then the social welfare map of the common decision set, $D_a \cap D_b$, on to the total social welfare set, $S(S_a, S_b)$.

The set, $D_a \cap D_b$, is the social consensus set on the policy and state variables influencing the formation of the total social welfare set. Thus $S(S_a, S_b)$ denotes this total social welfare function under social consensus formation.

Figure 2.1 Social welfare mapping under social consensus formation

appropriate technology. Thus the environment of production, and subsequently of production activity itself, is favoured by the profit-sharing institution. The same institution is also instrumental in mobilising capital formation in the economy, accentuated further by the ethico-economic predominance of elimination of interest and avoidance of waste in production and consumption menus. In this way the attainment of the target rate of growth in the Islamic economy is realised by organising production and consumption around the ethical standards of appropriateness of such menus, the avoidance of waste and income distribution.

Income distribution and the direction of wealth and resources towards productive transformation of human and physical capital among the assetless is further promoted by the redistributive role of *zakah*. In all these interrelationships, the great importance of the market process within the overriding presence of profit sharing under

cooperation, and its social regulation in conformity with the *shari'a* of the market process, in order to engender an appropriate competitive-cooperative system, are maintained. The agency empowered by this overseeing duty is known as *al-hisbah fil-Islam* (the Islamic social regulatory body for the market place).⁹

Finally, we consider the policy of price stabilisation in the Islamic economy. There is here an intrinsic relationship between the ethical policies of avoidance of interest and waste and that of price stabilisation. In order to explain these relationships several perspective must be examined.

First, the importance of price stabilisation in the Islamic economy is seen to stem from its aim of disbanding monopolistic and monopsonistic competition in the economy. This, however, does not lead to the kind of perfect competition viewed in classical economic theory, because the cooperative institution in the ethical sense of the *mudarabah* is ideally the principal form of economic institution. But to deter such cooperatives from becoming single producers or a few producers in the economy, the semblance of smaller and diversified cooperatives across all sectors and activities of the economy must be promoted. There are again intercooperations among such cooperatives, as can be shown in the case of the tripartite arrangement among consumers, producers and the financial institutions. The result of such competitive-cooperative conditions in the Islamic economy is the determination of prices through market prices at levels between the perfectly competitive prices and monopolistic prices. The important difference in such an Islamic determination of prices is that, unlike in the other two cases of the conventional economy, the production level is not restrained in the Islamic economy. Instead, the price level determines a supply of goods by producers that is higher than the level determined in the case of the perfectly competitive or the monopolistic case. The case of imperfect competition is automatically subsumed in this.

The particular level of prices in the Islamic economy also responds to the type of goods produced and consumed. Ideally, as all goods produced in the Islamic economy are social goods, they should be consumer durables and semi-durables. Among consumer durables examples are: basic food with high food value to the common people, housing and shelter, decent and durable clothing, clean water, a healthy environment and recreation, education, health care, and so on. Among the consumer semi-durables, examples would include: product differentiation in cars, housing, clothing, food stuffs, Islamically correct

entertainment, and so on. The production of luxury items at any one point in time is kept low; these are principally meant to satisfy specified needs, such as those of foreign diplomatic personnel, temporary foreign residents, tourists and so on. The average price level evaluated on the basis of a basket of goods produced and consumed in the Islamic economy is thus weighted in favour of social goods of the type of consumer durables (necessities) and semi-durables (comforts). It can now be shown in this case of market baskets that the objective of price stabilisation is attained.

Owing to the competitive-cooperative nature of the Islamic economy, the profit levels arising from *mudarabah* will be near normal profits. Such profit levels are, therefore, not expected to create profit-push inflation. Besides, as the wage bill is inversely related to profit shares, an increase in the latter will lower the wage bill and thus cause moderation in the cost of production for the cooperatives. This lower cost will in turn show up in price stabilisation. Finally, the boost to aggregate demand that takes place through the income distributive effect of *mudarabah* causes shifts in both the market demand and supply curves, and in this process any price increase will be stabilised and no inflationary pressure will be imminent. The market clearance process takes over.¹⁰

When sustained price increase is not an imminent problem in the Islamic economy, there is no relevance in speaking of the real as opposed to the nominal rate of interest to hedge against inflation, an argument made by some critics of the *riba* theory of Islamic economics. It has been shown elsewhere that non-inflationary price stabilisation in the Islamic economy can be seen to follow the Wicksellian model.¹¹

The question that then remains to be investigated is the price structure in the 'open' Islamic economy. Here, too, 'imported' inflation through tariffs, overvalued exchange rate and the high cost of foreign borrowing will be absorbed in the *mudarabah* enterprises, causing market clearance through demand and supply shifts responding to increased profitability and income distribution. The author has shown elsewhere that, in this case of the profit-sharing ratio acting in place of the rate of interest, the Keynesian-type multiplier relations result in external sector stabilisation.¹² This, together with the above formalisation on price stabilisation in the domestic economy, proves that the instrument of profit-sharing under cooperation (*mudarabah*) plays an important role in both internal sector as well as external sector stabilisation. All these conclusively

prove that there is no need to rationalise Islamic economic relationships to hedge against inflation by the use of unwanted foreign elements, such as the nominal and real rate of interest and their pedigrees.¹³

Conclusion

We have now come to the conclusion on this topic of interrelationships among the selected social state variables and policy variables in the Islamic economy. There are well-defined intrinsic interrelationships among these variables which are capable of establishing a well-defined social welfare function of the form $T(\bar{x}, \bar{y})$ as formalised in the above sections. The relationships of the type $y_i = h_i(x_1, x_2, \dots, x_n)$ $i = 1, 2, \dots, m$, and consequently those of the type $x_j = g_j(y_1, y_2, \dots, y_m)$, $j = 1, 2, \dots, n$, explain the principle of ethical endogeneity and the simultaneity between efficiency and equity goals of the ethico-economy in general and the Islamic economy in particular.

Our discussions above have brought out the following points in respect to the Islamic social choice theory and social welfare function: the ethical goals play the primordial role in the Islamic economy in determining the structure of consumption, production and distribution. These ethical goals and the instruments that mobilise them are based on well-defined principles and policy instruments which guide the Islamic economic order. Among these sets of critical social state variables and social policy variables are intrinsic relationships that act in loops of feedback, establishing thereby the principle of ethical endogeneity. It is this principle that finally forms the shuratic social consensus in the Islamic order. Out of this social consensus formation emerges the structure of social preferences, wherein individual preferences are moulded (through interactive decision-making processes) into collective social preferences. These social preferences are of the cardinal type in the sense of measurability based on critical shuratic policies and socio-economic state variables. The social welfare functions that emerge are categorised into types. First, there are the individual *shura*-specific social welfare indices. Second, there is the grand social welfare function expressed as an additive form of the individual *shura*-specific social welfare indices. The interdependence among the latter type of social welfare indices, which is an important nature of the indices in view of the interactive decision-making process of the *shuras*, is shown in terms of contingency probability measures.

RELEVANCE OF ADDITIVE SOCIAL WELFARE INDICES IN THE ISLAMIC ECONOMY

The additive aggregation of the shuratic social welfare indices into the grand social welfare function in the Islamic economy will now be further elaborated upon. There are at least three major benefits from accepting this legitimate characterisation of the underlying social choice and ordering in the Islamic economy.

First, the additive form is appropriate for signifying the ethical transformation that is taking place in various segments, sectors and institutions of the Islamic economy. It has been argued elsewhere that it is these microeconomic-level ethical transformations that would finally surface into a fully developed Islamic transformation. Such aggregations point to the highly democratic and decentralised process of the Islamic transformation under the guiding light of the *shari'a*. An Islamic transformation cannot be imposed by a dictatorial social ordering. This is equivalent to stating that although Pareto optimality is found to be absent in the Islamic social welfare maximisation, yet the existence of a well-defined additive social welfare function is proved to be true in the absence of the postulate of imposition of dictatorial preferences in Arrow's Possibility Theorem.

Second, at the shuratic levels decision-making requires that individual decision-makers attach their preferred weights to the critical state and policy variables, or equivalently to the index of these variables that define the shuratic social welfare indices. Ordinal weights are thus bound to enter along with the measurable sets of variables. The grand social welfare function of the Islamic economy is therefore a combination of cardinal and ordinal elements. These ordinal elements play a significant role in interactive decision-making, and influence the contingent probability measure. The probability measures in turn give the Islamic social welfare index its certainty equivalence. The social welfare indices thereby remain well-defined, in spite of the ordinal elements.

Third, the separable additive form of the grand social welfare function allows for optimisation using iterative procedures. For instance, in the case of the intertemporal form of the social welfare function, dynamic optimisation method would be used.¹⁴ This form of the social welfare function thus conveys empirical viability to the Islamic social welfare function.¹⁵ Finally, the additive form of the social welfare function enables the finite number of social conflict points to be enclosed into a set of discontinuities, thus leaving the

social ordering unchanged. This is the idea of the 'independence of irrelevant preferences'.

THE IDEA OF 'INDEPENDENCE OF IRRELEVANT PREFERENCES' IN ISLAMIC SOCIAL CHOICE THEORY

We take a more extensive view here of the concept of the 'independence of irrelevant preferences'. Due to the vastness of the range of Islamic sets of state and policy variables, they are bound to contain some matters of unnecessary detail and some of priority substance. There could also be those elements that might not be agreeable to different schools of jurisprudence in Islam. In such cases, incorporating all secondary elements in the shuratic decision-making process would make social consensus formation difficult to achieve. Only commonly agreed priorities under the *shari'a* would be included in the sets of state and policy variables and deliberated upon at the *shura* levels. This would be particularly true during the early process of Islamicisation of the social order. Subsequently, with the advance in Islamicisation of the social order, larger sets of such variables will be included in the decision set. This is identical to the idea presented earlier of the expanding nature of the sets of state and policy variables under the principle of ethical endogeneity. In the light of such realities, the concept of 'independence of irrelevant preferences' would mean the elimination of unnecessary details from the sets of state and policy variables, while constricting the decision set to commonly agreed upon priorities, at given contingent states of the Islamic economy. These states denote socio-economic contingencies.

Independence of irrelevant preferences would work more effectively at the higher echelons of *shuras*, rather than at the microeconomic levels of group-specific shuratic decision-making. This, however, does not disturb the aggregation process of the additive type of social welfare indices. The reason for this is that, during the aggregation process, the irrelevant preferences will be assigned low ordinal weights and thereby low contingent probabilities. This will minimise the effect of such preferences on the formation of the grand social welfare function. At the lowest level of Islamicisation of the economy, too many disparate preferences emanating from individual *shuras* would mean unevenly distributed ordinal weights assigned to those preferences that are in conflict with the majority view in the *shura*. This would leave the social consensus preferences to be

weighted higher than the social conflict preferences. The process of aggregation of social preferences would thereby again result in assigning lower ordinal weights to irrelevant preferences. In all cases therefore, depending on degree, the concept of the independence of irrelevant preferences is necessary for Islamic social ordering, and plays an important role in preserving the proper determination of the grand social welfare function emanating from shuratic social consensus formation.

A MATHEMATICAL FORM OF THE ISLAMIC SOCIAL WELFARE MODEL

We will now set up the mathematical version of the Islamic social welfare model. The following symbols are defined:

Let $\bar{x} = (x_1, x_2, \dots, x_n)(j, t)$ denote the set of state variables, subject to the occurrence of contingency j at time t , and $\bar{y} = (y_1, y_2, \dots, y_m)(j, t)$ denote the set of policy variables, subject to the occurrence of contingency j at time t .

In either of these sets, the goal/priority subscript is not necessary because, as the Islamic economy phases out, transitions to higher levels of Islamic transformation occur at marked junctures. Hence the time period becomes equivalent to the priority subscript (not shown). It is important to note here that the concept of time dimension in this case is not that of calendar time, sequentially set for the identification of goals/priorities, but rather that of the planning horizon. The contingency variable, on the other hand, identifies the occurrence of specific values of the set of state and policy variables or of the index constructed from these variables.

Let $W(\bar{x}, \bar{y})(s, j, t)$ denote the s th *shura*-specific social welfare function in the set of state variables and policy variables, subject to the occurrence of the j th contingency over time period t .

Let $p(j, t)$ denote the conditional probability measure for the occurrence of j th contingency, given that all prior contingencies have occurred along given branches of the decision tree, over the time period t .

$$p(j, t) = P(j | 0, 1, 2, \dots, j-1)(t),$$

$$\sum_j p(j, t) = 1.$$

The grand social welfare function, $W^*(\bar{x}, \bar{y})(j, t)$ can now be expressed in terms of the *shura*-specific social welfare indices as follows:

$$W^*(\bar{x}, \bar{y})(j, t) = \sum_j \sum_s p(j, t) \cdot W(\bar{x}, \bar{y})(s, j, b) \quad (2.5)$$

There are other subsidiary relations to be considered here. For example, the relationship between state variables and policy variables is of the form

$$H(\bar{x}, \bar{y}) = 0 \quad (2.6)$$

With non-zero Jacobians in the decision space, equation (2.6) yields

$$y_i = h_i(x_1, x_2, \dots, x_m) \quad (2.7)$$

$$x_k = g_k(y_1, y_2, \dots, y_n) \quad (2.8)$$

such that $dy_i/dx_k > 0$, $dx_k/dy_i > 0$. In the above formulations we take $i = 1, 2, \dots, m$; $j = 1, 2, \dots, M$; $k = 1, 2, \dots, n$; $s = 1, 2, \dots, S$; $t = 1, 2, \dots, N$.

The social welfare functions given above can be simplified by replacing the state variables and policy variables by their index. In general this index, I , can be taken as,

$$I = I(\bar{x}, \bar{y})(s, j, t) \quad (2.9)$$

$dI/d\bar{x} > 0$, $dI/d\bar{y} > 0$, for each s, j and t . One must carefully translate all variables into their positive equivalents. That is, in place of unemployment, the variable to be chosen must be employment; in place of waste (*israf*), the variable must be avoidance of waste, and so on.

The forms of the welfare function and the index would be different because the form of the social welfare index will vary according to the postulates of risk-aversion, risk-neutrality and risk-preference. The index of state and policy variables, on the other hand, has a specified form, which for practical purposes may be taken as the linear combination of the critical variables. The social welfare function at the *shura* level is therefore a monotonically positive transformation of the index of state variables and policy variables.

Since the index can be taken as a linear relationship of the state variables and the policy variables, and is specific to given *shuras*,

therefore the decision-makers at each *shura* level attach ordinal weights to the variables, subject to the occurrence of given contingencies over a period of time. The expression for the Islamic social welfare function now takes the following form:

$$W^*(I) (j, t) = \sum_j \sum_s p(j, t) \cdot W(I) (s, j, t) \quad (2.10)$$

where

$$I = \sum_i (a_i \cdot y_i) + \left(\sum_k b_k \cdot x_k \right) \quad (2.11)$$

$$y_i = h_i (x_1, x_2, \dots, x_n), i = 1, 2, \dots, m \quad (2.12)$$

$$x_k = g_k (y_1, y_2, \dots, y_m), k = 1, 2, \dots, n \quad (2.13)$$

$dI/dx_k > 0$, $dI/dy_i > 0$, $dy_i/dx_k > 0$, $dx_k/dy_i > 0$, and $dW/dI > 0$, for each s, j, t , where $s = 1, 2, \dots, S$; $j = 1, 2, \dots, M$; $t = 1, 2, \dots, N$, and a_i and b_k are ordinal weights for the policy variables and state variables, respectively. Furthermore, $p(j, t) = P(j | 0, 1, \dots, j-1)$, $p(t) = \sum_j p(j, t)$, and j is sequential with the time variable.

Next we investigate whether it is possible to switch contingency with the time variable. Towards this, we make the assumption that the Islamic state, or the grand *shura*, has a fixed set of priorities that it targets over its entire planning horizon. Changes in the contingent states of nature now concur with changes in time periods.

We have thus simplified the Islamic social welfare function to the form in time variable (sequentially the contingency variable) only. What this transformation means is that, for a change in contingency to occur, there should be a simultaneous marked improvement in the index of critical variables. It is not sufficient only for one variable to have changed significantly without improving other conditions of the economy. For instance, higher employment must go together with income distribution; economic growth must proceed with price stabilisation and higher employment, and so on.

The simplified version of the social welfare function in this case is,

$$W^*(I_t) = \sum_s p(t) \cdot W(I)(s, t) \quad (2.14)$$

Variables are as defined earlier. The interrelationships among the critical variables are shown in the index, I_t .

$$p(t) = P(t | 0, 1, \dots, t-1)$$

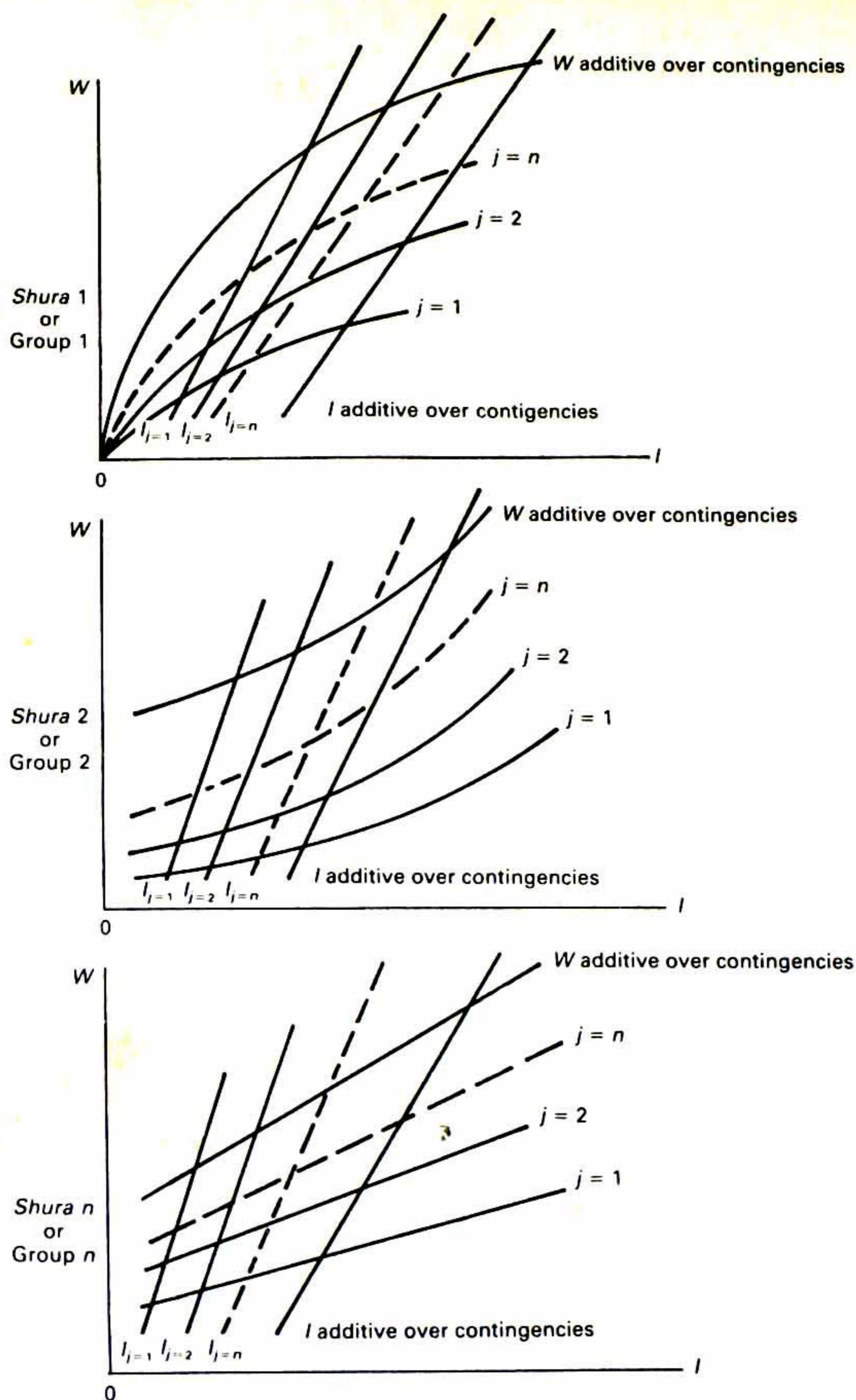
$$\sum_t p(t) = 1$$

Figure 2.2 shows the various cases of the Islamic social welfare functions under the additivity condition, and Figure 2.3 shows the relationship with given goals or priorities.

THE CONCEPT OF THE TIME DIMENSION IN THE ISLAMIC SOCIAL WELFARE FUNCTION

To complete our discussion on the choice of contingency and goal/priority against the time dimension in the Islamic social welfare function, we must finally note the concept of time and its relation to the Islamic concept of felicity. In the structure of relationships between Islamic economic principles and instruments, we noted earlier that the concept of total felicity in Islam is made up of the supreme felicity that is attainable only in the hereafter, in return for our righteousness in this life. Our acts of righteousness in accordance with the tenets of Islam lead to the attainment of this worldly felicity. The supreme felicity is therefore the result (reward) of accumulated worldly felicity in the Islamic sense. Since these two types of felicity are interrelated so much, their 'present' social value be made equivalent to shuratic decision-making. This shows that the time dimension in Islamic economic theory holds a significance that transcends even the earlier mentioned planning concept of the time period, or of the infinite time period for the planning horizon.¹⁶

The correct concept of time in this context would be the truly transcendental time horizon, encompassing the present effective value of the benefits obtainable from both temporal and supreme felicity. Practically speaking, however, such a social valuation process would appear to be impossible, and therefore uninteresting to the economist even as an ethical philosopher. Problems are evident: the value of the supreme felicity is infinite, hence the 'present value' of this supreme felicity would be infinite as well. There would also be the breakdown in the concept of time as a planning horizon. There can be no quantitative functional relationships existing between the temporal concept of time and the transcendental concept of time in the social valuation process. These problems are, however, solvable in the Islamic economic framework.



Note that in the construction of the additive group-specific (*shura*-specific) social welfare indices, no assumption of strict risk aversion is made. The forms of W shown are only illustrative.

Figure 2.2 Additivity of the Islamic social welfare indices specific to decision-making groups or *shuras* across contingencies

In each of these aggregative indices, I , the following method of aggregation is implied:

$$\begin{aligned}
 & I(\text{additive over all contingencies}) \\
 &= (\sum_j a_{js}) \cdot \left(\frac{\sum_j a_{js} x_{js}}{\sum_j a_{js}} \right) + (\sum_j b_{js}) \cdot \left(\frac{\sum_j b_{js} y_{js}}{\sum_j b_{js}} \right) \\
 &= (\text{avg} \cdot x_s) \cdot (\sum_j a_{js}) + (\text{avg} \cdot y_s) \cdot (\sum_j b_{js})
 \end{aligned}$$

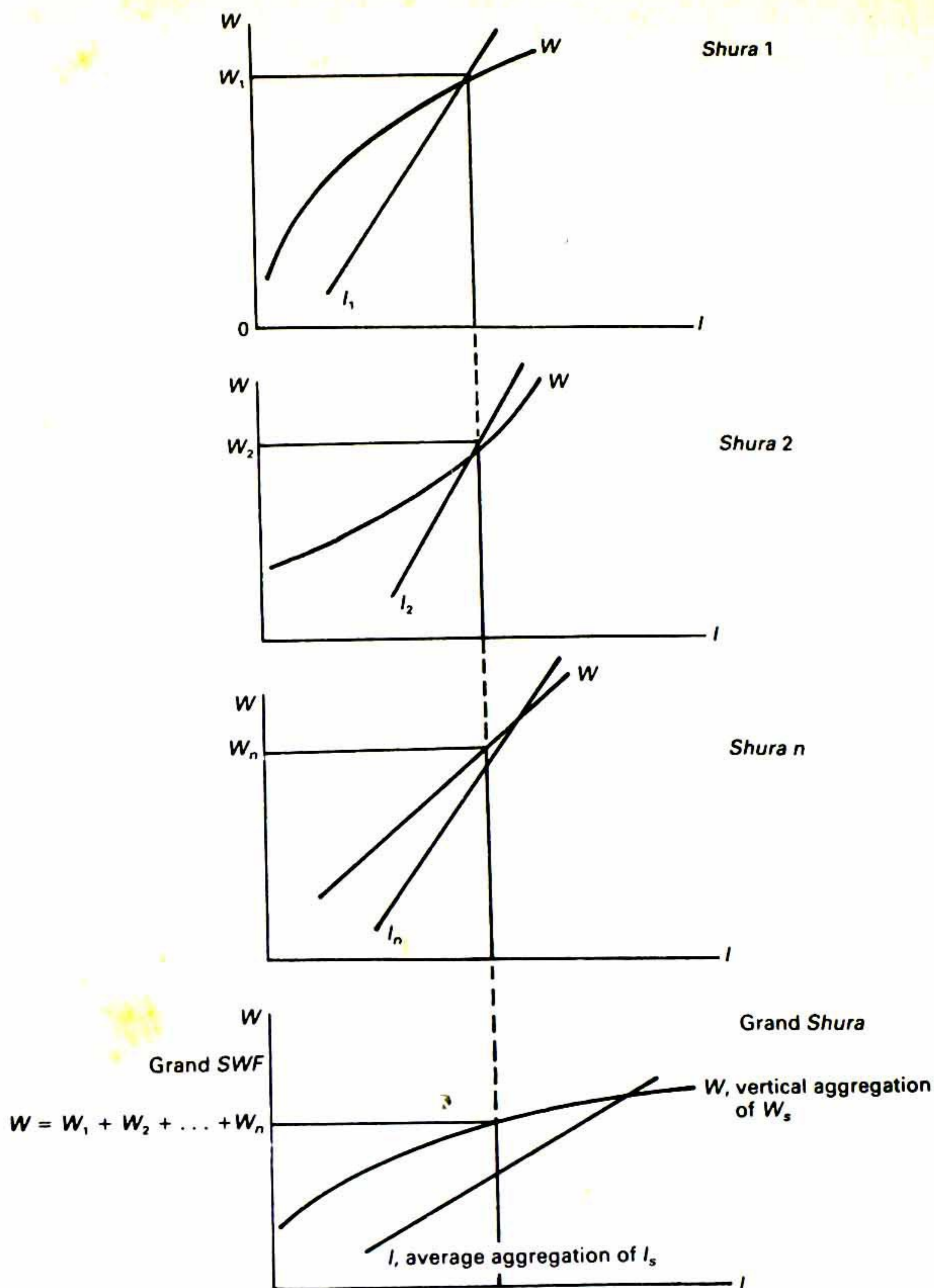
'Average' aggregation of I is done as follows:

$$\text{avg} \cdot I(\text{over given priority}) = (\sum_t a_t) \cdot I_t$$

This method of aggregation is shown in Figure 2.3.

The Islamic time concept plays two practical roles in the Islamic social valuation process. First, for purposes of evaluating a cardinal social welfare function, the temporal planning concept of time would be used. Islamic social valuation is now subject to the kind of symmetry between contingency and goal/priority as explained above. Then, with regard to transcendental time, one would use proxy for that time dimension by the attributes of God-consciousness (*taqwa*); of certainty of the hereafter by the consciousness on rewards and retributions for the good and evil acts in this life, respectively (*akhirah*); of endeavouring to achieve the highest possible level of ethical perfection in this world (*ihsan*), and benefiting the entire creation through acts of righteousness (*Islah*).¹⁷ These are the attributes of the supreme felicity that are attainable in the hereafter based on the implementation of such virtues in this life, leading to the attainment of temporal felicity. With such ethical foundations to shuratic decision-making, the decision-makers would transform the transcendental time horizon by contingencies indicating the supreme levels of ethical perfection. Contingencies would replace the transcendental time in this sense. Social valuation can now proceed over contingencies alone without reference to time horizon at all. With the changes in contingencies, the ordinal weights attached to ethical policy variables will increase as well. Now we can denote contingencies by the states of social transformation, and can use ordinal weights to attach graded significance to ethical policies at the 'nodes' in the decision tree, leading subsequently to the next stage of social transformation.

The relationship between contingencies and ordinal weights can then be seen to signify the intrinsic nature of interactions between



Note that there is no need in this framework for each *shura* to be social welfare optimising in the sense of W and I intersecting. This is a non-Paretian aspect of social choices in the *shuras*.

Figure 2.3 Additivity of the Islamic social welfare function across given goals/priorities for the grand *shura*

ethical perfection and the social transformation process occurring in loops of feedback between polity and the market environment. Such a process of social transformation is seen again to signify the principle of ethical endogeneity, the principle that is shown to be the foundation of ethico-economic theory. It appears to be particularly strong and clear in the theory of Islamic political economy.

The form the social welfare function now takes is similar to the expression (2.14), with the change of the time variable to contingency. Figures 2.2 and 2.3 represent the form of quantitative social valuation model assumed in the Islamic economy.

The extreme relevance of ethical considerations and policies, and the state variables in concert with these, leads the Islamic economy to be based on the ethical numeraire. There is a sharp distinction between the Walrasian price numeraire of the neoclassical general equilibrium system and the 100 per cent monetary currency numeraire recently studied in the literature on social economics.¹⁸ This distinctive departure of the concept of ethical numeraire in ethico-economics invokes an altogether new and rigorous treatment of consumption, production, income distribution and structure of general equilibrium not hitherto investigated in the economic literature.

CONSTRAINED OPTIMISATION OF THE ISLAMIC SOCIAL WELFARE FUNCTION

The final section of this chapter is devoted to the problem of constrained optimisation of the Islamic social welfare function. We will work with the following form of the social welfare maximisation model:

$$\text{Max. } W^* (I) (j, t) = \sum_j \sum_s W(I) (s, j, t) \quad (2.15)$$

subject to

$$I = \left(\sum_i (a_i \cdot y_i) + \sum_k (b_k \cdot x_k) \right) (j, t) \quad (2.16)$$

$$y_i = h (x_1, x_2, \dots, x_n) (j, t) \quad (2.17)$$

$$x_k = g_k (y_1, y_2, \dots, y_m) (j, t) \quad (2.18)$$

To carry out this optimisation problem we will adopt a combination

of the optimal control techniques and the calculus of variation techniques. We will then give the interpretation of the first-order conditions of the optimisation problem in regard to the Islamic economy. The dynamic social welfare maximisation problem can be rewritten as follows:

$$\text{Max.}_{x_{sj}, y_{sj}} \int_0^T \sum_j \sum_s \frac{\partial w(I)(s, j, t)}{\partial I} \cdot \frac{dI}{dt} \cdot dt \quad (2.19)$$

subject to

$$\int_0^T \sum_j \sum_s \frac{dI}{dt} \cdot dt = \int_0^T \sum_j \sum_s a_{sj} \dot{x}_{sj} dt + \int_0^T \sum_j \sum_s b_{sj} \dot{y}_{sj} dt \quad (2.20)$$

$$\bar{y} = h(\bar{x})(s, j, t) \quad (2.21)$$

$$\bar{x} = g(\bar{y})(s, j, t) \quad (2.22)$$

The dynamic Lagrangian version of this optimisation problem is

$$\begin{aligned} \text{Max}_{x_{sj}, y_{sj}} \int_0^T \left[\sum_j \sum_s f(\bar{x}, \bar{y}, \dot{\bar{x}}, \dot{\bar{y}})(s, j, t) + \lambda_1 \left(\sum_j \sum_s a_{sj} \dot{x}_{sj} + \sum_j \sum_s b_{sj} \dot{y}_{sj} \right) \right. \\ \left. + \lambda_2 \left(\frac{\partial h}{\partial \bar{x}} \cdot \dot{\bar{x}} \right) + \lambda_3 \left(\frac{\partial g}{\partial \bar{y}} \right) \dot{\bar{y}} \right] dt \quad (2.23) \end{aligned}$$

$$\text{where } f(\bar{x}, \bar{y}, \dot{\bar{x}}, \dot{\bar{y}}) = \frac{\partial w(I)(s, j, t)}{\partial I} \cdot \frac{dI}{dt}$$

Since $\lambda_1, \lambda_2, \lambda_3$ are arbitrary, we take them to be independent of time.

The Hamiltonian equations in this general form of the maximisation problem are,

$$\begin{aligned} \left(\sum_j \sum_s \frac{\partial f}{\partial \bar{x}} + \lambda_2 \cdot \frac{\partial^2 h}{\partial \bar{x}^2} \cdot \dot{\bar{x}} \right) (j, s, t) \\ - \frac{d}{dt} \left(\sum_j \sum_s \frac{\partial f}{\partial \dot{\bar{x}}} + \lambda_2 \frac{\partial h}{\partial \bar{x}} \right) (j, s, t) + \text{constants} = 0 \quad (2.24) \end{aligned}$$

and

$$\left(\sum_j \sum_s \frac{\partial f}{\partial \bar{y}} + \lambda_3 \cdot \frac{\partial^2 g}{\partial \bar{y}^2} \cdot \dot{\bar{y}} \right) (j, s, t)$$

$$-\frac{d}{dt} \left(\sum_j \sum_s \frac{\partial f}{\partial \dot{\bar{y}}} + \lambda_3 \frac{\partial g}{\partial \dot{\bar{y}}} \right) (j, s, t) + \text{constants} = 0 \quad (2.25)$$

It is possible to give an interpretation to the above equations in the case of social consensus formation. In this case, it is reasonable to think of a terminal limiting value of \bar{x} and \bar{y} , over contingencies and *shuras*, that gives a stable determined value to the functions (g and h) of state and policy variables. The equations (2.24) and (2.25) now reduce to

$$\left[\sum_j \sum_s \left(\frac{\partial f}{\partial \bar{x}} \right) - \frac{d}{dt} \left(\sum_j \sum_s \frac{\partial f}{\partial \dot{\bar{x}}} \right) \right] (j, s, t) = 0 \quad (2.26)$$

$$\left[\sum_j \sum_s \left(\frac{\partial f}{\partial \bar{y}} \right) - \frac{d}{dt} \left(\sum_j \sum_s \frac{\partial f}{\partial \dot{\bar{y}}} \right) \right] (j, s, t) = 0 \quad (2.27)$$

Equations (2.26) and (2.27) imply the underlying maximisation problem, now applicable only in the regime of social consensus formation:

$$\text{Max}_{\bar{x}, \bar{y}} \int_0^T \sum_j \sum_s f(\bar{x}, \bar{y}, \dot{\bar{x}}, \dot{\bar{y}}) dt \quad (2.28)$$

subject to

$$\bar{x} = h(\bar{y}), \bar{x}(0) = \bar{x}_0 \text{ at } t = 0, \bar{x}(T) = \bar{x}_T \text{ at } t = T \quad (2.29)$$

$$\bar{y} = g(\bar{x}), \bar{y}(0) = \bar{y}_0 \text{ at } t = 0, \bar{y}(T) = \bar{y}_T \text{ at } t = T \quad (2.30)$$

Neither equation (2.26) nor (2.27) implies that each of the expressions interior to the summation signs would be independently zero. Hence the maximisation problem does not apply to individual *shuras* and contingent cases. Only the additive social welfare function is subject to optimisation. This optimisation problem, in the form of the expressions (2.28), (2.29) and (2.30), implies that continuity and differentiability properties of the functions apply in the case of the additive social welfare function in the state of social consensus formation through the *shura*.

CONCLUSION

We can now conclude this chapter by observing that the general theory of ethico-economic social welfare analysis concurs with the special theory of Islamic social welfare analysis. There are, however, distinctive elements of the latter that contribute to the general theory by virtue of its well-defined premise of the *shari'a*, the principles and instruments of the Islamic economy, and the conceptual fullness of the principle of ethical endogeneity that is now seen to spring from the process of decision-making in the *shura*. The ethical numeraire theory of Islamic economics is found to be a distinctive departure from all received theories of ethico-economic equilibrium.

In all these formalisations one finds the strong negation of classical and neoclassical paradigms, both in terms of concepts and methodologies of analysis. While the mathematical techniques, particularly those of constrained optimisation yielding first-order conditions of optimisation, are acceptable, their interpretation in the Islamic social welfare maximisation is different from, even contrary to in many respects, the Pareto-optimal results of neoclassical analysis. Principal among these is the result of ethico-economic theory in general and of Islamic economics in particular, showing that efficiency and distributive equity are conditions attainable simultaneously through the proper policing of the market system and the establishment of feedback loops between social transformation and the ethico-economic policies.

By using a mix of cardinal and ordinal weights in the measurable form of additive social welfare functions, and adopting the symmetry between contingency and time dimension and between social goals/priorities and time dimension, it is possible to extend the Islamic social welfare function to quantitative analysis. At the same time it is possible to impute the effect of the proxy value of ethical imponderables in respect to social valuation emanating from the *shura*. Yet, in spite of the additive and cardinal/ordinal nature of the Islamic social welfare function, this is established on sets of theoretical constructs altogether different from those found in received theories of social choice and welfare economics.

The strongly analytical foundations of the Islamic theory of social choice and welfare economics and their quantitative viability are seen in relation to the highly sophisticated areas of mathematics that are studied to this analysis. This is an undertaking further advanced in subsequent chapters. The frontiers of development of a new theory

of welfare economics are thus opened up. Ethico-economics in general, and Islamic political economic theory in particular, assumes that new dimension, which is found to be altogether different in essence from received social economics, and also from the classical and neoclassical economic doctrines.

3 A Theory of Cost-Benefit Analysis in Islamic Economics

The methodology of social welfare function and its extension to cost-benefit analysis will now be adapted to the case of Islamic economics. Some of the critical points will be pointed out first.

VIEWS ON THE OPPORTUNITY COST OF CAPITAL AMONG ISLAMIC ECONOMISTS

In the literature on Islamic project evaluation,¹ there is divided opinion on the acceptability of the idea of opportunity cost, and thereby on the use of the discounted flow concept. One group of Islamic economists points out that, because the discount rate measures the speculative and not the real rate of return, it is inextricably linked with the rate of interest, no matter how the latter is defined, that is, as nominal rate or real rate.² The argument is also made that the neoclassical methodology makes the discount rate a sum of the marginal time preference rate and the marginal productivity of capital. As the time preference rate is the measure of the opportunity cost of capital in the consumption theory of interest, it is thus argued not to be acceptable in Islamic capital valuation. Within this group of Islamic economists are these who argue that instead of the concept of opportunity cost of capital for discounting a flow of returns, the alternative would be to consider a terminal value of returns. In that case, the discount rate would be replaced by the growth rate of dividends as actually received by the investor.

Another group, to which the author belongs, argues that the idea of opportunity cost of capital is both acceptable and necessary in Islamic valuation models. The arguments provided are several: the discount rate in the cost-benefit model does not denote the actual borrowing or lending rate of capital. It is a spot rate used by the investor as a decision-maker to evaluate a flow of net returns over time, under different contingencies of risk and return. The rates

therefore represent different expectations, not actual charges.

On the other hand, it matters for the Islamic economy as to how the discount rate is measured in the firm's income statement, for in this case the firm, since it is not dealing in any interest rate transactions, cannot determine a discount rate on the basis of the interest return on opportunities forgone. Instead, the firm would be determining the opportunity cost on the basis of profit shares forgone. Now, since profit shares based on profit rates are diverse across various firms, and are not centrally set by a financial authority (as is the case of the prime rate), and following which the commercial rates are set, therefore an average profit-sharing rate must be used for the discount rate at any point of time. This in turn implies that there must be a limiting relationship among the diverse profit-sharing ratios. That is indeed true, because the Islamic economy under its competitive-cooperative conditions³ would not have profit rates significantly above the normal rate in the long run. Furthermore, since profit-sharing projects, equity projects and joint ventures are medium- to long-term projects, it would therefore, be safe to arrive at a long-term limiting value of the profit-sharing ratio as a discount rate. The problem of risky choice is further removed in the Islamic cost-benefit model because such a limiting value of the long-term profit-sharing ratio would be one option among various ratios based on the expectations of the investor as a decision-maker.

The author has also argued elsewhere that, in so far as the opportunity cost of capital measures the scarcity cost of capital, such an indicator is necessary in Islamic capital valuation models to incorporate the important Islamic economic principle of production and consumption in the absence of waste (the principle of *la israf*).⁴

Naqvi had another way of approaching the same problem of scarcity in resource allocation.⁵ However, Naqvi's allocative model being of the neoclassical type, the speculative portion of the total rate of discount (equating to the sum of the time preference rate and the marginal efficiency of capital), namely the time preference rate, is considered necessary in his capital valuation model. The time preference rate underlies the consumption rate of interest. The rate of interest is thus made to perform an efficiency role in Naqvi's intertemporal allocation of resources, which he claims could not be performed otherwise by the rate of profit. By taking out the role of the rate of profit (and thereby the profit-sharing ratio), the most important institution and principle of Islamic economics is ignored. This is the principle (institution) of profit sharing (*mudarabah*).⁶

A RAPPROCHEMENT AMONG CONTENDING ISLAMIC VIEWS ON THE OPPORTUNITY COST CONCEPT

It is not difficult to establish a common ground between the contending views on the opportunity cost of capital among the Islamic economists. We can circumvent the problem by treating the idea of the opportunity cost of capital (and thus the discount rate) in the Islamic cost-benefit model in the following way.

The principle of avoidance of waste in consumption and production necessitates the role of a factor in the cost-benefit model explaining *la israf*. But, at the same time, such a concept cannot be based on the speculative criteria of the consumption rate of interest or on the notion of a trade-off: as, for example, that between efficiency (controlling price level) and equity (employment), to be found in the neoclassical tradition of resource allocation.⁷ Since the neoclassical tradition cannot be accepted in ethico-economic theory in general and in Islamic economic theory in particular, the following criteria of choice therefore also cannot be used: (a) 'the internal rate of return on a project $>$ market rate of interest' implies acceptance of the project; (b) strict risk-aversion among investors in all projects; (c) equating the discount rate to the marginal rate of return; (d) using time-varying discount rates to capitalise projects with different maturities. Instead, this chapter suggests that the opportunity cost of resource allocation be construed in an altogether different way: that is, by equating the measure of the opportunity cost of capital to the marginal or average increase in the grand social welfare function, per unit of improvement in the set of socio-economic state variables and policy variables (or some combination of these variables). The selected discount rate is then taken as a limiting value of contingent discount rates which converge to an equilibrium value under social consensus formation.

The consistency between the terminal value and the discounted flow versions of the cost-benefit model can now be readily seen. Since the speculative component has been taken out of the discount rate, it is replaced by the certainty equivalent of risky rates in the discounted flow version. In Islamic economics the certainty equivalence of risky returns associated with speculation is the profit share, actual or expected. Hence the discount rate equated to the certainty equivalent of risky rates is the same as the profit-sharing ratio in the project. The equivalence question is now concluded as follows:

Let NB denote the net benefit of the income flow, Y_t , time,

$t = 1, 2, \dots, N$. Let d denote the discount rate, now seen as the certainty equivalent of speculative rates of return due to risk.

$$NB = \sum_{t=1}^N Y_t / (1 + d)^t \quad (3.1)$$

Because of the equivalence between d and the profit-sharing ratio, the terminal value, TV , is given by

$$TV_t = \sum_{k=0}^{t+N} Y_{t+k} \cdot (1 + d)^{t+k} \quad (3.2)$$

This is the same as

$$NB (1 + d)^N = TV \quad (3.3)$$

That is, it is only because of the equivalence between the certainty equivalents of risky rates and the profit-sharing ratio that the terminal value criteria can be viewed as the N -period compounded value of the NB value. The point is therefore reaffirmed: once the neoclassical essence of trade-off in resource allocation is removed from the concept of opportunity cost and replaced by the average or marginal increase in social welfare per unit of improvement in a set of cardinal variables, then the idea of opportunity capital is an acceptable and necessary measure in the Islamic version of the cost-benefit model.

THE IDEA OF OPPORTUNITY COST IN ISLAMIC ECONOMICS DEVELOPED IN THIS WORK

The views on the opportunity cost of resource allocation and the discounting of income flows presented above would hold true both in the case of evaluating social projects and private projects. Because the marginal rate of return is not accepted for the discount rate in the Islamic case, therefore the social rate of return and the private rate of return would not be the same as their neoclassical definitions imply.

The alternative measures of these rates were established in the first part of this chapter. They may be simply summarised here. The equivalence of the social rate of return in the Islamic cost-benefit model is given by,

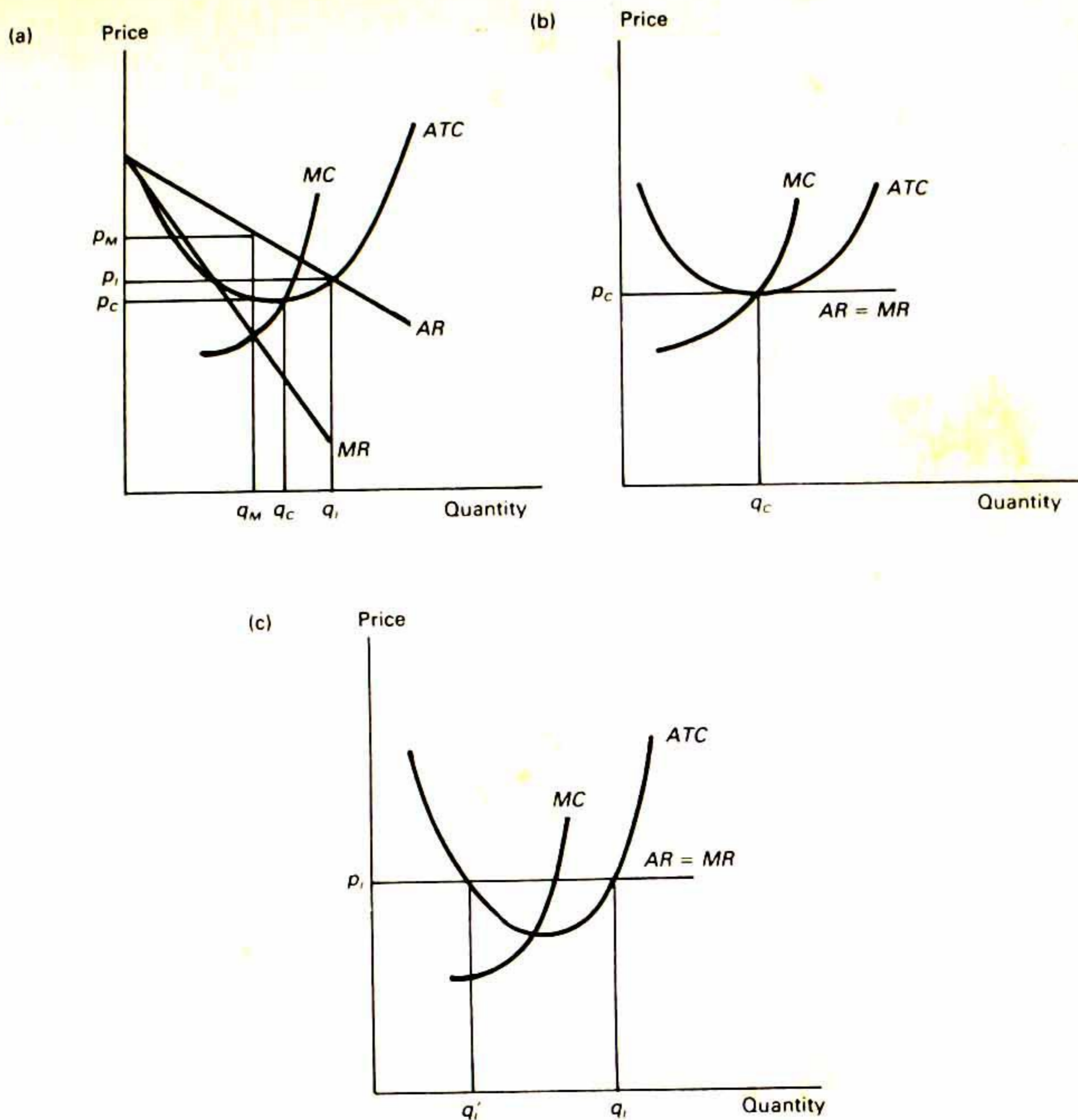
$$\partial W ((\bar{x}_{jt}) / \partial I (\bar{x}_{jt})) = d_{jt} \quad (3.4)$$

where $\bar{x}_{jt} = (x_{1jt}, x_{2jt}, \dots, x_{hjt})$ and $I(\bar{x}_{jt}) = \sum_{i=1}^n a_i \cdot x_{ijt}$ is a linear index of the state and policy variables given by the vector \bar{x}_{jt} , $j=1,2, \dots, n$, $t=1,2, \dots, N$. The linear index may be replaced by a non-linear one, depending upon the time path of expansion of the state and policy variables resulting from social consensus formation. Furthermore, the marginal change in the above sense can be replaced by simple ratios (averages) if, for example, risk-diversification is important for the portfolio or the capital market. In Islamic economic theory it has been shown that the nature of competitive-cooperative product and factor markets prescribes the average pricing conditions, because of the weighted average distributive nature of the total profit level by individual profit shares.⁸ At the same time, economic competition among cooperative groups will exist. This is due to the innovative nature of the market mechanism that is promoted, and the great extent of control of the economy that is passed on to the private sector in the Islamic economy. The government principally plays the supervisory role in enforcing policies and regulating the shari'atic principles in the Islamic economy.⁹

The alternative form of discount rate that we have prescribed for the Islamic economy in this chapter can now be combined with the marginal and average cost pricing formulas in the following way: in accordance with our new definition of the social rate of return, there is a price which is equal to the unit cost of obtaining the marginal or average increase in the social welfare function per unit of improvement in the set of critical variables.

Let p denote this price. Since $d = \partial W(\bar{x}_{jt}) / \partial I(\bar{x}_{jt})$, or a weighted average, therefore, $d = f(p)$, $\partial f(p) / \partial p > 0$ (note that the implicit function theorem of differential calculus would also give an inverse relationship between p and d), such that, if the average cost curve of ethico-economic development is related to the price variable, then the same average cost curve is also related to the discount rate. The discount rate is determined where the price is determined by the intersection of the average revenue curve and the average cost curve. The profit-maximisation implications of such an average cost pricing theorem for the Islamic economy is demonstrated in Figure 3.1 (An advanced version of this theorem was given in Chapter 1.)

Having determined the price variable in this way, the discount rate is then determined by the functional relationship between the two. Note that in the above formalisation no assumption of marginal cost pricing is made, and both short-run and long-run rates of profit are above the normal rate of profit given by the case of the neoclassical



- | | |
|---------------------------------------|----------------------------|
| p_C : price in perfect competition | ATC : average total cost |
| p_M : price in monopoly | MC : marginal cost |
| p_I : price for Islamic firm | AR : average revenue |
| q_C : output in perfect competition | MR : marginal revenue |
| q_M : output in monopoly | |
| q_I : output for Islamic firm | |

Comparison of the Islamic output with other cases shows $q_I > q_C > q_M$, with $p_I - p_C \ll p_M - p_C$ and $(p_I - p_C)$ very small. Also, for reasons of optimal economic welfare impact, $q_I (> q'_I)$ at $p = p_I$ is the only acceptable output level in the Islamic firm.

Figure 3.1 Comparative view on profit maximisation implications of the average and marginal cost pricing principles in the Islamic economic framework

perfect competition. Distributive properties of resource allocation in the Islamic economy, together with the necessary condition of externalities in production, require prices and profits to be above the long-run equilibrium prices to be found in perfect competition.¹⁰

The next question to ask is whether such prices, found to be higher than the perfectly competitive equilibrium prices, reduce consumer welfare? The answer is in the negative. This is true for the Islamic economy because no trade-off exists between efficiency and equity goals. The revenue due to the margin of higher prices is distributed to the consumer either in the form of transfer income (principally *zakah*) or as profit shares and wages. When profit sharing is involved the worker is also an owner of capital in the enterprise. Hence the increase in costs and profits are fully redistributed to workers and owners of capital by their participatory shares.

The principle of distributive equity, together with the principle of work and productivity, since these mobilise capital formation through profit sharing and eliminate interest transactions (interest is now considered an economic excess, waste an undue claim on resources), must maximise profit sharing (because of proportionate ownership and profitability) and the number of profit-sharing enterprises in the Islamic economy (because of the increase in investment following reduction, and then final elimination of the rate of interest). These conditions on the side of production fully distribute the national income among workers as owners of capital, and among principal owners of capital, by their proportionate but limited ownership of assets in the enterprise.

In conclusion, therefore, consumer welfare is not reduced by the average cost pricing of the Islamic economy. The social rates of discount in the Islamic economy must signify profitability and gains in consumer welfare.

This last point is further reinforced in the Islamic economy by the elimination of monopolies, which otherwise would violate the condition of proportionate but limited ownership. The question then is, does the average cost pricing (as shown above) imply monopoly pricing and monopoly profits? The answer is clearly in the negative. Unlike the case of marginal cost pricing, the cost and price are determined at the same level of output, and this level of output is the higher of the two possible levels of output. Besides, as shown above, the profit obtained at this level of output and price is totally distributed as shares of profit and wages. The conditions of monopoly pricing and monopoly profits do not hold in the case of Islamic

average cost pricing. Since the presence of monopoly profits is thus ruled out, there is no imputing of an excess 'fair' return on the regulated price floors. The discount rate as a direct function of prices, shown above, therefore represents optimal allocation of resources in the Islamic economy. The allocation of resources is, however, non-Pareto optimal, because of the divergent premise of analysis in the Islamic economy calling for efficiency–equity simultaneity in resource allocation rather than for a trade-off, as is to be found in neoclassical theory.

INTERPRETATION OF CONTINGENCY, GOAL/PRIORITY AND TIME IN ISLAMIC COST-BENEFIT METHODOLOGY

Our next part of the study on opportunity cost and discount rate in the Islamic economy is concerned with giving the Islamic interpretation of contingency, goal priority or time dimensions of the cost-benefit analysis. On referring to the shuratic social consensus formation process on ethico-economic issues, we can identify the contingencies: for instance, by the early, progressive and advanced phases of Islamic transformation among the populace. These phases of change relate to the potential of the Islamic economy for progressively better social policies, the evolving nature of interrelationship between state variables and ethical policies, which subsequently brings about better Islamic transformation. This is indeed the essence of the principle of ethical endogeneity earlier introduced, and is now shown to be the shuratic basis for integrating social policy formulation with the socio-economic environment. The net result is realisation of the process of Islamic transformation.

Now it needs to be seen how contingencies relate to the goals/priorities of the Islamic ethico-economic order. A few examples will suffice to establish the types of interrelationships expected. Take the case of economic cooperation, profit sharing, abolition of interest (interest is considered as one form of *israf*), and avoidance of economic waste (*la israf*) to be the four sequential priorities of the Islamic economy during its formative stage. During the early stage of the transformation, Islamic society and polity emphasise the need for economic cooperation, the establishing of venture capital for the assetless, cofinancing between enterprises bilaterally and multilaterally with social goals in view, diversifying the economy and promoting intercommunal trade.

The priority of economic cooperation must of course be reinforced by the second priority, namely profit sharing. This necessitates cooperative projects, joint ventures and equity participation among many agents in the private and public sectors, among workers and owners of capital, and among Islamic countries internationally. Again, these priorities must result in an optimal mobilisation of resources for attaining distributive equity and economic growth. This necessitates the lowering of, and is then followed by, complete elimination of interest rates in the Islamic economy. Now, while interest on money capital and monopolistic profits are seen as economic waste appearing in the form of quasi-rents, the abolition of interest monopoly necessitates the abolition of waste on the consumption and production sides.¹¹ Even while the priorities overlap, the contingencies associated with them can only make one priority more effective than the others over a period of time during which a specific contingency holds. A transition in contingencies or goals/priorities, whichever applies, can thus be identified with the lapse of the planning time period over which a substantive Islamic transformation has occurred, while all the goals/priorities (contingencies) continue to interact with each other in respect to their circumstantial importance. These circumstances would result from the nature of the transformation process (for example, when a substantial number of agrarian projects have been cofinanced, the economy can then move into joint ventures between farmers and investors to develop food processing enterprises, fish-processing plants and so on).

With the time dimension so identified with priorities or as the case may be, and the contingencies and the priorities overlapping, we can then write the cost-benefit model in the form shown in equation (3.1). A difference in treatment will appear in terms of identifying contingencies with time-periods, while leaving priorities to be assigned.

The Islamic *shura* on ethico-economic matters can alternatively treat cofinancing as a goal when the contingency of economic cooperation is strong; or treat joint ventures as a goal when the contingency of profit sharing is strong; or treat formation of secondary capital instruments and equity projects as a goal when the contingency of abolition of interest on loanable capital is strong. In this case, the condition of goal attainment over time while contingencies overlap, makes the goals priorities identifiable with time periods. Equation (3.1) again holds true.

In both the above cases we see that there is a perfect symmetry

between time and contingency, or time and goal/priority. Furthermore, in order to reduce the variables (including the discount rate) to their certainty equivalents, which was shown earlier to be an Islamic necessity in evaluating the opportunity cost of resource allocation, these variables or indices of variables are multiplied by their conditional probabilities across contingencies or goals/priorities, as the case may be. Expression (3.1) is then adapted to the case of the Islamic probabilistic cost-benefit model.

AN EXTENDED DEFINITION OF THE TIME DIMENSION IN ISLAMIC COST-BENEFIT AND WELFARE ANALYSIS

The critical relationship between time and contingency or goal makes the time dimension subject to proper definition in the Islamic cost-benefit model. Elsewhere, the author has argued that the concept of time period in Islamic economics can be separated, first into a time period that represents the intertemporality of economic variables, and second, it has a dimension that is relevant to the capitalisation of extra-temporal returns in the hereafter. Then because every worldly action is seen in Islam to be associated with reward or retribution in the hereafter, the extra-temporal dimension of time must have a convertible intertemporal dimension. This time convertibility must of course be of an ordinal type, because no actual data is available to capitalise the extra-temporal variables, such as the level of individual belief, the magnitude of the rewards or retribution in the hereafter, and so on. These ordinal value weights are set in the shuratic equivalence of the decision-making tree of the type shown in Figures 3.1, 3.2 and 3.3 of this chapter. The principle of ethical endogeneity is shown to reassign these weights as contingencies and goals, as the latter keep on evolving under different sets of social consensus formation on issues. For instance, the goal of attaining distributive equity through transfer payments (*zakah*), can be assigned the ordinal value 1, and attaining the goal of distributive equity through productive use of *zakah* for the needy (training, loans for establishing an enterprise or for investment by the assetless) can be assigned the ordinal value 2.

The principle of so determining ordinal weights for extra-temporal values in terms of their intertemporal ones is based on the rule of infallibility of the Islamic community endeavouring to exercise authoritative research (*qiyas, ijtehad*) towards solving the ethico-economic

problems and issues.¹² With the extended concept of the time dimension in the Islamic cost-benefit model, the ordinal value weights further augment the state variables, policy variables and the discount rates.

The time dimension defined in the extended Islamic concept is seen not to be a historical entity, in the sense that it is not mechanically used in the Islamic ethico-economic planning models. Rather it is an event-related entity across the lifetime of an evolving society from the perspective of Islamic structural change.

The concept of the time dimension as a developmental entity and an evolutionary entity has been marginally covered in the literature. The literature identifies the time dimension in classical and neoclassical economic thought with the developmental and evolutionary entities, respectively. That is, the classical school is found to identify the time dimension in the sense of a historical process of development; the neoclassical school is found to identify it in the sense of a logical relationship among economic variables that would hold true in the long run. Time, and the events connected with it, are thereby determined a priori. The value of the time dimension in the scenario is one of prediction only.¹³

On the other hand, the event-related concept of time emanating from the Islamic economic concept is one of assigning time-periods to spans of structural changes. Time is now not considered as an instrument of extrapolative trends. Economic prediction is rather linked to the attained conditions of state and policy variables, which in turn characterise the goals/priorities and contingencies in the Islamic economy. Really, this concept of time is seen to be nearer to the one given by relativistic physics, wherein time and events are treated as inseparable entities. Above all, the Quranic concept of time is indeed this. It is used as a scale of past and futuristic reference in terms of the criteria of good against evil, of perfection against error, over historical representation of humanity. Civilisation and society are seen to march across time in terms of epochs of marked triumphs of good over evil.¹⁴

With this concept of time in planning and evaluative models, there can be no linearity of projection of events. The determinants of projection are the attained state and policy variables in the context of their relationships with contingencies and goals/priorities. To formalise this picture we proceed as follows.

Let, $I(\bar{x}_{jt}) = a_1 \cdot E_{jt} + a_2 \cdot D_{jt} + a_3 \cdot p_{jt} + a_4 \cdot z_{jt} + a_5 \cdot Y_{jt}$, where a_i , $i = 1, 2, \dots, 5$ denote ordinal value weights assigned to the critical

variables of the developmental index, $I(\bar{x}_{jt})$. These variables are E_{jt} , employment at time t , subject to either contingency j or goal/priority j ; D_{jt} , income distribution variable at time t , subject to either contingency j or goal/priority j ; p_{jt} , profit-sharing ratio at time t , subject to either contingency j or goal/priority j ; z_{jt} , *zakah* expenditure at time t , subject to either contingency j or goal/priority j ; Y_{jt} , national income at time t , subject to either contingency j or goal/priority j ; $j = 1, 2, \dots, n$.

The time-dependent discount rate is given by $d_{jt} = \partial W(\bar{x}_{jt}) / \partial I(\bar{x}_{jt})$ or an average rate. The interchangeability of the contingency and goal/priority variables with the time-variable implies that, as the Islamic society evolves over time (time now being interpreted as a sequence of events) $d_{jt} \rightarrow d$ (a constant value). This happens precisely because of social consensus formation on Islamic issues, problems and solutions set at the shuratic levels of decision-making. The index of development being represented by the expansion path of social welfare surfaces is shown by Figure 3.2.

In Figure 3.2, $W_1, W_2, W_3, \dots, W_N$ represents disaggregated social welfare indices of the grand social welfare function for given values of \bar{x}_{jt} at time periods $t = 1, 2, \dots, N$, respectively. The locus of the points, a', a'' and so on describe the expansion path of the developmental index $I(\bar{x}_{jt})$, in so far as this locus describes the path of evolution of the specific state and policy variables affecting the grand social welfare function over time.

It is now contended that points such as $a^{*'} and $a^{*''}$ will result in an alternative locus of state and policy variables, but the resulting expansion path of these variables will converge to a unique path, the path that is determined by social consensus among shuratic decision-makers. Note that $dI(x_{ijt})/da_i = x_{ijt}$, where x_{ijt} is any one of the various variables mentioned above. Now, $dI/da_i - dI/da_i^* = (x_{ijt} - x_{ijt}^*)$. The divergences of the points $a^{*'}$ and $a^{*''}$ from a^* , and of $a^{*''}$ from a^* , are due to different ordinal value weights, which in turn imply that a new set of values for the state and policy variables must prevail. The contingency variables and the goals/priorities are not well defined. Social consensus does not hold, this is a result that conflicts with the objective of the *shura*, which is to establish social consensus. Thus, between the two paths, only one can be chosen (the one which establishes shuratic consensus). Now, with all this, a unique discount rate can be determined at the terminal point of the expansion path. But, since the terminal values of the state and policy variables can only be estimated by conditional probabilities in order$

TREATING THE INDEX OF CAPITAL MARKET VARIABLES AS A SOCIAL INDEX IN THE ISLAMIC COST-BENEFIT MODEL

The cost-benefit model for capital valuation is treated similarly. Here, one needs first to set up the index of capital market variables, such as an index comprising the variables, profit-sharing ratio, price level and certainty equivalent of risky return. This index of capital market variables must then be identified with a social index. The way to do this in the Islamic economy is to identify the nature and intent of all goods produced and consumed as social goods.

Briefly, a social good is defined as a private or public good produced and consumed to meet certain ethical targets. Among such goods are basic needs, the production and consumption of which are ascribed under the goals of mass consumption, equality and distribution; non-alcoholic beverages, to meet the Islamic tenets in this respect; Islamically non-requisite literature, non-requisite education and so on.¹⁵ In the case of profit-sharing projects under economic cooperation, the distributive nature of production, the employment multipliers, avoidance of interest transactions in such activities, and Islamically-requisite investment, make the production, consumption and output of these *mudarabah* ventures into social goods. Indeed, in the Islamic economy, investment and *zakah* are seen as both substitutable (comparative static case) and complementary (dynamic case) Islamic activities. That is, while at any given point of time *zakah* can be written off by an equivalent amount of investment, over time both investment and *zakah* increase simultaneously as more of the *zakah* expenditure is directed into productive investments for the needy.¹⁶

With investment, profit sharing, economic cooperation, elimination of interest and waste being requisite activities of the Islamic economy, can it then be said that matters relating to these are monitored by the *shura*? The answer is in the affirmative. It has been shown in Chapter 1 that the institution of the *shura* is widespread across all segments of society. Each such decentralised *shura* then integrates its decisions on specific issues at a higher echelon of structured shuras. In this way, the grand *shura* at the national level incorporates the decisions and findings of all the decentralised *shuras* to reach a democratic decision on specific issues. In this context, even the consultative process that goes on in a small Islamic firm is a semblance of the 'shuratic' process. The 'shuratic' process of decision-making is thus a highly decentralised and democratic one.¹⁷

In the Islamic cost-benefit model, the discount rate must now be made a function of the social index of the Islamic capital market. On adapting the expansion path of the social index to social consensus formation, and by properly selecting contingencies and goals/priorities, the discount rate in the case of the Islamic cost-benefit model for the capital market is determined at a terminal point like a^* . As before, there are ordinal value weights set by shuratic decision-makers to characterise the expansion path of the index. Clearly, in such a definition of the discount rate for both cases of the social net cost-benefit model and the cost-benefit model for the capital market, all the state and policy variables that enter the grand social welfare function, and the index of these variables, determine the discount rate.

Examine the following exercise:

$$W(\bar{x}_{jt}) = A \exp(a_1 \cdot r + a_2 \cdot p + a_3 \cdot R + a_4 \cdot z) \quad (3.5)$$

where $\bar{x}_{jt} = (r, p, R, z)$ (j, t); r denotes the profit-sharing rate, p denotes the price variable, R denotes the certainty equivalent of risky return, z denotes *zakah* receipts, j denotes contingency, and t denotes time variable. For simplicity, these variables are now taken independent of time. In the x -vector, the z -element appears as a policy variable. The other elements are state variables. The given form of the grand social welfare function means that social consensus in the *shura* remains unchanged over the period of time when a goal/priority or contingency is reinforcing the process of transformation in the Islamic economy.

$$I(\bar{x}_{jt}) = a_1 \cdot r + a_2 \cdot p + a_3 \cdot R + a_4 \cdot z \quad (3.6)$$

For simplicity, equation (3.6) is made independent of time. The implication of this simplification is that either goal/priority or contingency is interchanged with the time variable. The Islamic interpretation of this is that, as long as no new structural change is taking place, society would evolve along a fixed path of expansion given by the developmental index.

The determination of the discount rate, d , is now done as follows:

$$\text{Max} \cdot W(\bar{r}, p, R, z) \quad (3.7)$$

subject to

$$I(r, p, R, z) = a_1 \cdot r + a_2 \cdot p + a_3 \cdot R + a_4 \cdot z \quad (3.8)$$

$$NB = \sum_{t=1}^N I(r, p, R, z)(t)/(1 + d)^t \quad (3.9)$$

$$L = W - \lambda_1 \cdot (I - a_1 \cdot r - a_2 \cdot p + a_3 \cdot R + a_4 \cdot z) - \lambda_2$$

$$(NB - \sum_{t=1}^N I_t / (1 + d)^t) \quad (3.10)$$

$$dL/dI = dW/dI - \lambda_1 + \lambda_2 \sum 1/(1 + d)^t, \text{ for all time periods} \quad (3.11)$$

By definition, $dW/dI = d$ (discount rate). Then,

$$d - \lambda_1 + \lambda_2 \cdot \sum_{t=1}^N 1/(1 + d)^t = 0 \dots \quad (3.12)$$

The other first order Lagrangian maximisation equations are

$$dW/dr = \lambda_1 a_1 + \sum_{t=1}^N \lambda_2 a_2 / (1 + d)^t, \text{ for all time periods} \quad (3.13)$$

$$dW/dp = \lambda_1 a_2 + \sum_{t=1}^N \lambda_2 a_2 / (1 + d)^t, \text{ for all time periods} \quad (3.14)$$

$$dW/dR = \lambda_1 a_3 + \sum_{t=1}^N a_3 / (1 + d)^t, \text{ for all time periods} \quad (3.15)$$

$$dW/dz = \lambda_1 a_4 + \sum_{t=1}^N \lambda_2 a_4 / (1 + d)^t, \text{ for all time periods} \quad (3.16)$$

Since λ_1 and λ_2 are arbitrary quantities, we take their relationship in the form

$$\lambda_1 + \lambda_2 = 1 \quad (3.17)$$

Between equations (3.12) and (3.17) we can determine d . From the other equations (3.13)–(3.16), we determine the respective contributions of the state and policy variables to social welfare.

The important point to note here is that

$$d = f(r, p, R, z, a_1, a_2, a_3, a_4) \quad (3.18)$$

subject to the relation

$$\begin{aligned}
 & r \cdot dW/dr + p dW/dp + R dW/dR + z dW/dz \\
 & = \lambda_1 I_t + \lambda_2 I_t \sum_{t=1}^N 1/(1+d)^t \quad (3.19)
 \end{aligned}$$

This form of the discount rate is in sharp contrast to the ones given in the literature, and those formalised by Islamic economists to date. The form developed here signifies that the discount rate is influenced by the same set of state and policy variables critical to shuratic decision-making. Only in the unidimensional social welfare function (say, in terms of the profit-sharing rate alone), is $d = f(r)$. This expression in the linearised case is $d = c \cdot r$, c being a constant. But this is the trivial case, not the interesting one, because it does not yield a result any different from that known in the literature.¹⁸ It also does not show the essential shuratic decision-making process which underlies the evaluation of the opportunity cost of capital, and thereby of the discount rate. The tree configuration of the Islamic expected social net cost-benefit model involving capital market variables is shown in Figure 3.3.

The dark lines in Figure 3.3 indicate the final choices for the individual *shuras* across various contingencies (or goals/priorities). In the shuratic consensus formation stage, the relationships at the individual 'shura' level are as follows:

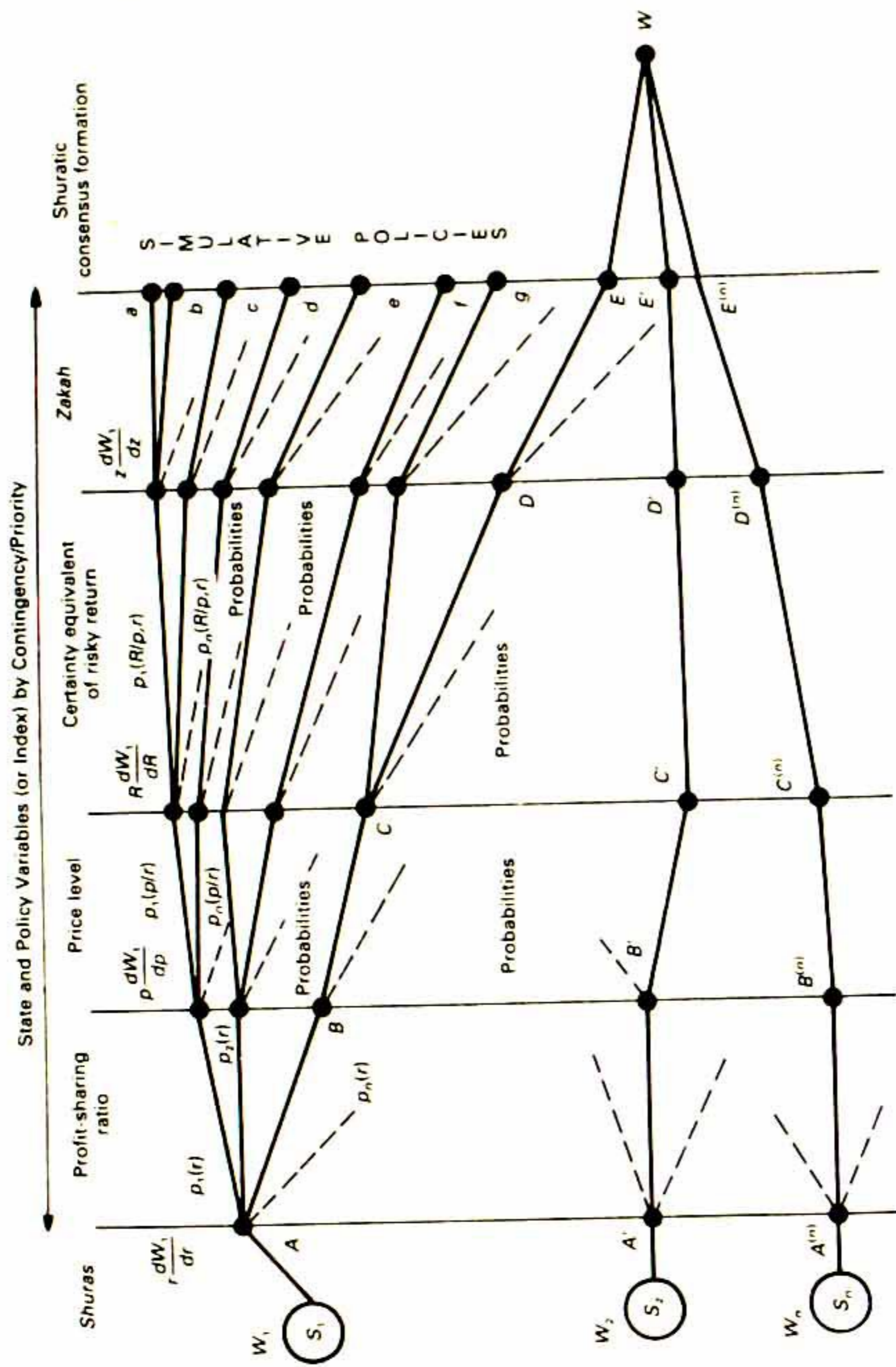
$$\begin{aligned}
 & \sum_{i=1}^n (r dW_i / dr + p \cdot dW_i / dp + R dW_i / dR + z dW_i / z) \\
 & = \sum_{i=1}^n \lambda_{i1} I_t + \sum_{i=1}^n (\lambda_{2i} I_t \cdot \sum_{t=1}^N 1/(1+d_i)^t) \\
 & = \lambda_1 I_t + \lambda_2 I_t \cdot \sum_{t=1}^N 1/(1+d)^t \dots \quad (3.20)
 \end{aligned}$$

where

$$\lambda_1 = \sum_{i=1}^n \lambda_{i1}, \lambda_2 = \sum_{i=1}^n \lambda_{2i} \dots \quad (3.21)$$

$$1/(1+d)^t = \sum_{i=1}^n 1/(1+d_i)^t \dots \quad (3.22)$$

The tree configuration of the Islamic expected net cost-benefit model for the capital market is shown in Figure 3.4. The corporation *shuras* are simply micro-level ones in the Islamic economy. They are integrated with higher echelons of *shuras* in the economy-wide levels of *shuras*. In the case of the cost-benefit model for the capital market, the critical variables are weighted by ordinal and cardinal weights.



Note that one of several policy simulative alternatives is optimal in the sense of social consensus formation. Thus, $ABCDEW$ is the optimal path for the social welfare index, W_1 , of *shura* 1; $A'B'C'D'E'W'$ is the optimal path for the social welfare index, W_2 , of *shura* 2, and so on. W now represents the aggregative contributions of the optimal indexes, W_1, W_2, \dots, W_n in the social consensus formation sense.

Figure 3.3 Tree configuration of the Islamic expected net social cost-benefit model

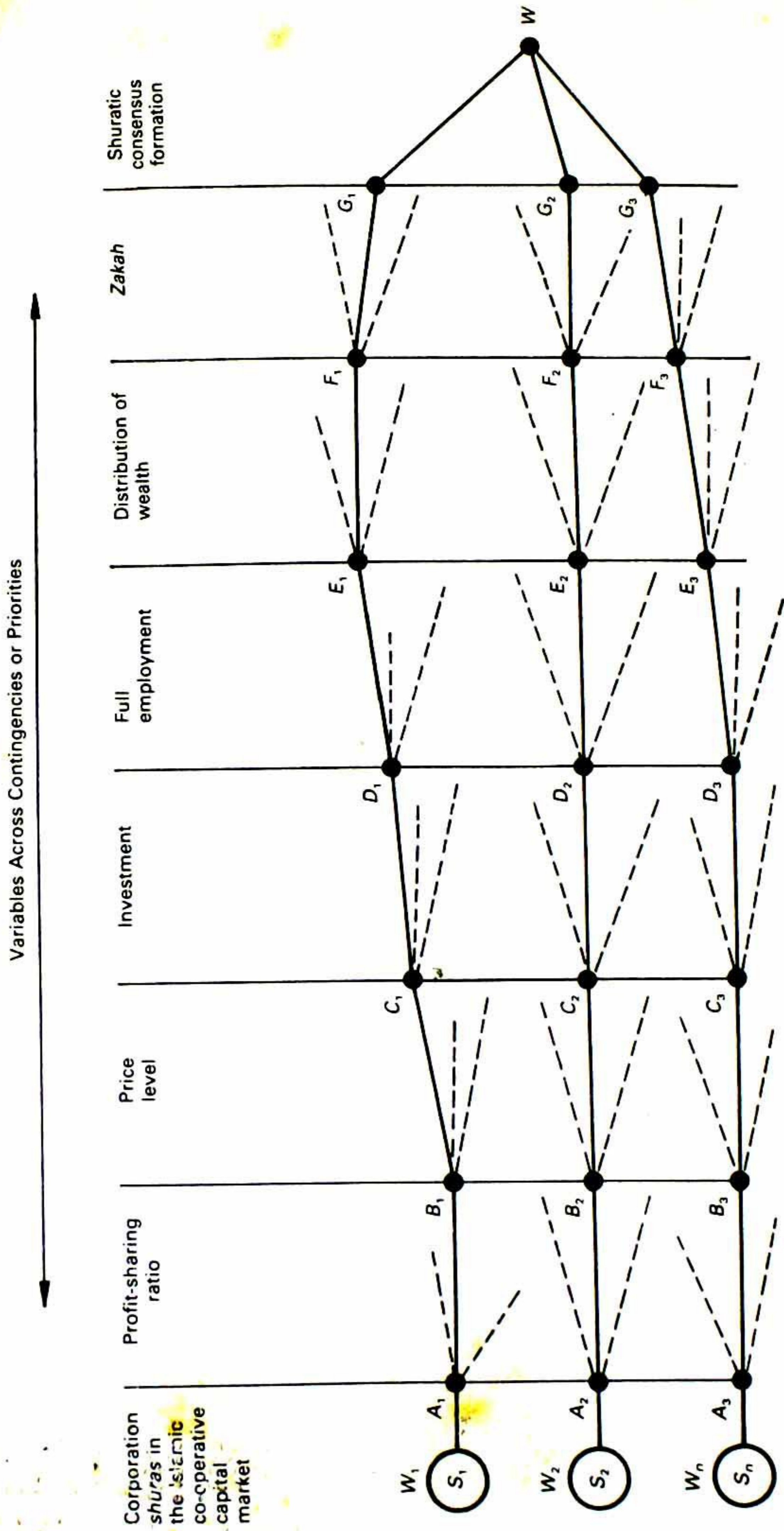


Figure 3.4 Tree configuration of social welfare basis of net cost-benefit model for the Islamic capital market

Such a formalisation shows that shuratic decision-making is a detailed decentralised and democratic process at the microlevel. The aggregation of these decisions forms social decisions at higher echelons of *shuras*.

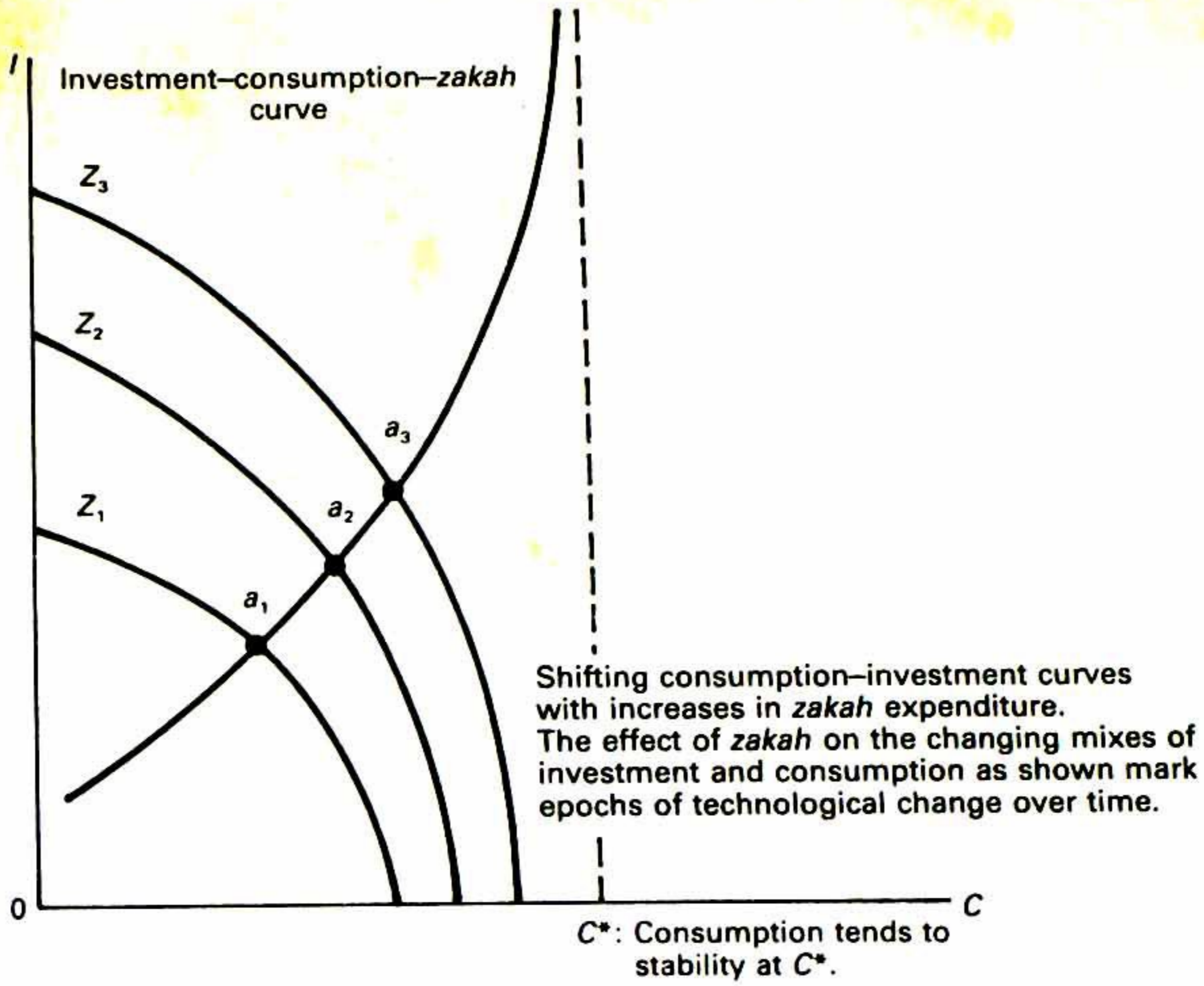
THE RELATIONSHIP BETWEEN ZAKAH AND DISCOUNT RATE IN THE ISLAMIC COST-BENEFIT MODEL

In the Islamic economy an important aspect of the relationship between the discount rate, the *zakah* rate and the profit-sharing ratio can now be shown. *Zakah* and investment in Islamically-requisite projects are found to be complementary to each other, intertemporally, so it is recommended that more of the *zakah* expenditure be outlaid on productive outlets for the needy.¹⁹

Zakah will, however, continue to play its important role as a consumption transfer for the disabled while minimising its payments as transfers to the able-bodied needy. The Islamic economic principle influencing it in this regard is that of work and productivity. The result of such a reallocation of *zakah* would minimise the free-rider problem in Islamic consumption behaviour. Otherwise income distribution will result in waste, and in this way the Islamic economic principle of avoidance of waste and of distributive equity will contradict each other.

Figure 3.5 shows the complementary nature of *zakah* and investment over time, and the consumption-*zakah* relationship thereby emerging. When an increase in *zakah* causes consumption to rise, investment is pulled down, and vice versa. As the discount rate is positively related to the rate of return on investment, it is adversely affected by an overallocation of *zakah* to consumption transfers, and is favourably affected by increasing the allocation of *zakah* expenditure to Islamically-requisite investment. Note that *zakah* expenditure on medical care, shelter, and so on for the elderly poor is considered a social investment because of its positive social productivity effects. The instance is now not one of 'free riding'.

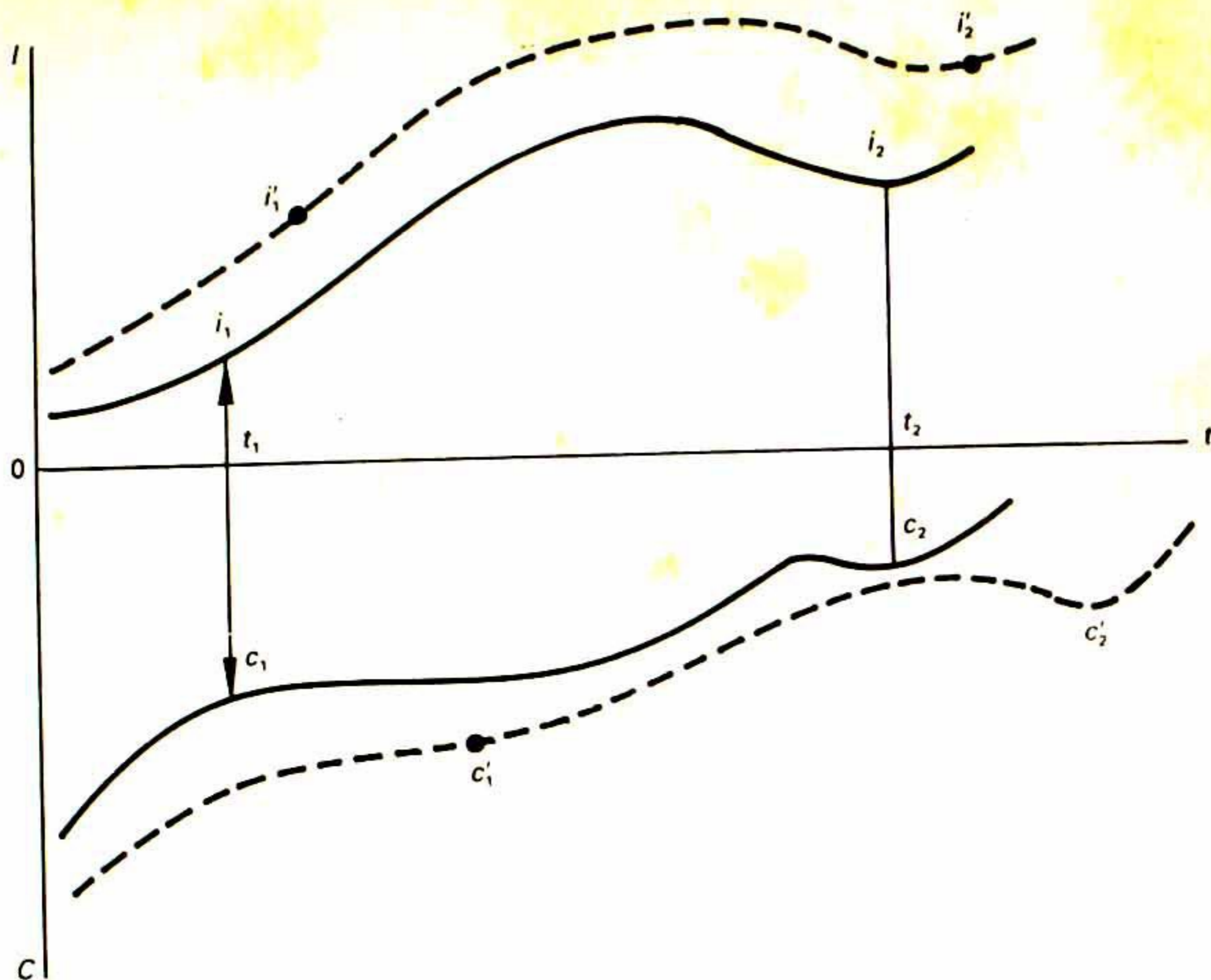
The conclusion, then, is that the discount rate has a positive relationship to the investment component of *zakah* expenditure, and a negative relationship to the consumption component of *zakah* expenditure. The above result on the switching points between investment and consumption goods intertemporally is supported by the *shari'a*, the *hadith* and the Quran.²⁰



I : investment
 C : consumption
 Z_1, Z_2, Z_3 : levels of *zakah* expenditure associated with given mixes of investment and consumption
 a_1, a_2, a_3 show the complementary nature of investment and *zakah* over time.

Figure 3.5 The complementary nature of *zakah* and investment over time

With regard to the Islamic cost-benefit model, the switching points indicate that the discount rates are related to either the contingencies of consumption and investment regimes, or the goals/priorities being placed on consumption and investment (see Figure 3.6). In an intertemporal framework, the Islamic perspectives of consumption-investment behaviour negate the existence of a consumption regime. Hence the priority must be on the intertemporal investment regime with the required balance of consumption needs being satisfied.²¹ The balance of consumption and investment expenditures from the *zakah* fund is denoted by the inflexion points in the two relationships. These points are shown by, i_1, i_2, \dots ; c_1, c_2 , and so on. The *zakah* expendi-



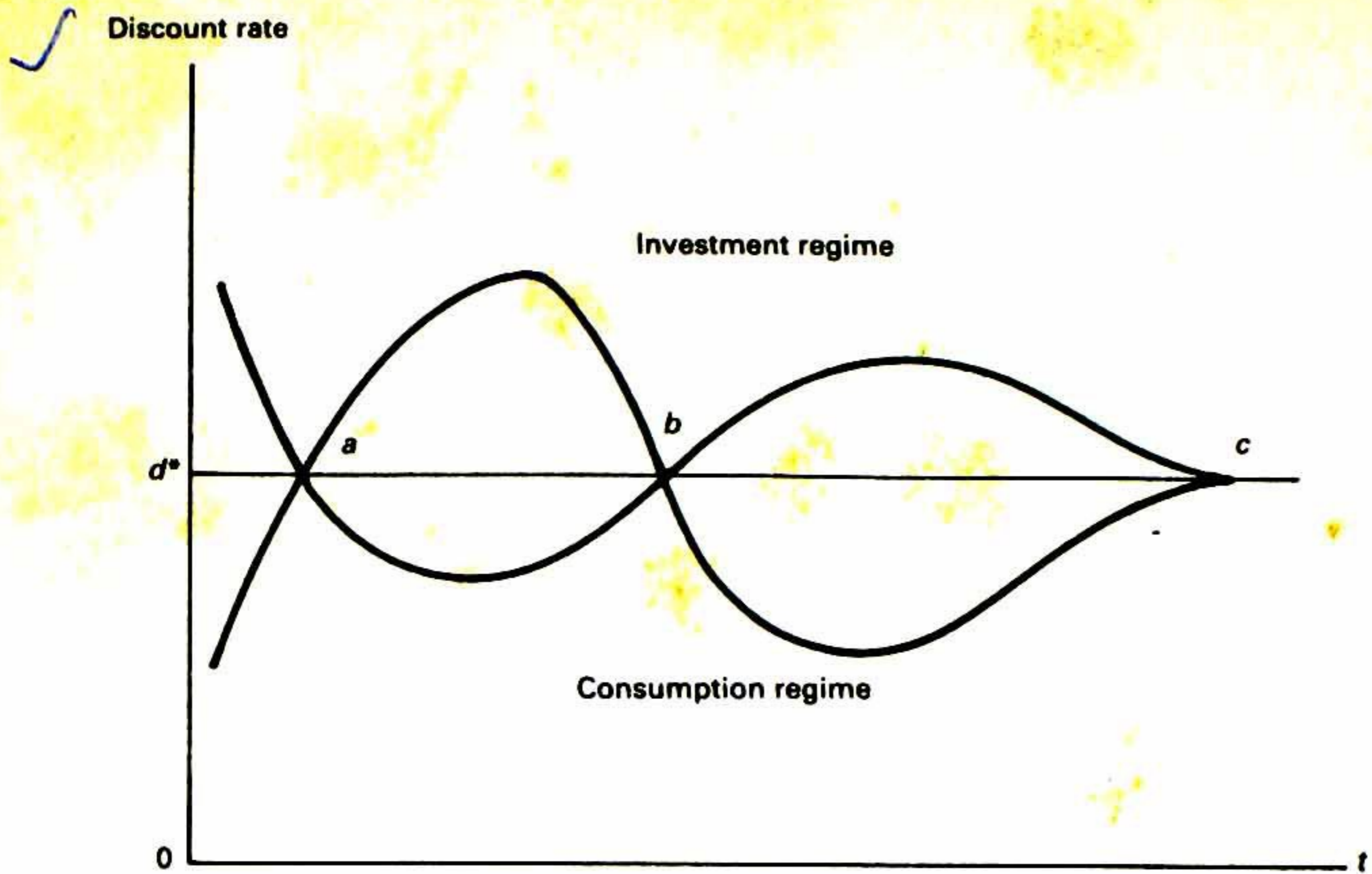
i_1, i_1' and so on are positive inflexion points showing the complementary effects of *zakah* on investment over time and over epochs of technological change
 c_1, c_1' and so on are negative inflexion points showing the residual effect of *zakah* on consumption over time and over epochs of technological change

These relationships are proportionate at the points i_2, i_2', c_2, c_2' and so on, showing that the intertemporal effect of lower investment, and the consequent weaker complementarity between *zakah* and investment, is lower consumption.

Figure 3.6 Switching points in consumption and investment with *zakah* effect over time

ture, the consumption expenditure and the investment expenditure are then determined in relation to each other. The discount rates determined corresponding to the inflexion points are the ones to be used to measure the opportunity cost of resource allocation when d is related to the profit-sharing ratio and the *zakah* rate (rate of increase in *zakah* funds); for now, the rate of return on investment is determined by the requisite investment component of *zakah*, and the

The Theoretical Foundations



d^* : equilibrium rate of discount

Figure 3.7 Equilibrium rate of discount as opportunity cost of capital in relation to investment and consumption regimes over time

profit-sharing ratio is positively related to this rate of return.

Once the contingency-specific discount rates are so determined, the unique certainty equivalent discount rate is thereafter determined by equation (3.20). The intertemporal equilibrating of the contingency-specific discount rates to a unique rate is shown in Figure 3.7. The decrease in the discount rate signifies a predominantly consumption regime; an increase in the rate signifies a predominantly investment regime, both brought about by the allocation of *zakah* between consumption and investment expenditures, respectively.

The above results will now be remodified by relaxing the underlying assumption of constant population. If population is growing, consumption expenditures will increase. This will shift the consumption-*zakah* curve in Figure 3.7 downwards and the inflexion points outwards, showing that the consumption component of *zakah* expenditure has increased. But, with population increase, the manpower/population ratio increases, signifying that such a growing population becomes a demographically stable one, characterised by its youth. The stable population structure has the effect of bringing a greater

proportion of young people to reinforce the productive capacity of the economy.²² *Zakah* expenditure will now further reinforce the investment levels. The investment-*zakah* curve will now shift upwards as shown in Figure 3.7, and the points of inflexion will shift outwards. With these vertical and outward shifts of the curves, the implications of *zakah* and the profit-sharing ratio via the rate of return on investment on the discount rate is similar to the one formalised above. The discount rate is not depressed by an increase in population size in the Islamic economy. The underlying factor in this is the consumption-investment behaviour in the Islamic economy: it allocates an increasing amount of resources to the generation of real investments intertemporally; it eliminates waste in consumption and production by minimising luxuries and maximising necessities and comforts in this order.²³

It can be shown that there is a one-to-one relationship between stable population structure and stages of economic development. The long-run rate of growth of population, the one which describes the stable population structure, is related to the fertility rate. When there is an ageing population, characterised by low fertility rates, the growth rate of population is also low. The resultant low growth rate of population adversely affects labour supply, and thereby the formation of the social product. The resulting consequences are even more pronounced. Now, under the pressure of falling gross national product, the economies push for capital-intensive projects and borrow heavily to finance a much needed social security fund to meet the retirement demands. This leads to increasing debts and causes inflationary pressures and unemployment problems. Finally, the consequences of such adverse economic movements are lower economic growth and lost economic welfare.

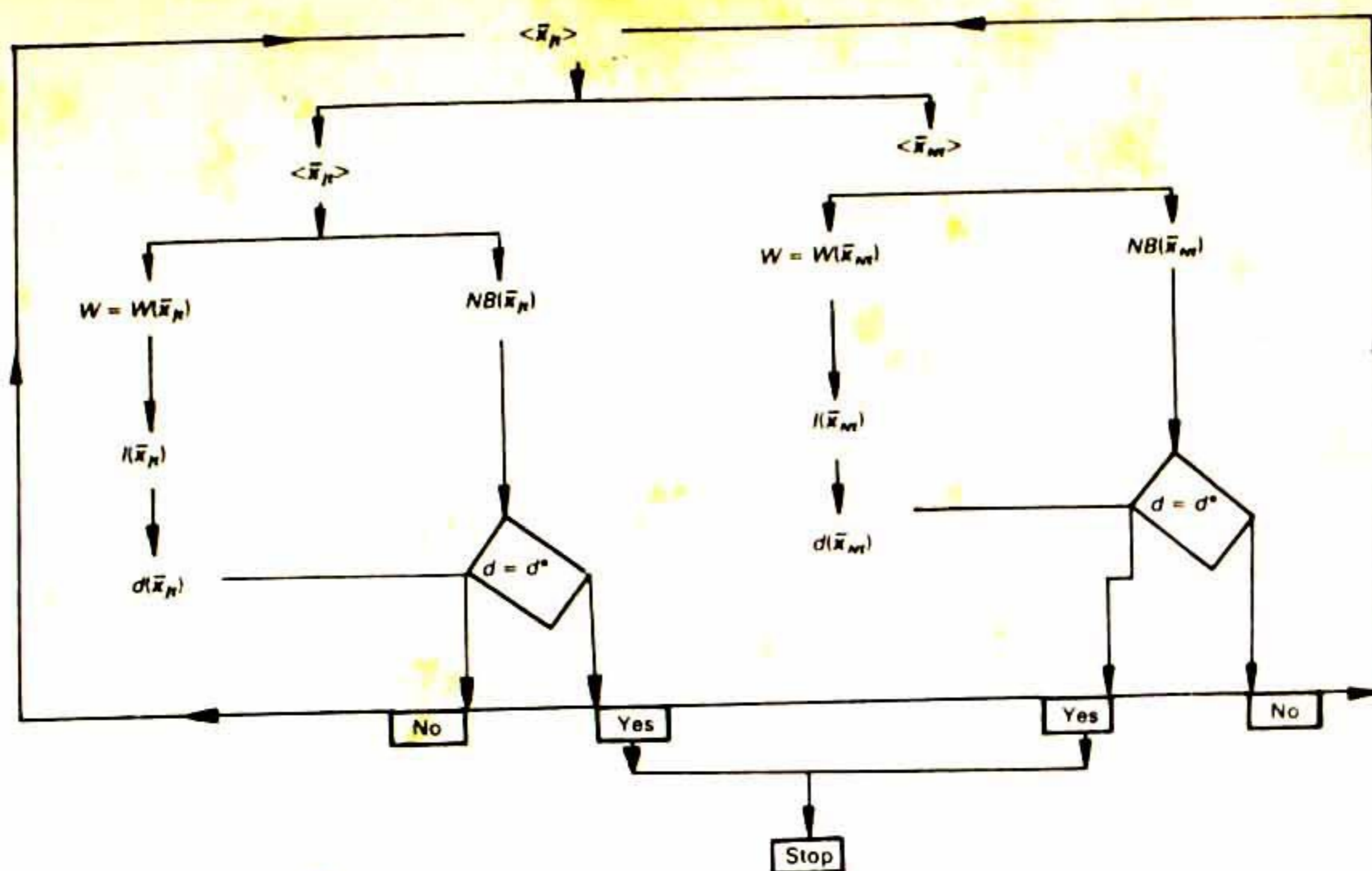
CONCLUSION

We can now conclude this chapter using a systems diagram (Figure 3.8). The diagram shows the interrelationships between the grand social welfare function and the net social cost-benefit model through the Islamic concept of the discount rate and the opportunity cost of resource allocation. These relationships are shown to be carried over different contingencies or goals/priorities for the state and policy variables.

In Figure 3.8 we show the following variables: \bar{X}_t denotes the

vector of state variables and policy variables for decision-making groups, $i = 1, 2, \dots, m$; contingencies or goals/priorities, $j = 1, 2, \dots, n$; $t = 1, 2, \dots, N$. The time variable is made congruous with contingency or goal/priority, as the case may be; \bar{x}_{jt} denotes the social consensus vector after iterations over decision-making groups in the *shura*. Here $t = N$ denotes the time period over which a goal/priority exists; \bar{x}_{Nt} denotes the social consensus vector when $t = j$ (contingency), meaning that the same contingency prevails over the given time period; $W(\bar{x}_{jt})$ denotes the grand social welfare function over different contingencies over time, expressed as an additive transformation over group-specific social welfare indexes; $I(\bar{x}_{jt})$ denotes the social/developmental index of critical variables as the expansion path of these variables over attained points on various social welfare functions; $d(\bar{x}_{jt})$ denotes the sequence of time-varying risky discount rates before social consensus formation has taken place and is determined by the marginal rate of change of the welfare index with respect to marginal changes in the social/developmental index; $NB(\bar{x}_{jt})$ denotes the sequence of net social cost-benefit models for different contingencies or goals/priorities over time; $d = d^*$ denotes the unique certainty equivalent discount rate (the one that would prevail in order to evaluate the opportunity cost of capital when social consensus prevails in the *shura*).

Similar sets of indicators exist when j is switched for N over time. In both cases, the *shura* defines the certainty equivalent discount rate by considering the opportunity cost in terms of extra cost required to attain a percentage increase in social welfare per unit of improvement in the critical variables (or in the index of the variables), given prevalent resources. This discount rate is also conformable with risk-diversification, maximised social and private profitability of the project/portfolio, and with social consensus formation involving the state and policy variables. If d^* is not so determined, social consensus is not established. The democratic consultative process of the *shura* now reiterates the process shown by loops of feedback. Such loops also imply the underlying principle of ethical endogeneity at work in social consensus formation in the Islamic economy.



\bar{x}_{jt} : vector of state variables and policy variables
 \bar{x}_{Nt} : the vector of variables in the case of social consensus, showing that the same contingency of state and policy variables prevail over the entire time-period

It must be noted throughout the net cost-benefit analysis that the state variables and the policy variables must be reduced to their monetary values. For example, the profit-sharing ratio is reduced to the monetary value of profit shares, full employment is reduced to income flow under full employment conditions; *zakah* as a policy variable is measured in terms of its money value of *zakah* revenue and disbursement.

Figure 3.8 Interrelationships between the grand social welfare function and the net social cost-benefit model via the Islamic concept of the discount rate

4 A Theory of *Mudarabah*, the Islamic Profit-Sharing System of Economic Cooperation

THE IDEA OF COOPERATIVES IN CHRISTIAN AND OTHER ECONOMIC TRADITIONS

The Christian Idea of Economic Cooperation

Profit-sharing systems under economic cooperation have been common to many cultures, both historically and in recent times. For example, Christian economists have been arguing for some time in favour of this form of economic arrangement, and against the capitalistic form of corporate management. The labour movement has been identified in this regard on the basis of the social gospel preaching worker solidarity and demand for equitable distribution and management of enterprises, principally of large corporations.¹

Modern papal encyclicals that have elaborated on the idea of natural rights for human beings on social matters include *Rerum Novarum*, *Quadregesimo Anno*, *Mater et Magistra*, *Pacem in Terris*, *Populorum Progressio* and *Laborem Exercens*.² In recent times, the pastoral letter of the American bishops has pointed out the need for 'the creation of an order that guarantees the minimum conditions of human dignity in the economic sphere for every person'.³ In order to achieve these goals the bishops advocate the establishment of collective profit sharing, industrial democracy and cooperative ownership while decentralising the process of socialisation.⁴

The Mondragon Cooperative Movement

The Mondragon cooperative movement is exemplary in this regard as a successful venture among industrial cooperatives and has been found to be highly conducive to employment creation. The total productivity of this cooperative enterprise has also been good. The

principle working in Mondragon is seen to be as follows: Mondragon leaves the responsibility of management to the workers, and leaves the responsibility of raising capital to the enterprises under Mondragon. These enterprises raise capital from their employees. They thereby allow every employee a one-man-one-vote right. The distribution of profits is done on the basis of hours worked and wage rates earned. The Mondragon is thus a self-managed cooperative, and runs a worker council for worker participation and decision-making, so creating an air of industrial democracy in the workplace. In this way both capital ownership and management are made to be distributive and participatory in the cooperative.⁵

Fundamental to the working of the Mondragon cooperative is the principle laid down by Vanek as follows:⁶ in order to make a cooperative achieve its goal of distributive equity, profitability and survival against competition, the subscribed capital of the cooperative must be externally financed. The external finance can be raised by open market transactions on bonds, or a pool of funds built up by the workers, from which attrition of funds can take place, with the promise to the workers to augment dividends by the returns on the use of these worker-pooled funds.⁷ There is also the essence of collective decision-making by workers as a self-managing body, referred to as worker co-determination. This is meant to maximise not only worker participation in the profit-sharing and resource management of the cooperative, but also to maximise decision-making participation in the choice of technology of production and the nature of the goods to be produced.⁸

A number of points therefore become identified with the proper functioning and success of cooperatives. These are that the goals of the cooperative must be based on the principle of distributive equity; it must have co-determination by the workers; there must also be self-management and sound financing which would not ultimately degenerate into disproportionate ownership in the cooperative. Otherwise a social cooperative, would be no different from a capitalistic corporation, which in the name of profit sharing establishes such a plan for its employees. It would also not hold if the worker-owned cooperative turned into a capitalistic corporation with the characteristics of owning stocks in disproportionate measure, so as to ultimately destroy the fundamental goals of the cooperative.

The Socialistic Idea of Cooperatives

Next we briefly examine the socialistic idea of the cooperative. The old idea of the cooperative as a collective enterprise organised around the centralised authority of the state, which sets the goals of distributive equity, control of production and management of resources by workers, has recently been supplanted by the idea of democratic socialism in which the cooperative again plays a very important role.⁹ The critical difference between the old and the new vision of the cooperative movement is that the cooperative can now evolve out of, and properly function in, a market economic environment. The emphasis again is placed on the labour movement and on the rise of worker solidarity.

As a consequence of the environment of the market mechanism, the cooperatives under democratic socialism are seen as being based on a decentralised decision-making process, and worker co-determination as being based on common and participatory issues facing the enterprise. The future of the socialist transformation in a democratic environment is seen in terms of equalising wage rates across all firms within the same industry.¹⁰ This is followed by the development of a profit-sharing fund made out of the surpluses of corporations resulting from control on wages.¹¹

THE ISLAMIC SYSTEM OF ECONOMIC COOPERATION

We now turn to the Islamic cooperative system. We will first examine the goals, organisational structure and functions of this cooperative in the context of the closed economy.

In Islam the economic and social basis of economic cooperation is not simply a fact derived from secondary sources of literature. Instead, it emanates from the fundamental Islamic sources of knowledge, namely the Quran and the traditions of the Prophet Muhammad (*sunnah*).¹² The institution of decentralised decision-making under the Islamic consultative body (*shura*) which exists at all levels of society; the principle of social control of production by workers and shareholders; profit sharing as the basis of distributing equitably the resources and output of production; these are all activated in the Islamic social order by a precise set of policy instruments which establish the principles of the Islamic political economy through the institution of profit sharing based on cooperation.

To summarise, the structure of socio-economic relationships in the Islamic economy is referred to here. It is totally characterised by the main principles, namely, *Tawheed*, and the brotherhood of humanity; total felicity, being made up of temporal felicity and supreme felicity in the hereafter. The latter is dependent upon the attainment of the Islamic goals of temporal felicity, because the Islamically-requisite worldly and spiritual acts are complementary ones. Then there are the functional principles for the socio-economic order: namely, the principle of work and productivity, and the principle of distributive equity.

These principles are cyclically linked to each other. They are institutionally attained in the Islamic social order through the joint role of profit sharing under economic cooperation (*mudarabah*), abolition of the rate of interest (abolition of *riba*); *zakah*; and the abolition of *israf*. The interrelationships between these sets of state and policy variables are very wide-ranging. A few of these relationships have been defined elsewhere. The end result of these interrelationships is that there is a simultaneous gain in economic efficiency and distributive equity in the Islamic economy, emanating from the central role of the cooperative in resource allocation, income distribution, social control of production by workers and equity owners, and consumption by households.

The Islamic economic principles and policy instruments surrounding economic cooperation result in Islamic cooperative and profit-sharing enterprises being of a very specific type. As there is no monopoly power in the Islamic economy, the growth of the cooperative cannot lead to monopolistic control by either the workers or the shareholders. This is made possible by implementing in the cooperative equiproportionate voting rights for both workers and shareholders. Profits are then shared proportionately on the basis of equity participation by workers and shareholders. This equity may not necessarily be in terms of subscribed capital; it can take the form of the imputed value of wages forgone in self-managed worker cooperatives, or it can represent the value of labour time in production in industrial cooperatives. The value of labour time itself is determined by the share of wages in total output distributed by market determined demand and supply of the given skills. The *shura* specific to the cooperative can administer the determination of wages, value of labour time and share of profits. Furthermore, the integration of various such *shuras* at the higher levels makes it possible to co-determine profit shares and wages by *intershura* decision-making.

Uniform wages and profit shares across various cooperatives thus become possible.

While determining profit shares, it has been shown elsewhere that there is an intrinsic structure of profit-sharing ratios that can be considered optimal in any *mudarabah* contract. The optimal profit-sharing ratio depends upon market forces acting on the supply and demand of capital in a joint venture when it is subjected to varying levels of profit shares. This profit-sharing ratio is also monitored by shuratic decision-making, keeping in view Islamic considerations on distributive equity and economic efficiency simultaneously in resource allocation. For instance, most of the profit shares might be narrowed down to the 45–55 per cent range. *Mudarabah* contracts in labour-intensive cooperatives would constitute a high proportion of equity in the form of wages forgone or the imputed value of sharing in terms of labour time. Shuratic decisions in regard to initial capital investment would be able to call for share capital from external sources (such as government, private-sector financiers and financial institutions) until a time when workers have established their cooperatives and have managed to pay back substantial amounts of external equity capital.

The one-person-one-vote industrial democracy is maintained. *Mudarabah* contracts in capital-intensive cooperatives would constitute much of the profit shares in proportion to the initial investment of capital among equity participants (other forms of profit shares will also remain). External financing, although not eliminated in this case, will be reduced to the extent that there is equity participation available to minimise the debt–equity ratio in the capital structure of the cooperative. The above types of financing and determination of profit shares are supported by the following ruling under the *shari'a*: 'In the widest sense of the term, *shirakah*, the partnership exists where property is held in common between two or more co-proprietors. A person thus alienates an undivided share of his property, in return for an undivided share of the property of another, each having a right to administer the whole.'¹³

MUDARABAH AND EXTERNAL FINANCING OF ENTERPRISES

It is to be noted that the external financing structure of *mudarabah* is completely devoid of interest transactions. Hence the external

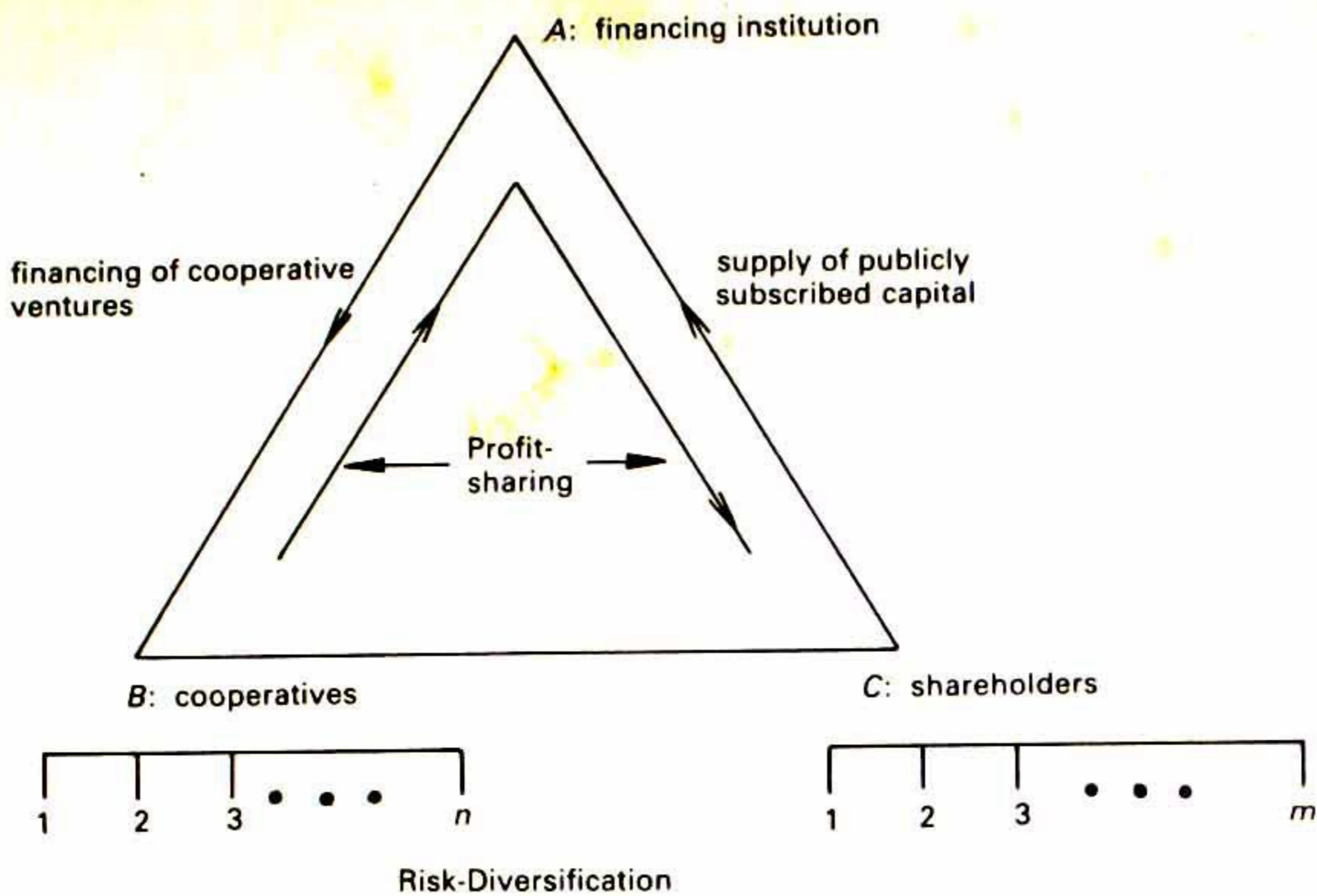


Figure 4.1 The *mudarabah* triangle

financing institution for a *mudarabah*, in every case, must also be an extended cooperative arm of the *mudarabah*. Thus new cooperatives become offshoots of existing cooperatives in the Islamic economy. The larger is the number of cooperatives so springing up, the better is the degree of risk-diversification. This facilitates the availability of new funds for risky ventures. There are obviously two positive effects of such an impetus through risk-diversification and supply of capital: the number of *mudarabahs* of all sizes increases, and the interlinkages among them allocates capital intersectorally by cooperatives in response to their intersectoral output demands. Now, with market forces pushing towards efficient allocation of the funds, the opportunity cost of resource allocation for the investor or the financier is reduced.

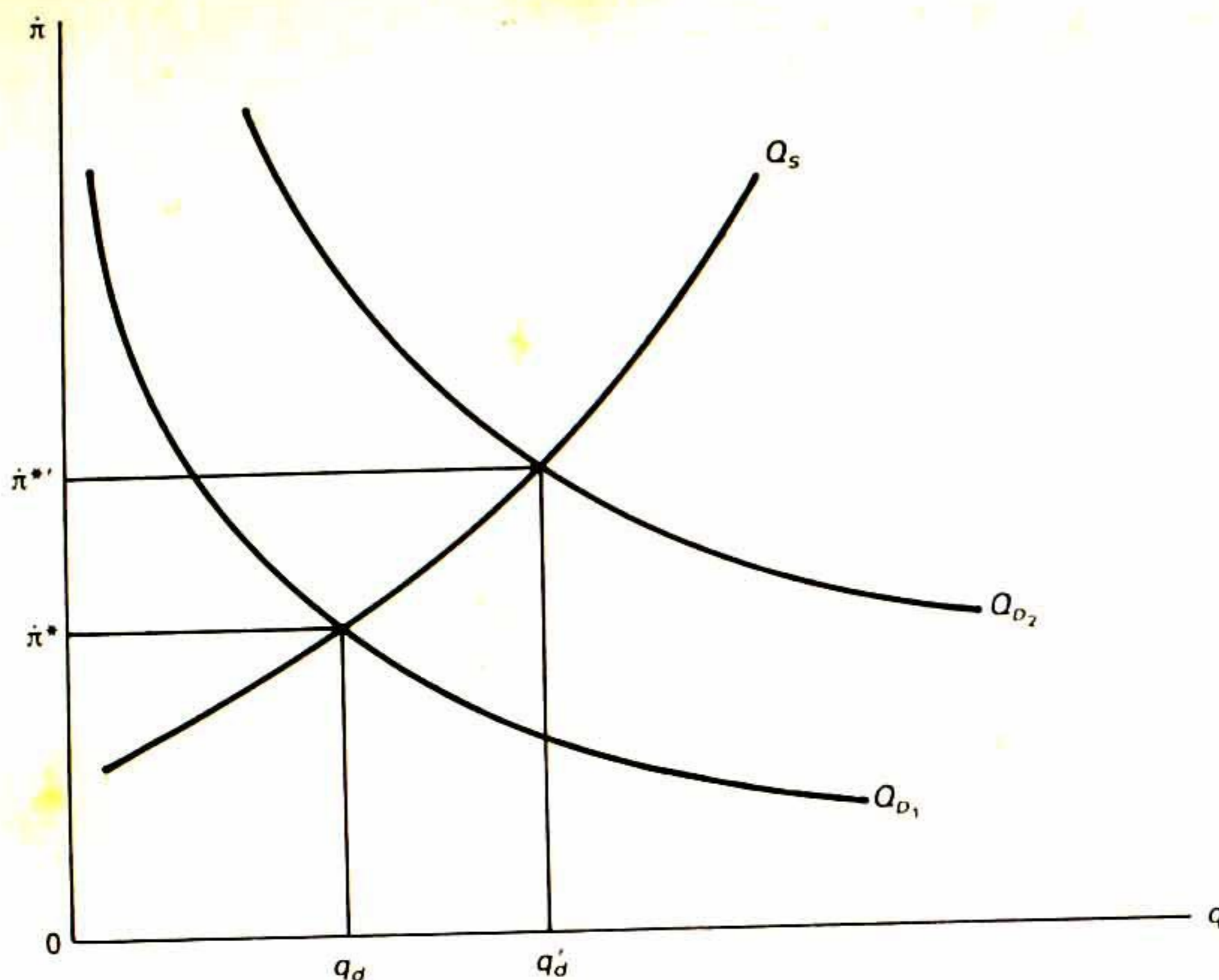
All these interlinkages and their effects are shown by the *mudarah* triangle, as seen in Figure 4.1. Vertex A of the triangle denotes the financing agency; vertex B denotes the cooperatives in need of external financing; vertex C denotes external shareholders in the assets of the cooperatives. This amount of capital is raised by the cooperatives through bonds sold and managed by the financial firms

on behalf of the cooperatives. Since vertex *B* has many *mudarabahs*, risk is successfully diversified but risky ventures are not avoided. Besides, these risk exposures are held both by *B* and an equally increasing number of financiers at vertex *A*. The result of effective risk-diversification and healthy profit prospects for the *mudarabahs* increase the selling of *mudarabah* bonds to *C*. Thus the number of external shareholders also increases.

DEMAND AND SUPPLY OF SHARE CAPITAL IN MUDARABAHS

Next comes the question of demand and supply of share capital, which ultimately determines the profit-sharing ratios for the financiers and the *mudarabahs*. We ask the following question: can a disproportionate profit-sharing ratio between *mudaribs* (*mudarabah* participants) exist when there are market forces acting on the demand and supply of capital from external financiers, with effective risk-diversification, and when healthy profit prospects prevail? Given the conditions of the shuratic decision-making process in which one-man-one-vote rights are given to each worker and shareholder, the condition of integration of shuratic decision-making exists at various levels of *shuras* in a given sector; and also at the economy-wide and polity-wide levels. Now, under conditions of capital supply under risk-diversification, it will not be in the interests of any one *mudarib* to ask for a lower amount of capital subscription. The financier will thus allocate funds to the *mudaribs* almost on equal basis. Next, between the financier and the *mudarib*, the objective of maintaining a high profit share will call forth less than the full amount of share capital. The external financiers would also earn extra receipts for managing the bond issues by the *mudarabahs*.

One must also relate the role of internal financing to the above adjustment process in profit-sharing ratios and to the expectations for profits. It has been shown elsewhere that the objective criterion of the Islamic cooperative is to maximise the payments of dividends on common stocks held by various *mudaribs*.¹⁴ This implies that, although reploughing of retained earnings will exist, particularly for cooperatives in labour-intensive activities, yet the demand for dividends by external shareholders will necessarily keep the use of retained earnings for purposes of reinvestment to a minimum. Hence the demand for external financing will be predominant.



π : rate of profit

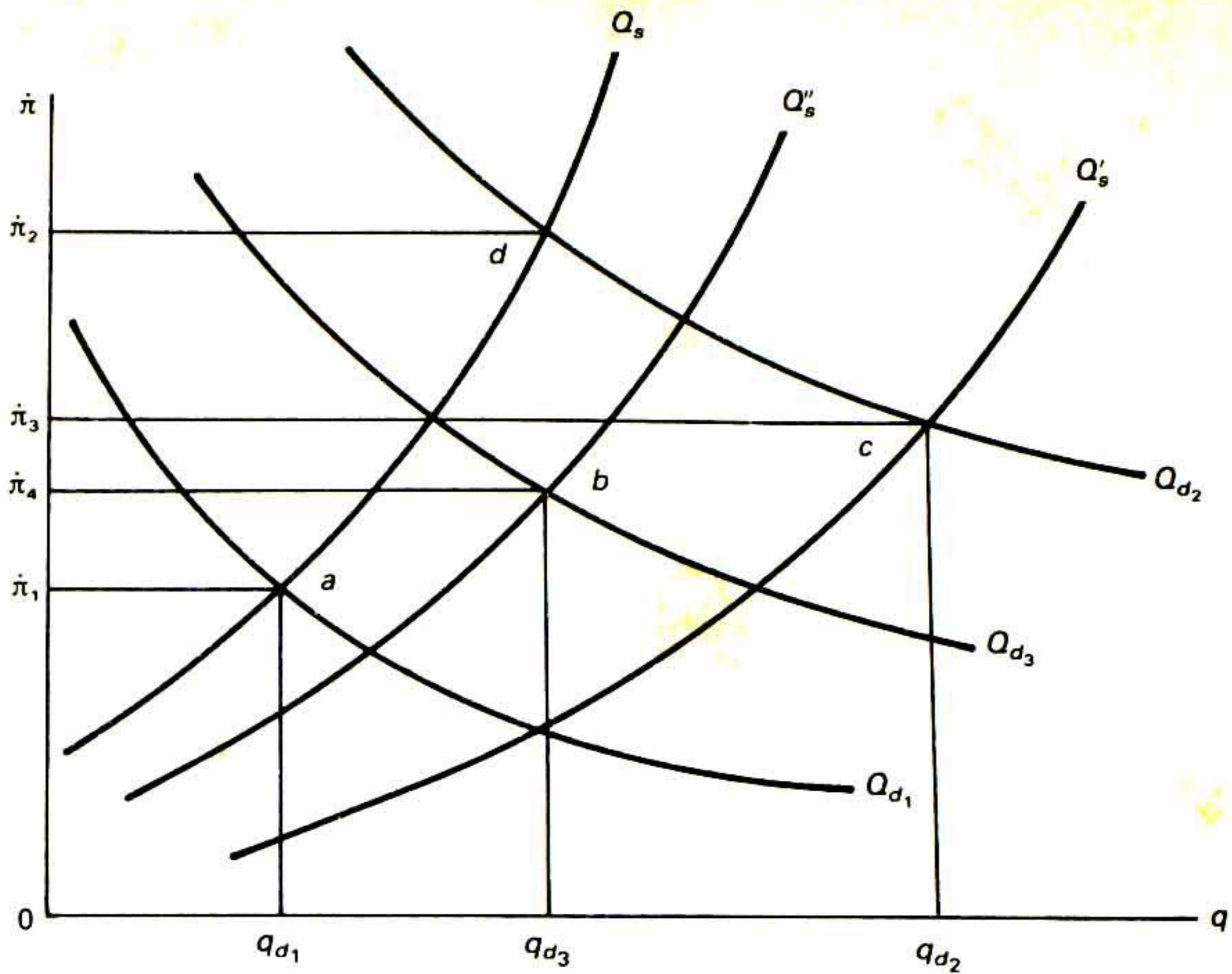
q : level of financing at different rates of profit

Shifts in the demand for finance are caused by higher expectations of technological change and profitability of *mudarabahs*.

Figure 4.2 Determination of the equilibrium rate of profit and the level of financing

Figure 4.2 shows the determination of the equilibrium rate of profit (π denotes the profit variable) and the amount of finance (denoted by Q). When profit rates are high, the demand for funds by the *mudarabah* (Q_d) is low, and vice versa. This is so because either the *mudarabah* would like to maintain a high profit-share for itself, or there is some amount of internal financing to meet the capital needs. At the same time, high profit rates bring forth a greater supply of funds (Q_s) from the financing institution.

In Figure 4.3 we show the adjustment process between the rate of profit and the level of financing (Q_D). Let Q_s denote the supply curve of funds by the financing agency to cooperatives. This curve may represent the lateral sum of all similar supply curves or it may be



$\dot{\pi}$: profit rate

q_d : level of *mudarabah* financing

Final market adjustment process set by demand and supply of funds for *mudarabahs* at different rates of profit is shown by the point $b(q_{d_3}, \dot{\pi}_4)$. The adjustment process intensifies with the increasing number of *mudarabahs* and financing agencies.

Figure 4.3 Adjustment process between the rate of profit and the level of *mudarabah* financing

taken as the supply curve for one financing agency. In either case, Q_s denotes the supply of capital to all possible borrowing cooperatives. On the other hand, Q_{d_1} and Q_{d_2} denote the demand curves for *mudarabah* capital by two *mudaribs*, both borrowing from the same financing agency.

A situation of unequal profit rates for the two *mudaribs* cannot hold. Hence, say that Q_{d_1} shifts up to Q_{d_2} , establishing a common profit rate, $\dot{\pi}_2$. At this higher profit rate, financial institutions are encouraged to supply higher amounts of capital, given the prospect of getting a higher share of profit. But *mudarabahs* cut down their demand for external funds, given the prospects for higher shares. Q_{d_2} thus shifts back to Q_{d_3} . At these higher profit-sharing ratios the

supply curve Q_s shifts to Q_s' , but now the resulting equilibrium rate of profit is lower, at $\dot{\pi}_3$. At this lower rate, the financing institution cuts back on its supply of funds, thus sending the supply curve from Q_s' to Q_s'' .

These adjustments keep on going until a mutually agreed upon profit-sharing ratio, concurrent with the profit rate and the demand and supply of funds for cooperatives and financial institutions, is set. The profit rate and profit-sharing ratio so set are clearly market-determined because of the demand–supply interactions.

EXPRESSION FOR THE PROFIT-SHARING RATIO

The mathematical relationship of the profit-sharing ratio to the rate of profit is as follows. A profit-sharing ratio for individual participant i , denoted by s_i , $i = 1, 2, \dots, n$, is defined as follows:

$$\pi_i = s_i \pi, \quad \sum_{i=1}^n s_i = 1, \quad s_i = \frac{K_i}{\sum_{i=1}^n K_i} \quad (4.1)$$

where π_i denotes profit share for participant i , π denotes total *mudarabah* profit, K_i denotes equity share of participant i , and $K = \sum_{i=1}^n K_i$ denotes total equity capital in the *mudarabah* venture. Let

$$\dot{\pi}_i = \frac{d\pi_i}{dt}, \quad \dot{\pi} = \frac{d\pi}{dt}, \quad \dot{s}_i = \frac{ds_i}{dt} \quad (4.2)$$

Then

$$\dot{\pi}_i = \dot{s}_i \pi + \dot{\pi} s_i \quad (4.3)$$

Only if

$$\dot{s}_i = 0, \quad i = 1, 2, \dots, n, \text{ then}$$

$$\dot{\pi}_i = s_i \dot{\pi} \dots \dots \quad (4.4)$$

In this case, the profit-sharing ratio is given by

$$s_i = \frac{\pi_i}{\pi} = \frac{\dot{\pi}_i}{\dot{\pi}} \quad (4.5)$$

This equation implies that the percentage rate of change of individual profit shares equals the common percentage rate of change of total *mudarabah* profits. While this result would hold in the long run, when profit rates are expected to equilibrate to an average rate (which in the *mudarabah* venture would be close to the normal rate), the result does not explain progressive equity participation as profit shares change. For instance, in a *mudarabah* cooperative, a worker who was once forgoing wages could later own capital in the enterprise as his profit shares changed.

To examine the second case we cannot assume, $s_i = 0, i = 1, 2, \dots, n$. Instead now,

$$\begin{aligned} \dot{s}_i &= \frac{d}{dt} \left(\frac{K_i}{\sum_{i=1}^n K_i} \right) = \left(\frac{1}{\sum_{i=1}^n K_i} \right) \frac{dK_i}{dt} \\ &\quad - \frac{K_i}{\left(\sum_{i=1}^n K_i \right)^2} \cdot \frac{d \left(\sum_{i=1}^n K_i \right)}{dt} \\ &= \frac{1}{\sum_{i=1}^n K_i} \cdot \frac{dK_i}{dt} - \frac{K_i}{\sum_{i=1}^n K_i} \cdot \frac{1}{\sum_{i=1}^n K_i} \cdot \frac{\sum_{i=1}^n \frac{dK_i}{dt}}{\sum_{i=1}^n K_i} \end{aligned}$$

that is,

$$\dot{s}_i = s_i [g_{ki} - \text{avg. } g_{ki}] \quad (4.6)$$

where

$$g_{ki} = \frac{1}{K_i} \frac{dK_i}{dt} \quad (4.7)$$

$$\text{avg. } g_{ki} = \frac{\sum_{i=1}^n g_{ki} K_i}{\sum_{i=1}^n K_i} \quad (4.8)$$

Now only if

$$\begin{aligned} g_{ki} = \text{avg. } g_{ki} \text{ , will } \dot{s}_i = 0. \text{ Then} \\ \dot{\pi}_i = s_i \dot{\pi} \text{ again } i = 1, 2, \dots, n. \end{aligned} \quad (4.9)$$

Otherwise

$$\begin{aligned} \dot{\pi}_i &= s_i \dot{\pi}_i + \dot{s}_i \pi \\ \text{i.e. } \dot{\pi}_i &= s_i \dot{\pi} + s_i \pi [g_{ki} - \text{avg. } g_{ki}] \end{aligned} \quad (4.10)$$

Now, the profit-sharing ratios are given by

$$s_i = \frac{\dot{\pi}_i}{\dot{\pi} + \pi [g_{ki} - \text{avg. } g_{ki}]} \quad (4.11)$$

Furthermore, by putting, $\frac{\dot{\pi}}{\pi} = p_\pi$, the percentage rate of change of total profits, we have the expression for s_i :

$$s_i = \frac{1}{\left[1 + \frac{g_{ki} - \text{avg. } g_{ki}}{P_\pi} \right]} \cdot \frac{d\pi_i}{d\pi}, i = 1, 2, \dots, n \quad (4.12)$$

This is the most general expression for the profit-sharing ratio under condition of changes in individual profit shares. From this general condition, the long-run expression for s_i is

$$s_i = \frac{\dot{\pi}_i}{\dot{\pi}} = \frac{d\pi_i}{d\pi}, \quad (4.13)$$

when $g_{ki} = \text{avg. } g_{ki}$, $i = 1, 2, \dots, n$.

OBJECTIVE CRITERION OF *MUDARABAH*

Now that we have formalised the flow of resources among *mudarabahs* and the financial institutions in the Islamic economy, we can proceed to formalise the objective criterion of the cooperative enterprise. It was shown elsewhere that the decision-making criterion for the Islamic cooperative is a cardinal type of social welfare function, in which the social welfare indices of the groups included in the transactions appear as interdependent indices.¹⁵ Furthermore, because of the influence of various levels of *shura* on this decision-making, the social and developmental variables also enter the social welfare function. In this way we have a vector of state variables and policy variables in the social welfare function. It now remains to be shown whether such a social welfare function can be expressed additively over different groups in the cooperative and under different contingencies of the state and policy variables.

The decentralised and democratic nature of decision-making in the initial round of shuratic deliberations makes the initial set of social welfare indices of the participating groups independent of each other. The grand social welfare function of the participating groups, $W(\bar{x}_{jt})$, would then be separable: that is,

$$W(\bar{x}_{jt}) = \sum_{i=1}^m W(\bar{x}_{ijt}), \dots \dots \dots \quad (4.14)$$

where $W(\bar{x}_{ijt})$ denotes the group-specific social welfare indexes, $i = 1, 2, \dots, m$; \bar{x}_{ijt} denotes the vector of state and policy variables set forth for deliberation by the i th group, over j th contingency (or goal/priority) set by the *shura* over time; $j = 1, 2, \dots, n$; $t = 1, 2, \dots, N$. Note here that either the goal/priority or the contingency can be made equivalent to the time variable; thus one of these subscripts is always suppressed when time is included.

Next, when the shuratic decision-making commences, the group-specific social welfare indices do not remain independent among themselves. They are mutually influenced by the collective decision-making taking place in the *shura* among the groups. Ideally, all group-specific orientations to the social welfare index are replaced by a common social welfare index over different contingencies or goals/priorities. The additive version of the grand social welfare is then reduced to an additive one over the contingencies or goals/priorities over time. The grand social welfare function of the *shura* is therefore of the additive form

$$W(\bar{x}_t) = \sum_j W(\bar{x}_{jt}) \quad (4.15)$$

In the simpler case, the *shura* is the consultative body of workers and shareholders in the cooperative. The shareholders are again derived from the financing agencies, members of the public, government, labour and the cooperative itself. A simplified set of state and policy variables would be

$$(\bar{x}_{jt}) = (r, D, E, w, z, g) (j, t) \quad (4.16)$$

where r denotes the profit-sharing ratio for the cooperatives and the financial institution; D denotes dividends paid out to the public; E denotes employment and is an important variable to labour and government; w denotes the wage variable, which again is a variable of interest to workers, labour and the government; z denotes the *zakah* expenditure based on the joint assets in the cooperatives, and is considered as a policy variable; and g is the growth rate of output and, in a planning sense, can be considered as another policy variable. Each of these variables is subjected to contingency or goal/priority over time.

We must now examine the interrelationships between these state and policy variables and the consequent influence on the social welfare function. Between r and w there is a trade-off: in the early stages of the cooperative, and particularly for the worker-managed cooperative in labour-intensive activities, there will be both wages as well as profit sharing prevailing over a period of time. But, over time, as much of the wages forgone as the opportunity cost of labour time are capitalised by profit shares, the wage bill becomes smaller, but not so the wage rate; that is, the number of members of the wage funds becomes smaller. With the growth of profit shares, the relative wage declines. This has further implications. The productivity of the cooperative increases with an increasing shift towards profit sharing and as the system moves away from wage-paying enterprises. Total productivity, not just labour productivity, must increase in the presence of profit sharing, otherwise the kind of shift from wage-paying institution to profit-sharing institution will be thwarted. Besides, profit sharing can continue to be attractive if workers and shareholders jointly maximise their profit shares, given their initial equity participation, now defined in comprehensive terms as before. External shareholders would depend both on the productivity of labour and the productivity of capital for the prospect of higher profits and

profit shares. The end result of the relationship between wages and profit rates is that a profit-sharing enterprise turns out to be more productive than a wage-paying one.¹⁶

A MATHEMATICAL FORMALISATION OF PRODUCTIVE TRANSFORMATION IN THE *MUDARABAH*

The mathematical formalisation of the above result is the following: let $Q = F(E, K)$ denote the production function in labour (E) and capital (K). Money capital is equated to the total cost of investment (C : not the cost of production): that is $C = (\text{average profit-sharing ratio}) \times (\text{borrowed capital}) + (\text{wages}) \times (\text{labour}) + (\text{income distribution to labour}) + (\text{redistribution in } zakah)$: or

$$C = r \cdot B(K) + w \cdot E + a \cdot E + z \cdot P, B'(K) > 0 \quad (4.17)$$

where $B(K)$ denotes borrowing of money capital to finance real capital formation, K .

Let the above expressions apply to one *mudarib* among several of them in the joint venture under cooperation in an Islamic economy. The final expression can be then written down as follows (the subscript for aggregation is not shown, and same notations are retained): total profit in the joint venture under *mudarabah* is

$$P^* = pF(E, K) - [rB(K) + wE + aE + zP^*], \text{ or}$$

$$P^* = (1/1 + z) [pF(E, K) - rB(K) - (w + a)E] \quad (4.18)$$

The Islamic profit-maximisation objective is $\text{Max.}P^*$. This is obtained by the first order condition of maximisation, $dP^* = 0$: that is,

$$[p \cdot (\partial F / \partial E) - (w + a)] dE + [p (\partial F / \partial K) - r (\partial B / \partial K)] dK = 0 \quad (4.19)$$

If employment and capital formation are simultaneously attained as part of the 'shuratic' objective, then $dE > 0$ and $dK > 0$. Then, $p(\partial F / \partial E) - (w + a) = 0$, and $p(\partial F / \partial K) - r(\partial B / \partial K) = 0$. These equations give

$$\partial F/\partial E = (w + a)/p \quad (4.20)$$

$$\partial F/\partial K = (r/p) (\partial B/\partial K) \quad (4.21)$$

Define total productivity by

$$R(w, r) = a(E) (\partial F/\partial E) + a(K) (\partial F/\partial K), \text{ with} \\ a(E) + a(K) = 1 \quad (4.22)$$

that is

$$R(w, r) = a(E) [(w + a)/p] + a(K) [(r/p) (\partial B/\partial K)] \quad (4.23)$$

Total productivity is thus shown to be positively related to wages, income distribution and the profit-sharing ratio. This expression also shows that $R(w, r)$ is independent of the redistributive effect of *zakah*. Hence, although *zakah* expenditure appears as a cost of investment, it does not reduce the total productivity of the cooperative. In the Islamic economy such a result holds true because the average cost pricing applies.¹⁷ Then the first-order condition of resource allocation would give

$$AR = AC \quad (4.24)$$

that is,

$$pF(E, K) = [(w + a) E + rB(K) + zP^*] \quad (4.25)$$

that is,

$$p^* = (1/z) [pF(E, K) - (w + a) E - rB(K)] \quad (4.26)$$

In other words, the residual of the total revenue after deduction of internal cost (plus accounting for *nisab*, the minimum allowable deduction) is redistributed in *zakah* payments. Note that in this formalisation the corporation payments of *zakah* are treated in terms of the payment of *zakah* by the joint participants of the cooperatives: workers, shareholders in the cooperatives and the public shareholders.

Other important implications of the above formalisation now

continue. Note that by taking the value total productivity in averages, we can redefine total average productivity as:

$$R'(w, r) = a(E) (Q/E) + a(K) (Q/B) \quad (4.27)$$

where

$$Q/E = (w + a)/p \quad (4.28)$$

$$Q/B = (r/p) \quad (4.29)$$

Thereby

$$pR'(w, r) = a(E) (w + a) + a(K)r \quad (4.30)$$

The same results hold as in the case of equation (4.23).

When equation (4.30) is compared with the neoclassical analogue of optimal resource allocation under constant returns to scale, we find that $pR(w, r)$ in Islamic cooperatives $> pR(w, r)$ in the neoclassical firm. How can this happen? The answer lies in recognising that the production function facing the Islamic cooperative is a joint production function and, being so, has externalities imputed to it. These externalities must exist in the joint production function of the firm due to psychic incentives plus monetary incentives through total productivity gains.¹⁸ The result of these externalities is to make the joint production function of the Islamic cooperatives of the increasing returns type. Besides, this must be the case in order for the Islamic enterprise to distribute both internally to workers as well as externally to *zakah* recipients.¹⁹

The interrelationships between the state and policy variables of the shuratic vector with which we started can now be summarised. The wage bill and profit-sharing ratio (the profit rate) are inversely related to each other. The dividends (D) increase with the profit-sharing ratio. Therefore the productivity of the Islamic cooperative is positively related to dividend payments and the profit-sharing ratio (profit rate), and is inversely related to the wage bill (not wage rate). If E denotes the employed wage labour of the Islamic cooperatives, then its size must decrease with increased profitability, the profit-sharing ratio (profit rate). A decrease in wage labour – that is, an increase in profit-sharing labour – signifies productive development of the Islamic enterprise. Hence the growth of capital signified by the

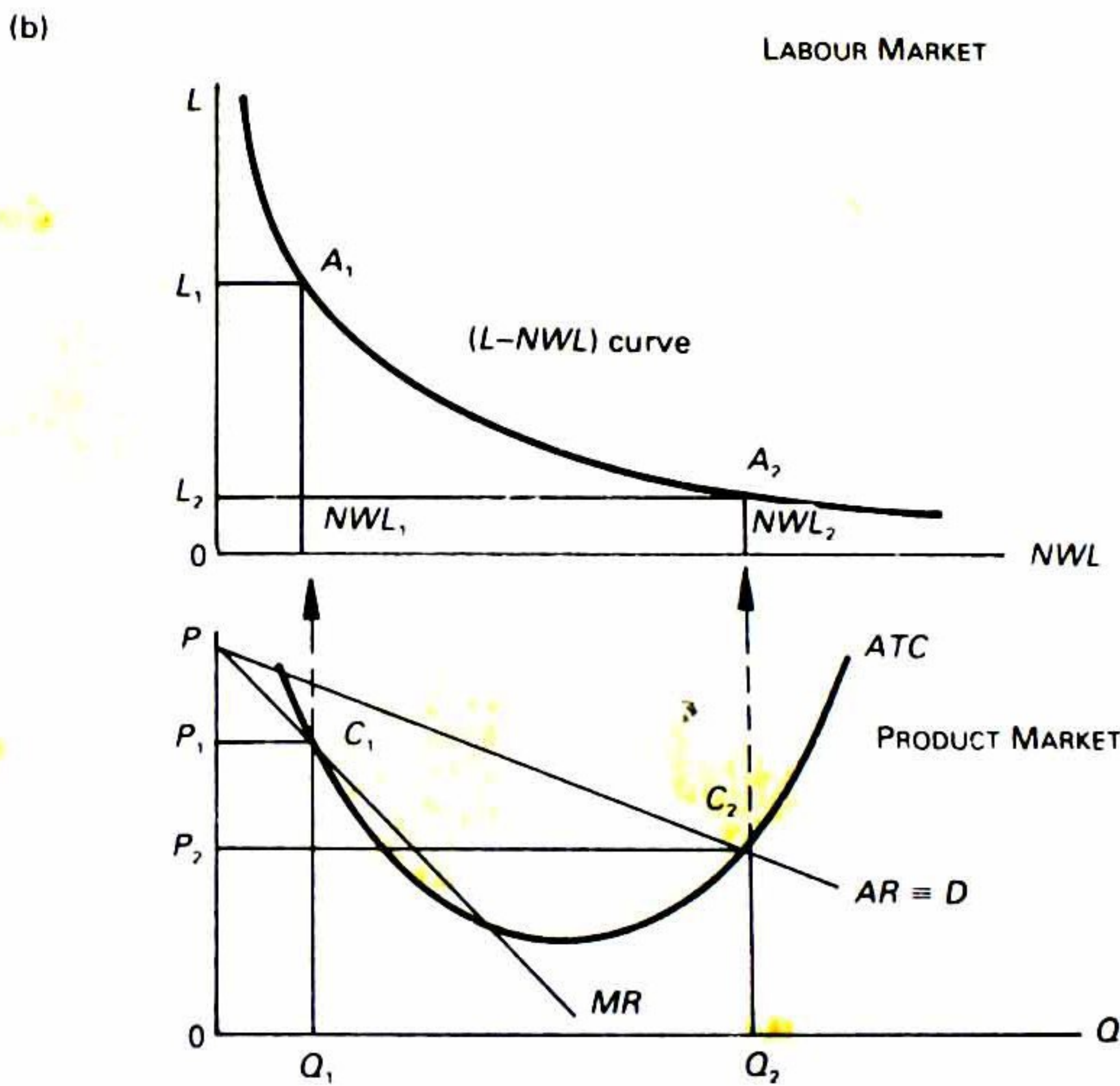
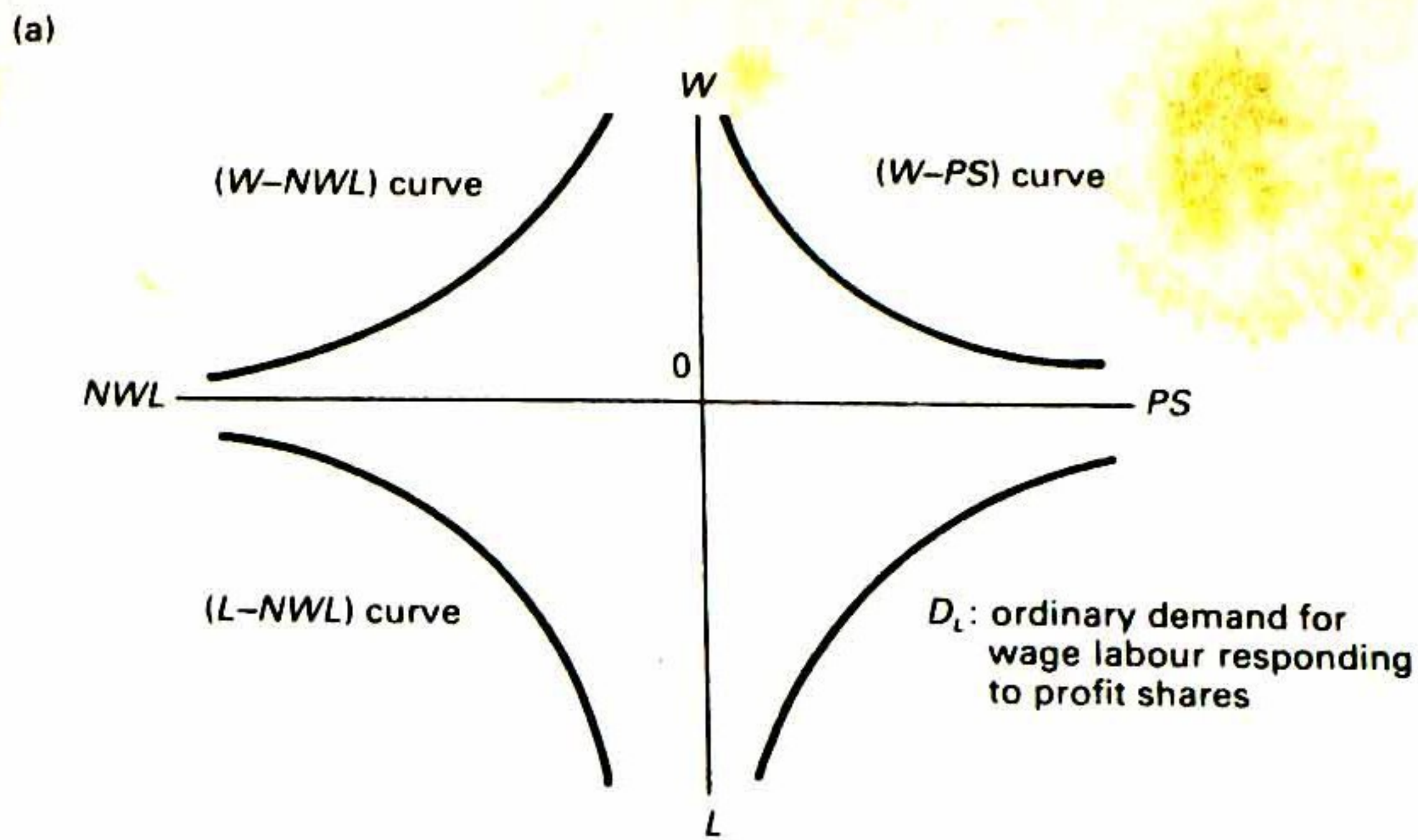
target economic growth rate, g , must keep pace with the growth of total labour, but g will increase with the increase in profit-participating non-wage labour.

The Islamic cooperative aims at minimising the size of wage labour. This of course does not mean that at any given point of time all wage labour will be pushed into profit-participating non-wage labour, owning proportionate equity capital in the cooperatives and equiproportionate voting/decision-making rights under the guiding principles of the *shari'a*. But this labour market transformation helps progressively to dismantle the dual labour market or segmented labour market barriers found in the capitalistic labour market.²⁰ However, as the process of transformation is through the guidance of the market process by the *shura*, it is not anywhere near the socialistic prescription of the same.

The interrelationship between the labour market and the product market in the process of mobilising secondary labour (wage labour) to primary labour (non-wage labour, equity participating in Islamic cooperatives) can be explained by the formalisation shown in Figure 4.4. In the first part of the diagram we rationalise that as there is a trade-off between profit shares (ps) and the wage bill (W), and an ordinary labour demand function in wage rate and quantity of labour (L), so there is an inverse relation between profit share and the quantity of wage labour (L). But with an increase in non-wage labour demand (NWL), the profit shares fall, as there is now effective risk-diversification due to the larger population of shareholders.

In the second part of the diagram it is shown that an adjustment takes place between wage labour and profit-sharing non-wage labour. It is to be seen in this part of the figure that under the first-order competitive-cooperative conditions which characterise Islamic optimal resource allocation, two equilibria in the product market can be shown, denoted by C_1 and C_2 . As proved in the average cost pricing formulae of competitive-cooperative conditions, only C_2 is the acceptable output-price configuration. Correspondingly, A_2 in the labour market is the only acceptable point. At this point the higher differential in labour, ($NWL_2 - NWL_1$), denotes a mobilisation into profit-sharing non-wage labour responding to the higher productivity of the cooperatives.

The point C_1 in the product market gives rise to lower profit shares when non-wage labour is NWL_1 . This can also happen when profit level is low. The point C_2 in the product market gives rise to a higher profit level. Profit-sharing labour being relatively more productive



- | | |
|--|--------------------------------------|
| L : wage labour | D_L : demand curve for wage labour |
| NWL : profit-sharing non-wage labour | Q : output |
| W : wage bill | p : prices |
| PS : profit share | AR : average revenue |
| | MR : marginal revenue |

Figure 4.4 Relationships in the labour market and product market in a competitive-cooperative economic system of the Islamic type

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over wage labour, C_2 in the product market gives rise to NWL_2 in the labour market.

For a point like C_1 in the product market and A_1 in the labour market, both economic expediency as well as the ethico-economic goals of shuratic decisions will necessitate rapid deployment of labour across occupations in short supply for skills. This is effected by training, human capital formation and production diversification and, most importantly, by providing worker incentives and external borrowing to enable wage labour to get into profit-sharing. Such conditions are expected to break down the dual labour market barriers and make secondary labour (wage labour) move into primary labour (equity participating non-wage labour). In this way, as more and more labour is productively transferred into profit-sharing non-wage labour, the original demand curve, D_1 , must shift right to D_1' , and establish the new equilibrium at the point A_2 . The corresponding output-price configuration – the one that must finally prevail in the product market – is denoted by the point C_2 . Resulting from the above type of product market and labour market adjustments, the output prices are determined at P_2 , output level is at Q_2 , and the potential increase in profit-sharing labour is in the order of ($NWL_2 - NWL_1$). There is a potential increase in profit shares now resulting from higher profitability of the cooperative.

COOPERATIVES UNDER ISLAMIC AND CHRISTIAN ECONOMIC THOUGHT: A COMPARATIVE LOOK

The cooperative perspectives in received economic theory, as seen both in Christian economic views and in Islam, have now been laid down. It remains to be seen how the Islamic theory of *mudarabah* differs from the other ones. The essential difference occurs in terms of the shuratic dispensations on ethico-economic decision-making on the Islamic side. This ties the cooperative to the set of Islamic economic principles and to the set of principal policy instruments in Islamic economics, which together mobilise the Islamic economic activities.

In these economic foundations of the *mudarabah*, interest on money capital has no role to play. If an Islamic society starts from an initial stage and moves into its successive stages of Islamic transformation, then it needs rapidly to eliminate all remaining interest-based transactions. Consequently, there are no worker pools of funds, no

external borrowing, no retained earnings, and no reinvestment of dividends and dividend payments based on interest-based portfolios of investments. The result of abolishing interest transactions from the Islamic capital market facilitates the growth of economy-wide cooperatives, among and between enterprises, firms, financial institutions and government. The elimination of interest transactions thus removes the most dangerous instrument of capital accumulation by the financier of funds. This is achieved by subjecting the financial market to the same decentralised and democratic decision-making process as is found in the integration of the *shuras* at various levels. The presence of interest transactions, no matter in what degree, would otherwise leave the cooperatives at the mercy of those who wield the loanable funds. This in turn causes undue capital accumulation, disproportionate profit sharing among participants, and unbalanced decision-making relating to the social control of production. It is principally such a disproportionate build-up of privileges and authority that has made the history of cooperatives in contemporary times less than satisfactory.²¹

The second kind of distinction in *mudarabah* is the goal of this institution to maximise the transformation of labour into profit-sharing non-wage labour. When this situation is studied in conjunction with the abolition of interest, the consequent gains in capital formation, the strengthening of the shuratic decision-making process among increasingly decentralised and democratic groups of decision-makers and the productivity gains associated with the transformation of wage labour to profit-participating non-wage labour, then the following is a logical conclusion: there is a simultaneous realisation of distributive equity in terms of workers' self-management process inherent in *mudarabah*, and the pure aspect of profit sharing in the absence of interest transactions. There is also social control of production by the workers and owners of capital jointly, emanating from the shuratic process of decision-making in this sector of the economy.

Finally, *mudarabah* is a competitive-cooperative institution, as it is governed by the Islamic precepts of a managed market economy. For instance, here we find the important presence of *al-hisbah fil-Islam*.²² The social market regulation by this agency, coupled with the shuratic decision-making process, makes the role of social state and social policy variables highly relevant in Islamic cooperatives. Thus the economy-wide nature of the cooperative institution, together with the principles of Islamic economics emanating from the *shuras*, bring about a coordination between microeconomic and macroeconomic

policies. On this type of policy coordination depend the sustenance and goals of the *mudarabah* network. An example of such a policy coordination was shown in terms of the vector, $\bar{x}_{jt} = (r, p, R, E, K, g)$ (j, t), where the profit-sharing variable, r , is a microeconomic policy variable; the certainty equivalent of risky returns, R , is a microeconomic state variable; employment/profit-sharing non-wage labour in *mudarabahs*, E ; and capital formation, that can be further augmented by the externally borrowed funds variables ($K, B(K)$), are macroeconomic state variables; the growth rate of output, g , is a macroeconomic policy variable in a planning context.

One last point must be mentioned in regard to *mudarabahs*, concerning consumer cooperatives, the types that are set up among buyers of goods (such as departmental chain stores) or service enterprises (such as consultant companies). The nature of the consumption–investment prescription of the Islamic economy makes it necessary and relevant to subject choices of consumption and production menus to the shuratic decision-making process. In the Islamic economy, the underlying principle of ethical endogeneity links up the transformation of social behaviour to the market offering, with producers providing goods that are required by Islam, and the consumers adapting their habits and preferences to these Islamically-required goods and services. Under Islamic law, the production of wine, pornography or gambling, for example, would be considered Islamically non-requisite, and these would therefore not be produced. Consequently, the consumer not able to consume these products will form habits of not consuming such products. Islamic habit-formation and conviction-building are crucial shuratic considerations, playing a significant role in the Islamic transformation process.

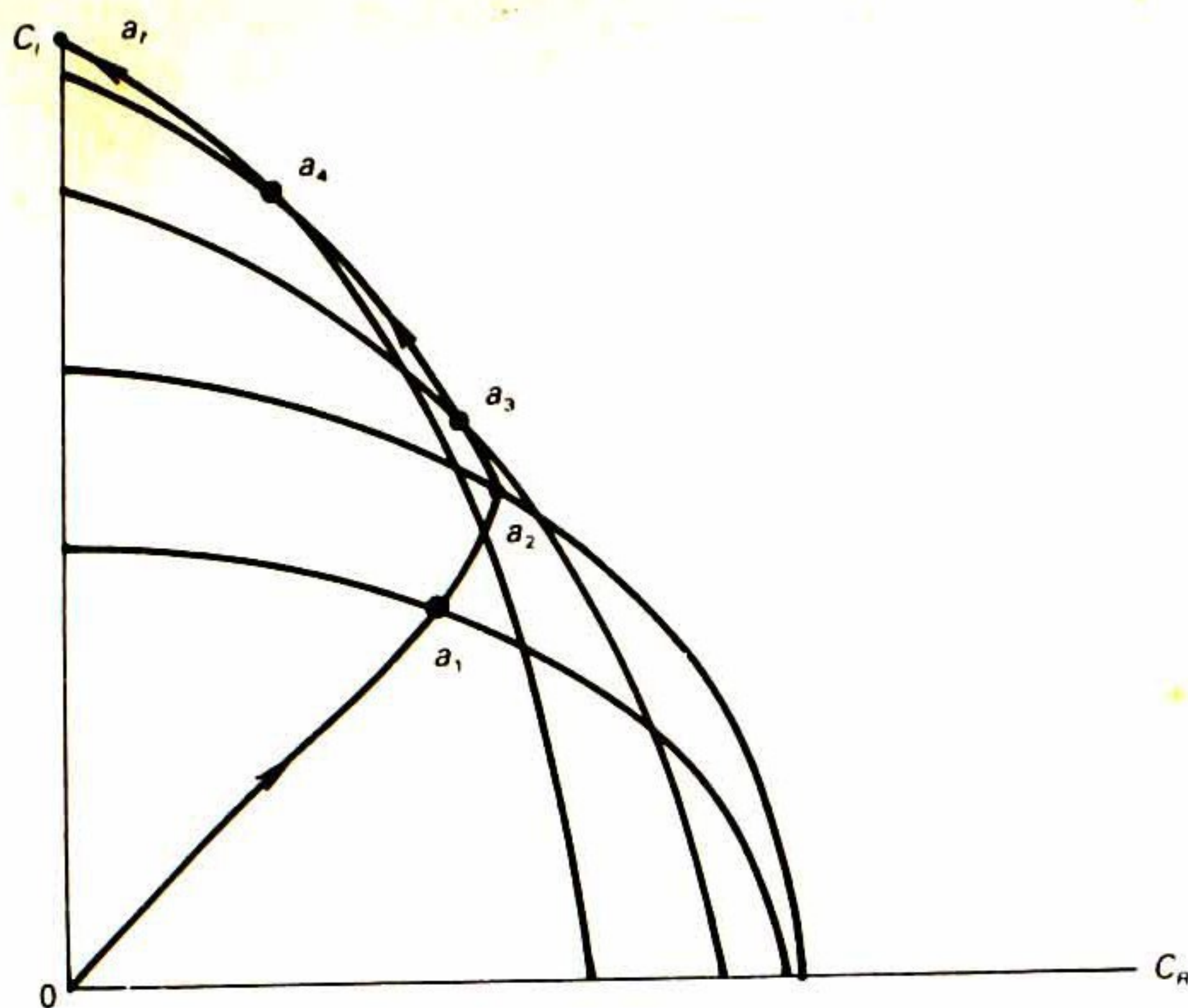
Noting the economy-wide nature of cooperatives in the Islamic economy, the cooperation between producer cooperatives and consumer cooperatives can be construed in terms of the latter promoting the sale of Islamically-requisite products. This further reinforces the formation of the Islamic consumption habit. The output of Islamic production is social goods, conditioned by ethical preferences of the consumer. Hence the demand function for these goods evolves in terms of the prices, quantities and ethical tastes of the Islamic consumer. The principle of ethical endogeneity is again seen to be at work here. The consumption function, the investment function and the production function are all augmented in the quality corrected sense:²³ that is, they are augmented by the ethical set endowed by its

policy and state variables.²⁴ The net return on the sale of products by consumer cooperatives is now seen to be based on the sale revenue of undifferentiated products. This of course does not rule out differentiation between Islamically-requisite products because of the important role of market forces in the production and consumption of such products. The social part of the total return on *mudarabah* investment is now made up of the imputation of the shuratic set of social state and policy variables.

The consumption of Islamically non-requisite products, although subject to a total ban, will probably continue to exist in a small way during the process of transition in the Islamic economy towards its ideal state. For instance, during this transition period some citizens of the Islamic state, in whom the Islamic conviction is not strong and complete or when the Islamicisation of institutions is not complete, will continue to consume limited amounts of wine, deal in interest-bearing transactions, and so on. These oddities will be ultimately reduced when the Islamic state blossoms into its fullness.

Figure 4.5 shows this process of transition and its effect in determining the rates of return on producer and consumer goods. In this diagram, the Islamically non-requisite goods can be interpreted as the 'regrettables'.²⁵ These regrettables are shown to be inferior goods so that, as preferences and incomes change in the Islamic economy, more of the Islamically-requisite goods and fewer of the regrettables will be produced and consumed. In the ideal state of the Islamic economy, signified by point *B*, all goods produced and consumed are of the Islamically-requisite type. The shifting of the production possibilities curves and the points of tangency of these surfaces with the consumer preference curves (denoted by a_1, a_2, \dots, a_N) determine the backward bending income-consumption curve indicating the dynamic minimisation of consumption of regrettables and the maximisation of Islamically-requisite goods. At each of these points of tangency, rates of return earned by the consumer cooperatives equal those earned by the producer cooperatives. Finally, in the ideal state of Islamic transformation, denoted by the point a_N , the production possibility curve reduces to the straight line, Oa_N , and the consumer indifference curve reduces to the point a_N . The resulting rate of return is infinite. The mathematical implication is straightforward: the summability/integrability of the discounted long-run social welfare function and the cost-benefit model needs convergent integrand or summation series.²⁶

The methodology used above might give a suspect neoclassical



C_I : Islamically-requisite consumption
 C_R : Islamically non-requisite consumption, or regrettable

Points a_1, a_2, \dots, a_N denote the path of transition to a fully-fledged Islamic society at the point a_N , where all regrettables are replaced by Islamically-requisite goods only.

Figure 4.5 Allocation of types of consumption goods in the transition phase of the Islamic economy

flavour. This suspicion is partially true because, when substitutable items are now in place (such as the Islamically-requisite goods and regrettables), the production possibility curve and the consumer indifference curves can still be used to convey the meaning. However, there is a distinction from the neoclassical approach on this case. The points a_1, a_2, \dots, a_N , are determined by interaction between shuratic decisions and the markets. Hence these points are not arbitrarily determined under consumer sovereignty. The surfaces thereby turn out to be kinked at these points. Leontief-type production techniques would imply independence between those used for the production of the two types of product.²⁷ This case is indeed true during the process of Islamic transformation of the social economy.

The avoidance of regrettables in preference to Islamically-requisite goods has some profound implications for the macroeconomy.

During the period of Islamicisation of the economy, effective alignment between consumer cooperatives and producer cooperatives necessitates proper coordination between microeconomic and macroeconomic policies. Figure 4.6 explains this type of policy coordination expected to hold in the Islamic economy by virtue of the above treatment of Islamically-requisite goods against regrettables.

Part (a) of Figure 4.6 shows the allocation of Islamically-requisite goods and regrettables as Islamic transformation proceeds. The positively sloped income-consumption curve which results brings about greater expenditure on Islamically-requisite consumption, and consequently on the corresponding types of investment expenditure (but this relationship can take two forms). Government expenditure also proceeds in the same directions: hence $Y' = Y + \Delta Y$, implied in part (b) of this figure. This means that an increase in aggregate demand causes an increase in the equilibrium of national income. Full employment in the economy is thus brought about due to increases in employment in the Islamically-requisite sectors of the economy. This is shown in part (c) of the figure.

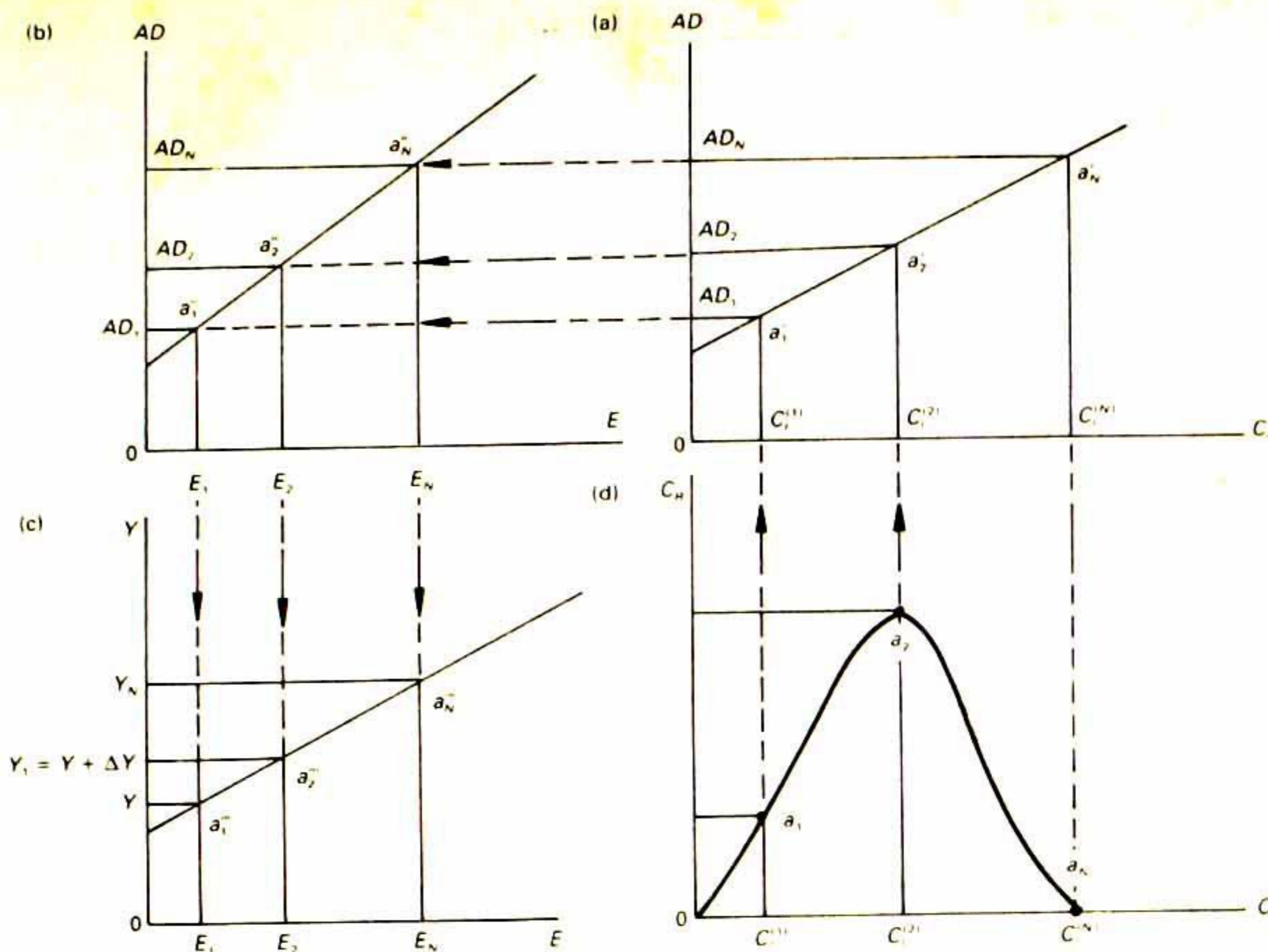
GENERALISED RELATIONSHIPS BETWEEN CRITICAL STATE AND POLICY VARIABLES IN *MUDARABAH*

The generalised relationship between critical economic indicators for a cooperative can now be formalised. The generalised expression for the net return in the cooperative includes the interest rate, so as to explain the adverse effect of interest rates on the profitability of cooperatives, and to make a comparison between the Islamic cooperative and other types of cooperatives examined earlier. The expected signs among these variables are shown in the grid in Table 4.1.

It is clear from this grid relationship that the presence of interest rate in the generalised expression for returns in the cooperative conveys a negative effect on all variables.

COMPARATIVE PROFITABILITY VIEW ON ISLAMIC AND OTHER COOPERATIVES

The comparison between the profitability of Islamic cooperatives and other types of cooperative can now be made. *Ceteris paribus*, drop-



- C_I : Islamically-requisite consumption
- C_R : Islamically-regrettable consumption
- AD : aggregate demand
- E : employment
- Y : national income

Figure 4.6 Aggregate demand, employment and national income effects of Islamic consumption

ping the interest rate variables in the generalised expression makes $W(\text{Islamic}) > W(\text{other})$. In fact, the effect of a zero interest rate on the given expression would make $W(\text{Islamic})$ substantially higher. The reason for this is the non-existence of the negative relationship between interest rate and wage rate through the dampening effect of interest rate on borrowed funds and on the level of employment. In the Islamic economy there is a positive effect of borrowed funds on the profitability of the cooperatives. This generates higher levels of employment. In regard to the movement of the profit-sharing rate and wage rate responding to progressive transformation of labour into profit-sharing non-wage labour, it is the wage rate relative to the profit-sharing ratio that declines, not the nominal wage rate *per se*.

Table 4.1 The grid of sign Interrelationships between critical economic variables influencing *mudarabah* enterprises

\dot{W}	\dot{A}	\dot{r}	\dot{w}	\dot{i}	\dot{E}	\dot{B}
\dot{A}	+	+	+	-	+	+
\dot{r}	+	+	-	-	+	+
\dot{w}	+	-	+	-	-	+
\dot{i}	-	-	-	+	-	-
\dot{E}	+	+	-	-	+	+
\dot{B}	+	+	+	-	+	+

W : cardinalistic social welfare index

A : a parameter indicating technological change in the social welfare index

r : profit-sharing ratio

w : wage rate

i : rate of interest

E : employment

B : external borrowing

Dots on these variables denote time-derivative percentages. Thus all variables in the grid appear in the percentage time-derivative form.

Hence we have all positive elasticities of the variables to social welfare (or net return) in the generalised expression for the social welfare (or net return). This increases the positivity of the variables on the social welfare or the net return in the case of Islamic cooperatives.²⁸

To take the above formalisation to its logical conclusion, we next generalise this contingency-specific equation (or goal/priority equation) to all contingencies (or goals/priorities). The generalised expression now reduces to the following matrix model:

$$W = A \cdot r^{a_1} w^{a_2} i^{a_3} E^{a_4} B^{a_5} \quad (4.31)$$

that is, $\log. W = \log.A + a_1 \log.r + a_2 \log.w + a_3 \log.i + a_4 \log.E + a_5 \log.B$, or

$$\dot{W}_t = \dot{A} + a_1 \dot{r}_t + a_2 \dot{w}_t + a_3 \dot{i}_t + a_4 \dot{E}_t + a_5 \dot{B}_t \quad (4.32)$$

$t = 1, 2, \dots, n$ (time); dots indicate time percentage rates of change of the variables. The above system of equations is written in the matrix form

$$\dot{W} = \Gamma \times \bar{a} \quad (4.33)$$

or

$$\bar{a} = \Gamma^{-1} \times \dot{W} \quad (4.34)$$

where

$$a = (\dot{A}, a_1, a_2, \dots, a_5)',$$

$$\Gamma = \begin{pmatrix} 1 & \dot{r}_1 & \dot{w}_1 & \dot{i}_1 & \dot{E}_1 & \dot{B}_1 \\ 1 & \dot{r}_2 & \dot{w}_2 & \dot{i}_2 & \dot{E}_2 & \dot{B}_2 \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 1 & \dot{r}_n & \dot{w}_n & \dot{i}_n & \dot{E}_n & \dot{B}_n \end{pmatrix}$$

$$\dot{W} = (\dot{W}_1, \dot{W}_2, \dots, \dot{W}_n)'$$

By operation of matrix inversion, we obtain $a_3 = \frac{1}{|\Gamma'|} \sum_{j=1}^n \Gamma'_{4j} W < 0$, because of the grid sign relationship for i . Γ' denotes the determinant of the transpose of Γ ; Γ'_{4j} denotes the cofactor of the element in the 4th row (interest rate) and j th column of Γ' . Since each $\dot{W}_j > 0, j = 1, 2, \dots, n$ and $\dot{W}_j \geq \dot{W}^*$, therefore

$$\left. \begin{aligned} 0 > a_3 &\geq \frac{1}{|\Gamma'|} \cdot \sum_{j=1}^n \Gamma'_{4j} \\ \text{i.e.} & \\ \frac{1}{|\Gamma'|} \sum_{j=1}^n \Gamma'_{4j} &< 0, |\Gamma'| \neq 0 \end{aligned} \right\} \quad (4.35)$$

Expression (4.35) is the condition required for satisfying the grid sign-relationship for the interest rate variable.

USE OF THE ISLAMIC COST-BENEFIT MODEL IN THE THEORY OF *MUDARABAH*

The Islamic cost-benefit model and the concomitant concept of opportunity cost in Islamic resource allocation having been established, we must now build in the theory of *mudarabah*. The definition of *mudarabah* adopted here is again that of a participatory enterprise at the level of worker cooperatives, industrial cooperatives and joint ventures domestically and internationally. Such an approach to *mudarabah* helps to base it strictly on economic cooperation with equi-proportionate participation, while sharing profits proportionate to the imputed value of initial resource inputs. The *mudarabah* enterprise is governed by the principle of distributive equity, the appropriateness of technology, and the social nature of the goods produced and delivered by it.²⁹

It has been formalised elsewhere, and shown earlier in this chapter, that the Islamic cooperative system is essentially a competitive-cooperative one. This is so because, unlike the socialistic idea of collectives as cooperatives and the capitalistic idea of capital ownership and wage payments along with dividend shares in cooperatives, the Islamic cooperative is an enterprise promoting joint ownership (management of resources through common stocks in an enterprise) while encouraging competition for excelling among such enterprises and goals. The Islamic *mudarabah* thus floats profit-sharing bonds to raise its capital needs, and then transfers proportionate ownership of assets to common stockholders. It also ascribes equiproportionate decision-making and voting rights to shareholders among workers, owners of capital and other common stockholders.

Furthermore, the nature of all goods in the Islamic economy being social goods as earlier defined, the joint ownership of resources calls forth social control of production. This means that there is equiproportionate participation by all the participants in the cooperative on matters facing the joint corporation, independent of an agent's capital participation. This characteristic of the Islamic cooperative makes it a medium of production of social goods under conditions of appropriate technology. Examples here would be the production of Islamically-requisite basic needs with indigenous and complementary

technology among the Islamic nations (*ummah*); the development of an Islamic capital market by maximising the intercommunal flow of goods, resources and capital among them; and establishing a common defence machinery to combat external aggression. In the Islamic economy all such undertakings, no matter how large or small, would be primarily done by the private sector under *mudarabah*, equity participation and joint ventures between the private and public sectors.

The idea of a corporation endowed by its objective criteria and evaluative mechanism is thus predominant in the Islamic economy. As mentioned earlier, there is an elementary *shura* at work at the enterprise/corporation level which undertakes the task of developing a corporate plan democratically under the condition of social control of production by all participants. The objective function of the *shura* represents that viewpoint for the corporation as a whole. This is given by equation (4.14).

Risk-Diversification by the Islamic Corporation

The Islamic corporation must be highly risk-diversifying. This is attained by maximising *mudarabah* participation in the capital market, and thus being able statistically to convert risky returns into their certainty equivalents. The focus here is to reduce and subsequently to eliminate capital market speculation. The Islamic corporation need not, however, avoid risky ventures. This is made possible first by establishing joint ventures between the private and the public sectors on profitable (social and private profitability) projects, with the result that the government being risk-neutral, the total risk held by private participants is automatically diversified.³⁰ Besides, the administrative machinery and financial information system of the Islamic government, combined with the efficiency of the corporation, help to mobilise resources effectively towards profitable ventures. In the Islamic economy the joint ventures between the private and public sectors will have the added benefit of integrating the decision-making in the *shuras* at these levels. This reinforces social and private profitability objectives. It is implied in the above arguments that the Islamic enterprise must yield good prospects for healthy returns to the investor in order to sustain itself. In this case, risk-diversification is both the cause as well as the effect of profitability of investments in the Islamic capital market.³¹

The shuratic objective function of the capital market is thus a

grand social welfare function additive over the group-specific cardinal social welfare indices, each of which are functions of a set of state and policy variables set by the shura, and on which common consensus is sought. The variables comprise socio-economic variables, among which the profit-sharing ratio, prices, returns and *zakah* payments are the ones treated earlier. To this list can be added employment and capital formation. The resulting social/developmental index is now well defined.

Issues on the Discount Rate used for *Mudarabah* Investments

Next, to turn to the evaluative mechanism, one need only show how the discount rate accounts for risk-diversification. The rest of the formalisation on opportunity cost of capital and discounting of income flows in the cost-benefit model is as before (See Chapter 3).

Look at Figure 3.2. The discount rate, determined at the terminal point of intersection between the grand social welfare function and the expansion path of the index of critical variables, is shown to be varying about the social consensus point, set in the *shura*. This is denoted by the point a^* . The initial point of the index curve is fixed because this point is known with certainty, but not so the terminal point in the case of uncertain state and policy variables. Now

$$d = d(r, p, R, z, E, K) \quad (4.36)$$

where r, p, R, z are as defined in expression (3.10). E denotes the employment variables and K denotes the capital variables. These variables are taken to be uncertain now, varying about the social consensus point $a^* = (r^*, p^*, R^*, z^*, E^*, K^*)$. Assuming continuously differentiable first- and second-order derivatives about a^* , Taylor's expansion about this point up to second-order differentials gives

$$d = d^* + \sum_{i=1}^n (x_i - x_i^*) \cdot [\partial d / \partial x_i]_{x_i=x_i^*} + \frac{1}{2} \sum_{s, s'=1}^n (x_s^i - x_s^{i*}) (x_{s'}^i - x_{s'}^{i*}) (\partial^2 d / \partial x_i^2) + R_n \quad (4.37)$$

Expected values give

$$\text{Var. } (d) = a_1 \text{Var. } (x_i) + a_2 \text{Cov. } (x_s, x_{s'}) \quad (4.38)$$

a_1 and a_2 are constants.

If there are n number of shareholders/projects in the corporate portfolio or in the capital market, as is the case here, then the selected discount rate for evaluating the investment is associated with uniform risk to all participants. Hence, risk for each shareholder/project is, $[a_1 \text{Var. } (\bar{x}_i) + a_2 \text{Cov. } (\bar{x}_s, \bar{x}'_s)]/n$. This tends to zero as n becomes indefinitely large. Thus under risk-diversification the certainty equivalent of risky discount rates is $d = d^*$. To prove the second part of the theorem – that d^* yields the maximum profitability, given the consensus value for the social welfare function and the index – we simply note that $NB(d=d^* | xi = xi^*) > NB(d = d^* + \text{risk terms} | xi = xi^*)$. The theorem is now proven: risk-diversification of the Islamic portfolio in the *mudarabah* market is both the cause as well as the effect of profitability, and is a factor incorporated in the discount rate for evaluating income flows over time.

GENERALISED DYNAMIC OPTIMAL RESOURCE ALLOCATION AND DISTRIBUTION PROBLEM IN THE ISLAMIC ECONOMY

The generalised optimal resource allocation and distribution problem of the Islamic economy can now be formulated as follows:

$$\left. \begin{aligned} \text{Max. } NB &= \int_0^T I(\bar{x}_{jt}) \exp(-dt) \cdot dt \\ \text{subject to } W &= W(\bar{x}_{jt}) \end{aligned} \right\} \quad (4.39)$$

where j represents either contingency or goal/priority as earlier explained, $j = 1, 2, \dots, n$. \bar{x}_{jt} is a vector of state and policy variables.

The maximisation problem can be written as follows:

$$\left. \begin{aligned} \text{Max. } NB &= \int_0^T I(\bar{x}_{jt}) e^{-dt} dt \\ \text{subject to } W &= \int_0^T \frac{dw}{dt} \cdot dt = \int_0^T \sum_{x_j} \left(\frac{\partial w}{\partial \bar{x}_{jt}} \cdot \frac{d\bar{x}_{jt}}{dt} \right) \cdot dt \end{aligned} \right\} \quad (4.40)$$

The Lagrangian for the dynamic optimisation problem is written down as

$$\text{Max. } L = \text{Max.} \left[\int_0^T I(\bar{x}_{jt}) e^{-dt} dt + \lambda_j \int_0^T \sum_{x_j} \left(\frac{\partial w}{\partial \bar{x}_{jt}} \cdot \frac{d\bar{x}_{jt}}{dt} \right) dt \right]$$

$$\begin{aligned}
&= \text{Max.} \int_0^T \left[I(\bar{x}_{jt}) e^{-dt} + \lambda_j \sum_{x_j} \left(\frac{\partial w}{\partial \bar{x}_{jt}} \cdot \frac{d\bar{x}_{jt}}{dt} \right) \right] dt \\
&= \text{Max.} \int_0^T z(\bar{x}_{jt}, \dot{\bar{x}}_{jt}) dt
\end{aligned} \tag{4.41}$$

The Hamiltonian equations of dynamic optimisation are:

$$\frac{\partial z}{\partial \bar{x}} - \frac{d}{dt} \left(\frac{\partial z}{\partial \dot{\bar{x}}} \right) = 0 \tag{4.42}$$

where

$$z(\bar{x}_{jt}, \dot{\bar{x}}_{jt}) = I(\bar{x}_{jt}) e^{-dt} + \lambda_j \sum_{x_j} \frac{\partial w}{\partial \bar{x}_{jt}} \cdot \frac{d\bar{x}_{jt}}{dt} \tag{4.43}$$

That is,

$$\frac{\partial I}{\partial \bar{x}_{jt}} e^{-dt} - \frac{d}{dt} \left(\lambda_j \sum_{x_j} \frac{\partial w}{\partial \bar{x}_{jt}} \right) = 0 \tag{4.44}$$

That is,

$$\frac{\partial I}{\partial \bar{x}_{jt}} e^{-dt} - \lambda_j \sum_{x_j} \frac{d}{dt} \left(\frac{\partial w}{\partial \bar{x}_{jt}} \right) - \left(\sum_{x_j} \frac{\partial w}{\partial \bar{x}_{jt}} \right) \cdot \frac{d\lambda_j}{dt} = 0$$

That is,

$$\frac{\partial I}{\partial \bar{x}_{jt}} e^{-dt} = \lambda_j \sum_{x_j} \frac{d}{dt} \left(\frac{\partial w}{\partial \bar{x}_{jt}} \right) + \left(\sum_{x_j} \frac{\partial w}{\partial \bar{x}_{jt}} \right) \cdot \frac{d\lambda_j}{dt} \tag{4.45}$$

$j = 1, 2, \dots, n.$

If λ_s are constant over time, then

$$\begin{aligned}
\frac{\partial I / \partial \bar{x}_{st}}{\partial I / \partial \bar{x}_{s't}} &= \frac{\lambda_s}{\lambda_{s'}} \cdot \frac{\sum_s \frac{d}{dt} \left(\frac{\partial w}{\partial \bar{x}_{st}} \right)}{\sum_{s'} \frac{d}{dt} \left(\frac{\partial w}{\partial \bar{x}_{s't}} \right)} \\
\text{i.e.} \quad \frac{\partial I / \partial \bar{x}_{st}}{\partial I / \partial \bar{x}_{s't}} &= \alpha(s, s') \cdot \frac{\sum_s \partial w / \partial \bar{x}_{st}}{\sum_{s'} \partial w / \partial \bar{x}_{s't}}
\end{aligned} \tag{4.46}$$

Expression (4.46) gives the time path of evolution of the critical variables across different pairs of contingencies or goals/priorities. In the special case when $\bar{x}_{jt} = (r, p, R, z)(j, t)$,

$$W = A \exp(a_1 \cdot r + a_2 \cdot p + a_3 \cdot R + a_4 \cdot z) (j, t) \quad (4.47)$$

$$I = a_1 \cdot r + a_2 \cdot p + a_3 \cdot R + a_4 \cdot z$$

The optimality conditions for $j=s, s'$, derived by applying expression (4.46), are:

$$\frac{a_1(s)}{a_1(s')} = \alpha(s, s') \cdot \frac{(a_1 + a_2 + a_3 + a_4)(s) \cdot W(\bar{x}_{st})}{(a_1 + a_2 + a_3 + a_4)(s') \cdot W(\bar{x}_{s't})} \quad (4.48)$$

where $\alpha(s, s') = \frac{\lambda(s)}{\lambda(s')}$

Expression (4.48) is rewritten as

$$\frac{W(\bar{x}_{s't})}{a_1(s')/(a_1 + a_2 + a_3 + a_4)(s')} = \alpha(s, s') \cdot \frac{W(\bar{x}_{st})}{a_1(s)/(a_1 + a_2 + a_3 + a_4)(s)} \quad (4.49)$$

that is

$$\frac{\exp [A(a_1 r + a_2 p + a_3 R + a_4 z)](s', t)}{a_1 (s')/(a_1 + a_2 + a_3 + a_4)(s')} = \alpha(s, s') \frac{\exp. [A(a_1 r + a_2 p + a_3 R + a_4 z)](s, t)}{a_1 (s)/(a_1 + a_2 + a_3 + a_4)(s)} \quad (4.50)$$

By taking a logarithm of each side, we obtain the final condition of optimality,

$$I(s', t) \propto I(s, t) \quad (4.51)$$

The implication of this optimality condition is that the state and policy variables move proportionately to each other (positively or negatively) and among themselves, across pairs of contingencies or priorities, as the case may be. This can be true when social consensus holds in the decision-making process, as there is now a one-to-one

relationship between these variables, indicating that the continuous chain of feedbacks among the state and policy variables are in effect as implied by the principle of ethical endogeneity. These results take us a step further: while the above formulation is indicative of the shuratic decision-making process in forming social consensus, so the principle of ethical endogeneity must be at the root of the shuratic decision-making process.

The above result also implies that policy perturbations about the social/developmental index are minimised under conditions of social consensus formation. This is explicable as a result of expression (4.51). That is, risk-diversification minimises the variance and covariance of risky discount rates about the social consensus terminal point.

Just as the optimal resource allocation conditions given above apply to feedbacks between the *shura* and the market environment in the formation of social consensus, so do they also apply to the *mudarabah*. We have seen that in this critical Islamic institution the *shura* of the Islamic corporation is in place. Other important issues of the Islamic capital market are also brought into significance: namely, risk-diversification, choice of technology and its proper modes of internal and external financing, social control of production by the participants, and the choice of the discount rate under social welfare considerations for project valuation. The above-mentioned interpretations of the optimal resource allocation conditions under social consensus thus apply to resource allocation in *mudarabah* as well.

5 Resolution of the Great Economic Problems in Contemporary Times in Islamic Economic Perspectives

The principle of ethical endogeneity underlying humanistic institutional economics is central to the economic principles of Islam. Through this approach to major economic problems in contemporary times, Islamic economics presents an alternative that is institutional in nature and at the same time different from all received economic doctrines. Only under restrictive conditions of consumption, production and distribution can the results of resource allocation in Islamic economics be made to approximate to the other paradigms. Islamic economics can thus be considered a direct derivative of the general theory of humanistic institutional economics with assumptive extensions to other areas of economics with humanistic elements in them. Our focus in this chapter is on the Islamic economic resolution of the great economic problems of contemporary times in an integrated fashion and under the ethical endogeneity principle of humanistic institutional economics.

HUMANISTIC INSTITUTIONALISM IN ISLAMIC ECONOMICS

The institutional form of Islamic economics is defined in terms of the following characteristics: first, the goal of Islamic economics is to explain and functionalise certain prescriptive modes of production, consumption, distribution and sharing of the resources, be they primary or produced, tangible or in the form of services, righteously and in accordance with the ethical laws laid down by the Quran, further elaborated by the Prophetic traditions explaining the principles of the Quran, by exegesis of the Quran through *ijtehad*, *qiyas*

and *ijma*.¹ Second, there are well-defined assumptions that centre around the Islamic economic goals, and establish in a consistent and logical way interactive feedbacks between the economic activities and the Islamic goals. These are the assumptions of God's supremacy and absoluteness in ownership of resources and the guidance by His laws of all economic activities. This principle further leads to the congruent one: that is, humankind is but a viceregent of God on earth who has been ordained by the Islamic laws, known as the *shari'a*, to manage and distribute the resources of the universe in a righteous and equitable way.

The shadow criterion of this principle is the maximisation of total felicity. One part of this comprises temporal felicity attained through the adoption of Islamic economic principles and the function of the instruments and institutions. The other part comprises the supreme felicity that is attainable only in the hereafter, but whose certainty is reinforced through the attainment of temporal Islamic felicity. Apart from these there is the principle of work and productivity that aims at maximum utilisation of resources and reduction of the unwanted type of free-rider situation in economic activity.

Next, there is the principle of distributive equity. These principles or assumptions of the Islamic economy operate in conjunction with one another in respect to all activities in the economy. Third, there are policy instruments and institutions which mobilise the assumptions and activities of the economy towards realising the Islamic goals. These are the instruments of interest-free transactions, consumption and production in the absence of waste, the institutions of profit sharing under cooperation, and of *zakah*. In earlier chapters we referred to the general equilibrium loops among the principles (assumptions) and the instruments/institutions of the Islamic political economy, and we explained their interrelationships.

The above configuration of the Islamic economic principles point out that the ordaining laws governing all functions in the economy are derived from the Islamic laws. In the institutional framework of decision-making, the interpretation and application of these laws to worldly matters, known as *muamallat*, is carried out by as many relevant groups and representations as deemed necessary. Among these would be the religious learneds known as *ulemas*, labour leaders, employers, economists, sociologists, educationalists, and so on. Such a decision-making process in the light of the *shari'a* is known as the *shura*. The *shura* is a very extensive conglomeration of democratic and decentralised decision-making processes which ex-

tend from the level of individual businesses to higher echelons of coordinated decision-making bodies, known as *al-hisbah fil-Islam*.² They are still further integrated with national levels of *shuras*, such as provincial and central departments of economics, departments of commercial affairs, departments of consumer affairs and social services, known in the Islamic literature as *bait al-mal*. Finally, the highest level of coordination takes place at the international level by the world *shura* of Islam, known as the *shura* of the *ummah*. What the decision-makers, known as *sharees*, perform is the best choice of sets of goals/priorities; they also assign weights to them. They develop policy recommendations for different sectors and departments of the economy to follow, in order to realise the ethical goals of the Islamic society. They undertake authoritative Islamic research (*ijtehad*) and interpret the *shari'a* for the function of *muamallat*. They legislate only policy measures, not new laws.

The policy-theoretic nature of the Islamic economic system is now clearly seen to reside in the interaction between ethical laws and policies governing the market activity and the market environment itself. The democratic and decentralised process leading to the choice of appropriate ethical policies is limited only by the tenets of clearly defined prohibitions in Islam, known as *haram*. The Quran categorises total consumption and production activities into those that are unquestionably Islamically requisite, known as *halal*; those that are Islamically prohibited, known as *haram*; and those that are unclear between the two. In the final case, avoidance of the activity is recommended, but it does give the benefit of doubt to the uncertain activities, and it is this area where a wide range of decisionistic and policy views can be seen to appear within the *shuras*.³ Among those that are *haram*, a weight of absolute zero is assigned; among those that are *halal* there can be further prioritising on the basis of pressing necessity, considerations of costs and direct benefits. The array of weights assigned to such priorities then follows (for example, among the Islamically-requisite basic needs, comforts and luxuries, all of which are *halal*, basic needs are assigned the highest weight, then follow comforts and finally luxuries).

The second and important institutional characteristic of the Islamic economy is the structural transformation that emanates from the shuratic process between polity and the social/market environment. As we have mentioned above, there can be a wide range of shuratic choices of ethical policies based on prioritising of Islamically-requisite activities and of activities that are unclear. In either case,

there is a strong need for the development of *ijtehad* and *ijma*. As the Islamic rewards to individuals and society are returns in accordance with the best of their efforts towards acts of righteousness and piety, therefore, the result and impact of *ijtehad* and *ijma* in the *shura* at any one period of time can be considered as a historic point in a progressive chain of development in Islamic society. The development proceeds in the next stage by the impact of ethical policies transforming the preferences of consumption, the resulting choice of production menus and distribution into more acceptable Islamic states. Such preferences make individuals and society attain higher levels of temporal Islamic felicity. The new Islamic individual is thus born, who is capable of influencing the polity with better inputs into the shuratic process. The cycle of feedbacks between ethical policy variables and the market/social environment thus continues.

The essence of continuity is inherent in the humanistic institutional framework of the Islamic economy. This continuity is explained by the adaptation of ethical policies and social state variables emanating from the market/social environment. There is no conflict between the regime of pure policy-making and the regime of market process. In fact, the correspondence between the two regimes establishes consensus on policy choices among the *sharees* at distributed points of time. The formation of social consensus in the *shuras* contributes to the maximisation of the Islamic felicity functions comprising both pure economic variables and, through the impact of ethical policies, also economic imponderables. This implies that continuity gives rise to two congruent objective criteria in Islamic economics: namely, the formation of social consensus in the *shuras*, attained through the process of feedbacks between policy variables and state variables, and the resultant maximisation of the Islamic felicity function.

The Islamic felicity function is not necessarily a precise mathematical form, but is a cardinal one in the critical state and policy variables. The felicity function also accepts an admissible range of changing ordinal weights attached to the policy variables, in response to the simulation of ethical policies in the *shuras*. The importance of the felicity function lies in explaining the internal structure of the decision-making and transformation process in the Islamic economy. It is also found important in establishing a method of policy integration with theory, and in explaining resource allocation and distribution in ways that are found to be novel and altogether different from the received economic theories. The maximisation of the felicity function is not a one-shot mechanistic exercise at a point of time,

because the idea of optimality here means an evolution into higher and more progressive stages of Islamic transformation of society. Since this process itself is boundless, so the optimality conditions are not unique or globally stable. These are again issues of the uniqueness and local stability versus global stability of the general equilibrium state earlier associated with humanistic institutional economics. The nature of the social optimum so attained temporarily in the Islamic economy, and the dynamic nature of feedbacks between state and policy variables towards establishing social consensus, imply non-uniqueness and the globally unstable nature of the Islamic general equilibrium solution. There would, however, still be local stability.⁴

Islamic economics is, therefore, an example *par excellence* of humanistic institutional economics. The nature of continuity between policy regimes and regimes of state variables in this economic system makes Islamic economics capable of resolving the great economic problems of contemporary times in an integrated way. The great economic problems we shall investigate here are unemployment, distributional inequity, lack of entitlement and poverty. These will be treated as the state variables. On the other hand, the choice of technology, fiscal instruments, and monetary/financial instruments will be treated as policy variables. In Islamic economics, the Shatibi type of basic needs approach would suggest a labour-intensive form of choice of technology, where the labour/capital labour may yet be given varying targets by the decision-makers in the *shura*.⁵ The fiscal instrument will be the wealth tax rate, known as the *zakah* rate. The financial instrument would be the profit-sharing ratio (given the institution of profit-sharing under cooperation, known as *mudarabah*). The monetary instrument would be the reserve ratio or, when open market transactions are used as an instrument, we would revert to profit rate as the monetary instrument.

AN EXAMPLE OF ISLAMIC POLICY-THEORETIC PRIORITIES: BASIC NEEDS

Choice of State Variables

In contemporary times we have the example of the International Labour Organisation World Employment Programme as a Shatibi-type basic needs approach to full employment. Here the array of

shuratic weights attached to the following priorities will be in descending order: top-most priority would be given to the attainment of full employment, followed by distribution, and then entitlement and poverty. This ordering is only one of the various scenarios that the *shura* would select. It is proposed on the grounds that full employment will lead to improved income distribution, which in turn will entitle workers to ownership. This eventually will eradicate poverty. Elimination of poverty cannot be normally expected before individuals have sufficient earnings to buy goods and services, the deprivation of which spells poverty.

The above scenario may be replaced by others. For examples, in the situation of an ageing population with an adverse incidence of poverty among the elderly, the goals could take the following chain of priorities: full employment, income distribution and entitlement. These must also be treated independently of poverty, because the cause of poverty is not job-related in this case; rather, it is a demographic phenomenon. Now a new set of weights would be assigned to the critical state variables. A third case could be that the relevant goal is the eradication of absolute poverty, not relative poverty. In the case of the incidence of relative poverty, entitlement is not a critical problem, except that different income groups have at their disposal different characteristics of goods and services. The priorities thus change as a result and, along with that, the weights change as well. In every case, however, the goals of full employment and income distribution maintain their given leading priorities but, with different combinations of priorities, the assigned weights will change in every case. The ethical nature of these state variables arises from the Islamic economic principles of work and productivity, distributive equity, justice and brotherhood among humankind, and the attainment of temporal Islamic felicity which arches into attainment of supreme felicity in the hereafter.

Choice of Policy Variables

Next we look at the policy variables. The priority on the production of basic needs necessitates conservationist consumption habits, which is a prerequisite for the avoidance of waste (an important Islamic economic instrument known as the avoidance of *israf*).⁶ The emphasis on basic needs also agrees with the need to choose appropriate technology of production and, in relation to the full employment goal, appropriate technology is logically taken to be the labour-

intensive one. The choice of the profit-sharing ratio (profit rate) as the financial/monetary policy instrument is ethically related in the Islamic economy to the institution of profit sharing under cooperation.

If the principles of brotherhood, work, productivity and distributive equity are to be realised, then humankind must be viewed as a sharing community, not as a sheer self-aggrandising competing one. Competition, however, is applicable in acts of piety and righteousness which find their ethical reflection in the economy. Firms compete on the basis of this allowance for competition, and only with the principle of cooperation in place. This situation of economic exchange may be referred to as a competitive-cooperative system.⁷ The monetary instrument is drawn into this because money creation is now seen as an endogenous phenomenon in the Islamic economy, where the *ex ante* demand for money gets equated to the *ex post* supply of money.⁸

In the Islamic economy, interest transactions are strictly forbidden. It is argued that interest is a surplus that has no role to play in the actual cost of production. Being thus an exogenous cost imposed subjectively by the lender on the borrower for risk, which is at best surmised to occur in the future, interest becomes a levy on the borrower of funds and a source of undue profit for the lender. Instead, in the medium of profit sharing under cooperation, the absence of interest transactions is absolutely necessary to mobilise capital that will ultimately play the central role in productive investments, leading to economic growth, profitability of enterprises, employment and distribution of resources and opportunities. To go a step further, since interest is a subjective cost and a not a real cost of production, it is construed as an economic waste in the Islamic economy. It is thus not good even as an instrument for explaining intertemporal efficiency of capital. Otherwise, too, it is known that while investment is negatively affected by the rate of interest, there is also a spurious relation between interest rate and savings. The volume of savings is never influenced by the rate of interest.⁹

The rate of profit (or the profit-sharing ratio) thus completely substitutes for the rate of interest in the Islamic economy as regards mobilising and allocating financial resources, and endogenously controlling the supply of money, when the banks themselves are participants in the *mudarabah* enterprises for which essentially they supply money. In the case of consumer loans, the principles of strict surveillance over the nature and use of consumer loans is

strictly maintained. The individual can also be a *mudarib* with the lender (for example, in the case of house-building loans advanced by the *bait al-mal*). In the case of depreciating capital goods, a simple repayment of principle with no profit-sharing return is granted to the borrower. Such a loan is known as *qard-e-hassanah*. We see, therefore, that in every case of financial advances there is an idea of cost-of-capital involved, but this is measured in terms of the profit-sharing ratio and not in terms of the rate of interest.

Now, when banks are introduced into the financial market, the nature of money changes from that encountered in the conventional monetary system. In the Islamic economy with no interest on investment and consumption loans, the cost-of-capital is still there. However, a positive rate of profit arrests the problem of speculative demand for cash balances because the *ex ante* demand for money capital is reduced to an actual demand, and this is based on a pure contractual sharing of profits in a joint venture, in accordance with relative investment outlays.

THE INTEGRATED APPROACH TO GREAT ECONOMIC PROBLEMS FROM ISLAMIC PERSPECTIVES

We have brought together the major features of the Islamic economic system in addressing the great economic problems of contemporary times in an integrated way. We will now outline the theoretical basis of this integrated approach. The first topic to consider in this is the Islamic idea of micro-macro interface.

Micro-Macro Interface in Islamic Economics

Unlike the case with Keynesian aggregate analysis, in Islamic economics the building blocks are the micro-institutional foundations, where the interplay of ethical forces with the polity and market environment commences. Also, unlike the classical and neoclassical pure theoretical economic analysis, the Islamic economic analysis is based on an institutional policy-theoretic approach. The sum total of ethical *vis-à-vis* market interrelationships defines the relationships at the aggregate economic level. In Islamic economics the conventional distinction between microeconomic and macroeconomic analysis is not there.

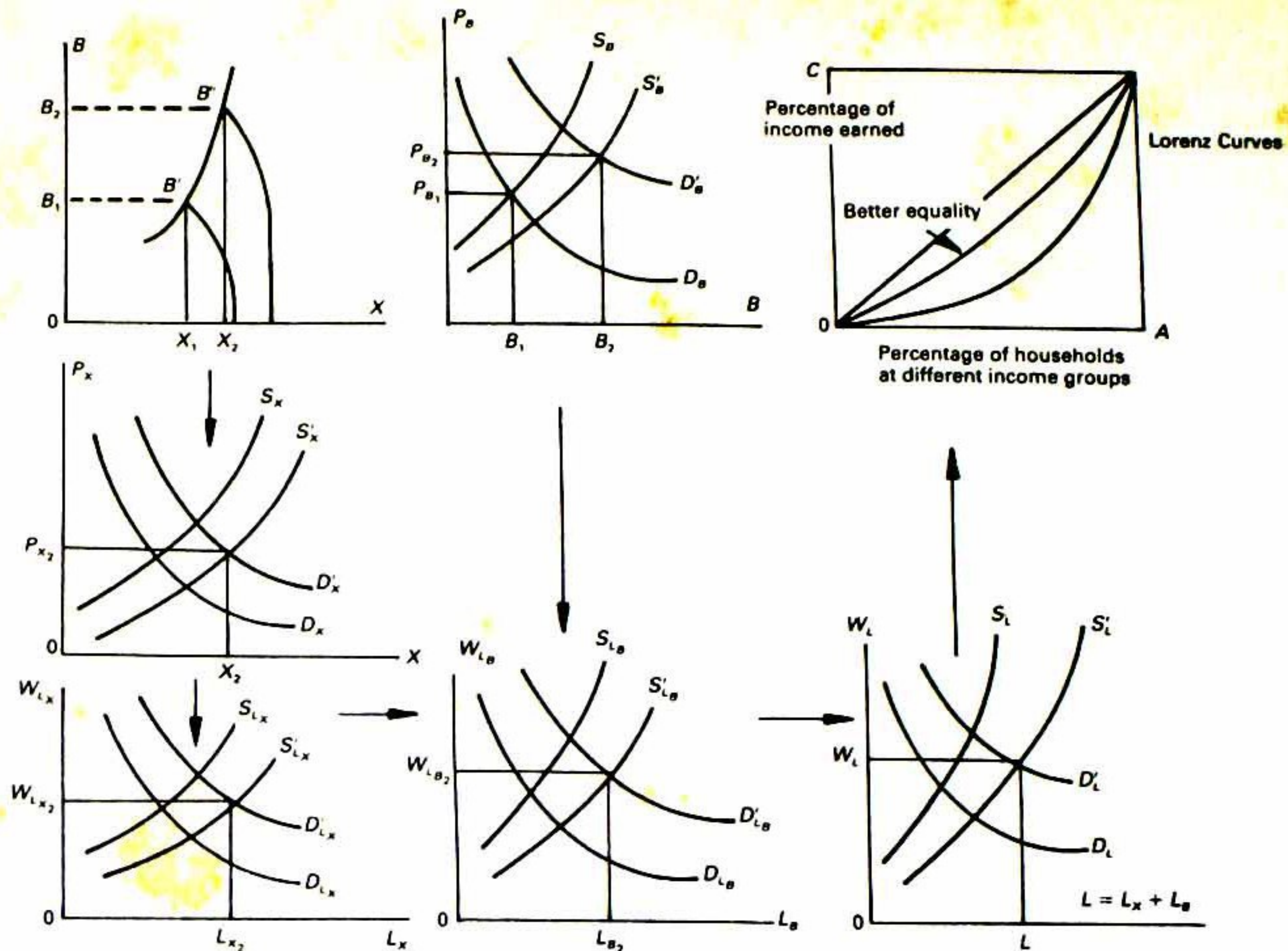
Addressing the Critical Goals

Figure 5.1 explains the direction of interrelationships among the critical state variables and policy variables earlier chosen to address the great economic problems in an integrated way. The full employment levels of wages and quantity of labour are shown by the lateral aggregation over similar categories for basic needs production and other types of Islamically-requisite productions. Two types of shift in the demand and supply curves are shown. One is due to substitution effect whereby, as the demand for labour in basic needs industries increases, wages increase in these industries and are followed by some labour from the other goods-producing industries satisfying the excess demand. Consequently wages stabilise in the basic needs sector and in the economy as a whole, while a higher quantity of labour is used in the basic needs sector in response to the labour-intensive type of appropriate technology.

The other type of shift in demand and supply is shown by the condition of overall improvement in technology favourably affecting both the basic needs industries and other goods-producing industries. This is found during periods of developmental transitions, whereas the emphasis on the development of the basic needs sector is associated with periods of structural adjustment of the economy. There are now increased wages and increased labour overall, and the full employment level is enhanced. Wages move up by the force of technological advance.

The nature of technological change in either case is of the labour-intensive type, but this does not mean that capital formation in the economy has declined relative to the increase in the stock of labour. Technological advance of the above two types causes both labour and capital to increase, and it is best if technological change turns out in the first case to be of the labour-augmented type, and in the second case to be of the equally labour- and capital-augmented type.¹⁰ The implication of the labour-augmented type of technological change is that the mode of production is turning up increasing amounts of productive labour. The implication of the equally labour- and capital-augmented technological change is that the mode of production is turning up more of both productive labour and productive capital. It is definitely the second kind of technological change that is the better option. Over time none of these labour/capital ratios remain constant; they only keep on increasing.

Equally the labour- and capital-augmenting type of technological



B : basic needs
 X : other goods
 P_B : price of basic needs
 P_X : price of other goods
 W_{LX} : wage rate of labour in X
 W_{LB} : wage rate of labour in basic needs
 L : total labour force
 W_L : wage rate on average

With a planned shift to the production of basic needs, the stability of P_B causes wages, W_{LB} , to be stable. This increases the demand for L_B more than for L_X . The demand for total labour thus increases. With wages stable and higher employment, income distribution improves in favour of the lower-income groups.

Figure 5.1 Interrelationships between critical state variables and policy variables in a basic needs regime

change implies the important result of dismantling segmented labour-market rigidities as labour is continuously transferred from the secondary labour market into the primary labour market.¹¹ It is also linked with the efficient adaptation of appropriate technology in carrying the structural development process through higher stages of graduated basic needs, wherein today's necessities are yesterday's comforts, and tomorrow's comforts are today's luxuries.¹²

The upper left part of Figure 5.1 shows the interaction of the financial/monetary sector in the full employment relationship. The effect is conveyed through the relationship of the financial/monetary sector with production technology. The emphasis throughout being on the production of a graduated basic needs basket of goods, and there being an endogenous type of money supply meeting the actual demand for money in a profit-sharing system, the upward shift in real wages is mainly due to productivity gains, and not due to wage-cost inflation. Consequently, productivity of investment and profitability of production in the appropriate technology regime are enhanced. These cause the upward shifts in wages and employment under the equally labour- and capital-augmenting type of technological change to be fully effective.

On the top right part of Figure 5.1 is shown the effect of full employment on the other critical indicators, income distribution and eradication of poverty. Using the usual Lorenz curve methodology, it can be seen that the skewness of income distribution resulting from the basic needs regime of development and full employment with increasing wage level would show up as a shift of the Lorenz curve towards income equality. Finally, the positive relationship of greater equality in income distribution with eradication of poverty is obvious.

Figure 5.1 explains one of several relationships that would exist among the critical variables, as was mentioned earlier. The important point to mark in these relationships is the role played by ethical elements in the Islamic economy. The labour demand curves shown are constructed on the pre-assigned goal of full employment, instead of this goal being treated as a derivative of changes in other variables in the economy. Then, towards attaining the goal of full employment, the investment sector, product market and financial/monetary sector are activated. The policies that activate them are of an ethical nature, which in this example are shown in terms of the Shatibi-type goal of basic needs development. Profit sharing is held to be the widely accepted production institution, but profit-maximisation is conditional only on the primary goals of full employment, distributional equity, entitlement and eradication of poverty. This constitutes the equity-oriented approach of Islamic economics with reference to the great economic problems of contemporary times.

THE EQUITY-EFFICIENCY QUESTION IN ISLAMIC ECONOMICS

The efficiency question is now answered by noting that the profit rate (or the profit-sharing rate) is the indicator of efficiency in the Islamic economy. The above relationships have shown that shifts in wage rate and the demand for labour in a full employment regime bring about increases in labour and capital productivity (total productivity), real increases in wages and price stabilisation through basic needs output, which do not cause cost-push inflation. On top of this, improvements in entitlement, better income distribution and eradication of poverty bring about increased expenditures in the economy, particularly from the households and the private sector. These are all signs of increased efficiency of the economy and show up in a healthy total rate of return on investment. In other words, the important thing to note is that the lower cost of production will determine the profit level and profit rate in the economy under given situations of product demand.

Between the equity and efficiency goals of the Islamic economy, we find that the existing relationships among critical state and policy variables show that these can be attained simultaneously, not in a trade-off, as found ingrained in the classical and neoclassical frameworks of analysis. The principal force for this equity-efficiency simultaneity condition to prevail is transformation of consumption and production preferences in the economy in response to the impact of ethical policy formulation in the *shura* and their feedback responses between polity and the market environment. Thus is the primal role of shariatic ethics and values in the Islamic economy. This equity-efficiency simultaneity is congruous with the principle of ethical endogeneity explained earlier.

TRANSFORMATION OF ETHICAL QUESTIONS INTO POLICIES IN THE ISLAMIC ECONOMIC SYSTEM

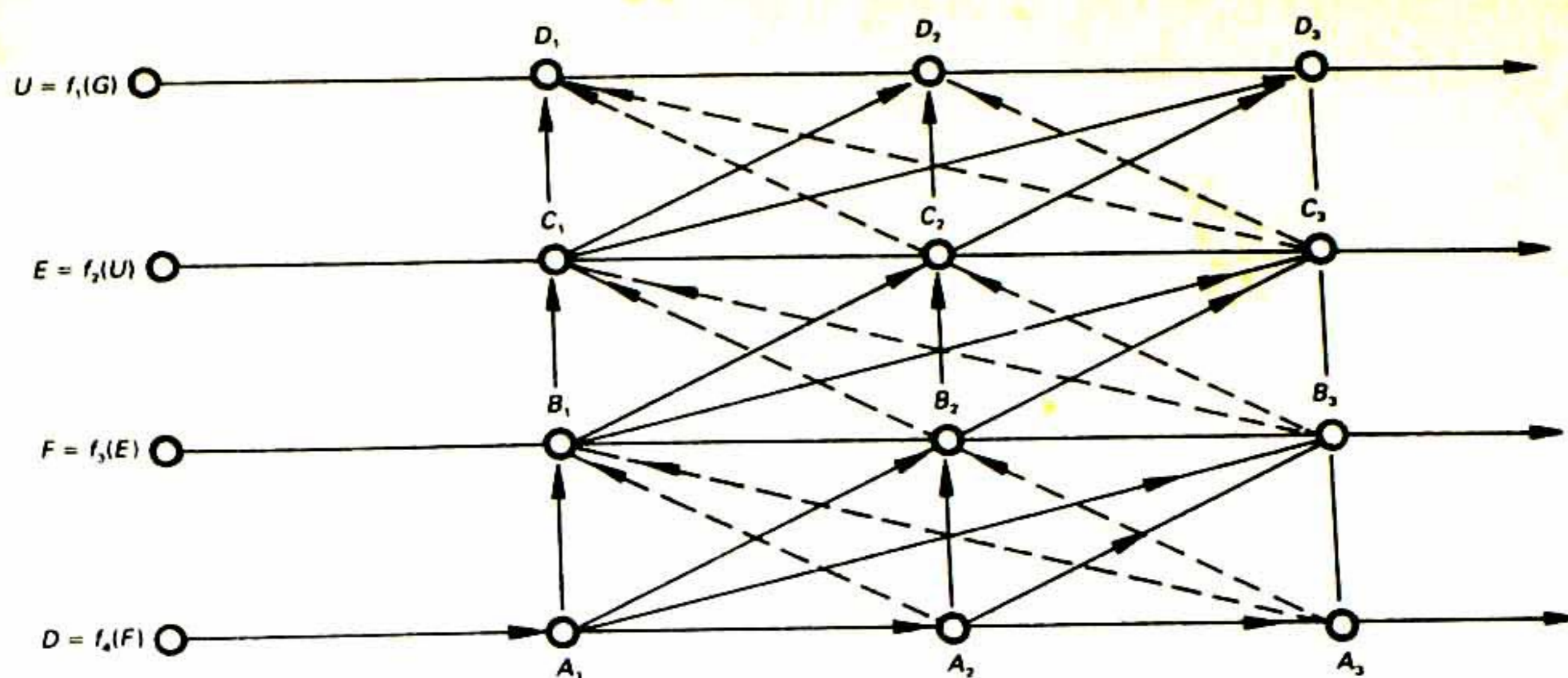
We will now take the role of ethical policies a step further in explaining the Islamic economic approach to resolving the great economic problems of contemporary times: that is, to see how the measurable impact of ethics and values are transferred into the actual ethical policy-making process. In regard to the problem of full employment and technological change, the priorities of the *shura* when choosing

critical variables, alternative forms of combining the critical state variables in response to alternative solutions and priorities, varying policy ratios (such as the labour/capital ratio over periods of technological change), and the realities of costs of achieving the targets at any one point of time, will all cause continuous shifts in the weights assigned to the critical variables by decision-makers in the *shura*.

The choices of ordinal weights will finally stabilise as social consensus formation is reached in the *shura*. These weights show up as coefficients of the index of critical variables, which in this case could be a linear combination of employment, income distribution, entitlement and eradication of poverty, all denoted by appropriate measurable variables. The index then enters as the variable argument of the Islamic social welfare function. Thus, in the sense of measurability of the critical variables and the ordinality of the weights assigned to the critical variables, the social welfare function is termed a cardinal one, which lends itself to measurement and probabilistic operations in order to form expected social welfare indices.¹³

Due to the continuous variability of the index of state and policy variables, the Islamic social welfare function has been shown in Chapter 2 to depend on time (also interchangeable with goal/priority) and contingency parameters. The maximisation of the Islamic social welfare function was thus carried out over time and contingencies. A maximal value of the welfare function was attained only with respect to the local stability of the relationship between state and policy variables. This is equivalent to a given state of social consensus formation. Thus the social welfare maximisation concept in Islamic economics is equivalent to social consensus formation, established through a series of feedbacks between ethical policy variables and state variables. However, a social consensus formation is unique only up to a given local stability of critical policy and state variables defined over given time and contingencies. Therefore new social consensus formation states replace old ones as the range of contingencies and time changes. The junctures of change to more improved social consensus formation states are indeed those associated with breakthroughs in the resolution of the great economic problems.

To generalise now on the treatment of all great economic problems of contemporary in Islamic perspectives, let $U = f(G, S)$ denote an index of socio-economic development in terms of a combination of consumption and production of market and non-market goods (such as social security) denoted by G , given a state of structural transformation indicated by contingency and time, denoted by S . $E = f(U)$



The ethico-economic maximisation problem now is

$$\text{Max. } W = W(D, F, E, U | \mathbf{J}, \mathbf{S})$$

$$\text{Subject to } D = f_4(F | \mathbf{J}, \mathbf{S})$$

$$F = f_3(E | \mathbf{J}, \mathbf{S})$$

$$E = f_2(U | \mathbf{J}, \mathbf{S})$$

$$U = f_1(G | \mathbf{J}, \mathbf{S})$$

\mathbf{J} : shuratic policy vector

\mathbf{S} : contingency vector

Figure 5.2 Nodal tree of interactive ethical state and policy variables in Islamic institutional decision-making

denotes the supply of social services on attaining a given measure of index, U . $F = f(E)$ denotes the social demand for both social services as well as human capital development. $D = f(F)$ denotes the output of human resources taken as human capital formation and supply of social services. More complicated relationships among the different parameters of socio-economic development mentioned above can be evolved into the dynamic regime of changes over contingency and time periods.

The above provisions of goods and services are all subjected to ethical policies that (a) emanate from a shariatic base, and (b) interact with market environments over time and contingent states of nature. These are denoted by a vector, \mathbf{J} , subject to contingency, \mathbf{S} . We now have a nodal tree showing the values of the various functionals shown above for given contingencies and policy regimes over a given time period (see Figure 5.2).

EXAMINATION OF ISLAMIC ECONOMIC THEORY IN THE LIGHT OF SCIENTIFIC METHODOLOGY

Our next topic will be to test Islamic economic theory against the conceptual issues of economic methodology. In order to accomplish this, we turn to the critical investigation of Islamic economic methodology in contrast to the methods of inductivism and deductionism, to Popperian methodology of scientific theory, to the Kuhnian idea of paradigm, to the Lakatosian methodology of scientific research programmes, and to the more recent instrumentalism or positivism of Milton Friedman.¹⁴

Definition of Scientific Inquiry

To start with, we will evaluate critically the idea of scientific inquiry. The idea of scientific inquiry can be summarised in the method introduced by various leading scientists. Leibniz stated that pure logic can be taken as the all-embracing foundation of the mathematical sciences. Analytical methods, not intuitional synthesis, were considered the acceptable medium for real scientific inquiry.¹⁵ Likewise, Descartes' deductionist philosophy required rational and comprehensive understanding of certain interrelationships as the basis of certitude in the development of scientific inquiry.¹⁶ Einstein saw the underlying premise of science to be a metaphysical one. He wrote that: '[the] theoretical scientist is compelled in an increasing degree to be guided by purely mathematical, formal considerations in search for a theory, because the physical experience of the experimenter cannot lift him into the regions of highest abstraction. The predominant inductive methods appropriate to the youth of science are giving place to tentative deduction.'¹⁷ Northrup writes further on this: 'Thus only by the freest play of the imagination, both the intuitive imagination and the non-intuitive, formal, theoretical imagination, can the basic concepts and postulates of natural science be discovered.'¹⁸ Bertrand Russell said that abstraction in science is the soul of practical power. He writes, 'What we know about matter, abstract and schematic as it is, is enough, in principle, to tell us the rules according to which it produces perceptions and feelings in ourselves; and it is upon these rules that the practical uses of physics depend.'¹⁹ In recent times the school of superstrings theory in mathematical physics has explained the universe in terms of interactions between two mathematical groups. One of these comprises matter

and the forces of the universe we live in. The other comprises matter and forces in a 'shadow universe', which is either too strong or too weak relative to the known universe to establish matter and force interactions between the two.²⁰

These concepts on the nature of scientific inquiry point to the fact that the basis of scientific inquiry is essentially the logical explanation of relationships underlying a universe under study. These logical explanations are carried out by the tools of mathematical logic, but their strengths lie in explaining the nature of the universe with a minimum number of critical assumptions (or principles). The only assumptions and principles necessary in scientific inquiry are those that are capable of explaining the whole ecological order. Otherwise we have incomplete assumptions or too many assumptions which constrain the adaptability of a scientific explanation to all branches of scientific inquiry. This premise also points to the fact that scientific inquiry and explanation must be based on a general systems approach and not be demarcated (say, between the natural sciences, the social sciences and philosophy). Out of the generalised systems approach particular subuniverses of scientific inquiry can be opened up, but these by themselves cannot be considered as the springboard of scientific inquiry.

The Importance of Mathematical Logic in Explaining General Equilibrium Systems

The tools of mathematical logic in scientific inquiry overall are important for many reasons. First, mathematical logic is not tantamount to empirical tools. Instead, it is a basis for explaining the structure of relationships in a logical and consistent way, and includes in this both tangible variables as well as imponderables, which can be endowed abstract mathematical groups. Then these groups are made to be interactive in the generalised systems. The outcome of this analysis may or may not be empirically proven immediately. However, although empiricism is not a necessary characteristic of scientific inquiry, every scientific result must have the potential for experimentation in one form or other either at the present time or in the future. Second, mathematics becomes an indispensable method of establishing precision within scientific inquiry. Third, measurement in the real world using scientific results requires mathematical methods. In all of these, except for the third point, mathematics is not to be treated as a 'tool' of analysis, as it is often misconstrued. On

the contrary, its ability to explain the logical structure of theory makes mathematical logic a part and parcel of scientific theory.

The idea of the generalised systems approach of scientific inquiry does not mean copying the methods and models of the natural sciences in the social sciences, or vice versa, through philosophical discourse. What this means is that both natural and social sciences must be based on assumptions, principles and systems which, while explaining scientific inquiry, do not demarcate the physical world of matter from the world of human factors, ethics, values and social bliss. They must instead address a grand integrated ecology; as Capra says: The new theory, or set of models, is likely to involve a systems approach that will integrate biology, psychology, political philosophy and several branches of human knowledge together with economics into a broad ecological framework.²¹

The arguments I have presented here do not just leave us at Capra's threshold: they extend a similar methodology into the natural sciences. An example here would be medical ethics, which should be considered as part of the grand assumptions of scientific inquiry. Otherwise a scientific inquiry, no matter how sophisticated and paramount it is, would turn out to be an inappropriate scientific inquiry, in the same way as a very efficient production technology that does not meet social needs turns out to be an inappropriate technology.

We have now developed a comprehensive definition of scientific inquiry. It is a body of intellectual inquiry based on pure logical analysis and comprises the most reduced number of assumptions or principles that are capable of explaining the natural and human world through an integrated systems approach. The experimental nature of scientific inquiry resides with the potential for the scientific results to be experimentable, either at the present time or in the future. The validity of scientific inquiry and results cannot therefore be rejected on the basis of inconclusive empirical verification at any time. Such a definition of scientific inquiry emanates from the various respected views on the nature of scientific inquiry given by the great scientists.

ECONOMIC METHODOLOGY AND SCIENTIFIC INQUIRY

We will first of all evaluate the scientific methodology used in economics in the light of the above perspective of scientific inquiry, and then we will do the same with the methodology of Islamic economics

in our efforts to establish a new and unique scientific methodology in the social sciences.

A Critical Examination of Popper's Methodology in Economics

The first methodological thesis we examine is that expounded by Popper.²² To Popper, scientific inquiry must satisfy the following most important of his postulates: any scientific inquiry must be prone to falsification, on theoretical grounds, on empirical grounds, or both. To Popper an intellectual inquiry that cannot accommodate falsification is a dead-end inquiry, and therefore incapable of emerging into higher levels of discourse, scrutiny and acceptance by the scientific community. Popper expounds the following main postulates, under which an intellectual inquiry (if it is to be a scientific inquiry) is to be evaluated: possibility for falsification; empirical viability of a new theory, or its rejection if it does not stand up to empirical viability; internal consistency of the new theory to be based on a minimum set of axioms, assumptions and principles; and the capability of the new theory to explain the successes of past theories.²³

Criticism can at once be launched against the postulate of falsificationism on the grounds that its premise is too stringent for a new theory. It relegates the supreme importance of logical and consistent analysis to the domain of empiricism. As we argued earlier, a new theory may not have the right and ripe environment for it to feed upon, in order to experiment with data. Besides, a normative or prescriptive theory, which plays an important role in the dual relationship between policy and socio-economic variables, is of a deductive nature, and may not be easily susceptible to empirical experimentation. It may still have logical power to explain the world around, and could uphold proven possibilities for future experimentation as the right type of environment emerges. Under such circumstances it would be dangerous to impose the sanction of falsification and rejection to a nascent scientific theory. The Popperian idea of falsification and hypothesis of rejection of a new scientific theory is not, therefore, applicable to the definition of scientific inquiry presented in this chapter.

A good example for the refutation of Popperian hypothesis would be the neoclassical economic system. The neoclassical economic system has been thoroughly criticised on the grounds of its overly Cartesian orientation when applied to the human world, and its

failure to resolve the great economic problems of contemporary times in an integrated way. Yet the scientific community has continued to accept it precisely because of its prowess for internal consistency, based on its own set of assumptions. Likewise, when Keynesian economics was first expounded, there was not the right type of data to experiment upon for the Keynesian models. Even to this day, inadequate institutions and data in many national economies defy reliable empirical estimation and deductions for the Keynesian models, yet they have not been rejected by the scientific community. The fact is that the ultimate validity of a new scientific theory can only be proved over a span of investigation of indeterminate length. During this span of time, although the possibility of falsification exists, extended forms of debates for and against the theory proceed.

The Popperian postulates are also inimical to the concept of continuity between the pure theoretical and politico-economic junctures of thought. If the Popperian postulates were so harshly employed, there would not be today any vestiges of either the neoclassical school (the pure theorists) or the Keynesian school (the policy-theoretists). The growth of the school of institutional economics which shares in both theory and policy would be seriously delimited. With this the essence of synthesis between theory and policy, which was found to be crucial in resolving the great economic problems of contemporary times in an integrated fashion, would be lost.

A Critical Examination of Kuhn's Methodology in Economics

Kuhn was interested in the structure of scientific revolutions. He investigated the conditions under which a budding scientific inquiry can have potential and can be categorised as a paradigm and a revolution in scientific thought.²⁴ According to Kuhn, a paradigm is a distinct new body of thought in a discipline that has the force to establish its own sizeable adherents and carry on its own pronounced research. A paradigm is born with a package of scientific problems in response to its world view. This world view poses a need for a protracted period of scientific inquiry. This provides the springboard for the new theory at hand. The continuity in thought based on the paradigm is established, and the banner is passed on from generations to generations. The paradigm gathers momentum from this, and flourishes to become what Kuhn calls a normal science.

A normal science, as the outgrowth of the paradigmatic shift in the social sciences, is characterised by the following critical features: identification of major events in the social world, which the paradigm can explain; and actual logical explanation of the events by the methods and axioms of the paradigm. The normal science is thus a maturing and actualisation stage of the paradigm. Finally, a normal science can mature into a revolution, but not necessarily so.

A scientific revolution has the following distinctive feature: there is a rejection or subordination by the scientific community of an established theory in favour of the new one. Consequently, there is a reformation in the world view of the scientific problems and their mode of resolution by the new body of theory.

Although Kuhn's methodology is safer than Popper's when applied to economics, problems appear with the Kuhnian postulate suggesting that past theories are rejected by the emergence of a new theory. For instance, the neoclassical economic theory has had a number of serious shortcomings, but the Keynesian school did not totally replace the idea of marginalism in its analysis. The mathematical truism of the existence of first- and second-order derivatives, and thereby of the positive definite form of the Hessian, are accepted optimisation conditions no matter which school of thought is invoked.²⁵ Bronfenbrenner notes that in economics there is not so much a 'dislink' as there is synthetic discontinuity between schools of thought.²⁶ Such a discontinuity is of the type we have discussed. Problems also arise in Kuhnian methodology from the postulates (as with Popper) requiring necessary empirical testability of the new theory against some major economic problem.

Here there is a danger in trying out a new theory against hitherto unfamiliar data and nascent institutional environments that are found hardly ripe enough to do empirical justice to the new theory. We continue to note here that for powerful and logically consistent prescriptive theories there is a gestation period, which can be identified with the Kuhnian paradigm. Then there is the prescriptive period when policy interactions with the socio-economic environment take place. Finally, institutions and real environments are formed which render the new theory testable. All this involves a long period of development from infancy to maturity, and may thereafter develop into a scientific revolution. During this time span the new theory continues to be tested and strengthened.

A Critical Examination of Lakatos' Methodology in Economics

Next we come to look at Lakatos' ideas. The problem that occupied Lakatos was the method of demarcating genuine science from pseudo-science. He argued that scientists have a core theory that has to be proven in order to stand up to question, although the peripheral axioms may be refutable. The foundation of any scientific theory rests on the core theory and the associated set of axioms, assumptions and principles. The larger is the comprehension of the field of hard-core theory in the socio-economic universe, the greater would be the validity of the new theory as a scientific one. However, Lakatos introduced a serious constraint to his methodology by the dogmatic evaluation of a theory as irrational on grounds of it incorporating social imponderables in its hard-core theory. It was on this ground that Lakatos criticised Kuhn for having included religious elements in the paradigm shift, which Lakatos described as 'irrational'. From the perspective of the definition of scientific inquiry presented in this chapter, Lakatos' isolation principle on imponderables must be considered to be damaging to the principle of continuity between the natural and human world, which we had argued must be the common weal of the axioms of all sciences. The Lakatosian methodology of complete demarcation between competing paradigms, and its rejection of reliance on social imponderables (the most important of which are religion, ethics and values), can be seen to have found application in Marxism.

The substitution of religious and ethical values by the principles of dialectical materialism in Marxism has been looked upon critically by many in the field of social theory.²⁷ For instance, in recent times the liberation theologians have viewed the Christian religion through a Marxist lens, but have strongly incorporated religion in their manifesto. The emergence of social democracy is a good example of this strong relevance of religion in socialist thinking.²⁸ These developments point out that the Lakatosian principle of independence of scientific inquiry from social imponderables, most importantly religion and ethical values, leaves the socio-economic inquiry inept.

Lakatosian methodology, like Popperian methodology (and, to a lesser degree, Kuhnian methodology), can now be critically viewed on grounds of the scientific perspective we have provided in this chapter. First, the problem of lack of extension into social imponderables, and second, the problem of hegemony of the 'protective belt' of the new theory independent of external influences, are the inter-

twined difficulties in using Lakatosian methodology as a viable one in the socio-economic realm. Indeed, the definition of scientific inquiry renders the Lakatosian methodology less than a scientific one for use in the socio-economic realm. The end result of the internal independence of the 'protective core' of Lakatosian methodology is discontinuity between the sciences and the axioms, assumptions and principles encompassing the natural world and the human world. On this matter Lakatos promoted the idea of competition between the sciences.²⁹

A Critical Investigation of Positivistic Methodology in Economics

In recent times we find a revival of positive methodology in the hands of Friedman. The core of this approach is to explain the economic world as it 'is', not as it 'ought' to be. The prescriptive and normative content of economic science is thus taken out, and empiricism is reinstated instead to its fullest force.³⁰ This type of instrumentalism holds dangers for the scientific development of economics. For one, inductivism is reintroduced into economic inquiry whereby, from the results of empirical models (such as are to be found in the case of econometric testing), general conclusions regarding economic relations are derived. The extent of deductivism – that is, of inferring particular results from general results – is narrowed down.

The positivistic inductive approach is, of course, representative of the classical economic school of which Friedman is an important modern exponent. The classical economic doctrine of *laissez-faire*, the essence of which is to be found in Smith's *Wealth of Nations*, of Malthus' optimum population theory and the economic growth paradigm of the Ricardian type had all sprung from the environment of the Industrial Revolution sweeping Europe at that time. This prepared the grounds for the niceties of market economics, *laissez-faire* and all that went with these in the classical school. From these particular historical results, the great economics treatises then tried to build a superstructure of economic theory.³¹

Such a development shows that the process of inductivism was very much in play. In recent times it is this same inductivism that sounds in Friedman's writings as well. Earlier we pointed to the limitations of classical economic thought in addressing the great economic problems of contemporary times in an integrated way. Those facts adequately point to the dangers that go with the underlying instrumental inductive methodology in economics. Finally, the in-

strumental methodology, by narrowing down the scope of economic inquiry to an inductive one, falls short of incorporating the more comprehensive features of scientific inquiry mentioned earlier in this chapter.

A Critical Examination of Deductive Methodology in Economics

Neoclassical economics is an exercise in deductive methodology, whereby generalised mathematical results of optimisation systems are brought to bear on particular microeconomic problems. Here, too, one finds the dangers of overly sanctifying theoretical niceties and confusing them with realities. The deficiencies of this system, derived from the idea of scientific inquiry presented in this chapter, are obviated by the overemphasis on cognitive assumptions akin to those found in the natural sciences. Such assumptions are drawn at the expense of more comprehensive sets of assumptions and principles taken from both the natural and the human world, including the economic imponderables of ethics and values. The Cartesian essence of form and number is so strong in the deductive methodology of the neoclassical school that with it the Austrian economic school fell upon unbridled individualism to explain the notion of good and evil in terms of social utilitarianism. A pungent criticism against this social utilitarianism methodology of the neoclassical school can be summarised in the words of Myrdal: 'I have always wondered why the psychologists and philosophers have left the economists alone and undisturbed in their futile exercise.'³²

Keynesianism, Institutionalism and Deductive-Inductive Methodology

In Keynesian economics we confront the difficulty of demarcating the sway of deductivist and inductivist methodology. In the sense that Keynesian economics has given rise to the prominence of econometrics, and to the extent that econometric results are made to explain specific economic problems, the method is instrumental and inductivist. However, to the extent that apart from aggregation problems, the Keynesian general equilibrium system tends to explain the behaviour of households and specific sectors of the economy, the method is a deductivist one. Also, the relevance of social policies in the Keynesian general equilibrium system implies an attempt towards integrating the inductivist and deductivist methodologies. This tendency towards integration is conformable with the perspective of

scientific inquiry presented in this chapter. Difficulties arise, however, from the impossibility of smoothing out the aggregation of microeconomic preferences which determine social policies, to the formation of macroeconomic variables.

That is where institutional economics, further categorised by humanistic institutional economics, fills the crucial gap. Its integration of policies with state variables, and incorporation of social imponderables in the decision-making process, makes the humanistic institutional system encompass the features required for scientific inquiry as defined in this chapter. The inductivist and deductivist methods are now integrated. The inductivist method is found to work in the flow of relations between polity and the market environment, taken independently. This gives rise to measurability of critical state and policy variables. The deductivist method is found to emerge from the ethical general equilibrium system which, by establishing loops of feedbacks between the policy variables and the state variables, generates social consensus formation.

ISLAMIC ECONOMIC METHODOLOGY AND SCIENTIFIC INQUIRY

The Nature of Islamic Economic Methodology

It is now time to investigate the nature of methodology found in Islamic economics, and to show how this methodology can be evaluated against the perspective of scientific inquiry presented in this chapter. Islamic economics is a humanistic institutional economics *par excellence*. Its assumptions, reduced as they are, appear in the form of principles: namely, the principle of the unity of God and the brotherhood of man, the principle of maximising Islamic felicity, the principle of work and productivity, and the principle of distributive equity. These are supported by a cogent set of instruments and institutions, including the elimination of interest, the institution of a wealth tax, the institution of profit sharing with cooperation, and the avoidance of waste in consumption and production. The interaction among the principles and instruments/institutions defines the foundation of the Islamic theory of economics. The extensive ecological and ethical spectrum of the decision-making process in the institutional structure of the *shura* encompasses the human and physical environments. The indispensable need for God-centered principles is

to recognise the indelible historical truth of morality and degradation as the criteria for the growth and decay of civilisations, respectively. From this perspective, the economic order in Islam is considered as an integrable suborder of the grand social order, the unique objective of which is the balanced development of humankind, while upholding the historical truth of the Godly laws as the criteria of felicity, which is first attained in this life through collective righteousness, and the result of this is believed by Muslims to be transmitted into the supreme felicity in the hereafter.

The belief in the certitude of supreme felicity in the hereafter governs the ethical substance of the *shari'a*. It thereby universally affects the decision-making process of the *shura*. Once the relevance of the Islamic economic principles, instruments/institutions, and the nature of the institutional decision-making process is so well defined, the prominence of God and the hereafter become real explainable verities, not metaphysical ones. The Islamic institutional economic system, now working in synthesis between polity and the grand ecological order, establishes interrelationships that are theoretically and empirically founded on the maximising of temporal felicity with its extension to supreme felicity. These interactions explain the principle of the ethico-economic order that we earlier termed the principle of ethical endogeneity.

All the features of the Islamic economic methodology are thus found to agree with the perspective of scientific inquiry presented in this chapter. These features are the internal coherence among the cogent sets of principles (assumptions) and instruments/institutions; the logical explanation of the God-centred system in respect to worldly affairs; and the systematic explanation of the institutional nature of Islamic decision making.

The Nature of Falsificationism in Islamic Economics

The next point to note is the nature of falsificationism in Islamic economics. The principles of falsificationism is ever present within the decision-making framework of the *shura*. It is demonstrated in the perpetual changes taking place at the level of progressively comprehending the ethical values of the decision-makers, and improving on the ethical values through interrelationships with the grand social order. The shuratic decision-making process extends to the realm of both inductivism and deductivism in Islamic economics, in the same way as for the humanistic institutional economic system.

The equivalence of the concept of falsificationism or revision in Islamic methodology are the institutions of *ijtehad*, *qiyas* and *ijma*. The fundamental objective underlying these is to derive the results from the principal sources of law, without abrogating these principal sources. This is the same as saying that the Islamic polity is empowered merely to interpret the Islamic laws. It cannot and does not legislate new laws. The irrevocable sources of Islamic laws, namely the Quran and the authentic traditions of the Prophet Muhammad (known as *sunnah*), form the protective belt of hard-core Islamic social theory. When this protective belt is ignored, the system that emerges is no longer an Islamic one.

The inductivist–deductivist synthesis of humanistic institutional economics is transmitted to the Islamic economic system. In this context, experimentation is an important element of the system, as the institutional framework requires continuous evaluation of the feedback between ethical state and policy variables, which finally drives the Islamic system towards social consensus formation. However, the contingent states of nature have probabilities attached to the nodes of decision-making. These probabilities finally help in assigning ordinal weights to the critical state variables. When such contingencies appear at the early or low levels of Islamic transformation, the institutions, social environment and information base of the Islamic society are not developed enough to render the prime relationships of the Islamic economic system fully testable. Following this, with the growth of the Islamic socio-economic order into better contingent states over a period of time, the system becomes increasingly empirically viable. Over this spare of time, debates, discourse and improvements proceed, through the interactions between the *shura* and the grand social environment.

The Relationship between Islamic Economics and the Received Economic Doctrines

Finally, we need to investigate whether the received economic doctrines can be explained by special cases of Islamic economic theory. Islamic economics recognises the prevalence of universal truths that are commonly shared among paradigms, for instance: the acceptance of a market economy; the explanation of demand and supply of Islamically-requisite goods/services with ethical policy perturbations in them; the existence of an ethical general equilibrium system in spite of its distinct nature of stability; maximisation of an

Islamic felicity function and the first-order solutions that go with this; growth with distributional equity. These are all commonly shared by other economic doctrines, although the methods of approach are quite different. Neoclassical methods of analysis with second-best approximations have also been used in explaining intertemporal allocation of resources in the Islamic economy, and in explaining international trade theory with Islamic economic cooperation.³³ In the second part of this book we use certain macroeconomic social welfare functions with Keynesian-type interrelationships among the critical variables for estimations in the Malaysian economy. Each of these cases of economic doctrine, although seen to have common grounds with Islamic economic models, can at best be viewed as imperfections of the Islamic institutional system, not as substitutes.

CONCLUSION

We have now brought together all the major points to prove that Islamic economics poses the possibility of a genuine scientific revolution in economic thought.³⁴ The idea of scientific revolution herein conveyed is that of a new world view of the grand ecological and social system, which Islamic economic goals, objectives, principles, instruments and institutions address. The methodology, while being of the integrated inductivist–deductivist type, is polar to the earlier received theories. Particular solutions and approaches can, however, be sought in the ideal Islamic system, which show neoclassical and Keynesian traces of analysis; but these are imperfect representations, pointing out only that there is a semblance of distant continuity in the growth of Islamic economic theory to these doctrines. During its development this new theory accommodates falsificationism up to the limit of its protective belt of hard-core fundamental sources of knowledge. It is thus through this integrated view of the social and ecological order that Islamic economic theory and policies intend to address the great economic problems of contemporary times.

The last point is to pose the obvious question: since Islamic economics has so much in common with humanistic institutional economics, can the latter not suffice for a revolution? The matter is, of course, for the future scientific community to decide. But the immediate answer to this lies in noting that institutional economics of all types have time and again used the postulates from received economic theories and embellished them with policy configurations.

Islamic economics has a totally polar approach to received economic doctrines in terms of goals, objectives, principles, instruments and institutions.

The Islamic laws in the framework of Islamic economics are laws that have been sent down over historical time to humankind as a single world nation adhering to common and unique truths and values. Islam invokes adherence to these laws, but does not make it binding on anyone as a prerequisite for the functioning of the Islamic social order and its economic system. While it is true that the Islamic system can be established, and would flourish in an Islamic environment, there will still continue to be a normal relationship between it and other economic systems, even while adopting all the precepts of Islamic economics in an Islamic economy.

Part II

The Applied Perspective

6 The Analytics of the Islamic Macroeconomic System

The purpose of this chapter is to set up the theoretical foundations of the Islamic macroeconomic system. From the formalisation of the macroeconomic order we will evolve the study of the expenditure and monetary sectors as part of our goal of studying the Islamic financial sector.

The Islamic economic system is known to have a cogent set of principles and a set of instruments to mobilise the principles in the social order. Because Islam is a world religion, it enunciates a world ethico-economic order.¹ In this order, it is the attainment of optimal social welfare (earlier interpreted as temporal and supreme felicity) in preference to maximality of material gains alone that is a primal objective. The goal of economic growth is a necessary one, but a derivative of the goal of social welfare. Naqvi says, 'Islam is a self-sufficient entity, with clearly defined features – an arabesque wherein reside the religious, economic and social dimensions, providently equilibrated to form a unity.'²

As a consequence of this ethical nature of Islamic economics, it has been pointed out elsewhere that in it the microeconomic foundations of price theory must answer the aggregative problems of macroeconomics.³ This approach is found to differ from the usual institutional forms of aggregative analysis. The microeconomic treatment and its gradual aggregation to the economy-wide level will then be made to establish the consumption function, the investment function and the production function, and thus answer the questions of determining equilibrium levels of income and employment. One approach to this orientation in macroeconomics would be to develop a grand social welfare problem endowed with a social welfare function in critical socio-economic variables, such as employment, prices and incomes, rate of economic growth and income distribution. The constraints of such a social welfare optimisation problem will be the lateral aggregation of microeconomic consumption functions, investment functions, production functions and the aggregate resource

constraints.⁴ Then the monetary and fiscal systems will be made to evolve exogenously out of this grand social welfare objective function, these being merely instruments required to gear the Islamic economic system to its desired equilibrium in consumption, investment and production. The rationale for such an approach in Islamic economic theory is that it is individual ethical and economic behaviour which, once shaped, can explain social preferences in society. The economy-wide picture must be a reflection of such ethico-economic social preferences.⁵

DERIVING PRINCIPAL MACROECONOMICS RELATIONS FROM THE PRINCIPLES AND INSTRUMENTS OF ISLAMIC ECONOMICS

Relationships Among Principles

The ethico-economic basis of Islamic economics endows this system with the following principles. These principles are shown first to be interrelated within themselves and then with the economic instruments that follow.⁶

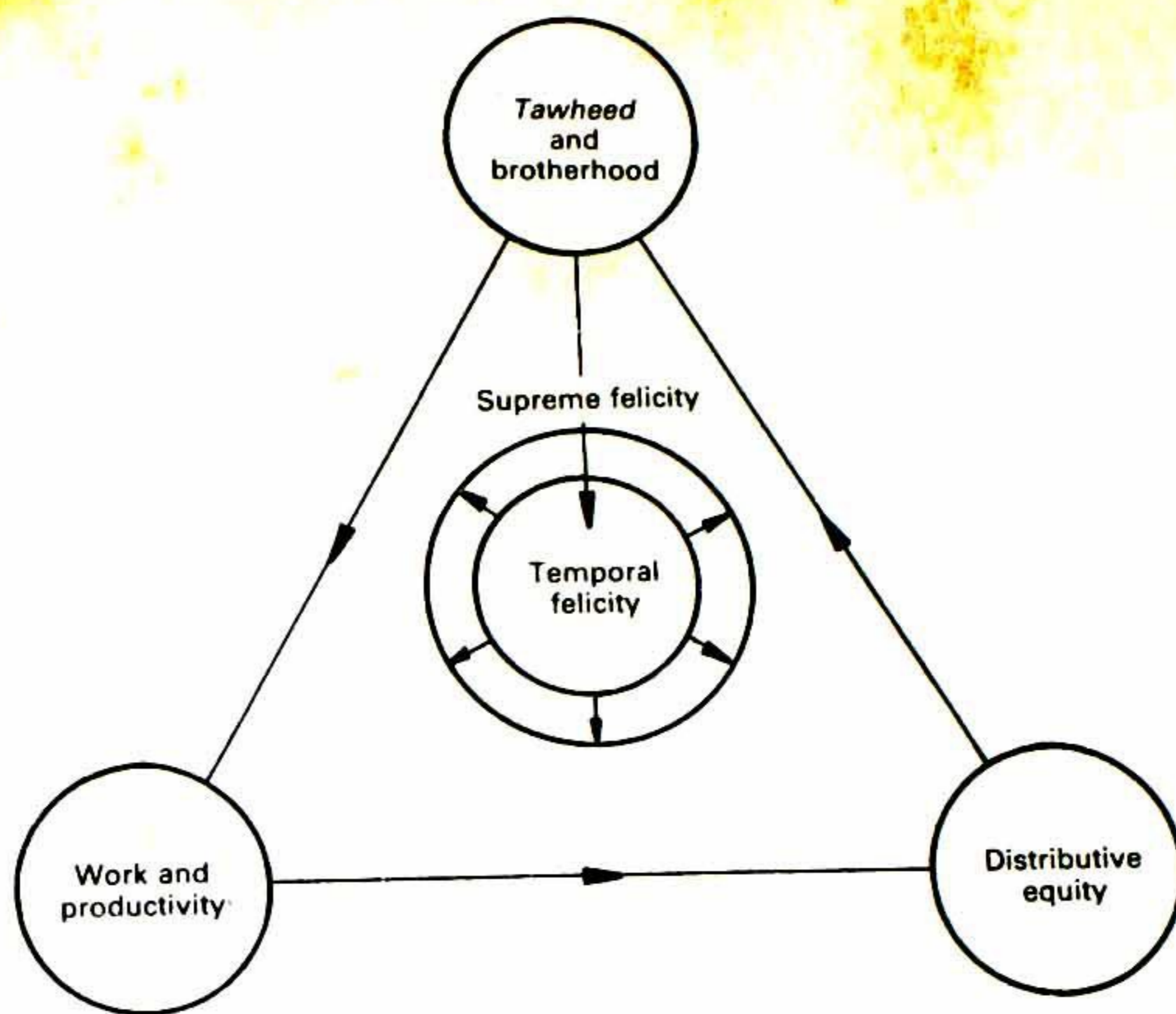
The main principle of Islamic economics is the principle of *Tawheed* and brotherhood. It states that the resources of the universe in primary or produced form are absolutely owned by God, while people are given the trusteeship of such resources to use in ways of righteousness as ordained by Him in the Quran, *sunnah* (traditions of Prophet Muhammad) and *ijtehad* or *qiyas* (analogy and authoritative Islamic research ratified at a time by the Islamic learned). The unity of God is seen in the principle through the complete subservience of the Islamic social order to a non-competing and absolute Lord of the universe and to the immutability of His divine injunctions. The concept of universal brotherhood is ingrained in this through the principle of sharing the resources of the universe operatively and righteously.

Under the principle of *Tawheed* and brotherhood, no one must acquire a resource, income, price or wealth that is not attributable to him or her by dint of work effort and productivity or under distributive equity. In these categories will be interest income, pure monopoly profit, absolute landownership and absolute ownership of capital. Contrarily, this principle of work and productivity says that factor prices are determined as a return for the contribution to

productivity. However, such payments are average productivity payments, determined over the contributions to output made by a large number of participants in a cooperative production arrangement.⁷

One notes in the principle of work and productivity the implication of average productivity as opposed to the marginal productivity theory of factor payments. Average productivity theory implies a sharing of resources and profits in a cooperative production arrangement. Thus while no one's average productivity can be reduced, someone's average productivity can be increased. This would mean either that an external economy of scale exists to drive up the average productivity of the followers, or that, in order to compensate for a drop in pecuniary productivity of the leaders, attractive non-pecuniary returns must be generated. Example of such non-pecuniary benefits are greater representation in decision-making, better work conditions and other psychic benefits.⁸ The mutual opportunity to share incomes, resources, benefits and profits intrafirm in this way is noted here as the principle of distributive equity. At the economy-wide level, this distributive equity works also through the Islamic transfer system of *zakah*, which is known to have important consumptional and production effects.

The principles of work and productivity and of distributive equity flows from and back to the main principle of *Tawheed* and brotherhood. The top-down relationship has been explained. The down-top relationship works through the progressive transformation of society through enhanced material gains, which further increases the prospects and yields from economic cooperation. It also progressively enhances psychic returns, which further reinforces the community's conviction on *Tawheed* and brotherhood. Thus there is a circular flow among these principles as shown in Figure 6.1. Note in this diagram that social welfare (or felicity) is treated as the outcome of the circular relationship. It is therefore not necessary to treat the principle of felicity separately. It is also to be noted here that no gains in distributive equity can be expected without first going through the required process of productive transformation, preceded by societal readiness to share resources fairly and righteously. This is a common place argument: that no resources for distribution will be generated unless preceded by the other two principles of ethical and structural transformation in the Islamic society. Note, thereby, the one-directional flow of interrelationships in Figure 6.1. It is this interrelationship that is shown to keep the Islamic ethico-economic system in equilibrium.⁸



Note that the circular relationship links up with temporal and supreme felicity through the crowning principle of *Tawheed* and brotherhood.

Figure 6.1 Circular relationships between the cardinal Islamic principles leading to temporal and supreme felicity

Relationship Among Instruments

In order to attain the ethico-economic equilibrium in the Islamic order, necessary instruments have been designed. We now turn to an examination of these in light of the equilibrium. Here, too, there are a multitude of possible interrelationships among the instruments, and between the instruments and the principles.

The most important of the Islamic economic instruments is *mudarabah*. Resources in the Islamic economy are mobilised under this one form of institution, which then might take different forms while dealing with capital-labour ventures, capital-capital joint ventures, labour-labour joint ventures and other combinations of these. Such a cooperative institution exists in all sectors of the economy and in the nation's external sector as well (in international trade, profit sharing is known as *murabaha*). In the financial sector, profit sharing in bonds, common stock and investment certificates is known as *mu-*

quarada. The profits accruing in these cooperative ventures are shared in proportion to the ratio of equity participation.

✓ The profit-sharing nature of the Islamic economy does not imply that profits shared will be the only form of payments in such an economy. On the contrary, there will also be wages (therefore also wages and profits depending upon the degree of common stockholding in the firm's assets).⁹ But wages paid come out of the working capital, which is sustained by the total amount of incomes for wage payments and immediate capital needs. In the advanced stage of Islamic economic transformation, profit-sharing labour will predominate over wage labour.

Profit sharing in Islam is an all-round principal economic institution because, through this institution, the existence of interest rates in the financial sector is totally replaced by the profit-sharing ratio (profit rate). Capital accumulation still proceeds in the Islamic economy, but now through the force of the rate of profit. This in turn may be equated to the marginal efficiency of capital, but cannot be linked with any speculative and subjective notion of cost. Thus the rationale for eliminating the rate of interest as a predetermined, exogenously given price on capital cannot exist in the face of profit sharing, which is determined *ex post* in a production run and other forms of income generating process.

In the presence of profit sharing and the abolition of interest rates, the propensity to invest increases. There is a natural allocation of resources between consumption and investment in this order. Intertemporally, as more of the resources are allocated towards investment, consumption increases, too, but at a decreasing rate, whereas investment increases at an increasing rate.¹⁰ In the case of capital valuation, the expected rate of profit is a relative pricing variable. In such a case a range of profit rates may be used for evaluating a project over time. This is the consistency of the rate of profit with the capitalisation rate for intertemporal efficiency of capital. It is now clear that *mudarabah* in its varied forms leads to the second most important instrument of the Islamic economy: abolition of interest in money capital.

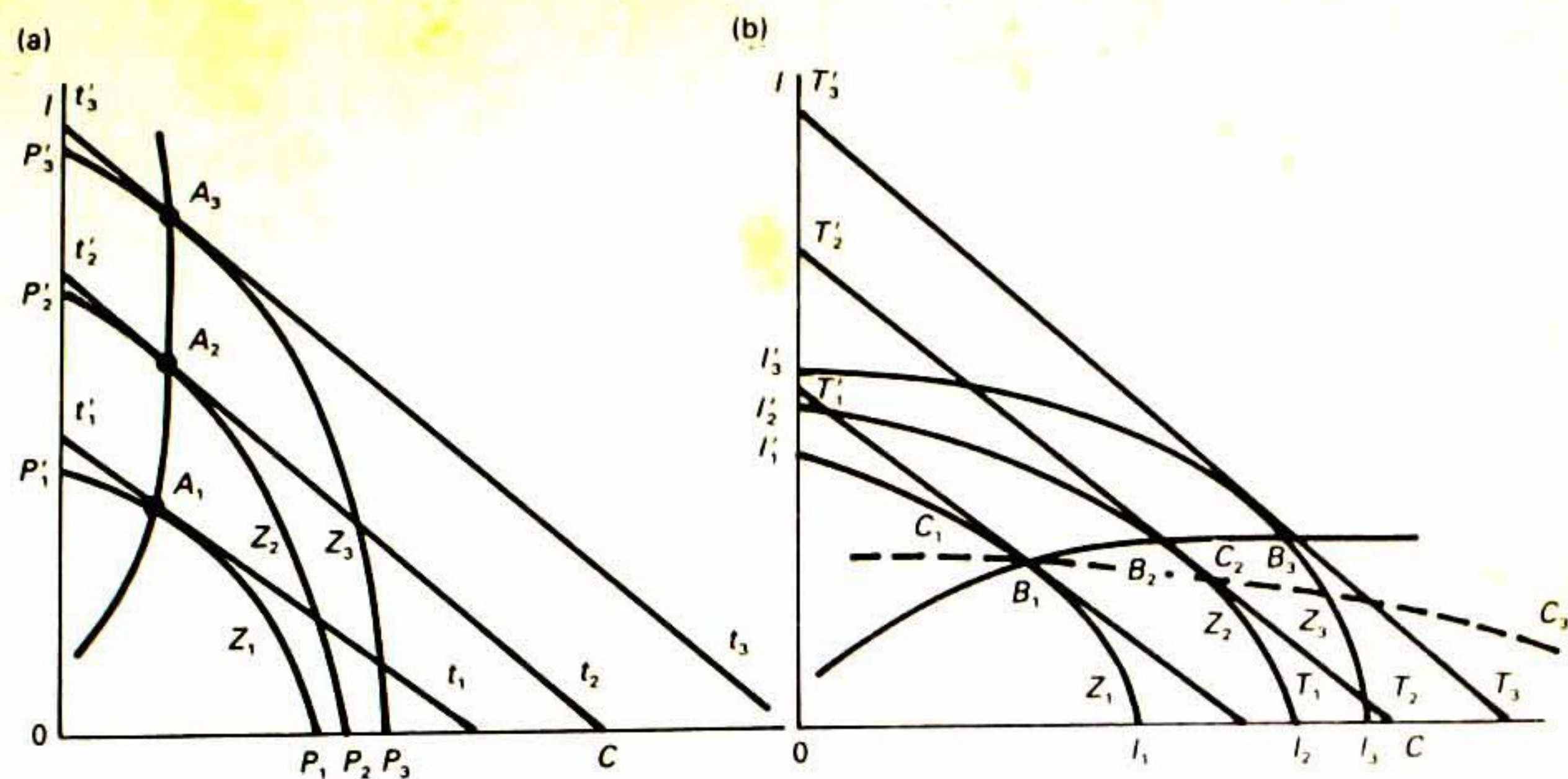
When *mudarabah*, along with the abolition of interest, gives rise to a productive transformation of the economy, the Islamic wealth tax mobilises income distribution decreasingly into transfer payments and increasingly into productive human resource development programmes for the needy. The idea here is that, since *mudarabah* intertemporally mobilises capital more towards investments, there is

a need for human resources to be constantly cycled through a network of diversified industrial ventures. In this case, *zakah* cannot be treated as a long-term transfer payment, for transfer payments cannot recycle the *zakah* funds into improved human resources for structural transformation of the economy. *Zakah* is therefore to be considered as a specific type of wealth tax, the objective of which is growth through productive redistribution. This, while it continuously uplifts the productive capacity of the *zakah*-programmatic recipients (manpower programmes, income supplementation to needy farmers, debtors, scholarships, vocational training for the needy, housing and improved facilities for the poor, and so on), increases average productivity and factor payment under the principle of work and productivity. The principle of distributive equity, on which the instrument of *zakah* is based, now institutionalises the productivity gains from the use of *zakah* funds. This is how *mudarabah*, through a complete replacement of interest by profit sharing, leads to the establishment of the instrument of wealth taxation known as *zakah*.

THE IMPORTANT GOAL OF PRODUCTIVE USE OF ZAKAH

The social allocation of *zakah* between consumption and investment is represented in Figure 6.2(a) on the curves P_1P_1' , P_2P_2' , and so on, corresponding to the intertemporal *zakah*-allocation levels, $Z_1Z_2Z_3$, and so on. When the allocation is increasingly towards investment, the slopes of the resource allocation lines, t_1t_1' , t_2t_2' , and so on give the relative return of investment to consumption. With a progressive flattening of these lines intertemporally, the return from investment relative to consumption increases. This results in the upward-sloping investment-consumption menu, $A_1A_2A_3$, showing that while both investment and consumption are increasing with the given type of allocation of *zakah* intertemporally, investment increases faster than consumption. Now higher social welfare levels are contributed by the increasing levels of investment.

In Figure 6.2(b), the same levels of social welfare are attained by a greater propensity towards consumption, but now the consumption-investment menu, $B_1B_2B_3$, indicates diminishing marginal returns from investment. The slopes of the resource lines, T_1T_1' , T_2T_2' , and so on, get steeper, indicating that the return from investment relative to that from consumption decreases intertemporally, with the levels



Zakah expenditure going increasingly into investment

Zakah expenditure going increasingly into consumption

I : investment
C : consumption
Z : *zakah* expenditure

Figure 6.2 Intertemporal effects of *zakah* allocation on investment and consumption

of *zakah*, Z_1 , Z_2 , Z_3 , and so on, being now allocated more towards consumption than towards investment. While both consumption and investment levels can still increase together for some time, there is the danger that *zakah* is allocated so much more towards consumption that its effect on intertemporal investment and growth is dissipated. This is shown by the downward bending curve, $C_1C_2C_3$, and so on. This kind of distribution of *zakah* must be avoided as it negates its very objective (that is, to generate both economic growth and welfare through distributive equity).

The question is often asked whether the *zakah* rate (only 2.5 per cent of all savings plus wealth in liquid form, including jewellery, the value of livestock and produce of agriculture) is inadequate to meet the needs of the modern Islamic government. This is a misconception, because while *zakah* is a specific wealth tax on the well-to-do, there are other residual taxes in the Islamic economy for meeting purely developmental needs. Besides, the Islamic economic philosophy is heavily

market-oriented and, given the institution of *mudarabah*, large-scale social projects are encouraged in the private sector. The replacement of the high annual tax rates in this case causes competitive product prices to be established, investment propensity to increase and aggregate demand to increase, which leads to the formation of profits, and to accumulation as well as distribution of capital. In the appendix to this chapter we bring out the point that the equivalent rate of *zakah* compared to a tax rate can be higher than the 2.5 per cent a year marked on annual cash holding.

Finally, the supportive instrument of the institution of *mudarabah* via the abolition of interest and the establishment of *zakah*, is the instrument of waste control on both consumption and production. Without this crucial link, the formation or sustenance of cooperative enterprises cannot proceed. The argument in this regard runs as follows: it can be shown that cost control rather than profit maximisation is the prime objective of a *mudarabah* institution. Profit maximisation objectives are suspect and are therefore not required for pure monopoly profits.¹¹ The social cost is minimised by reducing waste in consumption and production, eliminating interest as a form of waste, and increasing the productive use of *zakah*. Interest on money capital is a reflection of economic waste, as it involves the idle collaboration of owners of money capital with financial intermediaries, and bears no relation to the actual cost of production.¹² Note, however, that the concepts of efficiency of capital and the internal rate of return used in evaluating the present value of production assets cannot be considered equivalent to the rate of interest on money capital. Finally, the fact that the central focus of *zakah* is on productive transformation through income redistribution counteracts the presence of wastes in society, a principal aspect of which is unemployment and underutilisation of resources in production. It has been shown elsewhere that *zakah* acts as an effective instrument for the alleviation of structural unemployment and increasing the labour force participation.

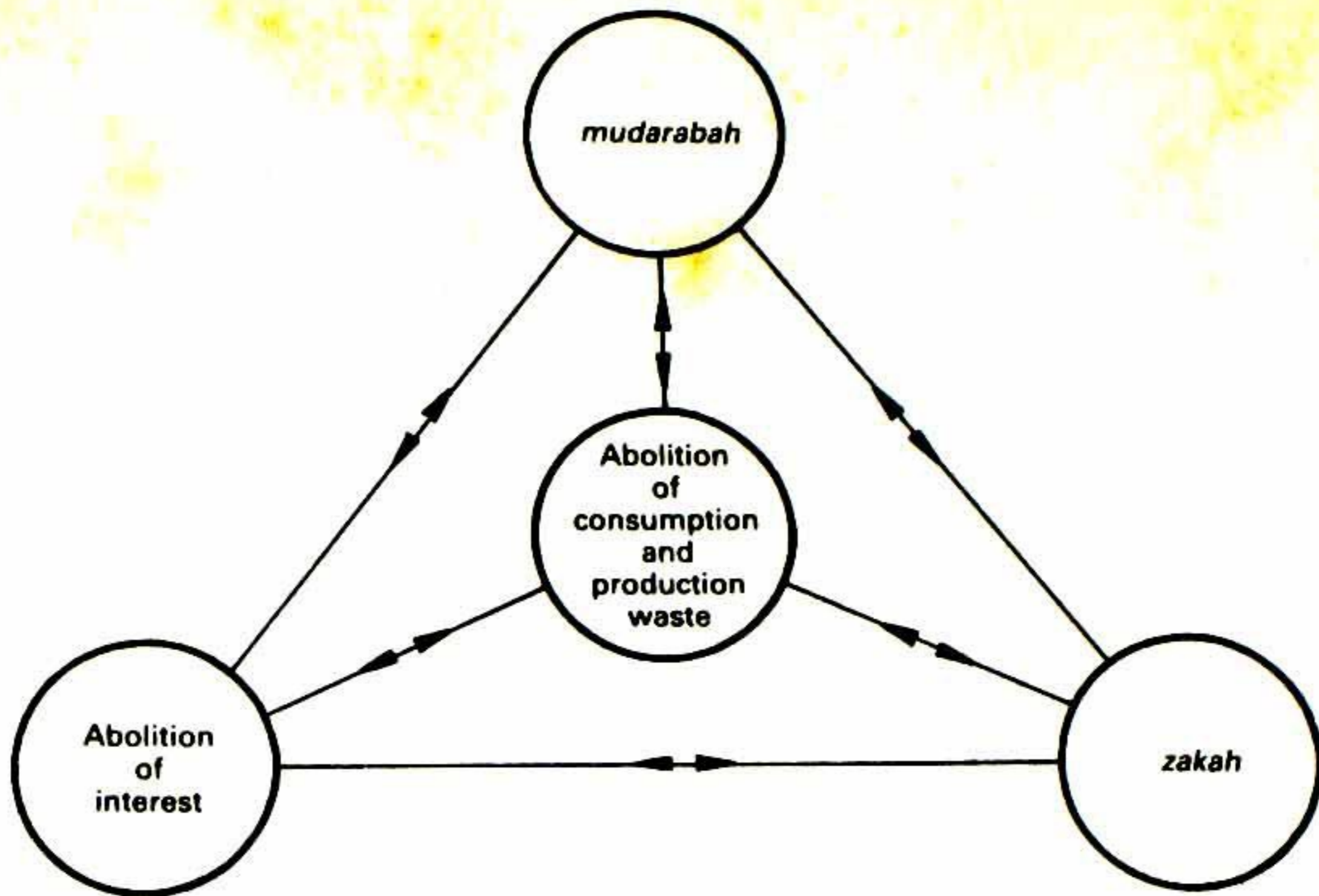
One last point must be noted here about the relationship between *zakah* and productive investment which results from the process of waste control. At any one point of time (static sense), there is a trade-off between *zakah* and real investment because, as invested capital cannot be 'zakated', more would be available in investment and less in *zakah*. But this is an incomplete picture. Because every amount of productive investment today yields an increased income in the future, the intertemporal relationship between *zakah* and invest-

ment is a growing one. The emphasis in these relationships is on productive transformation activated through *zakah*. However, if much *zakah* is for a long time channelled into consumption, there is less future investible capital, and economic growth suffers. Such an allocative trend will negate the very objective of *zakah* in economic growth through redistribution.¹³

A COMPLETE PICTURE OF THE RELATIONSHIP BETWEEN PRINCIPLES AND INSTRUMENTS IN THE ISLAMIC ECONOMY

The circular flow of relationships among the principal Islamic instruments is shown in Figure 6.3. Here again, the circular flow implies that, in an economy-wide perspective, it is not possible for the Islamic economy to attain sustained equilibrium without activating possible sets of interrelationships among instruments and policies, given the guiding principles. In other words, there are various well-defined interrelationships between the sets of instruments and the sets of principles. One example of this dual interrelationship is shown in Figure 6.4.

Note again in this diagram that the chain of instruments link up with the principles, through the links of abolition of *riba*, *zakah* and the abolition of *israf*. The *mudarabah* link with all these instruments is shown as a predetermined one. (This is one example of primal relationship.) Abolition of *riba* works on the principle of work and productivity through its effect on mobilising investment; productivity gains under profit sharing; and maximal utilisation of resources in production, leading to higher levels of employment and economic growth. *Zakah* works on this same principle of work and productivity, through its effect on alleviating structural and voluntary unemployment, leading thereby to productivity improvements, higher levels of employment, production utilisation and economic growth. *Zakah* also works on the principle of distributive equity by generating a transfer payment and redistribution for long-run productive transformation for specific needy groups.¹⁴ In this way, gains in distributive equity lead to more human resource development which cuts down resource waste. Also, through the effect of the other instruments on optimal production utilisation and full employment, distributive equity cuts down production waste (potential output gap). The principle of *Tawheed* and brotherhood is always the

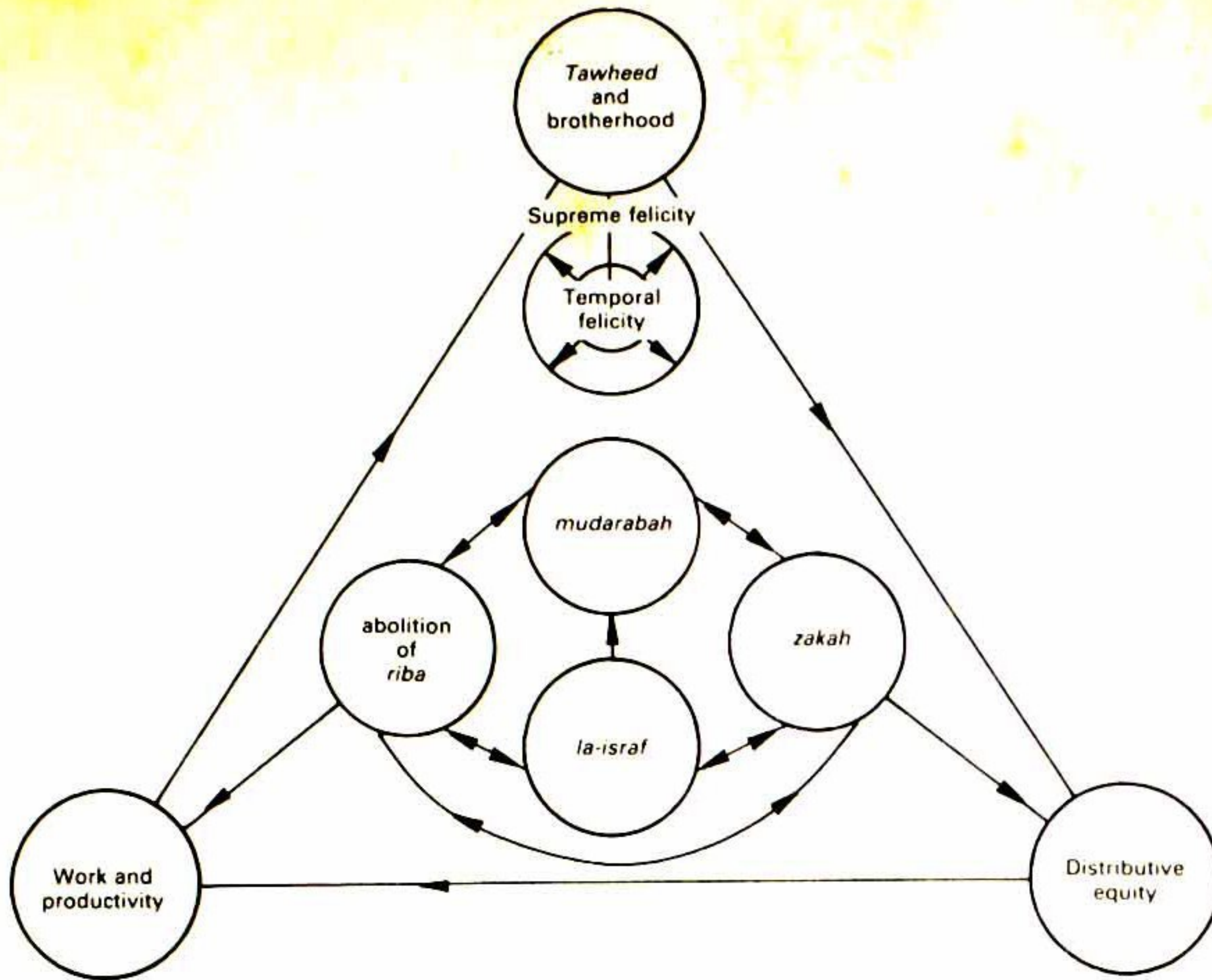


Note that the instrument of *la israf* must be effective in each and every one of the other instruments and institutions, in order to realise maximum impact multipliers in the economy.

Figure 6.3 Circular flow of relationships between the principal Islamic economic instruments/institutions

crowning one which mobilises the whole system through ethical policy formulation and its interaction with market environment. In turn, every round of improvement in the effectiveness of the instruments and the principles feeds back into this crowning principle.

The integration and consistency among the policy variables (instruments) and state variables in the system are shown by closed loops of interrelationships between the instruments and the principles. For instance, note one such relationship beginning with *Tawheed* and brotherhood, *mudarabah*, abolition of *riba*, work and productivity, distributive equity, *zakah*, abolition of *israf*, *mudarabah*, *Tawheed* and brotherhood, in that order. Likewise, another feasible loop is *Tawheed* and brotherhood, *mudarabah*, abolition of *riba*, *zakah*, work and productivity, distributive equity, abolition of *israf*, *mudarabah*, *Tawheed* and brotherhood. The distinction between these two cycles is that in the first case, since no *zakah*-investment link is identified, *zakah* and investment can play the role of substitutable activities. That is, an increased amount outlaid in investment reduces the same amount in *zakah*. In the second example of the loop, *zakah*



The Quranic passage supporting the integrated *Tawheed* view of the Universe is:

But to God
Do all questions
Go back (for decision)
S.II, v.210

Figure 6.4 A simplified network of interrelationships between Islamic economic principles and instruments/institutions

is linked with productive transformation. The complementary inter-temporal nature of *zakah* (distributive equity) and investment (economic efficiency) jointly reinforces the principle of *Tawheed* and brotherhood in the evolving Islamic society.

EXTENDING ISLAMIC ECONOMIC PRINCIPLES AND INSTRUMENTS TO THE CAPITAL MARKET

The Islamic economic principles, instruments and their general equilibrium interrelationships can now be extended to the capital market

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institution. Here one begins with the recognition that the adequate functioning of an Islamic economic system would necessitate the establishing of an appropriate capital market. An Islamic capital market is non-existent today, but movements towards establishing it have started.

Recently the Islamic Development Bank (IDB), which is the prime development finance institution promoting Islamic economic cooperation, has discovered that its important *murabaha* instrument – foreign trade financing – has not been proving adequate in financing the demand for investment in member countries.¹⁵ By the year 1990, it is felt, that much of the ‘unplaced’ funds of ordinary project operations, now being used for foreign trade financing, was recycled away from the foreign trade financing operation to supply the resource needs of future ordinary project operations. Thus a real need arose for the IDB to turn towards financial mobilisation of resources through viable capital markets in conformity with the tenets of the *shari'a*. In this area, IDB has been recommending various forms of investment certificates revolving around its income-generating financing instruments, such as foreign trade financing, equity financing and leasing operations. While these are important developmental areas where share capital can be raised, there is an equally pressing need to establish independent financing instruments, such as *mudarabah* bonds and *muqarada* certificates.

The two principal features of profit-sharing bonds evolving out of joint ventures would be their potential for generating attractive levels of profits, and their potential for effective risk-diversification. Both of these have important consequences on the formation of Islamic capital market. These points are now explained with the help of Figure 6.5.¹⁶

ABC denotes the *mudarabah* triangle. The apex, *A*, comprises the financial intermediary as the go-between for the shareholder at *C* and the investment sector, *B*. The principal responsibility of *A* is to manage risk; to identify, finance and evaluate continuously investment projects revolving around which are the *mudarabah* bonds issued to the shareholders. The nature of such bonds is similar to common stocks, preferred stocks being ruled out under Islamic considerations. The supply of loanable funds through *A* takes the form of a supply of household and corporate savings and an additional supply of money, if the desired saving is to be brought in line with intended investment. The change in money supply in this frame-

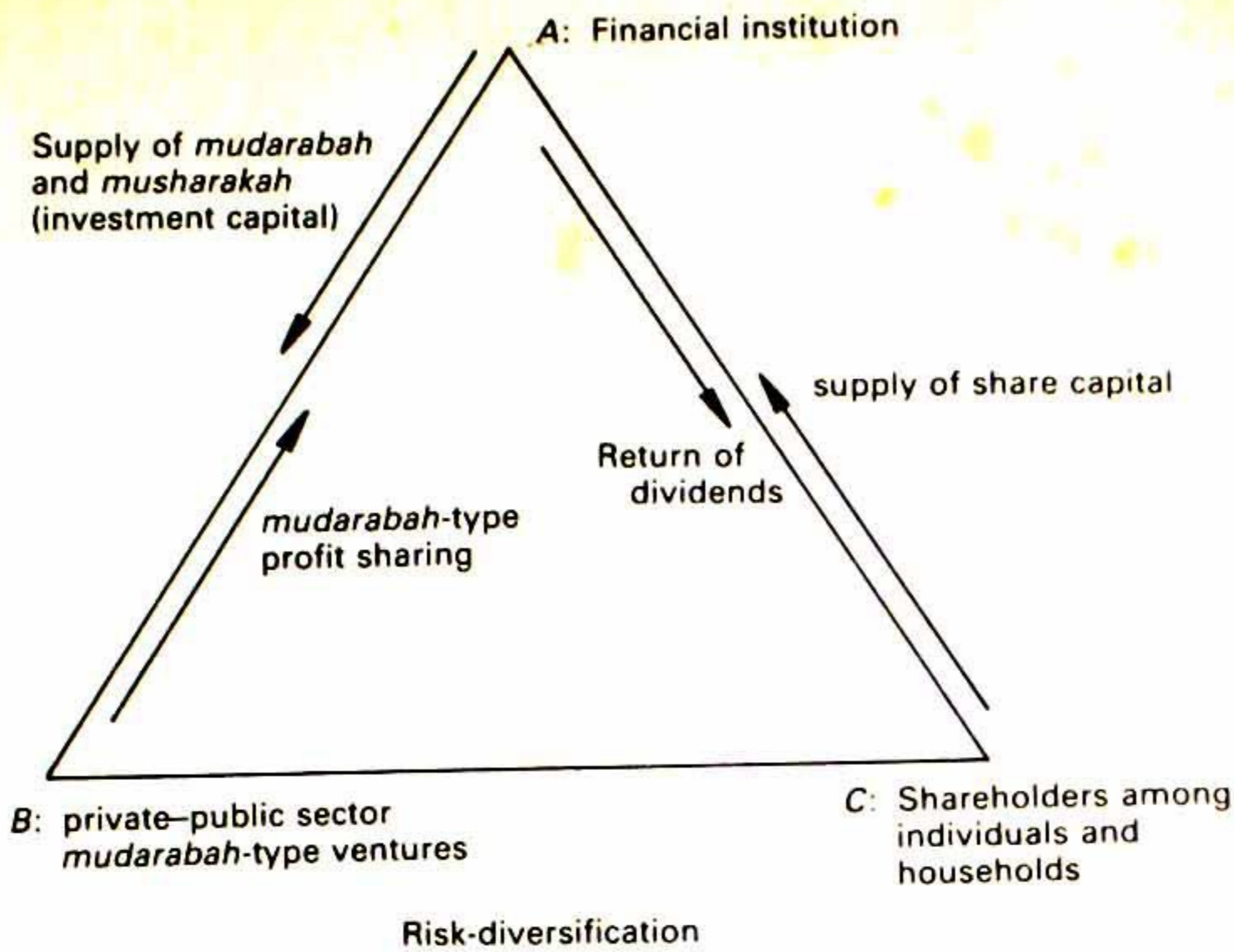


Figure 6.5 Mudarabah risk-diversification in the private sector: the Mudarabah triangle

work is thus a residual factor in establishing both monetary and fiscal equilibrium, by equating saving to investment on one hand, and, on the other, by equating money demand to the total supply of liquidity, *ex post* of investment demand. In such a system there can be no leakages. If, for instance, the level of saving is higher than intended investment, it is followed by contractionary monetary policy to the extent needed to equate the total loanable funds to investment. However, if saving is lower than intended investment, money supply occurs. In either case, the demand and supply of liquidity must balance.

Finally, the returns from *mudarabah* enterprises managed by the financial intermediary are distributed (or partially retained and distributed) to the shareholders. In the process, the financial intermediary takes two prices: the price for its service, and a price for allaying its expense account in managing *mudarabah* enterprises in the financial sector. Such a form of *mudarabah* enterprise can work in the private sector because it has the potential to diversify the risk to individual shareholders by both diversifying the investment possibilities and expanding *mudarabah* participation. This is why it is shown elsewhere that the objective of the Islamic firm is the maximisation of the

value of the shares of mudarabah stocks, which is equivalent to the net worth of the firm (that is, the difference between current assets and current liabilities).¹⁷

The idea of the loanable fund invoked in the above analysis is different in more than one way from the Wicksellian notion of loanable fund. In our case, the saving function is $S = S(Y, P)$, and the investment function is $I = I(Y, P)$. In the case of a residual change in the supply of money, Δm_s , to meet the total liquidity demand for investment, the following relationship must hold: $I = S + \Delta m_s$. Now, $dI = dS + d(\Delta m_s) = 0$, in equilibrium.

$$\text{That is, } \frac{\partial s}{\partial y} dY + \frac{\partial s}{\partial p} dP = -d(\Delta m_s) = \begin{cases} > 0 \\ = 0 \\ < 0 \end{cases}$$

where Y denotes disposable income, and P denotes profit.

When $-d(\Delta m_s) > 0$, it implies that there is a deceleration in money supply. This necessitates a higher need for supply of saving to finance investment. Thus, the negativity of $\partial s/\partial p$ increases as more savings are converted into investment because of the prospect of higher profit. On the other hand, there is a higher total increase in income resulting from the marginal propensity to save.

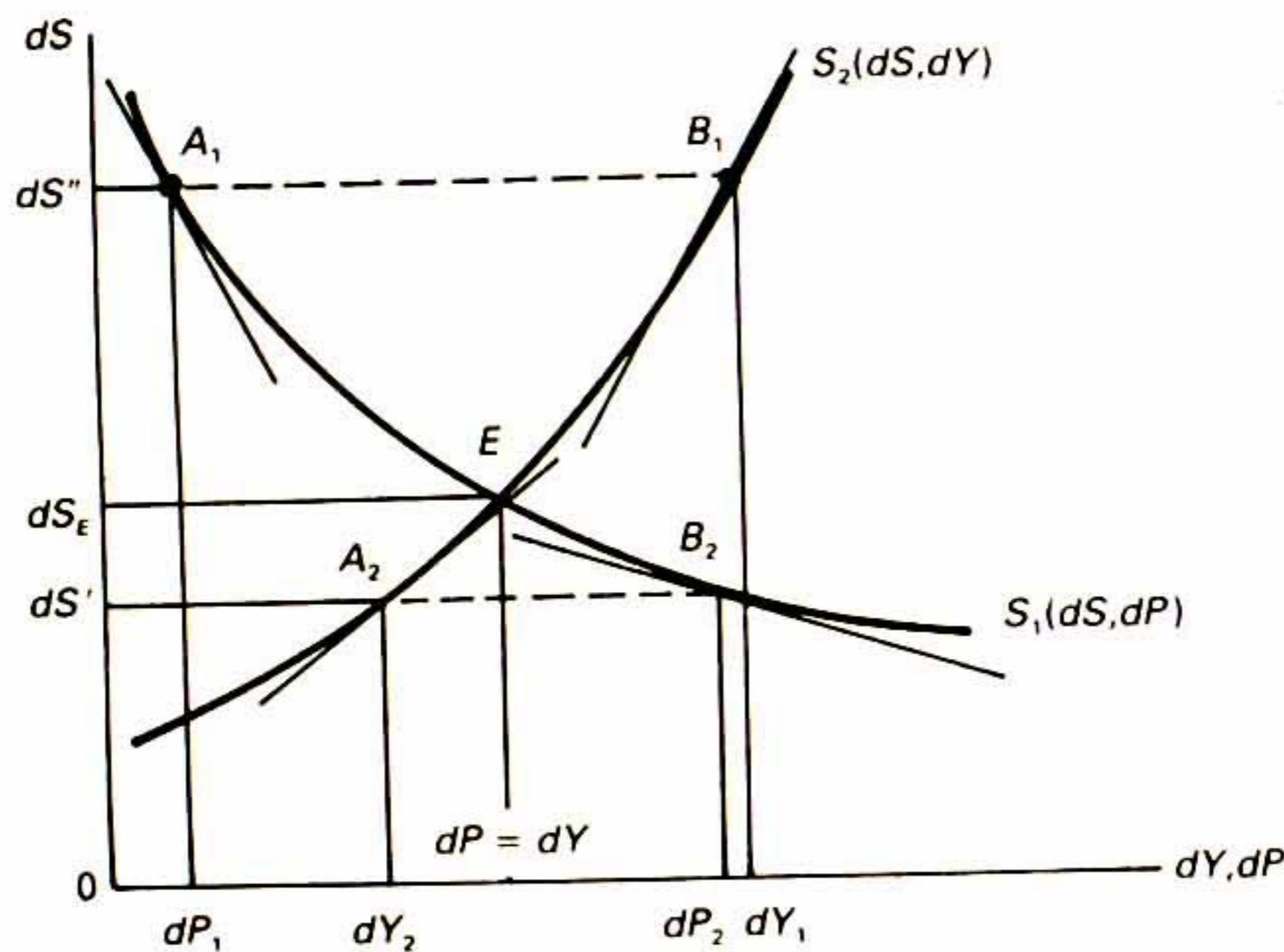
When $-d(\Delta m_s) < 0$, it implies that an acceleration in money supply takes place. This is due to a shortfall in the needed savings from the private sector. Now, there can be profit-push inflation, but fewer private-sector savings will be mobilised into real investment because the resulting total change in income through marginal propensity to save is low.

When $d(\Delta m_s) = 0$, there is no change in monetary policy. All the additional needs of intended investment are met by additional amounts of savings in the private sector. Now the total increase in profit generated as a result of increased mobilisation of savings towards investment results in a higher total change in income given the marginal propensity to save. These results can be represented as in Figure 6.6.

Let $S_1 = S_1(ds, dp)$ denote the change-in-supply curve (dS) under the influence of change in profit share (dP), and $S_2 = S_2(ds, dY)$ denote the change-in-supply curve under the influence of change in income variable (dY). At the points A_1, B_1 , the case of $dY_1 > dP_1$ implies that $d(\Delta m_s) < 0$. At the points A_2, B_2 , the case of $dP_2 > dY_2$ implies that $d(\Delta m_s) > 0$. At the point E , the case of $dP = dY$, and implies that $d(\Delta m_s) = 0$.

CONSUMPTION FINANCING IN THE ISLAMIC CAPITAL MARKET

So far we have looked at Islamic financial instruments from the side of investment financing. We now turn to the ideas of consumption financing in an Islamic framework. Consumption financing entails short-term credits. One way to look at these credits is as loans, in which case the only price on these loans is the service charge. However, in the Islamic framework consumption loans are not devoid of their developmental impact. For instance, loans on only recommended consumption under *shari'a* can be made out. There is also a strict surveillance towards the repayment of the loans in time. Finally, the most important developmental consideration is the use of such loan transactions in boosting consumer demand for products of the durable goods type. Thus, in the *ABC mudarabah* triangle (Figure 6.5), a consumer loan by *A* is a promotion of *B* to *C*. This yields higher profit rates to *B*, which are channelled back in profit sharing to *A* and *C*. In this aspect of consumer loans, the total price on it is the service charge plus the short-run share of profit through sales promotion by *A*. In the market for commodities, for new



E is the equilibrium point in the Islamic capital market, setting $dP = dY$ and $dS = dS_E$.

Figure 6.6 Equilibrium effects in the Islamic capital market

venture products recommended under the *shari'a*, such as the sale of cars and equipment, this type of short-term financing of consumer loans can be an effective stimulating instrument for the economy. The possibilities of all these various financial instruments show that there are adequate financial instruments for establishing an Islamic capital market, both in terms of investment financing as well as consumer loans financing.

THE PROBLEM OF PRICE INDEXATION IN ISLAMIC ECONOMICS

Finally comes the question of price indexation in profit-sharing and service charges. Because of the Wicksellian nature of savings–investment adaptation shown earlier, the Islamic economy cannot have expectational movements in price formation. Inflation (if any) in the Islamic economy would be of the profit-push type. Here too, the market-oriented nature of the Islamic economy will yield a surplus only in the short run. In the long run all profits will be normal profits. Thus, while the profit-push type of inflation can exist in the Islamic economy, it will be of the short-run type. This surplus itself, or a part of it, thus becomes the discount factor for yielding the real value of inflationary profits and service charges in the Islamic economy. To formalise this last point, let p_d denote the relevant part of the surplus ($= p_s - p^*$; p_s denotes short-run profit and p^* denotes the long-run profit); the real value of profit, p , is, $\bar{p} = \frac{p}{1 + p_d}$, and the real value of service charge, S , is, $\bar{S} = \frac{S}{1 + p_d}$ where, p_d denotes the profit-push rate of inflation.

Note, however, that \bar{p} and \bar{S} are shown here for economic accounting and valuation purposes only. They do not take part in actual transactions. Hence, the financial intermediary deals in p and S , and not in terms of \bar{p} or \bar{S} . Thus there is no actual indexation of profit rates and service charges in the Islamic economy. This is also seen to be true on the grounds that indexation for expected profits is of a speculative nature, and creates expectational inflationary pressures, while profit rates and service charges are *ex-post* economic quantities. Both of these features of pricing in the Islamic financial market make price indexation unwanted and unnecessary.

VALUATION OF FINANCIAL ASSETS USING REAL PROFIT RATES

However, when we turn towards valuation of financial assets, the real values of profit rate and service charge become important evaluative criteria. We now turn to an examination of this topic. We have mentioned earlier that an objective of firms in the Islamic economy is to maximise the value of the shares of *mudarabah* stocks. As this objective assumes a social one through the externalities that the *mudarabah* system generates in the Islamic economy, the complete optimisation problem for the firm would include a social welfare function that is interdependent with the utilities of the shareholders in the *mudarabah* ventures. The interdependence in welfare arises from the fact that in a cooperative enterprise, the value of any one shareholder's stock depends upon profit sharing, in which each one's productive activity influences and determines the other one's productive activity. Now, the joint social welfare function is optimised, subject to an evaluation criterion on the valuation of the shares. The valuation objective function assumes the following form:

$$\text{Max. } W(p_1, p_2, \dots, p_n)$$

$$\text{subject to } p_i = \sum_{t=1}^N \frac{v_t^{(i)}}{(1 + p_d)^t (1 + d)^t} \tag{6.1}$$

($i = 1, 2 \dots n$), where W denotes the social welfare function; p is the share price of different shareholders, numbered from 1, 2, . . . n ; $v_t^{(i)}$ is the yield on the shares over time, $t = 1, 2, \dots N$, for the i th shareholder; d is the suitable discount rate used in the valuation of shares; and p_d is a profit-push inflation rate.

The maximisation problem can be put in the Lagrangian form,

$$L = \text{Max.} \left[W(p_1, p_2, \dots, p_N) - \sum_{i=1}^n \lambda_i \left(p_i + \sum_{t=1}^N \frac{v_t^{(i)}}{(1 + p_d)^t (1 + d)^t} \right) \right] \tag{6.2}$$

where λ_i ($i = 1, 2, \dots n$) are the Lagrangian multipliers.

First-order conditions of optimisation yield

$$\frac{\partial w}{\partial p_j} - \lambda_j = 0, j = 1, 2, \dots, n \quad (6.3)$$

These equations can be solved for p_j under the Implicit Function Theorem to yield,

$$p_j = G_j(p_1, p_2, \dots, p_{j-1}, p_{j+1}, \dots, p_n) \quad (6.4)$$

$$j = 1, 2, \dots, n.$$

Hence the share price for any one shareholder depends upon the share prices of all other shareholders. Consequently, the yields on shares for the shareholders are interdependent.

The choice of the discount factor has aroused some controversy in Islamic economics. In general, it cannot be taken as a time-preference rate for two reasons: first, because the absence of a rate of interest in the Islamic economy eliminates speculation, and second, because time-preference theory is the offspring of the consumption theory of interest, which again is discarded in the Islamic framework. In the literature on Islamic valuation models and project evaluation, it is argued that the discount rate is equal to the profit-sharing rate, and thus is the marginal efficiency of capital.¹⁸

In the above model the discount rate is determined as follows (we solve the problem in continuous time). Now,

$$p_j = v_0^{(j)} \int_0^{\infty} e^{-(d-p_j)t} dt = \frac{v_0^{(j)}}{\alpha - p_j}, \quad (6.5)$$

$$\alpha > p_j$$

where p_j denotes the profit rate for the j th shareholders, $j = 1, 2, \dots, n$, and $\alpha = d + p_d$.

We take equation (6.4) in the form,

$$p_j = \prod_{\substack{i=1 \\ i \neq j}}^n p_i^{a_i} \quad (6.6)$$

where a_i are coefficients showing the degree to which p_j is related to the respective p_i ($i = 1, 2, \dots, n, i \neq j$). Between equations (6.5) and (6.6) we obtain,

$$H = \frac{\prod_{\substack{i=1 \\ i \neq j}}^n (\alpha - p_i)}{(\alpha - p_j)} \quad (6.7)$$

where

$$H = \frac{\prod_{\substack{i=1 \\ i \neq j}}^n v_0^{(i)}}{v_0^{(j)}} \quad (6.8)$$

To simplify equation (6.7), we put $p_i = \bar{p}$, the average rate of profit in the profit-sharing venture. Equation (6.7) now reduces to $H = (\alpha - \bar{p})^{n-2}$, or, $\alpha = d + p_d = H^{\frac{1}{n-2}} + \bar{p}$. Furthermore, when the number of shareholders increases indefinitely, $n \rightarrow \infty$, then $\lim_{n \rightarrow \infty} H^{\frac{1}{n-2}} = 1$. Hence, for complete risk-diversification, the total rate of discount is a linear function of the average rate of profit.

THE RELEVANCE OF KEYNESIAN ANALYSIS IN ISLAMIC ECONOMICS

Returning at this point to the idea of equilibrium-induced price stabilisation of the loanable funds theory, and of the Islamic theory based on *ex-post* determination of profits, we will now show that similar ideas are found in the Keynesian theory and the rational expectations hypothesis. This will bring out further the nature of expectation-dissipating effects in price formation.

The central stimulation instrument in Keynesian framework is the aggregate demand. In this, recessionary levels of investment demand, consumer expenditure and underemployment equilibrium are to be stimulated by an improvement in aggregate demand. Government expenditure is made to play the important role. An improvement in aggregate demand through increases in government expenditure proves to be inflationary, but such inflationary pressures are not serious for the economy. As long as *ex-post* savings equal *ex-ante* investment, the economy will always be in equilibrium at higher levels of national income. Leakages will be reduced and the income multiplier will rejuvenate the economy more than an inflationary effect of an aggregate demand increase will have a negative

effect. The net gain of such economic changes will be felt on higher levels of employment and economic growth. Thus in Keynesian analysis the issue of inflation is of the demand-pull type, and is therefore not considered to be of destabilising magnitude.¹⁹

When the Islamic idea of expenditure sector equilibrium is introduced in the above analysis, the force of the total supply of loanable funds being mobilised under the rate of profit equates this supply to the demand for liquidity. Speculation and expectations are avoided because the critical financial instrument, the rate of profit, is an *ex-post* quantity. This *ex-post* quantity in turn determines the monetary demand and the supply of loanable funds. This point was formalised earlier. In this way, the combination of Keynesian aggregate demand analysis with the Islamic loanable funds analysis shows that there is consistency between monetary and fiscal policies in the second system. In the Keynesian system a regime of expansionary fiscal measures is consistent with a regime of expansionary money supply with regard to stimulating aggregate demand, and keeping the rate of interest pegged at a suitable low level consistent with the demand for liquidity. In the Islamic economic system the same type of consistency is found to hold in the case of a pegged rate of profit (see Chapter 7). In either case we refer to such a situation as the low level liquidity trap.

The rational expectations hypothesis picks up the relationship between fiscal and monetary policies and studies them in the following way: money demand and supply are said to be anticipated if there is a lag of time sufficiently long to generate price expectations between an expected change in demand and its adjustment to the actual change in demand for cash balances. Subsequent to this, any change in the supply of money would also experience a lag between its announcement and implementation. On the other hand, a change is said to be unanticipated if the speed of adjustment between expected and actual demand for cash balances is instantaneous. Following this, a change in the supply of money may be anticipated or unanticipated.²⁰

When the rate of inflation increases, an anticipated change in money demand will generate further cycles of inflationary pressures. An unanticipated change in money supply will arrest price pressures, as prices change by the same percentage as the change in money supply. This will stop further increases in inflation. However, if an unanticipated change in money demand is followed by an anticipated change in money supply, the cycle of ongoing inflation will be

aggravated as long as the monetary sector equilibrium is not restored.

Again, when the rational expectations hypothesis on inflation is combined with the Islamic economic picture, the message is clear. The existence of profit-push inflation, if any (and only in the short run), eliminates the possibility of the expectational hypothesis prevailing, or profit-push inflation persisting in the long run, with profit rates moving towards normal rates. Hence any change in money supply is unanticipated. It is created only on the spur of the moment when the total demand for loanable funds generated through private-sector savings falls short of the level of investment demand. This case was formalised earlier.

In all the above economic regimes, there is no *a priori* reason for price pressures to result in prolonged inflation as a result of expansionary fiscal and monetary policies. Whether or not inflationary pressures occur depends upon the ability of policy instruments to arrest time lags towards the mobilisation of investible capital. The longer these time lags are, the more likely they are to create spiralling inflationary expectations on price levels.

GENERAL EQUILIBRIUM ANALYSIS

In the Islamic economic system, *mudarabah* plays a central role as a financial instrument in mobilising resources towards productive investment. However, it is itself interrelated with other economic instruments of the Islamic economy. A complete, general equilibrium study of the financial sector therefore necessitates an examination of all the instruments in relation to resource mobilisation, expenditure sector equilibrium, monetary sector equilibrium, generation of economic growth and social welfare maximisation. This gamut of interrelationships will now be examined.

We begin by formulating a measurable social welfare function, recognising that an Islamic society derives socio-economic gains through the joint realisation of the targets of economic growth, price stabilisation, eradication of unemployment, attaining income distribution, capital formation in productive investment and consumption expenditure; and in attaining these goals with the use of the instruments of *mudarabah*, *zakah*, and the replacement of interest rates by profit-sharing rates. The linkage of these instruments with the instrument of abolition of *israf* is established by the 'constraints' on consumption and investment. The whole problem is developed from

a microlevel foundation and then extended to the macroeconomic level. This is in accord with the need for ethico-economic preference formation at the microeconomic level, which finally surfaces in the whole economy.

The social welfare function being a measurable one is taken in the form

$$W = \frac{x^{a_1} \dot{p}^{a_2} E^{a_3} w^{a_4} I^{a_5} C^{a_6}}{\text{state variables}} \cdot \frac{p^{a_1} Z^{a_8}}{\text{policy variables}} \quad (6.9)$$

The constraints under which W would be optimised are

$$x = h_1(I, w, E) \quad (6.10)$$

$$C = b_0 + b_1 x + b_2 \dot{p} + b_3 w + b_4 Z \quad (6.11)$$

$$I = c_0 + c_1 x + c_2 \dot{p} + c_3 p + c_4 Z \quad (6.12)$$

$$E = d_0 + d_1 x + d_2 I + d_3 w + d_4 u + d_5 Z \quad (6.13)$$

where x denotes output (value added, income and earnings), \dot{p} denotes rate of inflation (price stabilisation as an economic goal), E denotes employment (productivity goal), w denotes wages (income distribution goal), I denotes investment or capital formation (productive investment goal), C denotes consumption (economic welfare goal), p denotes the profit-sharing rate (a financial instrument), Z denotes *zakah* expenditure (a socio-economic instrument), and W denotes the social welfare function. a_1, a_2, \dots, a_8 are coefficients of significance of each of the target and instrumental variables in contributing to total social welfare. They turn out to be welfare elasticities of each of the variables, but need not add up to unity as no constant returns to scale assumption is made.

In the constraints, $b_0, b_1, b_2, b_3, b_4; c_0, c_1, c_2, c_3, c_4$, are regression coefficients for the microlevel consumption and investment functions. d_0, d_1, d_2, d_3, d_4 and d_5 , are regression coefficients for the demand for labour (employment) equation.

The relation of C to x is a Keynesian one; C to Z is explained by *zakah* expenditure on current consumption; C to \dot{p} is the well-known real balance effect (Pigou effect); C to w is the relationship with income distribution. The relation of I to x is a well-known derived demand relation; I to \dot{p} is the real productivity effect; I to p is the

profitability incentive effect or the effect of marginal efficiency of capital on investment; and the relationship with Z is the productivity effect through income redistribution. All these have been explained earlier or are well known from the literature.

The relationship of x to I , L and w needs some explanation. Consider the production function

$$x = f(E, K) \tag{6.14}$$

where K denotes the stock of capital in the ordinarily known firm-production function, and E denotes the employed labour force. We can rewrite (6.14) as follows:

$$x = Eg(k) \tag{6.15}$$

where $k = \frac{K}{E}$, and f now assumes the per capitem form. $k = k(w)$,

a function of wage rate, w . Let $x = x_0 e^{\alpha t}$, where α denotes the rate of growth of output, x , over the initial value of x ($= x_0$). $E = E_0 e^{nt}$, where n is the rate of growth of labour. Equation (6.15) can be written as follows:

$$\begin{aligned} \dot{x} &= g(k(w)) \dot{E} + E \frac{dg(k(w))}{dt} \\ &= nEg(k(w)) + E \left(\frac{\partial g(k(w))}{\partial k} \right) \cdot \frac{\dot{K}}{E} - \frac{\partial g(k(w))}{\partial E} \cdot \frac{K\dot{E}}{E^2} \end{aligned}$$

That is

$$\alpha x = nx + \left(I \frac{\partial g(k(w))}{\partial K} - k(w) \frac{\partial g(k(w))}{\partial E} nE \right)$$

that is

$$x = \frac{1}{(\alpha - n)} \left(Ir - nk(w)Ew \right)$$

Thus $x = h_1(I, E, w)$, where $h_1(I, E, w) = \frac{1}{\alpha - n} \left(Ir - nEwk(w) \right)$,

$r = \frac{\partial g(k(w))}{\partial K}$, which may be interpreted as the marginal productivity of capital in per capitum form of the production function, and is therefore equated to the gross rate of return, r .

$w = \frac{\partial g(k(w))}{\partial E}$ may be interpreted as the marginal productivity of labour in per capitum form of the production function, and is therefore equated to the nominal wage, w .

Finally, the labour demand equation given by (6.13) shows the relationship of E with output x (this is the derived demand for labour relationship); with I (again the derived demand relationship); with w (productivity effect); and with Z (the distributive equity and productive transformation effect of *zakah* in the labour market).

The microlevel social welfare optimisation problem is the following: Max. $W = x^{a_1} \dot{p}^{a_2} E^{a_3} w^{a_4} I^{a_5} C^{a_6} p^{a_7} Z^{a_8}$ subject to

$$x = h_1 (I, E, W)$$

$$E = d_0 + d_1 x + d_2 I + d_3 w + d_4 Z$$

$$C = b_0 + b_1 x + b_2 \dot{p} + b_3 w + b_4 Z \quad (6.16)$$

$$I = c_0 + c_1 x + c_2 \dot{p} + c_3 p + c_4 Z$$

The Lagrangian is given by

$$\begin{aligned} L = \text{Max.} & \left[x^{a_1} \dot{p}^{a_2} E^{a_3} W^{a_4} I^{a_5} C^{a_6} p^{a_7} Z^{a_8} + \lambda_1 (x - h_1 (I, L, w)) \right. \\ & + \lambda_2 (E - (d_0 + d_1 x + d_2 I + d_3 w + d_4 Z)) \\ & + \lambda_3 (C - (b_0 + b_1 x + b_2 \dot{p} + b_3 w + b_4 Z)) \\ & \left. + \lambda_4 (I - (c_0 + c_1 x + c_2 \dot{p} + c_3 p + c_4 Z)) \right] \quad (6.17) \end{aligned}$$

The maximal value of x is determined as follows:

$$\frac{\partial L}{\partial x} = 0 = \frac{a_1 W}{x} + \lambda_1 - d_1 \lambda_2 - b_1 \lambda_3 - c_1 \lambda_4$$

That is

$$x = g (\dot{p}, u, w, I, C, p, Z) \quad (6.18)$$

Likewise, the maximal values of w , E , I , C , p , \dot{P} and Z are determined as,

$$w = g_2(x, \dot{p}, E, I, C, p, Z) \quad (6.19)$$

$$E = g_3(x, w, \dot{p}, I, C, p, Z) \quad (6.20)$$

$$I = g_4(x, \dot{p}, E, w, C, p, Z) \quad (6.21)$$

$$C = g_5(x, \dot{p}, w, E, I, p, Z) \quad (6.22)$$

$$p = g_6(x, w, \dot{p}, E, I, C, Z) \quad (6.23)$$

$$\dot{p} = g_7(x, E, w, I, C, p, Z) \quad (6.24)$$

$$Z = g_8(x, E, w, I, C, p, \dot{p}) \quad (6.25)$$

Note that in equations (6.21) and (6.22) the variables C and I appear in the investment and consumption relations, respectively. The two could be related through the income multiplier effect of investment on consumption, and of increased consumer demand on investment leading to production.

Equations (6.18)–(6.25) constitute a linear multiple equations model in eight variables, of which (x, \dot{p}, E, w, I, C) are endogenous variables and (p, Z) , are exogenous variables. The system of equations is fully determinate. There is no identification problem as a result. The estimation of the equation takes place in the log-linear form.

The estimation of the linear simultaneous equation model is estimated across firms and households at the microlevel in order properly to determine the direction of relationships and correlations among the variables. When these are established, the generalisation of the relationships to the microlevel can be undertaken.

Now, denoting macroeconomic variables by the capital letters for the corresponding microeconomic variables, the macroeconomic investment function is given by

$$I = G_4(X, \dot{p}, E, w, C, p, Z) \quad (6.26)$$

$$C = G_5(X, \dot{p}, w, E, I, p, Z) \quad (6.27)$$

$$X = G_7(\dot{p}, u, w, I, C, p, Z) \quad (6.28)$$

where X now denotes national income (the gross national product, GNP, and national insurance). Thus, aggregate savings, $S = X - C$. The loanable fund required is now given by, the investment level, I . If $I > S$, the residual needed to bring S equal to I is the expanded supply of money. If $I < S$, there is a contraction in money supply, $\Delta m_s < 0$, as was explained earlier. In the Islamic economy, the total demand for liquidity equals the investment demand, I . Thus, from the estimation of the equations (6.26)–(6.28) we get the money demand = $M_d (= I)$, the loanable fund = $M_s (= S + \Delta m_s)$. The expenditure sector equation is derived from the relation between X and p . This gives the IS curve in the Islamic economy. The monetary sector curve is derived from the relation between X and P through the savings function, $S = S(X, P)$. Thus the monetary and expenditure sector relations are derived from the more fundamental problem of social welfare optimisation in the Islamic general equilibrium sense.

In the system of simultaneous equations, some of the variables in given relations may be dropped: for instance, in equations (6.26) and (6.27), the variables (C and I respectively) may be dropped. Likewise, time lags may be associated with various variables: for instance, equation (6.26) may be written in the time-lag form as

$$I_t = G_4 (X_{t-1}, \dot{p}_t, E_t, w_t, C_t, p_{t-1}, Z_t), \quad (6.29)$$

meaning that I_t depends upon reinvestment of income earned during the previous period of time; and on profit-sharing rates during the previous period of time, which give multiplier incentive (disincentive) for investment at this period of time. Other forms of lags can be brought to mind.

In the system of equations (6.18)–(6.25), some of the signs of coefficients for Z and p can be predicted according to theory. In equation (6.18) the effect of profit-sharing rates and *zakah* expenditure being positive on productive transformation, the coefficients of the p and Z variables are expected to be positive.

In equation (6.19), the effect of p and Z variables being positive on income distribution and labour productivity, the signs of the coefficients of p and Z variables are expected to be positive. In equation (6.20), the effect of profit-sharing and *zakah* expenditure is positive on investment and aggregate demand, with a depressive effect on structural unemployment, so the coefficients of the p and Z variables are expected to be positive. However, if more of the effect is being

mopped up by investment on employment, through the positive effect of increasing rates of profit, then the influence of *zakah* may be reduced. *Zakah* expenditure and investment are inversely related to each other in a static framework of analysis (or in the short run). In such a case the coefficient of the Z variable in equation (6.20) may turn out to be negative, and the coefficient of the p variable may turn out to be a large positive number.

In equation (6.21), the coefficients of p and Z may be positive or negative. In the short term, increasing profit rates will induce higher investment. But, in the long term, the marginal efficiency of capital ($= p$) will decline with an increase in investment. In the short term, *zakah* expenditure and investment may tend to be negatively related, but in the long term, both investment and *zakah* expenditure would increase under the force of productive transformation followed by higher wealth and income.

In equation (6.22), the coefficients of p and Z are expected to be positive or negative. If more *zakah* expenditure is outlaid in current consumption, the coefficient of the Z variable will be positive. But, in such a situation, real investment expenditure out of the *zakah* fund will decrease, and consequently the rate of profit will decline. Then the coefficient of the p variable will be negative. In equation (6.23) the coefficient of the Z variable may be positive or negative, for the same reasons as explained above.

In equation (6.24), the coefficients of p and Z variables may be positive or negative. When p increases under profit-push inflationary pressure, \dot{p} will increase. Now the coefficient of p will be positive, but this is a case of the short run, as no long-run inflationary trend can be sustained in the Islamic economy, where long-run profit rates approximate to the normal profit rate. If the allocation of Z is increasingly towards investment, productive transformation would take place and the coefficient of the Z variable will be negative in relation with \dot{p} , and vice versa. In equation (6.25), the coefficients of p and \dot{p} are expected to be positive, since Z is here considered in nominal terms.

In the macroeconomic equations (6.26)–(6.28), the p variable is expected to be negatively related with I in the long run, through the effect of increasing investment on the marginal efficiency of investment. This yields the negatively sloped IS curve in the Islamic economy, in terms of the X and p relationship applied to the expenditure sector equilibrium. On the other hand, on the loanable funds side, the supply of savings function shows that the higher the rate of

profit, the higher the propensity in the economy to mobilise savings towards investment and earn higher incomes. Thus a positive relation is expected between X and p in the supply of liquidity (that is, in relation to the monetary sector equilibrium). This yields the positively sloped LM curve in the Islamic economy in terms of the X and p relationship applied to the monetary sector equilibrium.

The model system so far considered was for the closed economy. The same system can now be extended to an open economy by including the export variable (J) and the import variable (M) in the total social welfare function. Then two more constraints are added, one for export, and one for import.

The social welfare function in terms of export and import variables can be explained in terms of enterprises, propensity to invest for exports. When export is thus treated as a kind of investment variable, and import is treated as a kind of consumption variable, then the formalisation of the social welfare function in terms of export and import variables is similar to that in terms of investment and consumption variables.

The two additional constraints now appear as

$$J = J (X, I, \dot{p}, E, C, w, p, Z) \quad (6.30)$$

$$M = M (X, I, \dot{p}, E, C, w, p, Z) \quad (6.31)$$

Equation (6.30) taken in the linear or log-linear form shows that J depends on X (output effect), I (investment effect on production), \dot{p} (inflationary effect on the prices of exportables), E (employment effect in production depending upon capacity utilisation), C (domestic consumption effect of home produced goods on export), w (the income distribution effect in production), p (the profit effect on investment and production), and Z (the indirect effect through productive transformation). Equation (6.31) shows that M depends on X (national income effect leading to excess demand), I (demand for inputs for investment), \dot{p} (price effect through inflation and tariffs), E (employment effect on consumption demand), C (consumption effect on the demand for imported goods), w (income distribution effect resulting in increased consumer demand), p (increased demand for inputs required for production), and Z (indirect effect on consumption through income distribution, or an investment through increased productivity).

In the open economy version of the model system, the estimation

of the simultaneous equation model does not entail an identification problem. The system is also determinate, with ten equations and ten variables, of which p and Z appear as policy variables. There is, however, the possibility of multicollinearity in the system, as some of the independent variables are intercorrelated. For instance, in equations (6.30) and (6.31), the variables Z and w , C , I , and E appear to be intercorrelated, and the effect of Z on J and M is indirect. When this happens, statistically biased estimates result.

DEVELOPMENTAL IMPACT OF THE ISLAMIC CAPITAL MARKET INSTITUTIONS

We have now examined the principal features of an Islamic capital market. We have shown that not only is such a capital market a feasible institution, but it is also necessary for Islamic countries and economic union.

The need for an Islamic capital market arises because of its specific developmental impact, provided through the financial system in terms of certain well-defined principles and instruments. The principal financial instrument in this framework, namely *mudarabah*, together with its effect on the abolition of *riba* (interest), insulates the Islamic financial system from the vagaries of speculative mechanisms and adverse policies of the industrialised nations, with their serious business cycle effect on the developing countries. The developmental impact of the Islamic financial system is provided through the relevant types of developmental pattern that must follow. Such patterns include the transfer of appropriate technology, collective self-reliant development and growth through redistribution. Islamic economic cooperation is the outgrowth of an Islamic capital market.²¹

The critical features of an Islamic capital market are the need for scientific formulation, institutional development and coordination. The scientific formulation of the system is undertaken through all-out basic analytical and applied work in this area by academicians, students and practitioners. Towards this goal, universities in Islamic countries must have a well-developed programme in Islamic economics and finance within the conventional academic programmes in economics. Governments and the private sector must be made to encourage problem-oriented research in this area. The existing financial institutions, such as the Islamic banks, the conventional commercial banks and the state banks, must cooperate to develop this area.

The total task is not an undertaking of economists and financiers alone. It is the combined effort of many interrelated branches of study along with *ulema* (Islamic scholars), with the central focus on Islamic economics and finance. Thus the study of Islamic economics and finance and the development of the institutions cannot be overly crowded by an air of religiosity not essentially required by these. Otherwise all the efforts will drift away from the scientific moorings upon which the Islamic capital market must be established.

In the process of institution development, close interaction between the Islamic financial institutions, the state bank and the government is indispensable. The financial institutions will be accelerating the pace of *mudarabah* transformation in the private and public sector, but they cannot monitor the financial instrument of money supply or the collection and disbursement of *zakah* funds. The state bank would be authorised to conduct the monetary instruments, but would not by itself run the *mudarabah* ventures. The government tax and revenue department and the department of economic planning would conduct the fiscal planning and *zakah* collection and expenditure. The interlink among these institutions would occur through the interrelationships that each of these activities has with the other, towards creating the competitive viability of the Islamic economic instruments.

There must also be an overseeing department of Islamic economic and financial affairs. This would undertake the task of coordinating the functions of *mudarabah* financing, *zakah* collection and expenditure, abolition of interest in the monetary sector and in fiscal matters relating to the proper integration of the function in the expenditure sector and the monetary sector. This would translate into a wholesome consistency between the monetary and fiscal policies.

The statistical and technical macroeconomic planning unit must rest with the state bank, and the other institutions must have their own cells. The functions of this department would be to collect, disseminate and update all necessary socio-economic data. The needs for specific data would come from other institutions, and be based on recommendations by university study groups. Socio-economic estimations and projections will also be undertaken by this department. Such a department, while it would specialise in Islamic socio-economic data, is really a part of the state bank's statistical analysis and data department.

A working picture of the Islamic institutional system can now be presented as in Figure 6.7. The directions of arrows indicate the relevant flow of information and hierarchical relationships.

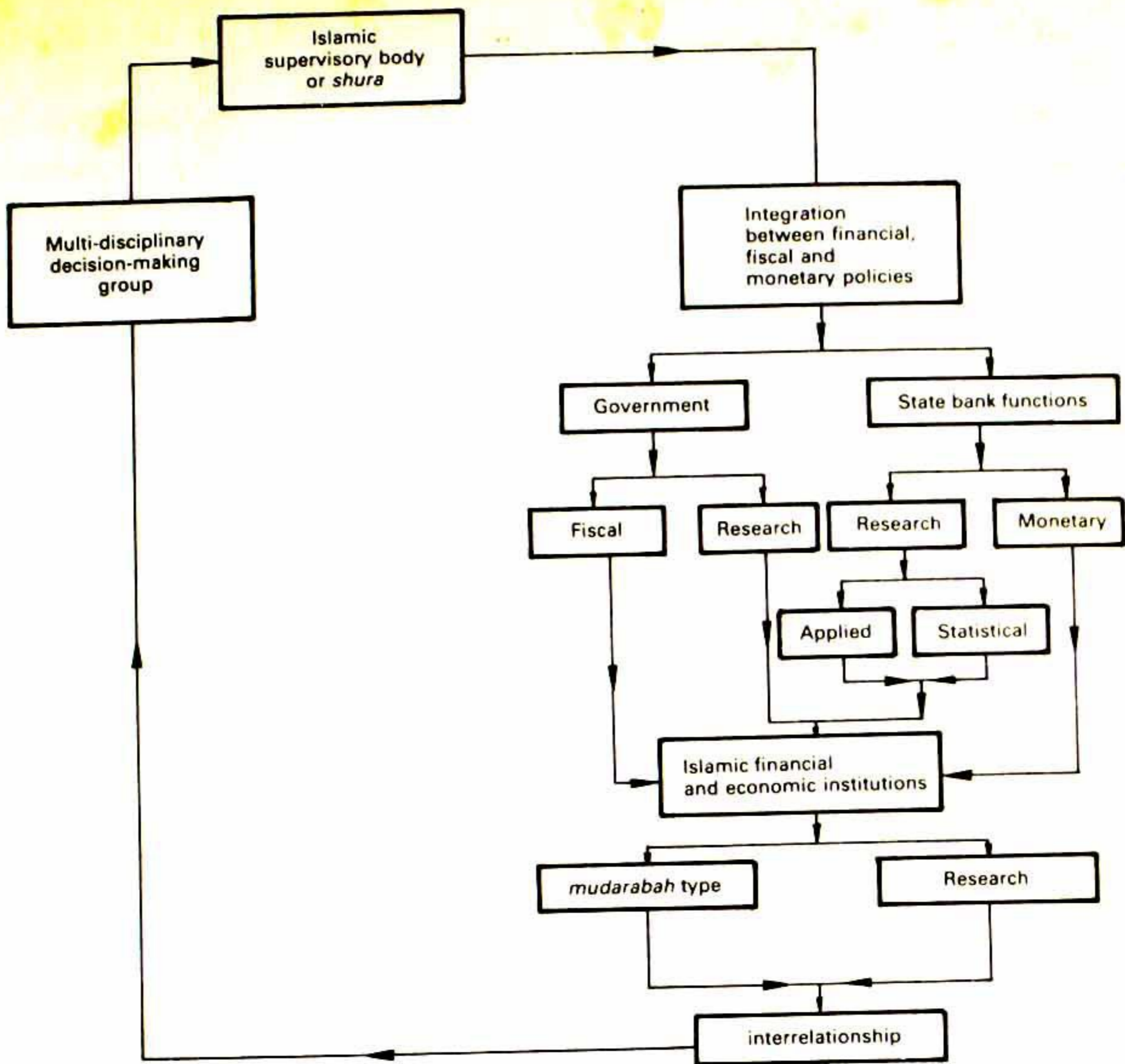


Figure 6.7 A framework of Islamic economic institutional development

TECHNICAL APPENDIX: THE ZAKAH RATE AND ZAKAH REVENUE COMPARED TO THE INCOME TAX RATE AND TAX REVENUE

Let W_t denote the accumulated 'zakatable' wealth standing at time t , C_t denote deductions from W_t , part of which is on *zakah* payments and the rest on consumption, I_t denote taxable income from all sources at time t , T_t denote the nominal rate of income tax at time t , z denote the *zakah* rate (2.5 per cent), R_t denote the tax revenue, $R_t = \tau_t T_t$, Z_t denote the *zakah* revenue at time t , and, ΔZ_t denote the *zakah* revenue differential over the tax revenue, $\Delta Z_t = Z_t - R_t$. Now,

$$\begin{aligned}
\Delta Z_t &= Z_t - R_t \\
&= z(W_t + T_t) - \tau_t T_t \\
&= (z - \tau_t) I_t + z W_t
\end{aligned} \tag{6.32}$$

$\Delta Z_t > 0$, if and only if $zW_t > (\tau_t - z)I_t$.

Also, $zW_t > 0$, if and only if $\tau_t > z$.

By definition of accumulated 'zakatable' wealth at time t ,

$$\begin{aligned}
W_t &= (W_0 + I_0 - C_0) + ((W_0 + I_0 - C_0)(1+p) + I_1 - C_1) \\
&\quad + ((W_0 + I_0 - C_0)(1+p) + I_1 - C_1) \cdot (1+p) + I_2 - C_2
\end{aligned} \tag{6.33}$$

+ . . . + t th term.

That is,

$$\begin{aligned}
W_t &= (W_0 + I_0 - C_0) [1 + (1+p) + (1+p)^2 + \dots + (1+p)^{t-1}] \\
&\quad + (I_1 - C_1) [1 + (1+p) + (1+p)^2 + \dots + (1+p)^{t-2}] \\
&\quad + (I_2 - C_2) [1 + (1+p) + (1+p)^2 + \dots + (1+p)^{t-3}] \\
&\quad + \dots \\
&\quad + (I_{t-1} - C_{t-1})
\end{aligned} \tag{6.34}$$

In the above expressions, p is taken as a constant rate of profit (profit-sharing rate). Equation (6.33) can now be written as

$$W_t = (W_0 + I_0 - C_0) h_1(p) + \sum_{i=1}^{t-1} (I_i - C_i) g_i(p) \tag{6.35}$$

where $h_1(p) = [1 + (1+p) + (1+p)^2 + \dots + (1+p)^{t-1}]$; $g_i(p)$ are the various functions of p shown in the square brackets in equation (6.33).

Under condition that $zW_t > 0$, for $\tau_t > z$ (2.5 per cent), we need

$$W_t = (W_0 + I_0 - C_0) R_1(p) + \sum_{i=1}^{t-1} (I_i - C_i) g_i(p) > 0 \tag{6.36}$$

That is,

$$\begin{aligned}
(W_0 + I_0) h_1(p) + \sum_{i=1}^{t-1} I_i - g_i(p) &> C_0 h_1(p) \\
+ \sum_{i=1}^{t-1} C_i g_i(p) &
\end{aligned} \tag{6.37}$$

Equation (6.36) implies that for *zakah* revenue to exceed the tax revenue, there must be complementarity between the institution of *mudarabah* and the institution of *zakah*. This complementarity is shown to be effective and to lead to the accumulation of wealth and the generation of incomes higher than levels of consumption over time (both current consumption and capital consumption). This in turn indicates the important relevance of real investment over consumption in the intertemporal framework of the Islamic consumption-investment menu. It must, however, be noted that this generation of wealth and income in the Islamic economy takes place through redistribution. This is the relationship between *zakah* and the principle of distributive equity in the framework of economic growth.

Our next task is to prove that the effective rate of *zakah* is greater than 2.5 per cent. The effective rate is defined here as the rate equivalent to time-distributed rates of *zakah* of 2.5 per cent each year. That is, $1+z = (1.025)^n$ gives the effective rate of *zakah* as

$$z = (1.025)^n - 1 \tag{6.38}$$

Now consider equation (6.33) again. Here

$$C_t = c_t + z(W_t + I_t) \tag{6.39}$$

where c_t denotes consumption at time t .

With equation (6.39), equation (6.33) reduces to

$$\begin{aligned} W_t &= (0.025(W_0 + I_0) - c_0) R_1(p) \\ &+ (I_1 - c_1 - 0.025(W_1 + I_1)) g_1(p) \\ &+ (I_2 - c_2 - 0.025(W_2 + I_2)) g_2(p) \\ &+ \dots \\ &+ (I_{t-1} - c_{t-1} - 0.025(W_{t-1} + I_{t-1})) \\ &= (0.025(W_0 + I_0) - c_0) h_1(p) \\ &+ (I_1 - c_1 - 0.025(1 - 0.025)(1+p)(W_0 + I_0)) g_1(p) \\ &+ (I_2 - c_2 - 0.025(1 - 0.025)^2(1+p)^2(W_0 + I_0)) g_2(p) \\ &+ \dots \\ &+ (I_{t-1} - c_{t-1} - 0.025(1 - 0.025)^{t-1}(1+p)^{t-1}) \end{aligned}$$

$$\begin{aligned}
&= 0.025(W_0 + I_0) \left[h_1(p) - \sum_{i=1}^{t-1} \frac{\bar{g}_i(p)}{(1+0.025)^i} \right] + \sum_{i=1}^{t-1} (I_i - c_i) g_i(p) \\
&= 0.025(W_0 + I_0) \left[h_1(p) - \sum_{i=1}^{t-1} \frac{\bar{g}_i(p)}{(1+z)^{i/t}} \right] \\
&\quad + \sum_{i=1}^{t-1} (I_i - c_i) g_i(p) \tag{6.40}
\end{aligned}$$

on using equation (6.38). Equation (6.40) can now be solved by approximate numerical methods for a value of z , the effective rate of *zakah*. Clearly, the effective rate of *zakah* is higher than the actual rate of *zakah* of 2.5 per cent annually.

This technical appendix proves two important points: first, it proves that the institutions of *mudarabah* and *zakah* are complementary to each other, and this leads to capital formation and economic growth in the economy. In this case, the revenue from *zakah* is higher than the revenue from taxes. Second, the equivalent effective rate of *zakah* is higher than the actual annual rate of 2.5 per cent on liquid assets. This effective rate of *zakah* is computable by approximate numerical methods in terms of the profit-sharing rate(s), savings and initial level of gross wealth.

7 Macroeconomic Relations in the Islamic Economy: Experimental Case Study of Malaysia, 1970–85

In Chapter 6, the system of equations (6.18)–(6.25) and (6.26)–(6.28) showed the general forms of relations among critical macroeconomic variables in the Islamic economy. These forms were then shown to result in the expenditure sector equation and the monetary sector equation. It was indicated also that these general forms of equations could be modified by adding or dropping some variables, and by building in different time-lag structures to the variables. The equations could be expressed in alternative linear forms, such as the log-linear form. The expected signs of the regression coefficients were indicated. These signs are important in showing the direction of change between selected variables. In all these, the central objective was to note the influence that the rate of profit (replacing the rate of interest) and *zakah* expenditure, as macroeconomic variables, would have on the other variables of the model system. We now turn to an empirical examination of these relationships.

THE ISLAMIC MACROECONOMIC SYSTEM OF EQUATIONS

First, we shall formalise the Islamic macroeconomic system of equations and explain the types of sign relationships expected between various variables. As explained in Chapter 6, such an Islamic model system would be an example of the family of equations which can evolve from the underlying social welfare maximisation problem with given ethical variables in this system.¹

Sign Relationships in Equations

A number of sign relationships among critical Islamic macro-economic variables may be explained right away. In the investment equation, it is to be noted that:

$\frac{\partial I}{\partial Y} > 0$, meaning that investment (I) increases with national income (Y).

$\frac{\partial I}{\partial p} \cong 0$, meaning that with increasing investment at the full employment level of national income, the marginal efficiency of investment (capital) will decline. This is followed by a decline in the rate of profit. But when the economy is not in full employment condition, there is a capacity to increase the profitability of investment. This gives the positive sign of the partial derivative.

$\frac{\partial I}{\partial Z} \cong 0$, meaning several things:

1. If *zakah* expenditure (Z) is outlaid more towards current consumption, then its more desired allocation towards *zakah* – eligible productive investment (such as human resource development of the needy) – declines at any one point of time. Consequently, the impact of *zakah* expenditure on total productive investment declines. In this case, $\frac{\partial I}{\partial Z} < 0$.
2. Alternatively, if an increasing amount of resources is outlaid towards consumption, then a correspondingly reduced amount of resources is outlaid towards investment, and a correspondingly reduced amount is subjected to *zakah*. In this case, $\frac{\partial I}{\partial Z} < 0$.
3. In the long run, case 2 may revert back to both investment and *zakah* expenditure when channelled towards productive transformation. In that case, $\frac{\partial I}{\partial Z} > 0$.

In the money demand equation, the following sign-relationships would be expected:

$\frac{\partial M_d}{\partial Y} > 0$, meaning that as $\frac{\partial I}{\partial Y} > 0$, the corresponding demand for liquidity to finance investment demand will also increase. Thus the demand for money, M_d , is equated here to the demand for liquidity, which will increase with investment and income.

$\frac{\partial M_d}{\partial p} < 0$, meaning that as $\frac{\partial I}{\partial p} < 0$, then by the corresponding demand for liquidity relationship (that is, $\frac{\partial M_d}{\partial y} > 0$), it follows that $\frac{\partial M_d}{\partial p} < 0$. In the supply of liquidity equation, taken here to be equal to money supply equation, the following sign relationships would be expected:

$\frac{\partial M_s}{\partial y} > 0$, meaning that an increase in money supply, M_s , (equatable here to the loanable fund) increases the price level, and this in turn increases the nominal value of the national income, Y .

$\frac{\partial M_s}{\partial p} > 0$, meaning that an increase in money supply follows the prospect of earning increasing rates of return on investment. Such a prospect mobilises savings towards investment. Besides, any short-run profit-push inflationary pressure with increased supply of liquidity will be followed by increasing levels of profit rates.

The macroeconomic equations are now to be developed. These appear in linear form below, but a log-linear form in the defined variables would be equally valid.

Islamic Investment and Consumption Equations

The Islamic investment equation is taken in the form

$$I = C_0 + C_1Y + C_2P + C_3Z \quad (7.1)$$

where I denotes investment, Y denotes nominal value of national income, P denotes the rate of profit emerging of an economy-wide *mudarabah* system, Z denotes *zakah* expenditure, and C_0 , C_1 , C_2 and C_3 are regression coefficients. In terms of the sign relationships, it is expected that $C_1 > 0$, $C_2 < 0$ $C_3 \geq 0$.

The Islamic consumption (C) equation is given by

$$c = d_0 + d_1Y + d_2Z \quad (7.2)$$

where d_0 , d_1 and d_2 are regression coefficients and, according to the sign relationships, it is expected that $d_1 > 0$, $d_2 \geq 0$. Other variables were defined earlier.

The national income accounting identity is given by

$$Y = C + I + Z + G \quad (7.3)$$

where G denotes government expenditure other than *zakah* expenditure, and is equated to the disbursement of tax revenue in the case of a balanced full employment budget. In the Islamic economy, *zakah* is a specific wealth tax, but not the only means of taxation. Government revenues are collected also from agricultural taxes, royalties, crown lands, property taxes, resource taxes and import duties. However, due to the predominance of the private sector and the market system in the Islamic economy, the tax rates are expected to be low and only residual on the *zakah* rate, which is 2.5 per cent of wealth held in liquid form (including jewellery value and livestock).

Zakah Equation leading to the Investment-Saving Curve in the Islamic Macroeconomy

The *zakah* (Z) expenditure equation is given by

$$z = e_0 + e_1S \quad (7.4)$$

where S denotes savings and wealth accumulated over time until the point of being 'zakated'; e_0 and e_1 are regression coefficients, with e_1 being the *zakah* ratio or the marginal change in *zakah* expenditure with changes in the wealth base (S), $e_1 > 0$.

On substituting I , C and Z from equations (7.1), (7.2) and (7.4) into equation (7.3) we obtain,

$$Y = \left(\frac{d_0 + c_0 + e_0 + G_0}{1 - d_1 - c_1} \right) + \left(\frac{c_2}{1 - d_1 - c_1} \right) P + \left(\frac{d_2 + e_1}{1 - d_1 - c_1} \right) Z \quad (7.5)$$

Next we consider $Z = e_0 + e_1 S$, and substitute in this, $S=I$. Then

$$Z = \left(\frac{e_0 + e_1 c_0}{1 - e_1 c_3} \right) + \left(\frac{e_1 c_1}{1 - e_1 c_3} \right) Y + \left(\frac{e_1 c_2}{1 - e_1 c_3} \right) P \quad (7.6)$$

On substituting the value of Z from equation (7.6) into equation (7.5) we obtain

$$Y = A + BP \quad (7.7)$$

where A is a function of the government autonomous expenditure, G_0 ; B can take a positive or negative value.

It can be shown that

$$A = \left(\frac{d_0 + c_0 + e_0 + G_0}{1 - d_1 - c_1} + \frac{d_2 + e_1}{1 - d_1 - c_1} \cdot \frac{e_1 c_0 + e_0}{1 - e_1 c_3} \right) \left(1 - \frac{c_1 e_1 (d_2 + e_1)}{(1 - d_1 - c_1)(1 - e_1 c_3)} \right)^{-1}$$

$$B = \left(\frac{c_2}{1 - d_1 - c_1} \right) \left(1 + \frac{e_1 (d_2 + e_1)}{1 - e_1 c_3} \right) \left(1 - \frac{c_1 e_1 (e_1 + d_2)}{(1 - d_1 - c_1)(1 - e_1 c_3)} \right)^{-1}$$

When $B < 0$, $A > 0$, a negatively sloped relationship between Y and P ensues. This relationship can be explained with the help of the investment and profit-rate relationship: that is, as investment increases at the full employment level of national income, the marginal efficiency of investment (capital) declines, and the cost of production in terms of factor inputs goes up. Consequently the rate of return on investment falls. A decline in the rate of profit does not, however, mean that income, Y , will decline too, for there is already an accumulated stock of capital in the economy which would generate increasing levels of income.

On the other hand, a positive relation between Y and P is the well-known Keynesian argument that the marginal propensity to spend (sum of the marginal propensities to consume and invest) exceeds unity. Such a situation would arise in the Islamic economy because of the intrinsic nature of excess for real investment in this economic system. When the excess demand for investment is not

satisfied temporarily by the supply of liquidity through the loanable fund, a situation of economic disequilibrium arises in the expenditure sector, as is also the case in the Keynesian expenditure sector. In order to restore equilibrium now, it would require much of the increasing levels of profits to be distributed as dividends. These cash dividends can then buy government common stock and thereby increase central bank reserves. Now, a liberalisation of the reserve ratio will increase the supply of liquidity needed for meeting the investment demand. Such a mechanism of money supply is of the nature of open market operation, and so reduces the prospect of price increase in the economy. What we now have is an excess reserve chasing investment demand, which in turn converts to factor incomes and sets a higher level of full employment national income. Following this, the negative relationship between the rate of profit and investment demand at the new full employment level of national income is re-established.

Expression (7.7) gives the well-known *IS* relation, but in this case for the Islamic economy. It is referred to here as the *IIS* schedule.

Monetary Sector Equilibrium in the Islamic Macroeconomy

Next we turn to the monetary sector equilibrium. The demand for liquidity required for meeting investment demand is given by

$$M_d = a_0 + a_1Y + a_2P \quad (7.8)$$

where M_d denotes the total demand for liquidity, a_0 , a_1 and a_2 are regression coefficients, with $a_0 > 0$, $a_1 > 0$, $a_2 < 0$.

In the Islamic monetary sector there can be no discount rate mechanism between the Central Bank and the financial institutions. There is no speculative motive for holding money by households. Therefore in general the speculative motive for money is non-existent in the Islamic monetary sector. On the other hand, the transaction demand and the precautionary demand for holding money are to be expected in the demand for money in the Islamic economy.² These components of the total demand for money are both functions of the income level, Y , and the rate of profit, P . The demand for money equation is then given by a form such as equation (7.8).

The supply of liquidity in the Islamic economy equates to the supply of saving coming from the loanable funds. The corresponding money supply (M_s) equation is then given by

$$M_s = b_0 + b_1Y + b_2P \quad (7.9)$$

where b_0 , b_1 and b_2 are regression coefficients, with $b_0 \geq 0$, $b_1 > 0$, $b_2 > 0$.

For the Islamic monetary sector equilibrium we need,

$$M_d = M_s \quad (7.10)$$

This means that the supply of savings ($=S + \Delta ER$, ΔER denoting change in excess reserve, ER) equals the demand for money capital for investment (I). Equation (7.10) yields the Islamic LM relation and is referred to here as the ILM relation. The form of ILM equation is,

$$Y = \left(\frac{b_2 - a_2}{a_1 - b_1} \right) P + D \quad (7.11)$$

where D is a constant and may be determined by the monetary reserve ratio set exogenously by the Central Bank.

As in the case of the IIS curve, the ILM curve may be positively or negatively sloped. When an increased demand for investment sets up competition for loanable funds, the cost of investment increases, as less is available per unit of investment assets. Consequently the marginal efficiency of investment (capital) declines; along with this, the rate of profit declines. In such a case, a negatively sloped ILM curve can be expected. However, Y would still be increasing under the impact of the investment multiplier.

In the Keynesian system, a negatively sloped LM curve is consistent with a positively sloped IS curve. In the system, a negatively sloped LM curve means that small decrements in the rate of interest would bring about a large demand for investment capital. The supply of liquidity being exogenous, it now lags behind the demand for liquidity, and a monetary sector equilibrium is thwarted. A situation of this type would result in anticipated lags in money supply and, as discussed in Chapter 6, can lead to expectational forms of inflation. In order to restore the monetary sector equilibrium and arrest the rise of inflation, the monetary authorities must instantaneously increase the needed supply of liquidity to meet the total demand for investment capital. With this, the nominal value of income increases along with the increase in investment demand and an increasing rate of profit in an Islamic economic system. A monetary sector

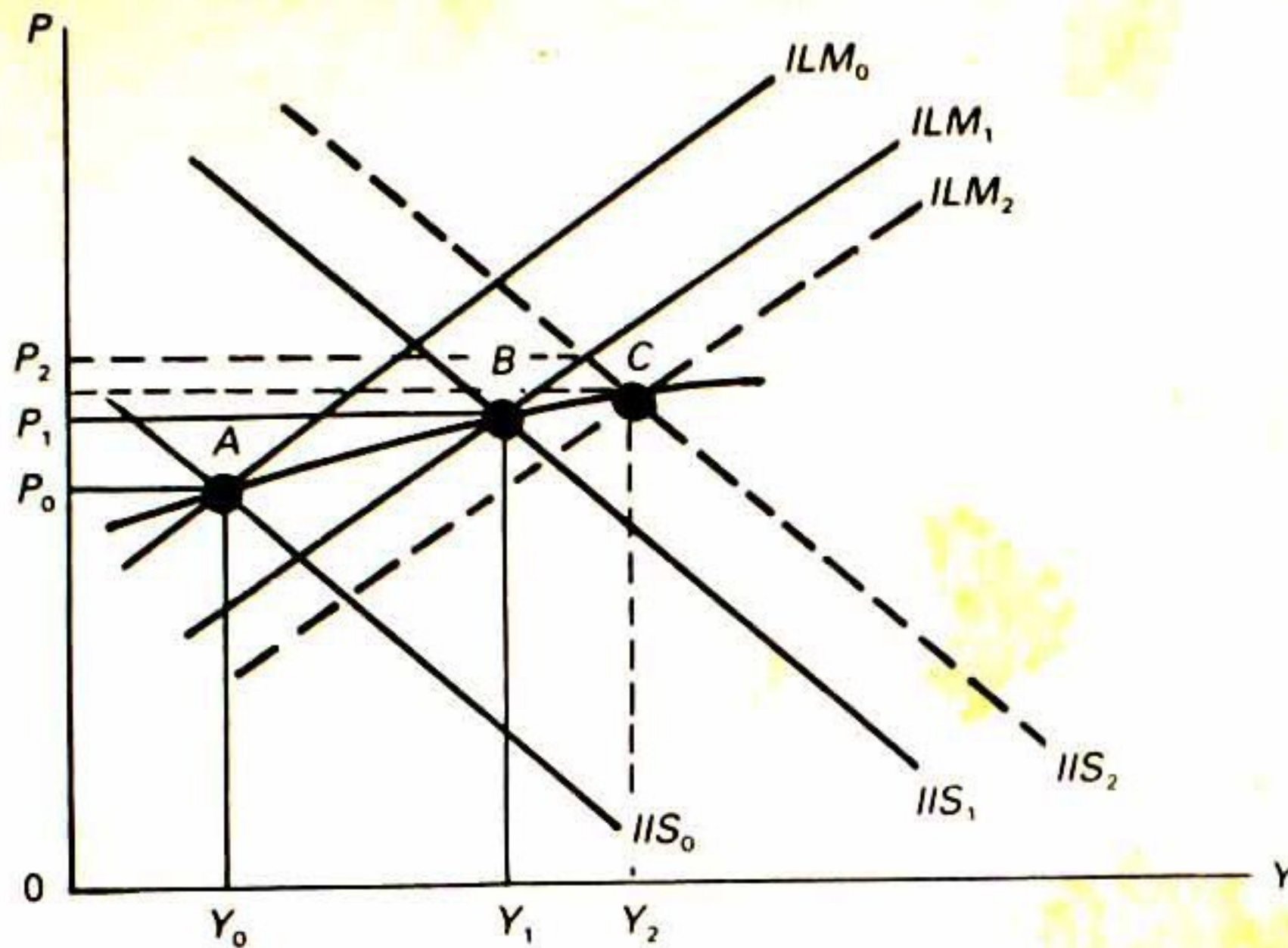
equilibrium is then restored, and equation (7.11) assumes a positive slope once again.³

In the Islamic economy, the creation of additional supply of liquidity (ΔER) must be instantaneous, following an excess demand for investment capital. This would make the *ex-ante* demand for cash balances able to be exactly satisfied by an *ex-post* supply of liquidity, and thus fully used up for purposes of investment. The spur in investment is caused by the increasing rate of profit. Hence the prospect of anticipatory money demand and supply would be non-existent in the Islamic economy. Consequently, inflationary pressures of the cost-push type and the expectational types will be non-existent. The profit-push type of inflationary price movement will exist, but only in the short run, before a long-run adjustment of profit levels to normal profits sets in.

GENERAL EQUILIBRIUM IN THE ISLAMIC MACROECONOMY

As in the Keynesian economic system, general economic equilibrium in the Islamic economic system would be established by the point of intersection of a negatively sloped IIS curve with a positively sloped ILM curve. This implies consistency between fiscal and monetary policies, shown by simultaneous shifts of the IIS curve and the ILM curve, either leftwards (contractionary policies) or rightwards (expansionary policies). Under the loanable funds concept of the supply of liquidity in the Islamic economy, it was shown earlier that much of the investment demand is satisfied by mobilisation of private-sector savings. The residual supply of liquidity is then made up of excess reserve creation (ΔER). One can likewise argue for the case of contractionary policies. Because of this nature of the loanable funds, the investment sector curve in the first place (and thereby the IIS curve) experiences a larger shift rightwards than the ILM curve.

These changes are shown in Figure 7.1. The figure shows that the attainment of consistency between fiscal and monetary policies in the Islamic economy, while stabilising inflationary price movements by eliminating anticipatory movements in the demand and supply of liquidity for purposes of investment, would generate higher levels of national income at higher levels of profit rates. However, with increasing investment, competition for loanable funds will make availability of funds more restricted. The increase in the rate of profit



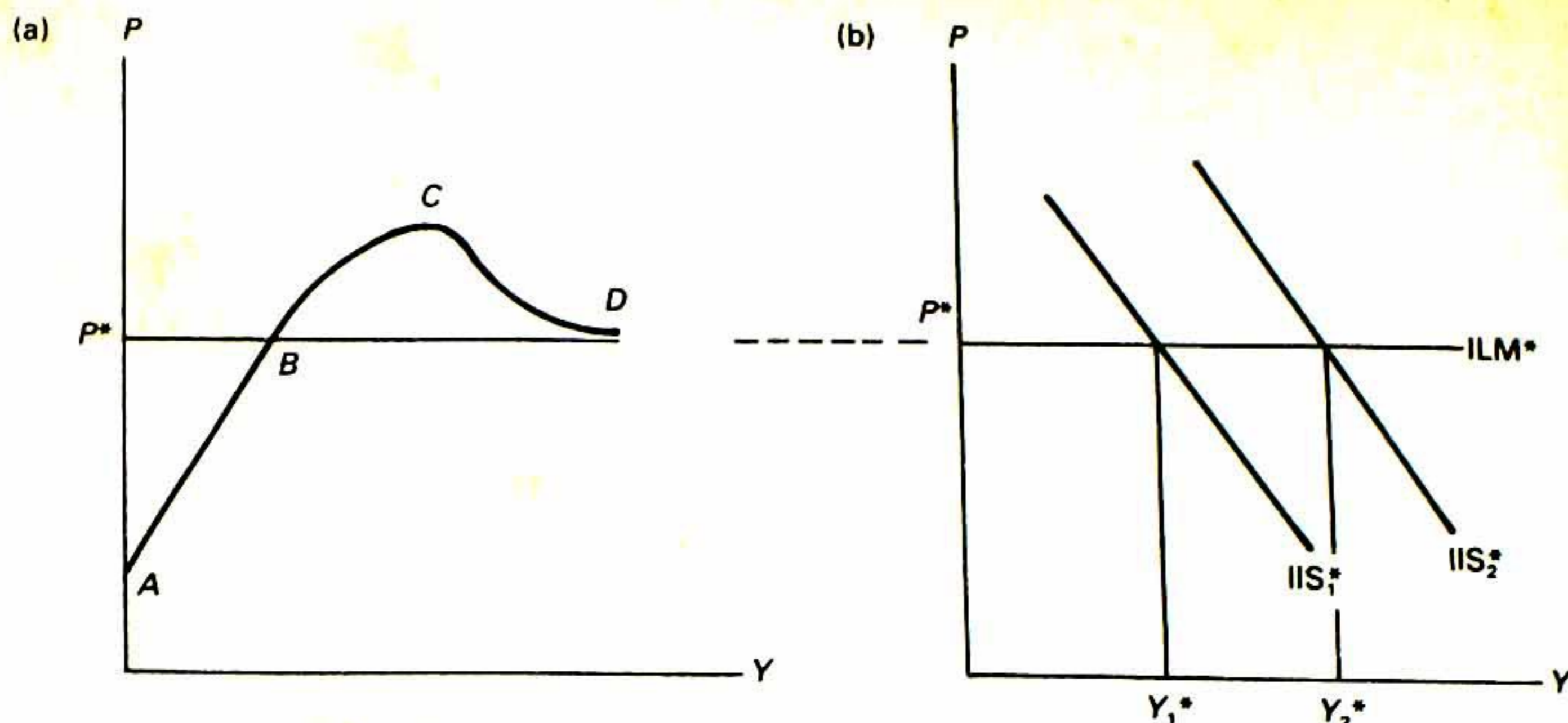
P : profit rate
 Y : national income

The curve ABC shows that profit rates, p (therefore also the profit-sharing ratios), stabilise at higher levels of national income, Y .

Figure 7.1 The IIS and ILM curves in the Islamic economy

will then be checked. Such a movement between the level of national income and the rate of profit is shown by the curve, ABC . The curve indicates that the rate of profit increases at a decreasing rate with increase in investment, followed by an increase in national income.

Since the rate of profit, unlike the rate of interest, is a market-determined quantity, which over the long run stabilises around the normal rate of profit, the curve ABC raises questions about the nature of money demand and supply at this long-run normal rate of profit. When the long-run rate of profit is attained, the investment sector stabilises as well. The nature of mobilisation of savings, into investment is a determinate one. Hence, at the normal rate of profit, the liquidity situation remains unchanged. Now, most of the demand for liquidity required for investment is provided by private-sector saving. Under these conditions, the ILM curve at the long-run rate of profit becomes horizontal, and we have a case of a liquidity trap similar to the one found in the Keynesian economic system. We shall call this case the profit-liquidity trap in the Islamic economy. The situation is depicted in Figure 7.2.



Note that the stabilisation of the rate of profit near to the normal rate (which can be higher than the normal rate of profit) determines the pegged rate of profit for the liquidity trap in the Islamic economy. Now the economy can realise the full multiplier impact of the IIS shifts.

Figure 7.2 The profit-liquidity trap in the Islamic economy

Figure 7.2 (a) reproduces a curve like *ABC* in Figure 7.1. The curve *ABCD* shows the long-run profit rate, P^* , towards which the locus of expenditure sector equilibrium and monetary sector equilibrium jointly establish themselves. There is now full consistency between the fiscal and monetary sectors. At this rate of profit, the IIS curve is fully effective in further accelerating the process of economic growth, indicated by the forward shift of national income from Y_1^* to Y_2^* . The ILM curve becomes ineffective since it is set under a situation of no change in excess reserve. The situation depicted in Figure 7.2 is therefore of the non-inflationary type.

P^* is the long-run rate of profit, below which the profit-sharing venture becomes unviable, so the supply curve of money can either be infinitely elastic or positively sloped. Monetary sector changes in this case can be explained in the following way: In Figure 7.3, the negatively-sloped money demand curve, *DD*, becomes horizontal at $P=P^*$. This is indicated by the curve, *DD'*. The supply of liquidity curve, *SS'*, coincides with this horizontal liquidity demand curve until the rate of profit rises to P' and the supply curve of liquidity becomes elastic, as shown by the upward rising curve, *S'SS''*. The monetary aggregates are now given by the quantities, M_1 , M_2 and M_3 , as shown in Figure 7.3.

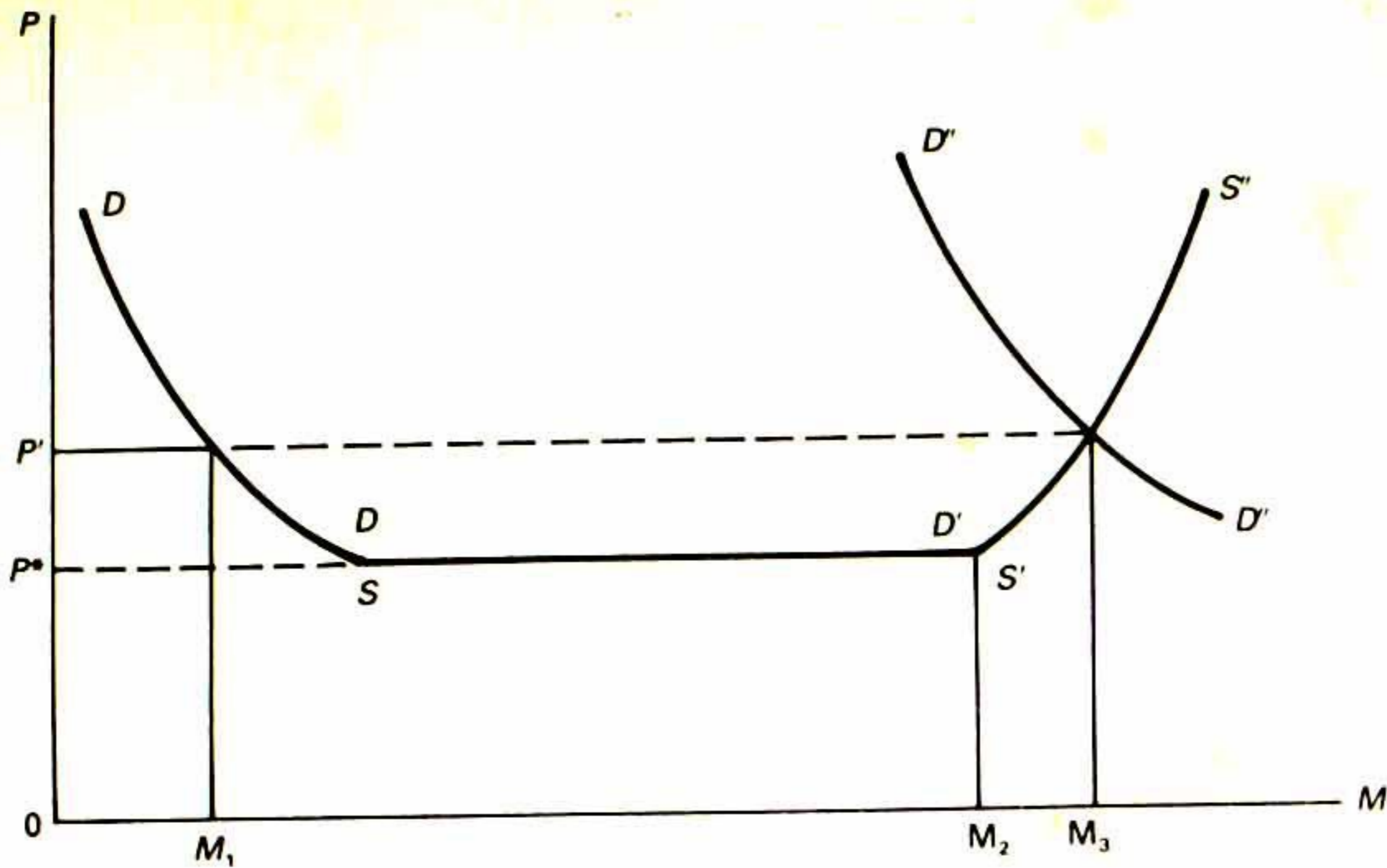


Figure 7.3 Monetary sector adjustments under the profit-liquidity trap

PRODUCT MARKET RELATIONS IN THE ISLAMIC ECONOMY

We now turn to product market relations. The production function is given by,

$$Y = f(K, L) \tag{7.12}$$

where Y denotes output, K denotes capital input, and L denotes labour input. Equation (7.12) is the same as equation (6.6) in Chapter 6, which was given in per capitem form. It is not necessary for this production function to be of the neoclassical type. For instance, in the short-run perspective, only the labour input is relevant, as capital is not expected to change in the short run. Then, too, the labour demand curve is determined by the average wage-productivity relationship, not by the marginal productivity relationship. Such a condition requires the production function to be of the increasing returns to scale type. This is, indeed, also a cause and effect of the *mudarabah* system in the Islamic economy.

The labour market equations are now set up as follows:
The labour demand function is taken to be

$$L_D = L_D (W, Y, I, Z) \quad (7.13)$$

The labour supply (L_S) function is given by

$$L_S = L_S (W, Z) \quad (7.14)$$

As represented here, L_S is shown to be structurally determined through training for the needy, due to the presence of the *zakah* expenditure variable. The relationship of L_S to nominal wages is well known. As for the *zakah* variable, it is expected to improve the total productive capital of the economy, including human capital. The *zakah* multiplier thereby acts positively in labour supply through the investment and income variable.⁴ Equation (7.14) can then be extended to the general form

$$L_S = L_S (W, Y, I, Z) \quad (7.15)$$

The labour market equilibrium is given by

$$L_D = L_S \quad (7.16)$$

From equation (7.16), the equilibrium level of wage rate, say W_0 , can be determined, given Y , I and Z .

The Islamic economic general equilibrium system is now complete. The set of equilibrium equations in the expenditure sector, the monetary sector, product market and labour market is now summarised below:

$$\text{expenditure sector equation: } I = C_0 + C_1 Y + C_2 P + C_3 Z \quad (7.17)$$

$$\text{IIS equation: } Y = A + BP \quad (7.18)$$

$$\text{money demand equation: } M_d = A_0 + A_1 Y + A_2 P \quad (7.19)$$

$$\text{money supply equation: } M_s = b_0 + b_1 Y + b_2 P \quad (7.20)$$

$$\text{loanable funds equilibrium equation: } I = S + \Delta(ER) \quad (7.21)$$

The loanable funds equation (7.20) implies the monetary sector equilibrium equation:

$$M_d = M_s \quad (7.22)$$

$$\text{ILM equation: } Y = \alpha P + \beta \quad (7.23)$$

$$\text{production function: } Y = f(K, L) \quad (7.24)$$

$$\text{labour demand equation: } L_D = L_D(W, Y, I, Z) \quad (7.25)$$

$$\text{labour supply equation: } L_S = L_S(W, Y, I, Z) \quad (7.26)$$

Equilibrium wage rate is determined from the relationship

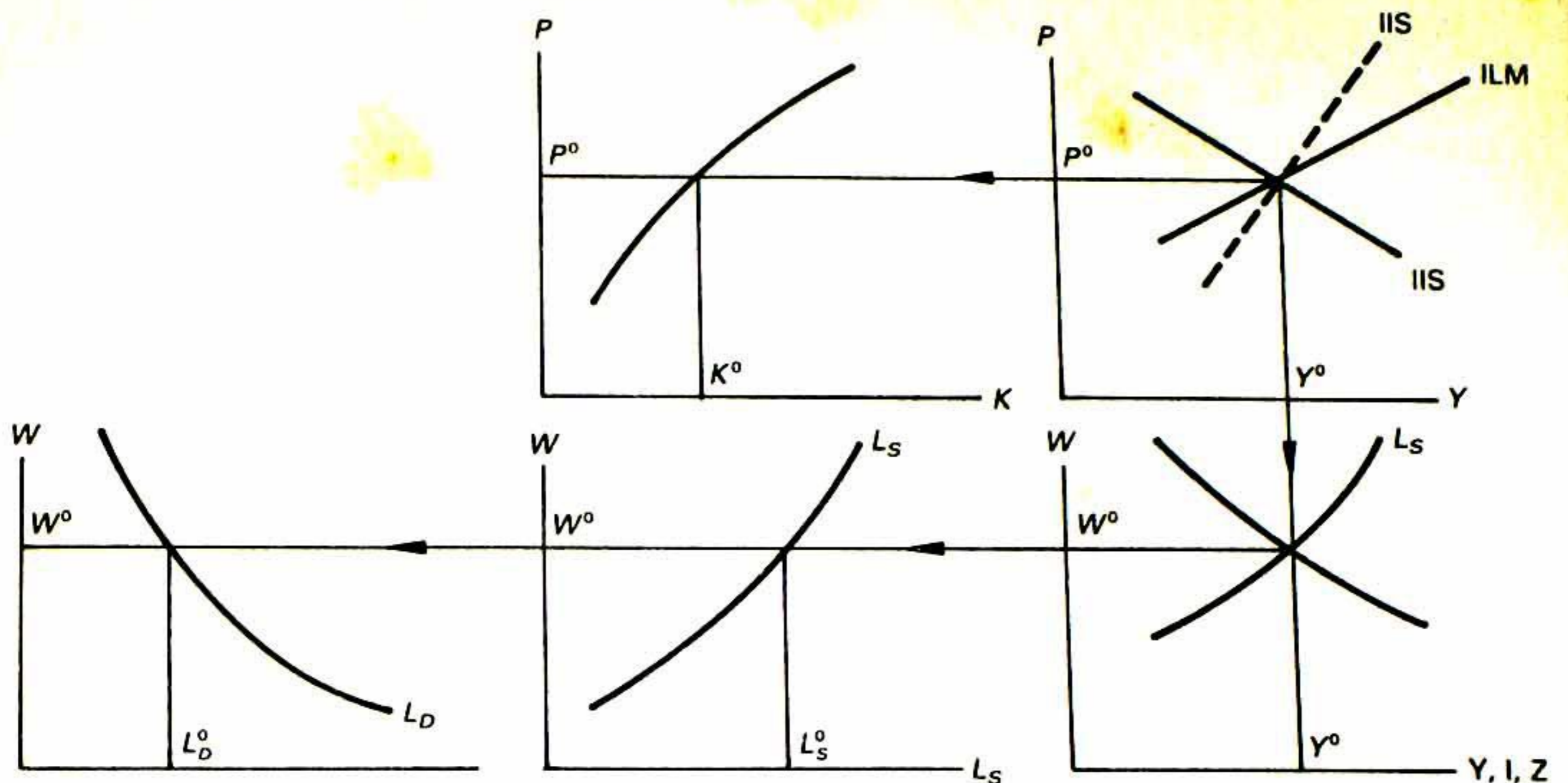
$$L_D = L_S \quad (7.27)$$

The system of five equations, (7.18), (7.23), (7.24), (7.25) or (7.26), and (7.27) in five unknowns, Y, P, I, W, L , makes a determinate system. Thus an Islamic general equilibrium system is uniquely determinate. The Islamic macroeconomic general equilibrium relationships are shown in Figure 7.4.

In this diagram it is shown that, corresponding to an equilibrium level of profit rate, P , there is an equilibrium level of capital stock, K^0 , determined through the marginal efficiency of capital schedule. Corresponding to an equilibrium level of output, Y^0 , and given values of I and Z , there is an equilibrium level of wages, W^0 , determined by the intersection of the labour demand curve, L_D , and the labour supply curve, L_S . Corresponding to an equilibrium level of wages, W^0 , given values of Y^0 and Z , there is an equilibrium supply of labour, L_S^0 . Corresponding to the level of equilibrium, W^0 and Y^0 , I and Z , there is an equilibrium demand for labour, L_D^0 .

EMPIRICAL ESTIMATION OF THE ISLAMIC MACROECONOMIC SYSTEM FOR MALAYSIA

Having established the Islamic economic general equilibrium system in its conceptual framework, we now turn to an actual estimation of this model system for Malaysia over the period 1970-85. The main objective in this exercise is to specify and estimate the entire set of Islamic macroeconomic relations and then test the validity of the theoretical assertions.⁵ It is not the intention of this section to infer any empirical confirmation of our theoretical model from the existence of a



In these diagrams, the quantity of labour is shown to be a function of national income, investment and *zakah*. The Keynesian-type general equilibrium in the Islamic economy establishes equilibria in the factor markets for capital and labour. The positively sloped IIS curve means that the sum of marginal propensities to consume and invest out of the net national product exceeds unity. This happens because of the excess demand for investment in the Islamic economy which might remain unsatisfied by the available savings.

Figure 7.4 Macroeconomic general equilibrium system of the Islamic economy

well-founded Islamic economic system. The institutions and policies required for such a system do not presently exist in their entirety in Malaysia. However, there is serious thinking along these lines and some important institutions do exist, which means the relevant data is available over a long enough period of time for us to undertake some sound econometric work. These conditions make the Malaysian economy a viable base for the empirical testing of our conceptual Islamic macroeconomic model system. This is our sole objective in this section.

We have also made a variation to our conceptual model system by taking the variable in the log-linear form. This again is in compliance with the system of equations evolved in Chapter 6, on the basis of an Islamic social welfare maximisation problem. However, no specificity can be lost by this transformation, because one is simply a positive transformation of the other model system. The definitions and sym-

bols for the variables exist in their original form. In the empirical version of the model system, the further inclusion of the inflation rate variable enables us to study some of the equations in the context of price changes. In this context, we define \dot{p} as the rate of inflation given by the rate of change in consumer price index. We also define T as government expenditure variable in nominal value.

Data available for the variables M_s and M_D for the period 1970–85 are in M1 terms. Data for Y, I, C, P and \dot{p} are available for the period 1970–85. The data for the rate of profit, P , are taken from the Government of Malaysia 20-year Federal Government Securities coupon rate. Values for Z are available for the period 1975–1981. For the remaining years, values are estimated using the following equation:

$$\log. Z = 15.7475 + 0.0481t \quad (7.28)$$

In this way the Z variable is extended for the whole time period (t), 1970–85. Detailed input data are given at the end of this chapter (Table 7.13).

The money demand equation is taken in the extensive form:

$$\begin{aligned} \log. M_D = & a_0 + a_1 \log. \dot{p} + a_2 \log. Y + a_3 \log. P \\ & + a_4 \log. I + a_5 \log. C \end{aligned} \quad (7.29)$$

This equation is estimated under various sets of conditions:

- (i) $a_1 = 0, a_4 = 0, a_5 = 0$;
- (ii) $a_1 = 0$;
- (iii) $a_4 = 0, a_5 = 0$;
- (iv) as shown in equation (7.29).

Among these various estimated equations, the following two estimated forms showed full compliance with the sign relationships of our theoretical equation of money demand:

$$\begin{aligned} \log. M_D = & -2.46 + 0.63 \log. Y + 0.03 \log. \dot{p} \\ & (5.13) \quad (10.87) \quad (1.39) \\ & - 0.18 \log. P \quad (7.30) \\ & (0.39) \end{aligned}$$

$$R^2 = 0.9790, DW = 2.19, SSE = 0.0407$$

$$\begin{aligned}
 \log. M_D = & -1.70 + 0.68 \log. Y + 0.02 \log. \dot{p} \\
 & (0.73) \quad (1.79) \quad (0.41) \\
 & - 0.16 \log. P + 0.13 \log. I \\
 & (0.33) \quad (0.32) \\
 & - 0.25 \log. C \quad (7.31) \\
 & (0.42)
 \end{aligned}$$

$$R^2 = 0.9794, DW = 2.25, SSE = 0.0400$$

Estimation of the Money Supply Equation

The money supply equation is taken in the extensive form:

$$\begin{aligned}
 \log. M_S = & b_0 + b_1 \log. \dot{p} + b_2 \log. Y + b_3 \log. P \\
 & + b_4 \log. I + b_5 \log. C \quad (7.32)
 \end{aligned}$$

This equation was estimated under various sets of conditions:

- (i) $b_1 = 0, b_4 = 0, b_5 = 0;$
- (ii) $b_1 = 0;$
- (iii) $b_4 = 0, b_5 = 0;$
- (iv) as shown in equation (7.32).

Among these various estimated forms, the following two showed full compliance with the sign relationships of our theoretical money supply equation:

$$\begin{aligned}
 \log. M_S = & -2.67 + 0.91 \log. Y + 0.95 \log. P \quad (7.33) \\
 & (7.82) \quad (20.32) \quad (2.94)
 \end{aligned}$$

$$R^2 = 0.9942, DW = 1.67, SSE = 0.0384$$

$$\begin{aligned}
 \log. M_S = & -2.08 + 0.83 \log. Y + 0.88 \log. P \\
 & (1.81) \quad (2.52) \quad (2.41) \\
 & + 0.11 \log. I - 0.06 \log. C \quad (7.34) \\
 & (0.56) \quad (0.15)
 \end{aligned}$$

$$R^2 = 0.9944, DW = 1.81, SSE = 0.0373$$

The ILM relation is taken in the extensive form:

$$\log. Y = c_0 + c_1 \log. \dot{p} + c_2 \log. P + c_3 \log. I + c_4 \log. C \quad (7.35)$$

This equation was estimated under the following sets of conditions:

- (i) $c_1 = 0, c_3 = 0, c_4 = 0$;
- (ii) $c_1 = 0$;
- (iii) $c_3 = 0, c_4 = 0$.
- (iv) as shown in equation (7.35).

The following three estimated equations responded to the sign relationships of the ILM equation in our theoretical model simulation:

$$\log. Y = -2.52 + 6.28 \log. P \quad (7.36)$$

(1.31) (6.72)

$$R^2 = 0.7636, DW = 0.38, SSE = 1.4706$$

$$\log. Y = 0.47 + 0.03 \log. P + 0.16 \log. I$$

(0.47) (0.09) (1.00)

$$+ 0.83 \log. C \quad (7.37)$$

(3.68)

$$R^2 = 0.9949, DW = 1.13, SSE = 0.0316$$

$$\log. Y = -236 - 0.09 \log. p + 3.80 \log. P \quad (7.38)$$

(1.62) (1.55) (5.36)

$$R^2 = 0.7128, DW = 0.57, SSE = 0.5046$$

The IIS relation is taken in the form

$$\log. Y = d_0 + d_1 \log. \dot{p} + d_2 \log. I + d_3 \log. P + d_4 \log. Z$$

$$+ d_5 \log. T \quad (7.39)$$

under the following set of conditions:

- (i) $d_1 = 0$;
- (ii) as shown in equation (7.39).

The estimated IIS relation which complied well with the sign relationships of our theoretical IIS relation is as follows:

$$\begin{aligned} \log. Y = & 2.67 + 0.26 \log. I - 0.002 \log. P \\ & (0.97) \quad (0.62) \quad (0.004) \\ & + 0.82 \log. Z + 0.35 \log. T \end{aligned} \quad (7.40)$$

$$R^2 = 0.9941, DW = 1.00, SSE = 0.0307$$

The investment equation is taken in the extensive form,

$$\log. I = e_0 + e_1 \log. Y + e_2 \log. P + e_3 \log. Z + e_4 \log. T \quad (7.41)$$

which yielded the estimated equation,

$$\begin{aligned} \log. I = & -6.53 + 0.15 \log. Y + 0.43 \log. P \\ & (11.55) \quad (0.66) \quad (1.81) \\ & - 1.32 \log. Z + 1.54 \log. T \end{aligned} \quad (7.42)$$

$$R^2 = 0.9984, DW = 1.91, SSE = 0.0175$$

The investment equation in real value is taken in the general form

$$\begin{aligned} \log. (I/\dot{p}) = & S_0 + S_1 \log. \dot{p} + S_2 \log. Y + S_3 \log. P \\ & + S_4 \log. Z + S_5 \log. T \end{aligned} \quad (7.43)$$

which was estimated under the following sets of conditions:

- (i) $S_1 = 0, S_4 = 0$;
- (ii) $S_1 = 0$;
- (iii) $S_4 = 0$;
- (iv) as shown in equation (7.43).

The estimated form of the real investment equation which complied with our theoretical formulation was as follows:

$$\begin{aligned} \log. \left(\frac{I}{\dot{p}} \right) = & -5.31 + 0.05 \log. Y - 0.63 \log. P \\ & (4.19) \quad (0.19) \quad (1.59) \\ & - 0.94 \log. \dot{p} - 0.43 \log. Z \\ & (29.58) \quad (0.53) \end{aligned}$$

$$+ 1.05 \log. T \quad (7.44)$$

(3.30)

$$R^2 = 0.9987, DW = 2.11, SSE = 0.0221$$

The consumption equation is taken in the following form:

$$\log. C = g_0 + g_1 \log. \dot{p} + g_2 \log. Y + g_3 \log. Z + g_4 \log. T \quad (7.45)$$

which is estimated under the following sets of conditions:

- (i) $g_1 = 0, g_3 = 0;$
- (ii) $g_1 = 0;$
- (iii) $g_3 = 0;$
- (iv) as shown in equation (7.45).

The estimated forms that complied with the sign relationships of our theoretical consumption function were as follows:

$$\begin{aligned} \log. C = & 1.51 + 0.005 \log. Y + 0.53 \log. Z \\ & (7.71) \quad (0.06) \quad (4.31) \\ & + 0.71 \log. T \quad (7.46) \\ & (9.54) \end{aligned}$$

$$R^2 = 0.9995, DW = 1.85, SSE = 0.0025$$

$$\log. C = 0.72 + 0.11 \log. Y + 0.77 \log. T \quad (7.47)$$

(7.05) (0.98) (7.06)

$$R^2 = 0.9988, DW = 1.66, SSE = 0.0063$$

In the product market, the potential level of output was estimated by the following extensive form:

$$\log. Y = h_0 + h_1 \log. E + h_2 \log. I + h_3 \log. Z + h_4 \log. p \quad (7.48)$$

under the following conditions:

- (i) $h_4 = 0;$
- (ii) $h_4 = 0, h_3 = 0;$
- (iii) as shown by equation (7.48).

The estimated equations that complied with the sign relationships of our theoretical production function are:

$$\log. Y = 3.04 + 1.41 \log. E + 0.56 \log. I \quad (7.49)$$

(7.22) (1.54) (4.76)

$$R^2 = 0.9907, DW = 0.95, SSE = 0.0576$$

$$\log. Y = 4.33 - 0.81 \log. E + 0.49 \log. I$$

(8.66) (0.85) (5.36)

$$+ 1.37 \log. Z \quad (7.50)$$

(3.33)

$$R^2 = 0.9952, DW = 1.35, SSE = 0.0299$$

In the labour market, the labour demand equation is taken in the general form

$$\log. E = k_0 + k_1 \log. Y + k_2 \log. I + k_3 \log. Z$$

$$+ k_4 \log. W + k_5 \log. P \quad (7.51)$$

The estimated equations are as follows:

$$\log. E = 0.97 + 0.09 \log. Y + 0.002 \log. I$$

(1.05) (0.46) (0.02)

$$+ 0.21 \log. Z + 0.11 \log. W + 0.09 \log. P \quad (7.52)$$

(0.06) (0.71) (0.46)

$$R^2 = 0.9633, DW = 2.41$$

The labour supply equation is estimated in the form,

$$\log. L_s = f_0 + f_1 \log. W + f_2 \log. Z \quad (7.53)$$

under the following condition:

(i) as shown in equation (7.53)

The estimated equation is

$$\log. L = 1.83 + 0.15 \log. W + 0.27 \log. Z \quad (7.54)$$

(3.39) (2.35) (2.92)

$$R^2 = 0.9874, DW = 1.69$$

One last equation estimated is for the profit rate relationship taken in the general form

$$\begin{aligned} \log. P = m_0 + m_1 \log. \dot{p} + m_2 \log. I + m_3 \log. C \\ + m_4 \log. T + m_5 \log. Z \end{aligned} \quad (7.55)$$

The equation results from equating IIS with ILM. The rate of profit, P , is therefore the equilibrium rate of profit at the full employment level of national income. The estimated form of the equation is

$$\begin{aligned} \log. P = 4.25 + 1.38 \log. I + 3.21 \log. C \\ (2.92) \quad (3.40) \quad (2.54) \\ - 4.53 \log. T + 0.002 \log. Z \quad (7.56) \\ (2.95) \quad (0.003) \end{aligned}$$

$$R^2 = 0.8864, DW = 1.12 \text{ SSE} = 0.0137$$

STATISTICAL ANALYSIS OF ESTIMATES IN THE ISLAMIC MACROECONOMIC MODEL

We turn now to the statistical analysis of the model system that we have estimated for the Malaysian economy for the period 1970–85. Our main objective in this section is to examine the stability of relationships among critical Islamic economic variables and other variables. To undertake this exercise we chose the level of significance for the t -statistic to be 5 per cent. Hence all the computed t -statistics for the estimated regression coefficients are compared against the tabulated value of $t_{15,0.05}$ (that is, the degrees of freedom being 15). Thus when the computed t -statistic exceeds the value of $t_{15,0.05}$, this would imply that the probability of rejecting the specific estimated value of the regression coefficient when it is true is 5 per cent. The rejection of this null hypothesis at the 5 per cent level of significance will be our indicator of the instability of the variables relationship. The same idea of statistical instability will also be shown in terms of the ambiguity of sign relationships in the estimated model system. In general, it is seen from the estimated model system that the sign relationships in our Islamic macroeconomic general equilibrium system of equations are consistent with our theoretical formulation.

The statistical results of our best fit money supply equation in terms of the sign relationships of our theoretical model are summarised below:

$$\log. M_s = -2.67 + 0.91 \log. Y + 0.95 \log. P \quad (7.57)$$

(7.83) (20.32) (2.94)

$$R^2 = 0.9942, DW = 1.67, SSE = 0.034$$

$$\log. M = -2.08 + 0.83 \log. Y + 0.88 \log. P$$

(1.21) (2.52) (2.41)

$$+ 0.11 \log. I - 0.06 \log. C \quad (7.58)$$

(0.56) (0.15)

$$R^2 = 0.9944, DW = 1.81, SSE = 0.0373$$

The signs of the regression coefficients are in accordance with our theoretical formulation (see Table 7.1). For example, a positive coefficient of $\log. Y$ and $\log. P$ variables indicate that, with an increase in income and profit rates, there is a higher incentive on the financial authorities to get into *mudarabah*-type ventures. Thus the supply of savings in the form of liquidity increases. The positive relationship of income to money supply can be explained through the aggregate demand effect requiring an increased amount of liquidity to finance stimulative policies in the economy.

The positive sign of the coefficient of $\log. I$ variable indicates that a higher supply of liquidity is required to finance the spur in investment

Table 7.1 Testing the null hypothesis on estimated regression coefficients of the money supply equation

Variables	Coefficients		t-statistics		DF	Test of null hypothesis at 5% level of significance	
constant	-2.67	-2.08	7.83	1.21	15	R	A
$\log. Y$	0.91	0.83	20.32	2.52	15	R	R
$\log. P$	0.95	0.88	2.94	2.41	15	R	R
$\log. I$	-	0.11	-	0.56	15	-	A
$\log. C$	-	-0.06	-	0.15	15	-	A

$$t_{0.05,15} = 1.753$$

R: Reject

A: Accept

demand following an increase in income and profit rates. The negative sign of the coefficient of log. C variable indicates that there is a trade-off between consumption and investment in regard to the demand for liquidity. That is, with a higher proportion of the supply of liquidity being channelled into investment, a proportionately lower amount of it is channelled into consumption expenditure. Besides, as more of the increase in national income is channelled through savings into investment, less will be available for consumption expenditure. In our theoretical formulation, this meant the Wicksellian type of money supply relationship, in which the supply of savings constitutes a large part of the supply of liquidity in the economy. That is the loanable funds theory, with which the Islamic monetary theory is seen to agree.

Between the estimated equations (7.57) and (7.58), the latter is seen to be more versatile in explaining several economic interrelationships in the money supply equation. It is also consistent with equation (7.57), which is strictly of the Keynesian type. The economic interrelationships of equation (7.58) can be demonstrated in Figure 7.5. Here, $Y = C + I + T + Z$. Given T and Z , a greater proportion of income, Y , is directed through savings into the loanable funds for supply of liquidity, which means correspondingly less is available out of Y for consumption expenditure. The implication here is of the static form.

The rejection of the null hypothesis on the coefficients of log. Y and log. P variables at the 5 per cent level of significance makes the estimated money supply equation statistically unstable in terms of these variables. This can be seen in terms of the appreciable rejection regions, given as follows:

$$\begin{aligned} \text{log. } Y \text{ variable: actual coefficient - estimated coefficient} = \\ \left\{ \begin{array}{l} 69.09 \text{ per cent in equation (7.57)} \\ 9.40 \text{ per cent in equation (7.58)} \end{array} \right. \end{aligned}$$

The estimated coefficient is computed from

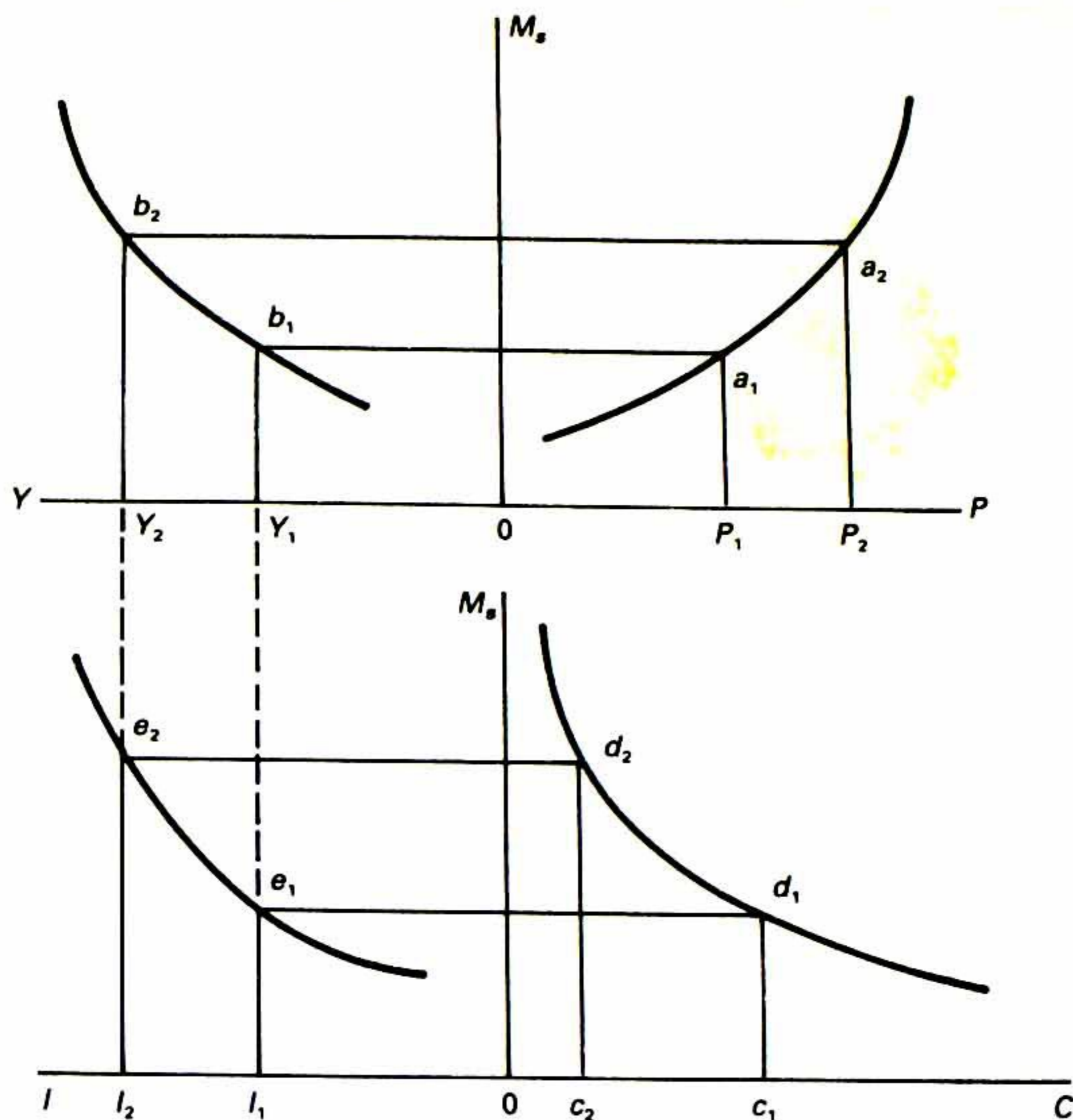
$$t = \frac{\text{actual coefficient} - \text{estimated coefficient}}{SSE}$$

$$\text{log. } p \text{ variable: actual coefficient} = \left\{ \begin{array}{l} 10 \text{ per cent in equation (7.57)} \\ 9 \text{ per cent in equation (7.58)} \end{array} \right.$$

Next, the statistical analysis of the estimated money demand equation follows:

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This diagram shows the positive relation of national income and profit rates to money supply.



This diagram shows the positive relation of investment to money supply, and consequently the negative relation of consumption expenditure to money supply.

Figure 7.5 Economic interrelationships in the estimated money supply equation

$$\begin{aligned} \log. M_d = & -2.46 + 0.63 \log. Y + 0.03 \log. \dot{p} \\ & (5.13) \quad (10.88) \quad (1.39) \\ & - 0.18 \log. P \\ & (0.39) \end{aligned} \quad (7.59)$$

$$R^2 = 0.9790, DW = 2.19, SSE = 0.0407$$

$$\begin{aligned} \log. M_d = & -1.70 + 0.68 \log. Y + 0.02 \log. \dot{p} \\ & (0.73) \quad (1.79) \quad (0.41) \end{aligned}$$

Table 7.2 Testing the null hypothesis on estimated regression coefficients of the money demand equation

Variables	Coefficients		t-statistics		DF	Test of null hypothesis	
						at 5 per cent significance	
constant	-2.46	-1.70	5.13	0.73	15	R	A
log. <i>Y</i>	0.63	0.68	10.87	1.79	15	R	A (approx.)
log. <i>P</i>	0.03	0.02	1.39	0.41	15	A	A
log. <i>P</i>	-0.18	-0.16	0.39	0.33	15	A	A
log. <i>I</i>	-	0.13	-	0.32	15	-	A
log. <i>C</i>	-	-0.25	-	0.42	15	-	A

$t_{0.05, 15}$
 R: Reject
 A: Accept

$$- 0.16 \log. P + 0.013 \log. I - 0.25 \log. C \quad (7.60)$$

(0.33) (0.32) (0.42)

$$R^2 = 0.9794, DW = 2.25, SSE = 0.0400$$

The signs of the coefficients of log. *Y* and log. *p* variables are as expected in Table 7.2. This can be interpreted in two ways. An increase in income through an increase in price level can increase the nominal demand for money. On the other hand, the transaction demand for money is a positive function of the level of income, which again is positively affected by increases in price level.

The positive sign of the coefficient of log. *I* variable explains the greater desire of households to hold money in the form of bonds and financial certificates which mobilise savings into investment. However, over time the external demand for liquidity to finance investments will stabilise in the face of an increasing levels of profits. Now, the relationship between investment and the marginal efficiency of investment (capital) reverts to being negative. In the estimated model this cannot, however, be predicted.

It is interesting to note that in equation (7.59), which is a simplified form of equation (7.60), the critical relationship between profit rate and the demand for money remains unchanged. The two estimated equations show that the negatively sloped money demand curve in the rate of profit is a fairly stable one.

The stability of the estimated equations, particularly of equation (7.60), is indicated by the acceptance of the null hypotheses on the estimated regression coefficients. In the case of the various estimated regression coefficients, the fiducial limits for the true value of the coefficients are given by the following (in equation 7.60):

log. Y : actual value – estimated value = 7 per cent,
that is, actual value = 0.75

log. \dot{p} : actual value – estimated value = 2 per cent,
that is, actual value = 0.04

log. p : actual value – estimated value = 1 per cent,
that is, actual value = 0.034

log. I : actual value – estimated value = 1 per cent,
that is, actual value = 0.33

log. C : actual value – estimated value = 2 per cent,
that is, actual value = 0.44

The high value of the DW statistic also points to the absence of serious time series problems (auto-correlation in errors), and this further indicates the stability of the estimated money demand equation.

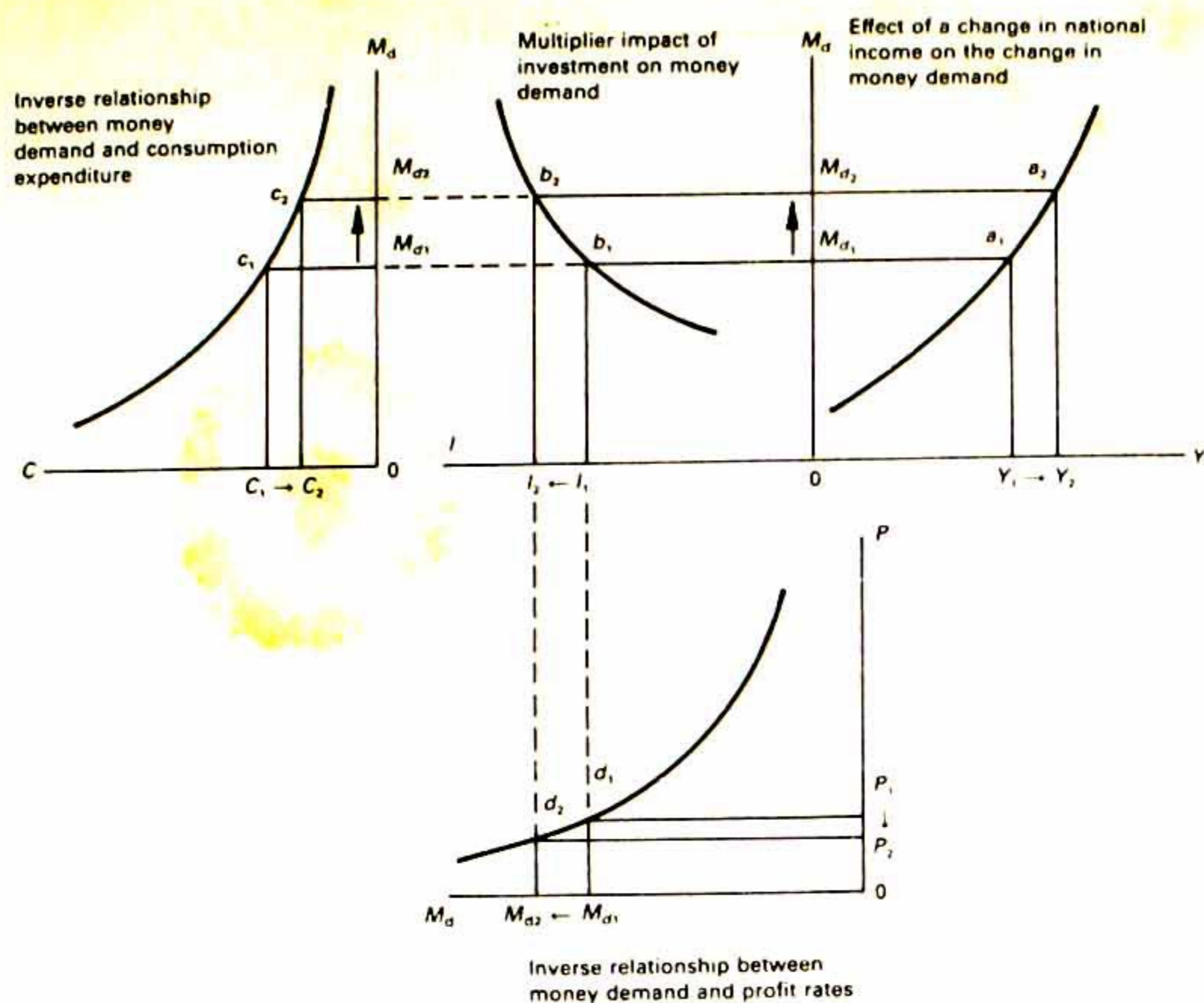
The economic interrelationships in equation (7.60) are demonstrated in the Figure 7.6. In this diagram, an equilibrium process is seen to be at work: with an increase in profits, incomes increase. This is followed by the increase in incomes being mobilised through savings into investment. The holding of money in real assets thereby increases. But, as investment increases, the marginal efficiency of investment (capital), given the full employment level of national income, starts to decline. This finally increases the external demand for liquidity. The external supply of liquidity balances the demand for liquidity, and the monetary sector equilibrium gets established.

The statistical analysis of the ILM relation now follows:

$$\log. Y = -2.52 + 6.28 \log. P \quad (7.61)$$

(1.31) (6.72)

$$R^2 = 0.7636, DW = 0.38, SSE = 1.4706$$



- M_d : money demand
- Y : national income
- I : investment
- C : consumption
- P : profit rate

Figure 7.6 Further economic interrelationships in the estimated money demand equation

$$\begin{aligned} \log. Y = & 0.47 + 0.03 \log. P + 0.16 \log. I \\ & (0.47) \quad (0.09) \quad (1.00) \\ & + 0.83 \log. C \\ & (3.68) \end{aligned} \tag{7.62}$$

$$R^2 = 0.9949, DW = 1.13, SSE = 0.0316$$

$$\log. Y = -2.36 - 0.09 \log. p + 3.80 \log. P \tag{7.63}$$

$$(1.62) \quad (1.55) \quad (5.36)$$

$$R^2 = 0.7128, DW = 0.57, SSE = 0.5046$$

Table 7.3 Testing the null hypothesis on estimated regression coefficients of the ILM relation

Variables	Coefficients			t-statistics			DF	Test of null hypothesis at 5 per cent level of significance		
constant	-2.52	0.47	-2.36	1.31	0.47	1.62	15	A	A	A
log. <i>P</i>	6.28	0.03	3.80	6.72	0.09	5.36	15	R	A	R
log. <i>I</i>	-	0.16	-	-	1.00	-	15	-	A	-
log. <i>C</i>	-	0.83	-	-	3.68	-	15	-	R	-
log. \dot{p}	-	-	-0.09	-	-	1.55	15	-	-	A

$t_{0.05, 15}$
 R: Reject
 A: Accept

The signs of coefficients in the estimated ILM relation are consistent with the theory (see Table 7.3). The positive sign of the coefficient of log. *P* variable gives a positively sloped ILM curve in the profit rate variable, the (*Y*, *P*), plane. The positive estimated coefficients of log. *I* and log. *C* variables indicate that gross national product (GNP) increases with increase in the values of these variables. The small negative coefficient of log. *P* variable indicates that inflation plays an insignificant role in the growth of nominal national income in this system. In other words, the real growth of national income in this system is strong.

With regard to the statistical stability of the estimated ILM relation, it is seen that only equation (7.62) gives a stable relationship, particularly in terms of the log. *P* variable. The other two estimated equations are not stable at the 5 per cent level of significance. Between these estimated equations one concludes that the ILM relation in terms of *Y* and *P* is not stable. Note, for instance, the difference between the actual and estimated values of the log. *P* coefficients in the three equations:

$$\text{log. } P \text{ variable: } \left(\begin{array}{c} \text{actual value} \\ \text{of regression} \\ \text{coefficient} \end{array} \right) - \left(\begin{array}{c} \text{estimated value} \\ \text{of regression} \\ \text{coefficient} \end{array} \right) =$$

$$\left\{ \begin{array}{l} 9.88 \text{ per cent in equation (7.61)} \\ 0 \text{ per cent in equation (7.62)} \\ 2.70 \text{ per cent in equation (7.63)} \end{array} \right.$$

Table 7.4 Testing the null hypothesis on estimated regression coefficients of the IIS relation

Variables	Coefficients	t-statistics	DF	Test of null hypothesis at 5 per cent level of significance
constant	2.67	0.97	15	A
log. <i>I</i>	0.26	0.62	15	A
log. <i>P</i>	-0.002	0.004	15	A
log. <i>Z</i>	0.82	1.20	15	A
log. <i>T</i>	0.35	0.51	15	A

$t_{0.05, 15}$
A: Accept

The instability of the slope of ILM curve in the (*Y*, *P*) plane indicates that there can indeed be a family of ILM curves.

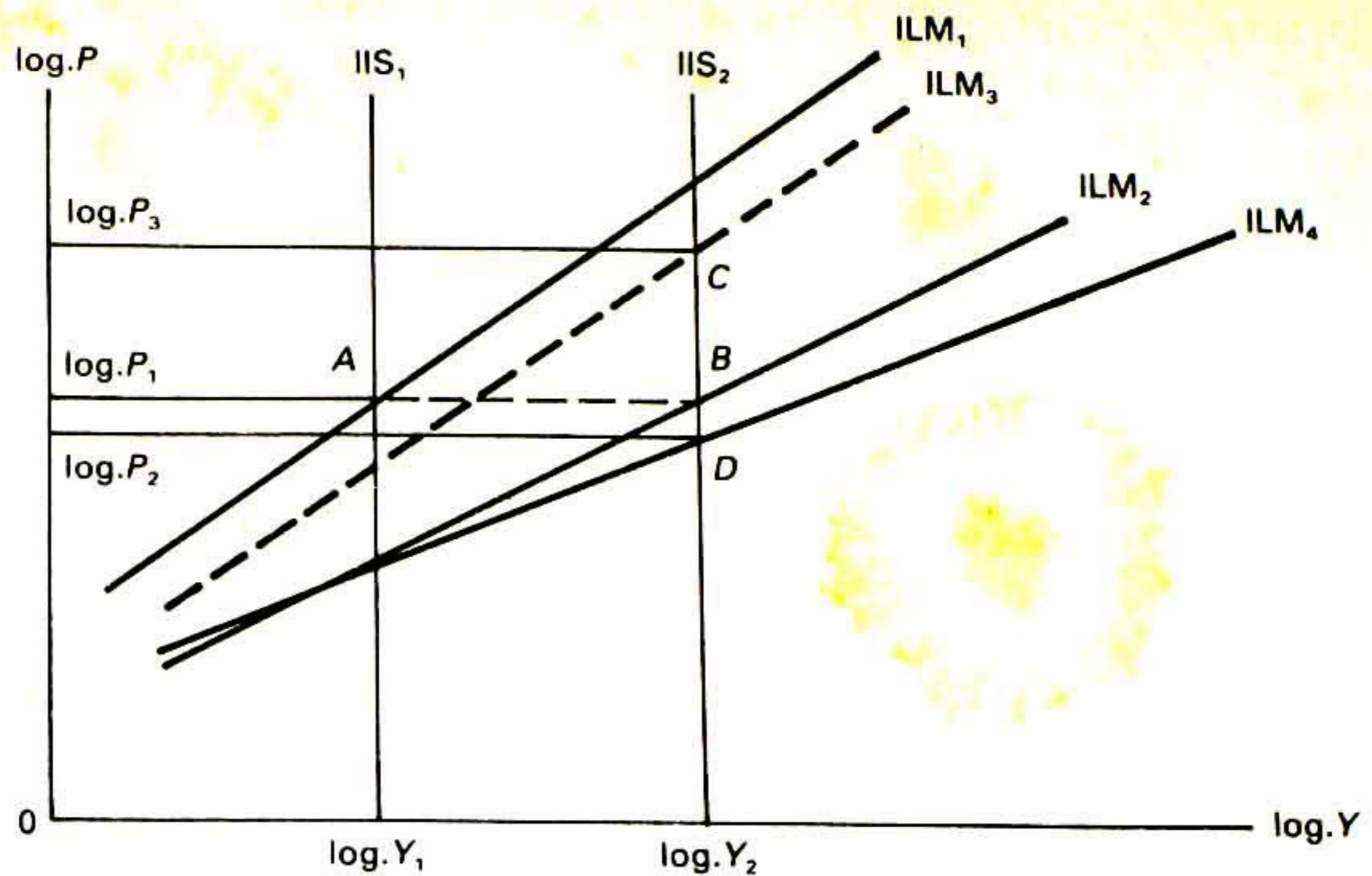
The statistical analysis of the estimated IIS relation now follows:

$$\begin{aligned} \log. Y = & 2.67 + 0.26 \log. I - 0.002 \log. P \\ & (0.47) \quad (0.62) \quad (0.004) \\ & + 0.82 \log. Z + 0.35 \log. T \quad (7.64) \\ & (1.20) \quad (0.51) \end{aligned}$$

$$R^2 = 0.9941, DW = 1.00, SSE = 0.0307$$

The estimated IIS relation yields signs of regression coefficients as expected in the theory (see Table 7.4). Particular note must be made here of the negative but small value of the coefficient of the log. *P* variable, and the positive signs of the coefficients of the log. *Z*, log. *I* and log. *T* variables. The negative relation between log. *Y* and log. *P* variables (not pronouncedly negative, but a rather inelastic relation) is explained by the fact that with an increase in investment levels, the marginal efficiency of investment starts to decline. This is the well-known Keynesian relationship of the IS curve at the full employment level of national income. The positive relationship of log. *Y* to log. *Z*, log. *I* and log. *T* variables indicates the stimulative aggregate demand effects in the expenditure sector, resulting in the full employment level of national income.

The estimated IIS relation is quite stable statistically at the 5 per cent level of significance. The presence of the inflation rate variable,



The exception to vertical shaped IIS curves in the Islamic economy in the Keynesian case is shown. This signifies the predominant effect of profit rates over national income in the Islamic expenditure sector model.

Figure 7.7 The estimated forms of the IIS and ILM relations taken in log-linear form

the $\log. \dot{p}$ variable, is not expected to alter the form of the estimated IIS relation. This is because in the Islamic economic system, where the rate of profit is a critical variable explaining general economic equilibrium, any degree of inflationary pressure will be built into the profit function. Then no separate $\log. p$ variable would be required in the IIS relation. For the same reason, the ILM relation also showed a spurious relationship with $\log. \dot{p}$ variable.

Between the IIS relation and the ILM relation we have a substantial amount of statistical instability in the monetary sector which makes the uniqueness of the Islamic general equilibrium system as explained by the estimated model system questionable. The nature of this instability can be seen in Figure 7.7.

In the limiting case the estimated IIS relation shows no effect of the $\log. P$ variable on $\log. Y$. Hence IIS_1 is shown to be infinitely inelastic in the $\log. P$ variable. But, with the stimulative effect of *zakah* expenditure, investment expenditure and government expenditure, the IIS curve shifts rightwards to IIS_2 , maintaining the shape of the estimated IIS relation, as this was found to be statistically stable. Consequently, $\log. Y_1$ increases to $\log. Y_2$.

The initial form of the estimated ILM relation in the (Y, P) plane may be represented by ILM_1 . The initial level of equilibrium is set at the point A . Since, the estimated ILM relation is found to be statistically unstable, it can assume a multitude of forms and, with a shift in the IIS relation, the consistency of fiscal and monetary policies will necessitate a rightward shift in the ILM. However, now we are not sure of the slope of the ILM curve. A multitude of possibilities can arise, as is shown by the positions of ILM_2 , ILM_3 and ILM_4 . In each of these cases we obtain a different equilibrium point, shown by B , C and D . Now a different level of the profit rate variable is determined for the same level of full employment national income. The decline in profit rates from P_3 to P_1 and then to P_2 would signify a lower mobilisation of savings towards the loanable funds and a greater demand for liquidity. Now the supply of liquidity from excess reserve creation will increase. Such a situation of liquidity creation is consistent with the shifts of the ILM curves from ILM_1 to ILM_3 composed with ILM_2 to ILM_3 . On the other hand, with a decline in profit rates, the level of investment expenditure, government expenditure and *zakah* expenditure may not be cut back. Hence there is no reason for the estimated IIS relation to swing leftwards, with a fall in profit rates from P_3 to P_1 and then to P_2 .

The statistical analysis of the estimated investment equation is given below:

$$\begin{aligned} \log. I = & -6.53 + 0.15 \log. Y + 0.43 \log. P \\ & (11.55) \quad (0.66) \quad (1.81) \\ & - 1.32 \log. Z + 1.54 \log. T \quad (7.65) \\ & (3.87) \quad (7.37) \end{aligned}$$

$$R^2 = 0.9984, DW = 1.91, SSE = 0.0175$$

The signs of the estimated regression coefficients are consistent with the theoretical investment equation (see Table 7.5). Particular note should be taken of the large negative value of the coefficient of the $\log. Z$ variable. There can be two explanations for this: first it might explain the fact that investment and *zakah* are substitutable activities in a static sense (that is, at one given point of time) in the Islamic economy. However, when technological advance is introduced over time, such a substitutable relationship may not hold true: - *zakah* receipts and expenditure can increase along with investment expenditure over time (dynamic sense). Second, the degree to which

Table 7.5 Testing the null hypothesis on estimated regression coefficients of the investment equation

Variables	Coefficients	t-statistics	DF	Test of null hypothesis at 5 per cent level of significance
constant	-6.53	11.55	15	R
log. <i>Y</i>	0.15	0.66	15	A
log. <i>P</i>	0.43	1.81	15	A (approx.)
log. <i>Z</i>	-1.32	3.87	15	R
log. <i>T</i>	1.54	7.37	15	R

$t_{0.05, 15}$

R: Reject

A: Accept

such a positive relationship between *zakah* expenditure and investment will exist over time depends greatly on the productive use of *zakah* when it must be spent. A strong feature of this productive use of *zakah* is its use in human resource development for the target groups of recipients of *zakah* funds. On the other hand, if too much of the *zakah* expenditure is instead outlaid on intertemporal consumption activity (that is, as social security transfers), then a positive relationship between log. *Z* and log. *I* variables may not occur.

With regard to the statistical stability of the estimated investment equation, we find that the relationship of the log. *I* variable to log. *Y* and log. *P* variables is fairly stable. On the other hand, the relationships with the log. *Z* and log. *T* variables are not stable. Such relationships can be explained by the fact that if given proportions of national income are not reinvested over time, then government expenditure (*T*) has to fill up the resource gap to some extent. Now, the movement of *Y* is fairly smooth, but that of *T* is not; it is totally a matter of fiscal policy. Finally, the stability in terms of the log. *P* variable indicates that there is sufficient excess slack in the economy to attain the full employment level of national income. Consequently, with an increase in the profit rate the level of investment will keep on increasing until the full employment level of national income is attained. Beyond this point, a negative relationship will set in between investment and the marginal efficiency of investment (capital). Such a relationship is better explained by the estimated equation for real investment.

The statistical analysis of the real investment (*i*) equation is given below:

Table 7.6 Testing the null hypothesis on estimated regression coefficients of the real investment equation

Variables	Coefficients	t-statistics	DF	Test of null hypothesis at 5 per cent level of significance
constant	-5.31	4.19	15	R
log. Y	0.05	0.19	15	A
log. P	-0.63	1.59	15	A
log. \dot{p}	-0.94	29.58	15	R
log. Z	-0.43	0.53	15	A
log. T	1.05	3.30	15	R

$t_{0.05, 15}$
 R: Reject
 A: Accept

$$\begin{aligned} \log. i = & -5.31 + 0.05 \log. Y - 0.63 \log. \dot{p} \\ & (4.19) \quad (0.19) \quad (1.59) \\ & - 0.94 \log. p - 0.43 \log. Z \\ & (29.58) \quad (0.53) \\ & + 1.05 \log. T \quad (7.66) \\ & (3.30) \end{aligned}$$

$$R^2 = 0.9987, DW = 2.11, SSE = 0.0221$$

The above relationship establishes an important result; namely, that it is the real and not the nominal investment which can be related to the marginal efficiency of investment in the expenditure sector model. However, the negative relationship between the marginal efficiency of investment (capital) or the rate of profit, and the real value of investment as shown in the estimated equation (7.66), is not via the full employment level of national income. Instead, it is due to the negative effect of inflationary price increase on the real return from investment, which in essence measures the marginal efficiency of investment (capital) or the rate of profit. The relationships of log. *i* with other variables (log. *Y*, log. *Z*, log. *T*) are explained as in the case of the estimated equation (7.65): See Table 7.6.

There is a gain of stability of the estimated equation (7.66) in terms of the critical Islamic economic variables, namely, log. *P* and log. *Z*. This point reinforces the conclusion that *zakah* was not taking up its due Islamic role in productive transformation in the Malaysian

Table 7.7 Testing the null hypothesis on estimated regression coefficients of the consumption equation

Variables	Coefficients		t-statistics		DF	Test of null hypothesis at 5 per cent level of significance	
constant	0.72	1.51	7.05	7.71	15	R	R
log. Y	0.11	0.005	0.98	0.06	15	A	A
log. Z	-	0.53	-	4.31	15	-	R
log. T	0.77	0.71	7.06	9.54	15	R	R

$t_{0.05, 15}$

R: Reject

A: Accept

economy. In the face of this and with rising inflation, the total of social and real rate of return on investment was not increasing in the Malaysian economy over the period 1970–85.

The statistical analysis of the estimated consumption function is given below:

$$\log. C = 0.72 + 0.11 \log. Y + 0.77 \log. T \quad (7.67)$$

(7.05) (0.98) (7.06)

$$R^2 = 0.9988, DW = 1.66, SSE = 0.0063$$

$$\log. C = 1.51 + 0.005 \log. Y + 0.53 \log. Z$$

(7.71) (0.06) (4.31)

$$+ 0.71 \log. T \quad (7.68)$$

(9.54)

$$R^2 = 0.9995, DW = 1.85, SSE = 0.0025$$

The signs of various regression coefficients in the estimated forms of the consumption equation comply with our theoretical formulation (see Table 7.7). Of particular importance is the positive sign of the coefficient of log. Z variable. This reinforces the fact that while *zakah* and investment had a negative relation in the estimated equations (7.65) and (7.66), *zakah* is seen here to have a positive relationship with consumption. This again points to the fact that much of the *zakah* expenditure was channelled into current consumption and less of it was directed into productive investment for the target groups on which such expenditures are mandated in an Islamic economic system.

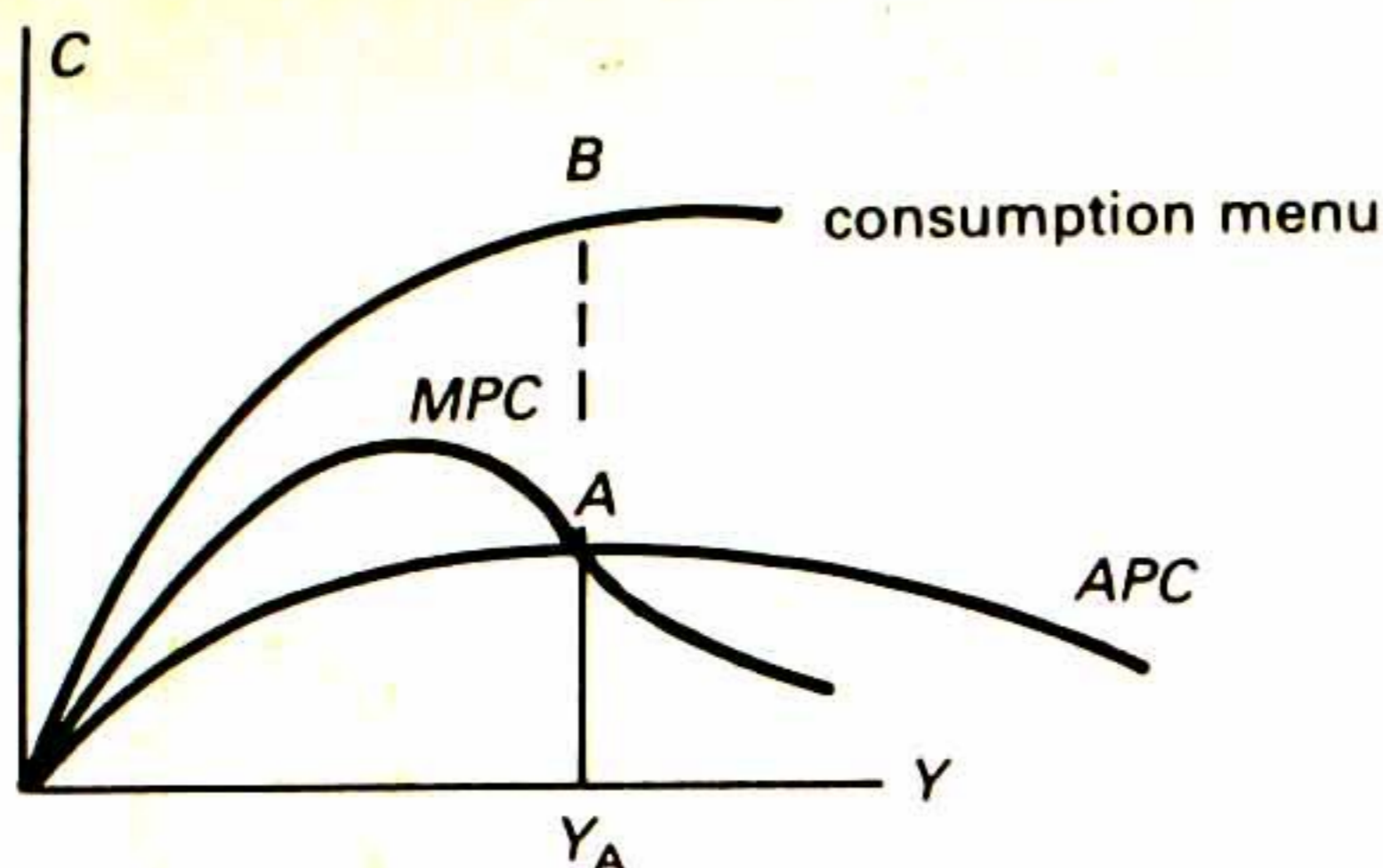


Figure 7.8 The relationship amongst MPC, APC and household thrift (Y_A)

The estimated relationship between $\log. Y$ and $\log. C$ variables shows that the ratio of 'marginal propensity to consume' to the 'average propensity to consume' was low. This implies that the marginal propensity to consume was too low. In other words, this means that income changed too slowly in order to have a marginal effect on consumption, indicating that there might have been an exercise of thrift on the part of household consumption behaviour. From equation (7.68),

$$\frac{\partial \log. C}{\partial \log. Y} = 0.005; \text{ i.e., } \frac{Y}{C} \frac{\partial C}{\partial Y} = 0.005; \text{ or } \frac{\partial C / \partial Y}{C / Y} = 0.005; \text{ i.e.,}$$

$$\frac{\text{marginal propensity to consume (=MPC)}}{\text{average propensity to consume (=APC)}} = 0.005.$$

This implies that the marginal propensity to consume was low and much smaller than the average propensity to consume. In Figure 7.8 B on the consumption-income curve denotes the starting of household thrift in consumption. For income levels above Y , MPC is thus progressively lower than APC .

This last point is further reinforced by examining equation (7.67). Here the removal of the Z -variable puts the pressure of consumption expenditure on the income variable. The coefficient of the $\log. Y$ variable increases to 0.11 from 0.005 in equation (7.68). The coefficient of the $\log. T$ variable remains unchanged.

The estimated consumption equation is fairly stable, particularly with respect to the $\log. Z$ variable. The fiducial limits for the actual value of the coefficients are as follows:

$$\text{log. } Z \text{ variable: } \left(\begin{array}{c} \text{actual regression} \\ \text{coefficient} \end{array} \right) - \left(\begin{array}{c} \text{estimated regression} \\ \text{coefficient} \end{array} \right) = \\ 1 \text{ per cent}$$

and this small difference is due mainly to the small value of SSE . The null hypothesis is rejected at the 5 per cent level of significance. At the 5 per cent level of significance, the true value of the regression coefficient, a , must be given by the inequality, $a < 0.534$. The computed t -statistic yields the value of the regression coefficient, a , to be 0.54. Thus the difference between the values of a for the computed t -statistic and the $t_{0.05, 15}$ value is not too far part.

The statistical analysis of the estimated potential output is given below:

$$\text{log. } Y = 3.04 + 1.41 \text{ log. } E + 0.56 \text{ log. } I \quad (7.69) \\ (7.22) \quad (1.54) \quad (4.76)$$

$$R^2 = 0.9907, DW = 0.95, SSE = 0.0576$$

$$\text{log. } Y = 4.33 - 0.81 \text{ log. } E + 0.49 \text{ log. } I \\ (8.66) \quad (0.85) \quad (5.36) \\ + 1.37 \text{ log. } Z \quad (7.70) \\ (3.33)$$

$$R^2 = 0.9952, DW = 1.35, SSE = 0.0299$$

In equations (7.69) and (7.70), the positive coefficient of the log. Z variable can be explained by the fact that *zakah* expenditure constitutes an autonomous expenditure in the economy. When the log. Z variable is dropped, equation (7.69) shows that both employment and investment have to be productive enough to maximise potential output. The argument is germane in other forms of social welfare expenditures as well: that is, such expenditures act as income supplementation during times of unemployment by the needy. Yet it would seem disturbing that the introduction of the *zakah* expenditure variable in equation (7.70) gives a negative coefficient to the log. E variable, showing that labour has now become less productive (see Table 7.8). The following two explanations can be put forward for such a change: first, the use of *zakah* expenditure is seen to be more in the direction of current consumption and not productive investment for the needy, which is an essential function of *zakah*. This consequently reduces the productivity of labour, and thus the nega-

Table 7.8 Testing the null hypothesis on estimated regression coefficients of the potential output equation

Variables	Coefficients		t-statistic		DF	Test of null hypothesis at 5 per cent level of significance	
constant	3.04	4.33	7.22	8.66	15	R	R
log. <i>E</i>	1.41	-0.81	1.54	0.85	15	A	A
log. <i>I</i>	0.56	0.49	4.76	5.36	15	R	R
log. <i>Z</i>	-	1.37	-	3.33	15	-	R

$t_{0.05, 15}$

R: Reject

A: Accept

tive relation between the nominal level of income and employment issues. Second, the lower productivity of labour would have been contributed by high wage rates in sectors that had become non-competitive, such as the agricultural sector. It is also in this sector, because of poverty and high levels of unemployment and bankruptcies, that *zakah* expenditure is the highest. Under such circumstances, the role of *zakah* is seen to be twofold: as argued above, it would have increased current consumptions of the needy; and, noting that *Y* is the potential output, it has to be maintained at the full employment level. Thus as long as structural unemployment lasts in the economy, an autonomous level of government expenditure would be required to maintain the full employment level of output. This is possible with the help of *zakah* expenditure along with investment expenditure.

The statistical instability of equations in terms of log. *I* and log. *Z* variables at the 5 per cent level of significance is shown by the following differences between the actual regression coefficient and the estimated regression coefficient:

$$\begin{aligned} \text{log. } I \text{ variable: } & \left(\begin{array}{c} \text{actual regression} \\ \text{coefficient} \end{array} \right) - \left(\begin{array}{c} \text{estimated regression} \\ \text{coefficient} \end{array} \right) \\ & = \begin{cases} 27 \text{ per cent in equation (7.69)} \\ 16 \text{ per cent in equation (7.70)} \end{cases} \end{aligned}$$

$$\begin{aligned} \text{log. } Z \text{ variable: } & \left(\begin{array}{c} \text{actual regression} \\ \text{coefficient} \end{array} \right) - \left(\begin{array}{c} \text{estimated regression} \\ \text{coefficient} \end{array} \right) \\ & = 10 \text{ per cent in equation (7.70)} \end{aligned}$$

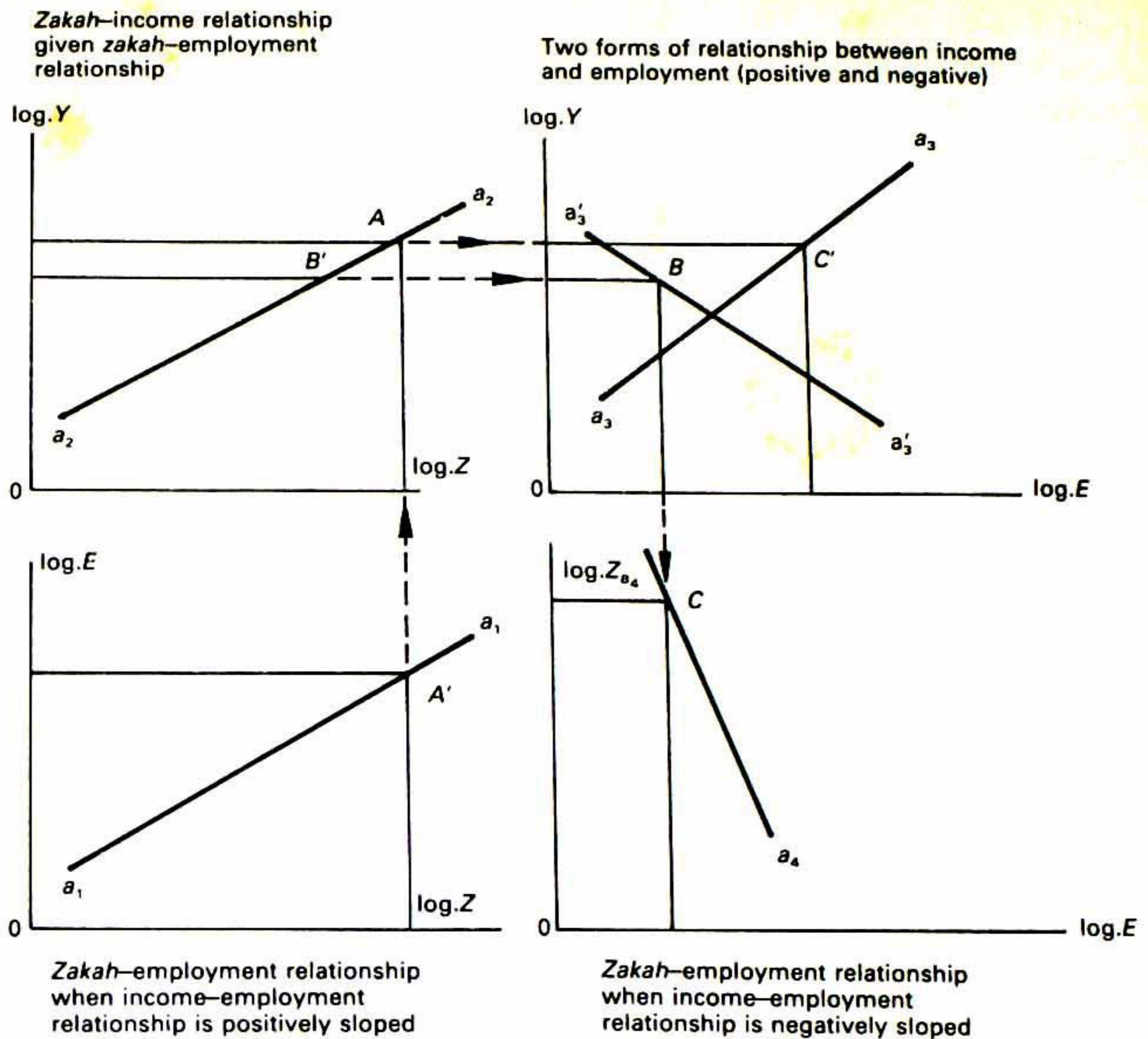


Figure 7.9 Estimated zakah-employment-income relation and the Islamic alternative to structural transformation with zakah

There is a good degree of statistical stability with respect to the employment variable, suggesting a structural problem of unemployment in the Malaysian economy. It is precisely because of the structural nature of unemployment that *zakah* expenditure must be reorganised so as to favour structural transformation in the Malaysian economy.

Figure 7.9 shows the process of structural transformation through *zakah* that is necessary in the Islamic economy, against the kind of relationships shown in equation (7.70). The estimated relationships are shown by the direction of arrows from point A to B and C. The central point to note in this relationship is the use of *zakah* through current consumption expenditure in maintaining the potential level of national output, Y. But this does not direct *zakah* towards produc-

tive transformation. The Islamic alternative for productive transformation is indicated by the direction of arrows from point A' to B' and C' . The important point to note in this transformation process is that the principal objective of *zakah* in these economic interrelationships is employment creation, and not primarily maintenance of potential national output. The potential output level is then automatically increased and maintained once employment creation takes place. Now, with positive relationships between $\log. Z$ and $\log. E$, and $\log. Z$ and $\log. Y$, there is bound to be a positive relationship between $\log. E$ and $\log. Y$.

Finally, corresponding to the potential level of national output, a general economic equilibrium is determined in the expenditure sector and the monetary sector. This necessitates the intersection of the IIS and ILM curves: that is, $IIS = ILM$ in this case. From such a relationship it is possible to obtain the equilibrium profit rate equation (but not necessarily the normal profit rate). The estimated form of the profit rate equation is

$$\begin{aligned} \log. p = & 4.25 + 1.38 \log. I + 3.21 \log. C \\ & (2.92) \quad (3.40) \quad (2.54) \\ & - 4.53 \log. T \quad 0.002 \log. Z \quad (7.71) \\ & (2.95) \quad (0.003) \end{aligned}$$

$$R^2 = 0.8864, DW = 1.12, SSE = 0.0137$$

The critical interrelationships are those between profit rate and investment, and between profit rate and *zakah* (see Table 7.9). In regard to the relationship between profit rate and investment, it is seen that although in our model system we equated IIS and ILM, yet the actual level of national output in the Malaysian economy was below the full employment level. There was consequently sufficient excess capacity for investment to increase towards establishing the full employment level of output. Along with this, the rate of profit could also increase. In regard to the relationship between profit rate and *zakah*, it is to be recalled that *zakah* expenditure was not found to be directed towards productive investment in the Malaysian economy for the period 1970–85. Consequently, the coefficient of the $\log. Z$ variable is fairly low.

The positive relationship between profit rate and consumption expenditure is expected in the short run. When the economy is below

Table 7.9 Testing the null hypothesis on estimated regression coefficients of the profit rate equation

Variables	Coefficients	t-statistic	DF	Test of null hypothesis at 5 per cent level of significance
constant	4.25	2.92	15	R
log. <i>I</i>	1.38	3.40	15	R
log. <i>C</i>	3.21	2.54	15	R
log. <i>T</i>	-4.53	2.95	15	R
log. <i>Z</i>	0.002	0.003	15	A

$t_{0.05, 15}$

R: Reject

A: Accept

the full employment level of income, consumption expenditure generates increased aggregate demand, and acts along with investment and *zakah* expenditures towards establishing the full employment level of national output. A higher level of national output in the process generates increasing reinvestment, and thereby higher profit rates.

The negative relationship between government expenditure and the rate of profit indicates that such expenditures have not played any positive role in productive transformation of the Malaysian economy. The conclusion is understandable when viewed against government expenditures being overly channelled towards social security payments or in supporting unproductive ventures. It is interesting to note here that although *zakah*, like government expenditure, is an autonomous expenditure in the economy, yet *zakah* expenditure has a small but relatively positive effect in productive capacity of the Malaysian economy.

The estimated equation and results for the labour demand equation are summarised in Table 7.10. The estimated labour demand equation is therefore found to provide a good explanatory power for the theoretical equation. The important directions of relationships to be noted here are the positive effect of *zakah*, profit rate and the wage rate on labour demand stated as employment. As we have noted, the Malaysian economy during the 1980s experienced substantial slack in the labour market, so that movement towards a full employment situation in the Keynesian type of Islamic labour market model would make both log. *I* and log. *P* increase together. This in turn will

Table 7.10 Testing the null hypothesis on estimated regression coefficients of the labour demand equation

Variables	Coefficients	t-statistic	DF	Test of null hypothesis at 5 per cent level of significance
constant	0.97	1.05	15	A
log. <i>Y</i>	0.09	0.46	15	A
log. <i>I</i>	0.002	0.02	15	A
log. <i>Z</i>	0.02	0.06	15	A
log. <i>W</i>	0.11	0.71	15	A
log. <i>P</i>	0.09	0.46	15	A

 $t_{0.05, 15}$

A: Accept

positively affect the derived demand for labour along with the inter-related and positive effect of log. *Y* as another important explanatory variable. As for the positive relationship of *zakah* and the wage rate to employment, this may be explained by the augmentation of wage rate with *zakah* in the low-earning farming sector in Malaysia during the later years of the New Economic Policy (NEP). Thus, between wage rate and *zakah* effects on wages, no negative effect of wage rate increases on employment was found. In other, more productive, sectors of the Malaysian economy, particularly in the manufacturing sector, an increase in wage rate was due to increase in labour productivity. While we cannot support the otherwise Islamic relationship of *zakah* on wages through its effect on labour productivity gains in training for the needy for Malaysia in the period studied, an Islamic structural transformation of the Malaysian economy would further support the kind of *zakah*, investment, profit rate and wage-rate effects on employment as shown in the estimated labour demand equation.

The estimated equation and results for labour supply are estimated in Table 7.11. The estimated labour supply equation does not, therefore, explain the effects of log. *W* and log. *Z* on log. *L*. This point supports the results of the labour demand equation from the perspective of an Islamic labour market. It explains the fact that although the effect of *zakah* on labour supply would be structurally positive because of productive transformation through the use of *zakah* in skill formation, such a result is weak for Malaysia for the period 1970–1985. The same result further points out that, under

Table 7.11 Testing the null hypothesis on estimated regression coefficients of the labour supply equation

Variables	Coefficients	t-statistic	DF	Test of null hypothesis at 5 per cent level of significance
constant	1.83	3.39	15	R
log. <i>W</i>	0.15	2.35	15	R
log. <i>Z</i>	0.27	2.92	15	R

$t_{0.05, 15}$
R: Reject

NEP, this very important role of *zakah* in productive transformation in the agricultural sector may have been lost.

The forms of relationship between *zakah* and wages explained above for the labour demand and supply equations are conclusively established in the wage rate equation,

$$\begin{aligned} \log. W = & -4.83 - 0.89 \log. Y + 0.72 \log. I - 0.25 \log. P \\ & (4.15) \quad (3.37) \quad (3.43) \quad (0.68) \\ & + 1.24 \log. Z - 0.05 \log. i \\ & (1.77) \quad (1.48) \end{aligned}$$

$$R^2 = 0.9855; DW = 1.81$$

The results are summarised in Table 7.12.

The negative result of log. *P*, the positive effect of log. *Z*, and the negative effect of log. *i*, which are accepted at the 5 per cent level of significance, point to the fact that because profit rate and investment have opposite signs in their relationship with log. *W*, the growth of labour productivity could not fully explain the increase in wage rates. Therefore a positive relationship of *zakah* on the wage rate would not have been through the route of productive transformation in the Malaysian economy, particularly in regard to the low-earning agricultural sector. All that might have happened is an augmentation of the wage rate with *zakah* expenditure. Finally, the negative effect of the nominal rate of interest on wage rate can be explained through the resulting negative effect of interest rate on investment.

Table 7.12 Testing the null hypothesis on estimated regression coefficients of the nominal wage rate equation

Variables	Coefficients	t-statistic	DF	Test of null hypothesis at 5 per cent level of significance
constant	-4.83	4.15	15	R
log. <i>Y</i>	-0.89	3.39	15	R
log. <i>I</i>	0.72	3.43	15	R
log. <i>P</i>	-0.25	0.68	15	A
log. <i>Z</i>	1.24	1.77	15	A
log. <i>i</i>	-0.05	1.48	15	A

 $t_{0.05, 15}$

R: Reject

A: Accept

CONCLUSION: SUMMARY OF EMPIRICAL RESULTS

We can now conclude this chapter with a summary of results of estimations carried out for the Malaysian economy for the period 1970–85, viewing it in the context of an Islamic economic system. Most of the equations estimated for the Keynesian type of Islamic economic system (namely, for money demand, money supply, IIS relation, ILM relation, investment function, consumption function, the potential level of output, employment, labour force and profit rate) yielded sign relationships as expected in the theoretical formulation. However, some of these relationships were statistically unstable, especially the money supply equation, the ILM relation, the profit rate and investment relationship. This statistical instability had to do with two factors: first, although we adopted the general equilibrium system of relationship in a full employment condition, the Malaysian economy for the period 1970–85 was below this full employment situation in output and employment. This created statistical instability in the slopes of some of the relationships, and a positive relationship between investment and profit rate (interpreted here as the marginal efficiency of investment). Second, the negative relationship – or a spurious positive (low value of estimated regression coefficient of the log. *Z* variable) relationship – between *zakah* and productive transformation of the target groups of recipients of *zakah* was seen in terms of this expenditure being directed overly towards

Table 7.13 Principal macroeconomic variables of the Malaysian economy

Year	MI (money supply)	MI (money demand)	Y	I	C	G (Malaysian \$ millions)	Z	CPI	IR	Profit rate (%)
1970	2 032.5	2 164.5	12 155	2 467	9 483	11 950	5 695.0	101.3	8.0	6.5
1971	2 120.4	2 222.2	12 501	2 391	10 302	12 693	5 975.6	102.9	8.0	6.5
1972	2 715.5	2 845.5	13 641	3 024	11 158	14 182	6 270.1	106.2	7.5	7.0
1973	3 735.2	3 858.8	17 443	4 023	13 023	17 046	6 579.0	117.4	8.0	7.6
1974	4 055.3	4 262.7	21 244	6 063	15 822	21 885	6 903.2	137.8	10.0	8.0
1975	4 348.8	4 589.3	21 684	5 171	16 797	21 968	7 237.2	144.0	9.5	8.0
1976	5 257.0	5 517.8	26 983	6 283	18 820	25 103	7 496.4	147.7	8.5	8.0
1977	6 127.4	6 480.2	31 064	7 712	22 200	29 912	8 056.2	154.8	7.5	7.8
1978	7 242.8	7 598.8	36 170	10 143	25 674	35 817	8 415.9	162.4	7.5	7.6
1979	8 487.0	8 910.7	44 433	13 052	28 881	42 383	8 788.9	168.3	7.5	7.8
1980	9 761.4	10 430.8	51 718	16 536	35 757	52 293	9 326.1	179.5	8.5	8.1
1981	11 014.5	11 727.7	55 985	20 521	41 019	61 540	9 519.8	109.7	8.5	8.5
1982	12 476.7	13 553.6	60 016	23 655	44 695	68 350	10 143.1	116.1	8.5	8.5
1983	13 432.3	14 620.3	65 702	25 553	48 154	73 707	10 642.8	120.4	8.5	8.5
1984	13 356.7	14 649.7	74 429	26 747	51 335	78 082	11 167.3	125.1	8.5	8.5
1985	13 578.9	14 723.8	72 308	22 826	51 582	74 408	11 717.6	125.5	8.5	8.5

MI : narrow definition of money
Y : national income
I : investment
C : Consumption
G : Government expenditure
Z : zakah expenditure
CPI : Consumer price index
IR : interest rate

current consumption and not, as Islamically recommended, towards productive investment for the targeted recipients. Included in this category of investment is human resource development of the target groups.

It was argued, on the basis of the empirical results, that *zakah* expenditure needs to be institutionally reorganised, with the goal of productive transformation of target groups of recipients. In this respect it was found that *zakah* expenditure can play a role different from government expenditure, which is seen to be associated with social security payments in the case of financial support to unproductive ventures. In Chapter 8 these critical points will be further developed in a policy framework.

8 Islamic Policy Conclusions on the Malaysian Macroeconomy

In this Chapter we will relate the principal results of our theoretical and empirical study on Islamicising the Malaysian macroeconomy to the problems and prospects viewed under the Malaysian Fifth Development Plan. On the basis of this investigation we will develop the relevant policy perspectives for the Malaysian macroeconomy to the year 1990.

SUMMARY OF THIS WORK: POLICY OUTLOOK

In the theoretical part of this work we have shown that the Islamic economic institutions of *mudarabah*, *zakah* and the abolition of interest with its replacement by the rate of profit, have important and positive implications for the structural development transformation of the economy. Within this framework the goals of development revolve around a balance between growth and distribution. The Islamic viewpoint on distributive equity and economic efficiency was shown not to be a trade-off, but rather an ethical simultaneity that is achieved through appropriate policies not taken from the neoclassical economic mould. Consequently a Keynesian approach to Islamic economic modelling was emphasised as a viable alternative.

We have shown that *mudarabah*, the Islamic profit-sharing system under cooperation, in its broadest terms, is central to the intertemporal and atemporal definitions of economic efficiency in the absence of the rate of interest. In fact, the process of abolition of interest (*riba*) cannot take place if the institution of *mudarabah* is not established and functioning well in the first place.

The role of *zakah* was shown to be complementary to that of *mudarabah* is establishing the efficiency–equity simultaneity. Its impact was shown to be on human capital formation of the needy. The

empirical results arrived at showed that the role of *zakah* in this productive transformation of the Malaysian economy was mandatory. It was argued that the positive *zakah* multipliers on income generation, human capital development, productivity and employment, in as much as they take place through the principle of distributive equity, cannot be overly directed towards current consumption if the goal of efficiency–equity simultaneity is to be attained.

The Malaysian economy between the years 1970 and 1985 is seen to have had slack periods, but potential for development in both directions: the institutionalisation of *mudarabah* and the use of *zakah* for the productive transformation of the economy. The slack periods existed because of the lack of proper functioning of these crucial Islamic economic institutions from an economy-wide perspective. The potential exists, because of the presence of these institutions, their statistical base and, therefore, their viability for undertaking related quantitative analysis for the Malaysian economy at this time.

The implications of *mudarabah* for Malaysia were shown in this study not to be contained within a closed economy alone. Rather, in a broader sense, it called for an extension of this institution to the external sector as well. This further adds to the significance of *mudarabah*, as the Malaysian economy happens to be a very open one. The point was brought out in this study that domestic and international trade in critical commodities, the one focused upon being agriculture, can be institutionally managed in a tripartite cooperation between government, the private sector (including financial institutions), and small-scale landholders, who are mostly the underprivileged Bumiputeras, the target group of the Malaysian NEP. The aim of this policy is to eradicate poverty and bring about greater equality in Malaysian society during the period of the Fourth and Fifth Development Plans. In this tripartite arrangement, the very important private-sector role in the presence of soft agricultural loans from the government and financial institutions was shown in this work to be benefiting from the compounding of equity participation in joint ventures, with government transfers acting as limited subsidies. In other words, under such a tripartite arrangement the principle of efficiency–equity simultaneity took the form of an incomes policy with progressive market adjustment taking place, rather than it being left to the benevolence of government transfers alone.

Apart from the economic analysis carried out in the Keynesian type of Islamic models which have been empirically tested in this study, it was also pointed out that the Malaysian economy experienced

a number of leakages between the years 1970 and 1985. Among these were underutilisation of production capacity, underinvestment in the private sector, shortfalls in export earnings, high consumption demand both from household and the government sides, decline of the agriculture sector and increasing unemployment. All these reflected slack in the investment model, with investment level being positively related to the rate of profit, interpreted as the marginal efficiency of investment. The message was thus clear: investment and production had to be diversified and expanded, with the private sector and cooperation between the private and public sectors playing major roles in this process. In the Islamic economic context this translates to the stepping-up of joint ventures of the *mudarabah* type, big and small, and the gradual elimination of loan interest, beginning with the critical commodities sector first. A comparison of selected bank statements in Malaysia has shown that the Islamic ventures in these directions, although quite nascent, have proved productive in recent years.

Finally, the information systemic basis of the Islamic economic institutions in the present Malaysian administrative set-up was delineated in this work. In this, a coordination of research, policy and administrative functions of an Islamic Supervisory Body with the Government Economics and Planning Department, the State Bank, the financial institutions in general, and the Islamic financial institutions in particular, was drawn up. The implications of this are that, during the process of Islamicisation of the Malaysian macroeconomy, the transition can adapt the existing institutions to the change rather than overhaul them completely. It would not be wise to do the latter in view of the huge costs involved. On similar lines of argument, the overall well-behaved Islamic monetary and fiscal models of the Keynesian type that have been tested in this study for Malaysia in the period 1970–85 have shown that a gradual replacement of the monetary instrument of interest rate by the profit-sharing rate and the introduction of wealth tax with distribution under fiscal policy measures will not adversely alter the existing administrative framework. This would be extremely expensive otherwise. The conclusion in this regard is not only true of Malaysia, but has been recently proved true for Pakistan and Iran as well.¹

We now raise the following question in this chapter: In the light of the theoretical and empirical results of our study and the problems and prospects viewed under the Fifth Malaysian Plan (1986–90), what potential do the Islamic alternatives hold for the Malaysian macro-

economy? In order to build upon this section of our study we will first summarise the relevant features of the Fifth Malaysian Plan that would interest us in this work.

SUMMARY OF THE MAIN FEATURES OF THE MALAYSIAN FIFTH PLAN FROM ISLAMIC PERSPECTIVES

The Malaysian Plan aims at the following critical targets in the direction of productive and equitable transformation of the Malaysian economy.²

1. Strengthening national unity through the achievement of expanded economic growth within the goals of the NEP. This policy aims at more equitable distribution of economic opportunities and participation by the underprivileged Bumiputeras and the eradication of poverty found to afflict this target group among all other groups in Malaysia (Chinese, Indians).
2. Emphasising the role of the private sector in resource mobilisation at all levels (large enterprises, medium- to small-scale enterprises, and certain government-owned enterprises which can be privatised).
3. Restraint in government expenditures in the market with the objective of cutting down the large balance of payment deficits and producing higher economic efficiency.
4. Pursuit of a combination of inward- and outward-looking strategies of development, such that foreign investments are encouraged in Malaysia on attractive terms so as to create viable import substitution, diversifying the commodity base through an internal mobilisation of resources rather than borrowing externally, and stepping up the export orientation in the secondary manufacturing sector.
5. Encouraging increased levels of equity participation in domestic enterprises, particularly from the Bumiputeras, whose percentage shares in this to date have been disproportionately lower than of the other groups in the country.
6. Rapid manpower development of the Bumiputeras in particular in order to distribute managerial and technical skills more equitably in the Malaysian society.

In realising the goals of the Fifth Plan Malaysia will have to face the economic realities of the years ahead. Trends in the balance of

payment deficits, falling terms of trade on commodities, and not-too-promising growth prospects for the industrialised nations in the eighties, will constrain economic growth for Malaysia. The Malaysian economy, open as it is to the world economy, will remain vulnerable to changes across its borders. On the domestic front, the single most important factor to consider would be structural transformation of the economy. This will involve realising the goals of NEP, and therefore the diversification and raising of productivity levels in agriculture. Furthermore, this will have to be achieved by resource mobilisation domestically through the private sector with government expenditures in it playing a decreasing role. The challenge must be faced in terms of reinvigorating the agricultural sector in view of the fact that it is expected to decline in growth and market share to the year 1990. On the other hand, the goal in the manufacturing sector would still be to maximise economic efficiency *per se*, and it will also be this sector that is expected to lead in growth performance. In other words, one has to view critically the prospects of achieving an equity–efficiency simultaneity in the context of a structural transformation process for the Malaysian economy to the year 1990. That, above all, is the heart of the Fifth Malaysian Plan in respect to the central focus on the NEP.

Table 8.1 gives the industry-specific gross domestic product (GDP) picture for Malaysia for the years 1985 and 1990. The trends shown here point to the declining growth of the agricultural sector and steady growth in the manufacturing sector. Average annual growth rates declined in 1990. All these point to gains in shares by the tertiary sector, declining shares by the primary sector, and a small increase in the shares of the manufacturing sector. These were not good signs for productivity gains in the Malaysian economy in the eighties.

Next we look at the employment picture by sectors for ethnic groups between the years 1980 and 1990. This is shown in Table 8.2. The trends show that while the share of employment for Bumiputeras remained unchanged in the agricultural sector between the years 1980 and 1990, there were significant gains in the manufacturing and tertiary sectors. But, in spite of this, the unemployment rate was seen to be highest among the Bumiputeras all through the eighties, although the growth rate of the labour force for Bumiputeras (3.4 per cent annually) was almost the same as for the Chinese (3.2 per cent annually) and the Indians (3.1 per cent annually) between the years 1980 and 1990. The slightly higher rate of growth of Bumiputera

labour force was due to increased manpower training and human capital development accentuated under NEP.

Table 8.3 presents the employment picture by occupation for ethnic groups between 1980 and 1990. The trends show that most significant gains in occupational shares by the Bumiputeras were attained in the sales and services occupations and some in the professional and technical occupations. In the agricultural and production occupations the percentage shares remain almost unchanged between the years 1980 and 1990. The occupational picture by ethnic group does not throw encouraging light on any significant gains on labour productivity as would be desired under NEP. The same picture holds in terms of mean and medium incomes for ethnic groups.

The final picture on economic distribution can be represented by the one on wealth-holding by ethnic groups in Malaysia. Here we will look only at the ownership of share capital of limited companies. Table 8.4 presents this picture for the period 1980-90. The trends show that significant gains have been achieved in the distribution of wealth during the mentioned period. This trend is expected to continue in favour of the Bumiputeras in the nineties. There would still be a significant disproportion in the ownership of assets between the Bumiputeras and other Malaysian residents. This disproportionate magnitude of asset-holding is of some concern as it biases resource mobilisation in the financial sector, principally in favour of the non-Bumiputeras.

When this picture on asset-holding is combined with the one on sectoral and occupational labour market for the Bumiputeras, it conveys the conclusion that most of the employment gains by this target group in the labour market would be at lower levels of managerial and tertiary sector occupations. Senior decision-making positions for the Bumiputeras must be realised if the impact of NEP is to be effectively realised.

The important relevance of distribution of wealth in Malaysian society for achieving equity and efficiency under the NEP formula is precisely the goal that can be addressed by the Islamic economic instruments of *mudarabah* and *zakah*. We will now examine this topic in a policy framework.

Table 8.1 Malaysia: GDP by industries, 1980, 1985, 1990 (M\$ millions in 1978 prices)

Industry	GDP 1980	share 1980	GDP 1985	% share 1985	% annual growth 1980-5	GDP 1990	% share 1990	% annual growth 1985-90
Primary								
Agriculture	14 676	33.03	18 052	30.4	4.6	20 702	27.3	2.9
Mining and quarrying	10 189	22.79	12 046	20.3	3.6	13 713	18.1	2.8
	4 487	10.04	6 006	10.1	6.8	6 989	9.2	3.3
Secondary								
Manufacturing	10 998	24.60	14 405	24.2	6.2	19 509	25.8	7.1
Construction	8 932	20.0	11 357	19.1	5.4	15 509	20.5	7.3
	2 066	4.6	3 048	5.1	9.5	4 000	5.3	6.2
Tertiary								
Electricity	17 836	39.90	26 138	44.1	9.3	34 982	46.4	6.8
	640	1.4	988	1.7	10.9	1 513	2.0	10.6

Transportation, garage and communication	2 542	5.7	3 805	6.4	9.9	5 494	7.3	8.8
Wholesale and retail trade	5 383	12.0	7 551	12.7	8.1	10 252	13.6	7.2
Finance, insurance, real estate and business services	3 687	8.2	5 212	8.8	8.3	7 230	9.6	7.3
Government services	4 563	10.2	7 270	12.3	11.9	8 842	11.7	4.3
Other services	1 021	2.3	1 312	2.2	5.7	1 651	2.2	5.2
Less: Imputed bank Service charges	854	-	1 675	-	-	2 224	-	-
Plus: Import duties	2 046	-	2 424	-	-	2 630	-	-
GDP	44 702	-	59 344	-	6.6	75 599	-	5.5

Source: Department of Statistics, Preliminary National Accounts Statistics of Malaysia (1985); Fifth Malaysian Plan, 1985-1990.

Table 8.2 Malaysia: Employment by Sector and Ethnic Groups, 1980, 1985, 1990 (000 and percentages)

Sector	1980				1985				1990						
	B	C	I	O	T	B	C	I	O	T	B	C	I	O	T
Agriculture, etc. %	1397	313	185	15	1910	1429	318	189	18	1954	1462	326	196	18	2002
Mining, etc. %	73.1	16.4	9.7	0.8	100	73.2	16.3	9.6	0.9	100	73.0	16.3	9.8	0.9	100
Manufacturing, etc. %	27	44	9	1	81	21	33	6	1	61	16	21	3	1	41
Construction %	33.9	54.7	10.6	0.8	100	35.2	53.7	9.9	1.2	100	38.5	51.4	8.4	1.7	100
Electricity, etc. %	309	381	61	5	756	353	394	75	6	828	409	432	92	8	941
Transport, etc. %	40.9	50.4	8.0	0.6	100	42.6	47.5	9.0	0.7	100	43.5	45.9	9.8	0.8	100
Wholesale Trade, etc. %	106	144	17	3	270	148	206	21	4	379	185	263	25	4	477
	39.1	53.4	6.4	1.1	100	39.0	54.5	5.5	1.0	100	38.8	55.1	5.2	0.9	100
	21	3	7	0	31	27	4	9	0	41	31	4	9	2	46
	67.1	9.7	22.6	0.0	100	67.9	8.8	22.8	0	100	68.0	8.7	20.0	3.3	100
	110	73	25	1	209	147	89	28	1	265	188	106	32	1	327
	52.6	35.0	11.9	0.5	100	55.6	33.4	10.7	0.3	100	57.4	32.5	9.9	0.2	100
	250	374	50	3	677	323	460	60	3	846	406	563	72	3	1044
	36.9	55.3	7.4	0.4	100	38.2	54.4	7.1	0.3	100	38.9	53.9	6.9	0.3	100

Finance, etc.	29	43	6	0	78	39	55	7	0	101	48	65	9	0	122
%	36.9	55.3	7.4	0	100	38.2	54.1	7.3	0	100	39.3	53.4	7.0	0	100
Government services	389	196	64	9	658	506	222	82	10	820	571	235	92	11	909
%	59.1	29.7	9.8	1.4	100	61.7	27.1	10.0	1.2	100	62.9	25.9	10.1	1.1	100
Other services	8.8	42	15	2	147	109	46	19	2	176	130	52	22	2	206
%	59.6	28.7	10.4	1.3	100	61.8	26.3	10.7	1.2	100	62.9	25.2	10.8	1.1	100
Total employed	2725	1614	439	39	4817	3102	1827	496	44	5469	3446	2067	552	49	6114
%	56.6	33.5	9.1	0.8	100	56.7	33.4	9.1	0.8	100	56.4	33.8	9.0	0.8	100
Labour force	2921	1679	468	40	5108	3397	1932	542	46	5917	3913	2218	615	52	6798
%	57.2	32.9	9.1	0.8	100	57.4	32.6	9.2	0.8	100	57.6	32.6	9.0	0.8	100
Unemployment %	6.7	3.9	6.2	3.0	5.7	8.7	5.5	8.4	5.0	7.6	11.9	6.8	10.3	5.0	10.1

B = Bumiputera
 C = Chinese
 I = Indian
 O = Other
 T = Total

Source: Department of Statistics, Preliminary National Accounts Statistics of Malaysia (1985); Fifth Malaysian Plan, 1985-1990.

Table 8.3 Malaysia: Employment by occupation and ethnic group, 1980, 1985 and 1990* (000s)

Occupational group ^a	1980						1985					
	Bumiputeras	%	Chinese	%	Indian	%	Others	%	Total	%		
Professional and technical ^b	154.9	53.7	97.5	33.8	29.7	10.3	6.0	2.1	288.1	100.0		
Teachers and nurses	77.2	60.8	39.2	30.9	9.8	7.7	0.8	0.6	127.0	100.0		
Administrative and managerial ^c	14.7	28.6	32.7	63.6	2.5	4.9	1.4	2.7	51.3	100.0		
Clerical ^d	183.4	52.3	133.1	37.9	31.2	8.9	3.1	0.9	350.8	100.0		
Sales ^e	146.4	31.1	292.2	62.0	31.5	6.7	1.1	0.2	471.2	100.0		
Service ^f	231.6	55.4	139.8	33.4	41.8	10.0	5.1	1.2	418.3	100.0		
Agricultural ^g	1369.8	73.5	315.6	16.9	163.9	8.8	15.1	0.8	1864.4	100.0		
Production ^h	624.2	45.5	603.0	43.9	138.5	10.1	7.1	0.5	1372.8	100.0		
Total	2725.0	56.6	1613.9	33.5	439.1	9.1	38.9	0.8	4816.9	100.0		
1985												
Occupational group ^a	Bumiputeras	%	Chinese	%	Indian	%	Others	%	Total	%		
Professional and technical ^b	193.9	54.4	115.5	32.4	39.8	11.1	7.5	2.1	356.7	100.0		
Teachers and nurses	111.3	64.5	49.5	28.7	10.9	6.3	0.9	0.5	172.6	100.0		
Administrative and managerial ^c	17.5	28.2	40.9	66.0	3.1	5.0	0.5	0.8	62.0	100.0		
Clerical ^d	224.7	54.0	152.9	36.8	36.1	8.7	2.1	0.5	415.8	100.0		
Sales ^e	216.3	37.9	324.1	56.8	30.0	5.2	0.5	0.1	570.9	100.0		
Service ^f	305.2	57.9	164.4	31.2	51.1	9.7	6.3	1.2	527.0	100.0		
Agricultural ^g	1402.6	73.5	327.2	17.2	158.6	8.3	19.0	1.0	1907.4	100.0		
Production ^h	741.5	45.5	701.6	43.1	177.5	10.9	8.1	0.5	1628.7	100.0		
Total	3101.7	56.7	1826.6	33.4	496.2	9.1	44.0	0.8	5468.5	100.0		

Occupational group ^a	Bumiputeras	%	Chinese	%	Indian	%	Others	%	Total	%
Professional and technical	225.5	55.6	124.2	30.6	48.2	11.9	7.7	1.9	405.6	100.0
Administrative and managerial	20.4	27.6	49.7	67.2	3.6	4.9	0.2	0.3	73.9	100.0
Clerical	256.5	54.4	173.2	36.7	40.0	8.5	1.9	0.4	471.6	100.0
Sales	281.7	41.3	368.7	54.0	31.2	4.6	0.8	0.1	682.4	100.0
Service	367.9	58.9	188.8	30.2	61.0	9.8	7.0	1.1	624.7	100.0
Agricultural	1433.6	73.3	348.5	17.8	154.0	7.9	19.8	1.0	1955.9	100.0
Production	860.4	45.3	813.4	42.8	214.2	11.3	11.6	0.6	1899.6	100.0
Total	3446.0	56.4	2066.5	33.8	552.2	9.0	49.0	0.8	6113.7	100.0

Notes:

- ^a The classification of occupations is based on the *Dictionary of Occupational Classification* (1980), Ministry of Labour.
- ^b Includes professions such as architects, accountants, auditors, engineers, doctors, dentists, veterinary surgeons, surveyors, lawyers, and also teachers and nurses. For Bumiputeras, a substantial proportion of those employed in this occupational group was made up of teachers and nurses. These two groups were estimated to account for about 77 200 or 60.8 per cent of their total in 1980 and 111 300 or 64.5 per cent in 1985.
- ^c Includes legislative officials, Government administrators, and managers.
- ^d Includes clerical supervisors, Government executive officials, typists, bookkeepers, cashiers, telephone operators, and telegraph operators.
- ^e Includes managers (wholesale and retail trade), sales supervisors and buyers, technical salesmen, commercial travellers, and manufacturers' agents.
- ^f Includes managers of catering and lodging services, working proprietors, housekeeping and related service supervisors, cooks, and related workers.
- ^g Includes plantation managers and supervisors, planters and farmers, agricultural and animal husbandry workers, forestry workers, fishermen, hunters and related workers.
- ^h Includes production supervisors and general foremen, miners, quarrymen, well drillers, motor-vehicle drivers and related workers.

* 1990 figures are estimates.

USE OF MUDARABAH AND ZAKAH TO ATTAIN EQUITY AND EFFICIENCY IN THE MALAYSIAN ECONOMY**Zakah in the Malaysian Economy**

We start by recognising that eradication of absolute poverty is merely an initial condition which puts the target poor above the poverty line. But this is not sufficient to make a society evolve into higher levels of economic welfare for one target group against the rich section of the population. That would imply that redistribution must take place in a progressive fashion, from the rich to the poor, such that the economic welfare of the whole society is maximised. This need not imply, however, that the economic welfare of the rich is maximised, unless of course there are altruistic considerations in this welfare function, whereby the rich obtain non-pecuniary benefits from the ensuing economic benefits to the poor. Such a formalisation of the relative poverty concept is somewhat Rawlsian in nature.³

The institution of *zakah*, which already exists in some organised form, particularly in the agricultural sector in Malaysia, must be considered as an instrument of productive transformation rather than as transfer payment for current consumption. This would be in accord with the Fifth Malaysian Plan target of accelerating human capital development and production diversification in the agricultural and resource-based manufacturing sectors. One way to enforce the use of *zakah* funds in productive transformation would be to treat them as a subsidy to needy Bumiputera farmers in small-scale land holdings, in conjunction with the easy loans from government and venture capital from private-sector joint venture investors. In this way some of the risk capital in the agricultural joint ventures, between small-scale Bumiputera farmers and the private sector investors, will be covered by the outlay of *zakah* funds to these needy farmers. The *zakah* fund can then be used in a multiple of productive channels, such as in newer methods of cultivation in the critically affected commodities, in production inputs and payments of loans outstanding.

When *zakah* is spent as training expenditure on the needy Bumiputera farmers, it could be treated either as a general on-the-job training expenditure or as a specific training expenditure. When the needy farmer uses *zakah* for the general type of on-the-job training, the amount can be passed on directly to the farmer by the government, because the government would collect and disburse *zakah* in

the first place. If the training is of a specific type, the funds would be channelled through the principal joint venture participants in the private sector, which would place the needy farmer in desired types of specific on-the-job training related to the project at hand.

The collection and disbursement of *zakah* must be well organised under the existing religious departments of the government and must be economy-wide. Thus *zakah* expenditure must be built into the fiscal policy of the Malaysian government. The only distinction between *zakah* expenditure and the usual type of contractionary fiscal measure is that, in a regime of tight fiscal policy, *zakah* expenditure cannot be cut back although the volume of *zakah* to be collected (and therefore to be spent) will automatically be affected by the decrease in income levels, following a cut-back in aggregate demand. Thus *zakah* acts in different ways from taxes. In the case of taxes, an increase in the tax rate causes a deflationary reduction in aggregate demand. In the case of *zakah*, the rate is unchanged at 2.5 per cent of wealth in liquidity form, so that the terminal value of wealth does not decrease at any point of time, although the income base at that time may contract because of tight fiscal policy. Thus *zakah* moves in the opposite direction from taxes at a time of fiscal contraction.

Zakah expenditures in productive investments and in current consumption must be treated differently. In the case of the portion of *zakah* that is spent in current consumption, it has to be spent during the current year. However, for productive investments, *zakah* may be allowed to accumulate over time. In such a case, those *zakah* funds being held for productive investments can be put into public *mudarabah* ventures, with the government bearing all the risk on the invested *zakah*, compensating for any loss in principal from public funds, and giving the equivalent exemptions to the *zakah* payer. In the case of any accumulation on the *zakah* withheld for productive investments, the returns are to be spent along with *zakah* expenditures year-marked for that given year. The Malaysian Department of Religious Affairs must therefore set up a comprehensive *zakah* system in conjunction with the system of personal and corporate taxes.

Under the Fifth Malaysian Plan, *zakah* funds must be spent more on productive investments rather than on current consumption. Resource mobilisation in the quickest possible time would require a minimum accumulation of the *zakah* funds outlaid in public ventures. In this way the saving leakages will be reduced and the investment multiplier increased. *Zakah* expenditures will thus be demand-stimulating

at a time when government expenditures and resource mobilisation through external borrowing will be reduced.

***Mudarabah* in the Malaysian Economy**

Next we turn to the consideration of *mudarabah* in an economy-wide sense for Malaysia during the period 1986–1990. Like *zakah*, *mudarabah* aims at achieving both equity and efficiency in the economic system, except that now the principle of distributive equity applies to all profit-sharing participants in the economy. *Mudarabah* can be combined with *zakah* projects, as was earlier mentioned.

At a time when the Malaysian government would be carefully looking at ways and means to (a) step up domestic mobilisation of funds; (b) increase Bumiputera ownership of wealth in the Malaysian society through corporate equity and shareholding; and (c) bring about significant diversification in the agricultural and manufacturing sectors, the institution of *mudarabah* on an economy-wide basis can provide significant advances in these directions. An important form of *mudarabah*, which also links up with *zakah* projects, is the tripartite joint venture among small-scale Bumiputera farmers, government and the private-sector investors, including financial institutions. Shareholding or participation in such a *mudarabah* enterprise with the objective of generating productive transformation in human and physical resources of the agricultural sector would call for a close control of the programmes by all the participants involved, leaving no sleeping partnership.

Shareholding in *mudarabah* ventures, particularly by the small-scale landholders, will add to the growth and distributiveness of equity and shareholding by the widest cross-section of Bumiputeras. This is clearly a central objective of the Malaysian government under NEP which ends in the year 1990, when the results of NEP will be finally evaluated.

Mudarabah ventures are of a very general type and involve all sections of the domestic economy and foreign investors in a wide variety of joint ventures. It was pointed out in this book that the *mudarabah* dividends must turn out to be in excess of interest-bearing returns and be fairly riskless in order for it to be attractive. These features of *mudarabah* dividends can be achieved through appropriate diversification of portfolios. The implication for the Malaysian Fifth Plan is then clear. At a time when the Malaysian government will be aiming at significant diversifications in the agri-

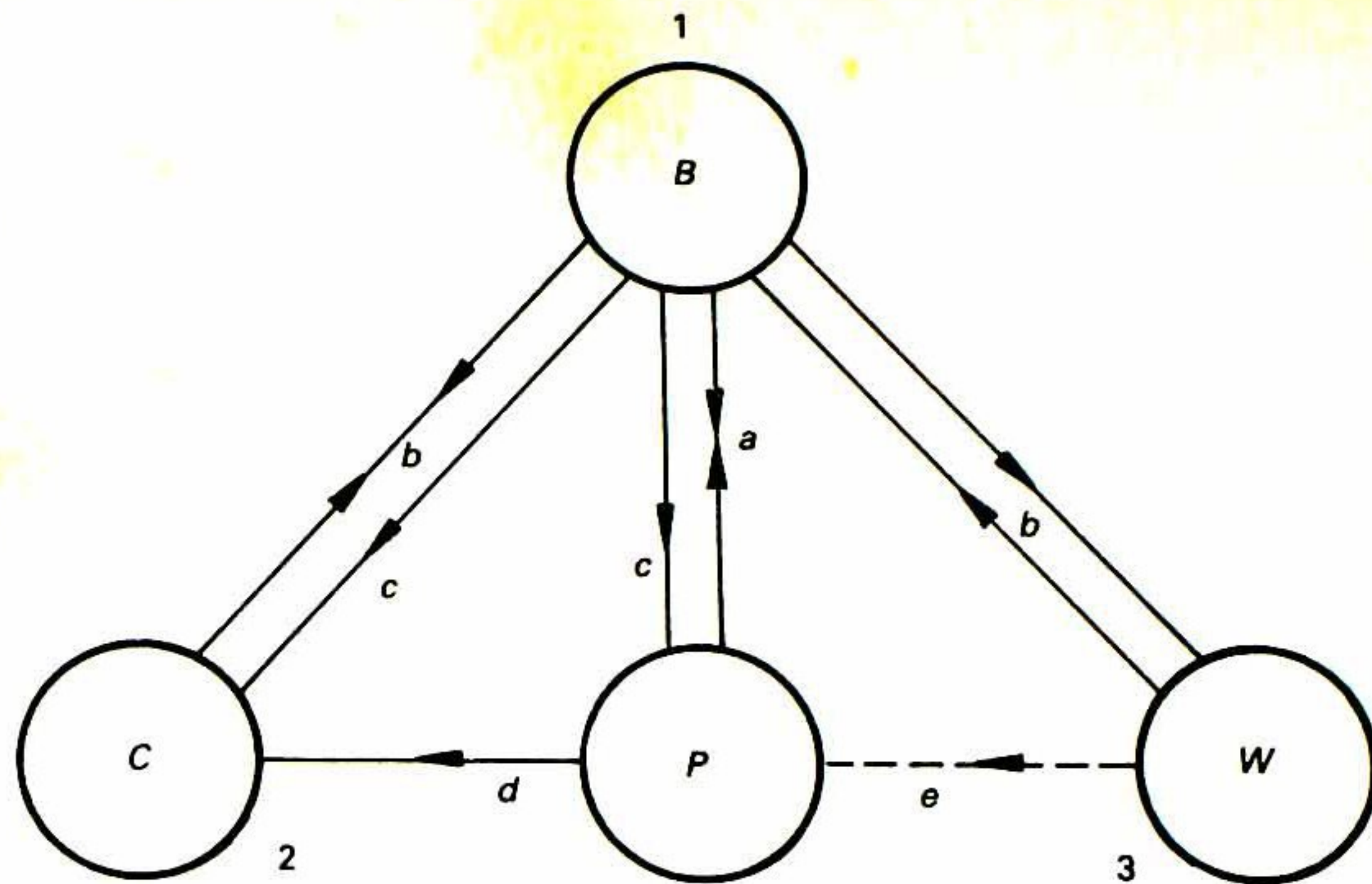
cultural and manufacturing sectors, the very nature of *mudarabah* ventures can provide this diversification impetus while also rapidly mobilising domestic financial resources increasingly towards real investments. These are the two inherent strengths of a *mudarabah* venture. These points were explained earlier in this book.

MUDARABAH AND THE PRICE STABILISATION PROGRAMME: POLICY PERSPECTIVES

Development of Output and Price Stabilisation Board for Critical Commodities

An application of *mudarabah* can be seen in the development of output and price stabilisation programmes for critical commodities. One such programme can be the formation of a Critical Commodities Board, empowered with price-support and price-setting measures on critical tradables.⁴ These measures are developed cooperatively among the participating groups, principal among whom are producers, government and labour. The Critical Commodities Board sets up a list of commodities adversely affected in international markets at any one point of time. It then develops price-support and bulk purchase programmes to protect these critical commodities. The Critical Commodities Board also studies and oversees the developmental impact of the programme of protection of critical commodities. The Board can also recommend levying optimal tariffs for the purpose of protecting critical commodities under the infant industry protection argument.

The Critical Commodities Board would buy the critical commodities directly from the producers at competitive wholesale prices. These prices, which are negotiated between the Board and producers, may be higher or lower than world prices. In the latter case we have the case of commodity dumping. The Board then sells the commodities, both domestically as well as in world markets, setting the same price for domestic consumers and world markets. If the Board sells at prices higher than world prices of the commodities, the resulting positive differentials in export revenue and domestic scale revenue are returned to the consumers and producers, either in cash (in the form of subsidies or cash rebates) or in kind (perhaps temporary reduced utility rates or reduced sales tax rates). If the selling prices set by the Board are lower than the world prices of the



- B : Critical Commodities Board
 C : consumer
 P : producer
 W : rest of the world in trade

Figure 8.1 Price setting and benefits in a Critical Commodities Board arrangement

commodities, the producers (sellers) do not suffer because they would have already received their domestically competitive negotiated wholesale prices. But the consumers gain because they are buying goods domestically at prices lower than the world prices. When the Board's selling prices are equal to the world prices, the consumers are still not worse off, but the producers (sellers) might gain if the domestically negotiated wholesale prices are higher than the Board selling prices in this case. These kinds of differential in price are bound to occur over periods of time.

The tripartite pricing arrangement for critical commodities is explained in Figure 8.1. *B* denotes the Critical Commodities Board; *P* denotes the producer (seller) of critical commodities; *C* denotes the consumer; *W* denotes the world. The two-way arrows marked *b* denote *B*'s sale to *C* and *W* and the return of sale revenue (export revenue) to *B*. The arrows marked *c* denote the return of benefits, in cash or in kind, to *C* and *P*.

The arrows *d* and *e* have a significance as well. They denote spin-off benefits passed out in cash or in kind by the producer to the

consumer. This would happen when the tripartite pricing mechanism leads to gains for the producer, which can in turn be converted into more retained earnings or price breaks. If retained earnings were reinvested in the region, this would cause higher output and employment. Price breaks will contribute to consumption welfare. In the tripartite pricing arrangement, the world economy can also provide an economic welfare-inducing effect on regional producers, and thereby on consumers. This will happen when domestic market prices of the commodities equal world prices, and the producers can now directly expand markets and adopt export-led growth strategies. When such a situation is attained the target commodities cease to be critical commodities, and the infant industry argument for protecting these commodities by the Critical Commodities Board is no more applicable. In fact, the Board now dissociates itself from the effort. Such a situation is attainable in the long-run transition to free trade following a regime of managed international trade on critical commodities.

The economic viability of such a Critical Commodities Board in administering a tripartite pricing and resource distribution programme is now examined. The resources of the Board, which would enable it to purchase regionally produced critical commodities, would be in the form of expenditures in goods and services, preferred loans and advances to potential buyers, and administrative costs. In the case of government expenditures in goods and services, there is a diversification of funds on other options involved here. The large private sector producers and crown corporations, instead of receiving government transfers directly, will be promised the sale of their products through the Critical Commodities Board. The funds so saved will be utilised by the Board for direct purchases from the producer, at domestically competitive wholesale prices negotiated between the Board and the producers. Thus there is no added escalation of the existing government expenditures on goods and services. Instead, over time, as the period of infant industry protection phases in, output multipliers are reinforced in the private sector and the pressure on the use of government transfers decreases. A market adjustment process ensues, leading to economy-wide economic and social gains. The loans and advances can be made out by the government through financial intermediaries and development organisations to potential buyers of the commodities in the country and abroad. Finally, the Board can issue commodity stocks and then follow this up by promoting sales of the commodities to the

diversified portfolio of stockholders. In this way the Board gets its funds and maximises the value of commodity stocks.

A Cost-Benefit Analysis of Tripartite Pricing Arrangement for Critical Commodities

Although the tripartite price-setting arrangement benefits both producers and consumers, this does not mean that there are no costs against benefits for this type of arrangement, however. For instance, when Board prices are higher than world prices, the consumers' economic welfare reduction must be sufficiently offset by the return of benefits (tangible and intangible) as spin-offs from the Critical Commodities Board and the producers. Likewise, the domestically negotiated wholesale price at the Board end must be sufficiently attractive over the world price in order for the producers to sell to the Board, and not directly to the world economy, at a time when Board selling prices are lower than world prices. Such scenarios would occur over time, and thus expectations will be generated on the costs and benefits from the tripartite buying and selling and price-setting arrangement. A social cost-benefit analysis would be developed, keeping in view the regional development goals of the Central Commodities Board. We look at a theoretical version of such a social cost-benefit model later on in this chapter.

We now examine the relevance of optimal tariff in the tripartite arrangement of the Critical Commodities Board. In order to protect infant industries and the worsening terms of trade of primary commodities, the Critical Commodities Board would impose optimal tariffs on goods that can otherwise be produced domestically through a resource manufacturing diversification of primary commodities. Examples would include petrochemicals, soap and detergent products as a manufacturing diversification of the primary fishery industry; furniture and luggage products as a manufacturing diversification of the forestry, steel and synthetic products industry; and so on.

Optimal tariffs on imports cause import prices to increase. Domestic prices of similar goods follow suit. This causes high profit margins to regional investors, followed by more capital inflow, improvement in output and employment. In the short run, higher commodity prices may create some inflationary pressures, but if the consequent improvement is demand-stimulating, the consumers remain to benefit from this. Finally, in the long run, higher profit expectations and higher capital inflow will cause market adjustment

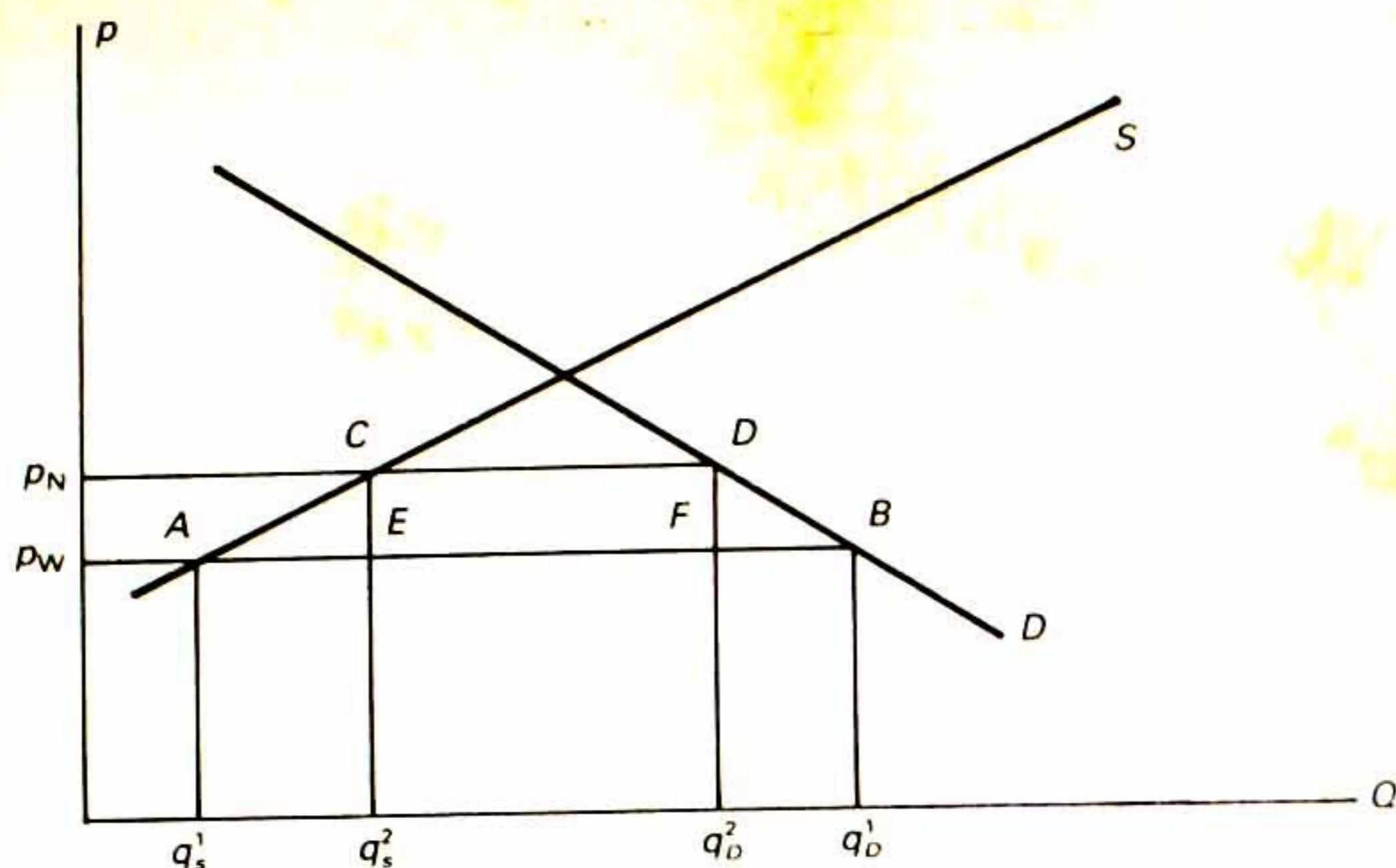


Figure 8.2 Effect of price setting under managed trade on consumption and production benefits

to take place. By this time economic diversification would have taken place, and the period of infant industry protection would be over.

Figure 8.2 shows the effect of price setting by the Critical Commodities Board on consumption and production benefits. In this diagram, P_w denotes the world price of a critical commodity; P_n denotes the negotiated Board price for the commodity; q'_s is the supply of the commodity at price, P_w ; q'_D is the demand for the commodity at price, P_w . When price, P_n , is higher than the world price, P_w , producers are encouraged to produce more, but consumers would demand less at a price level, P_n . However, P_n being the wholesale price, set by negotiation, the Board resells the commodity. Now, q_s^2 denotes the supply of the commodity at price, P_n ; and q_D^2 denotes an implicit quantity demanded had the selling price been P_n (higher than P_w).

The triangle AEC measures the net gain to the producer; the triangle DFB measures the implicit welfare cost to the consumer had the commodity been sold at price P_n ; the rectangle $CDFE$ denotes the cost to the Board of purchasing $(q_D^2 - q_s^2)$ of the commodity from the producers. In doing so, the Board provides incentives to the producers to produce an optimal amount of the commodity, higher than q_s^2 . The supply curve, S , must therefore shift to the right. The expenditures coming out of $CDFE$ must partly also go to the consumers

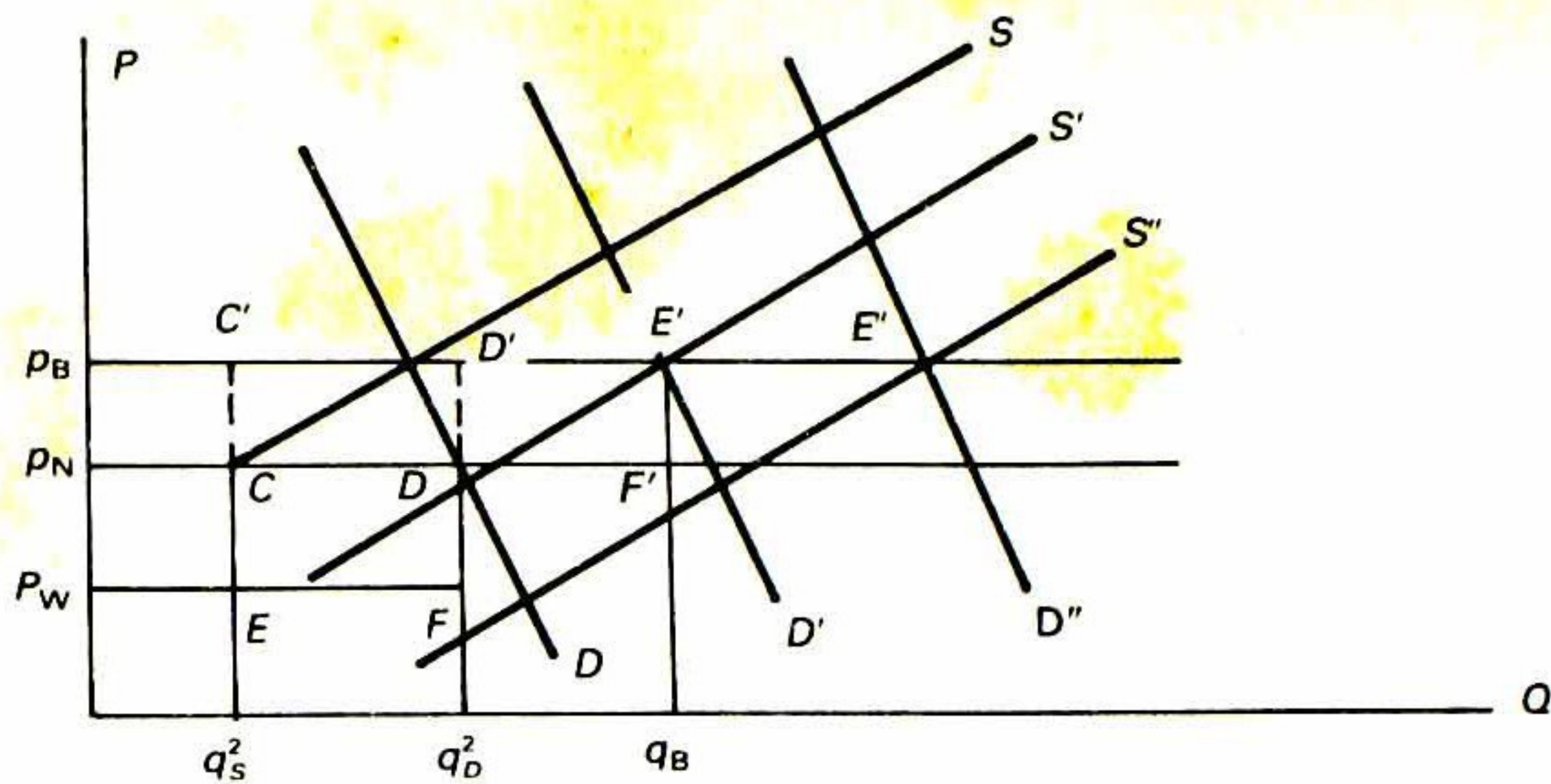


Figure 8.3 Shifts in demand–supply configurations as a result of board expenditures on goods and services⁵

as benefits, in cash or kind, and through spin-offs from the improving investment and production environment now taking place. All of these constitute the package of demand-stimulating measures. Consequently, the demand curve must shift to the right. In the final instance, the Critical Commodities Board would use all of $CDFE$ to ensure that the commodity market clears at a price, $P_B (>P_n >P_w)$, which constitutes the reselling price of the commodity by the Board, both in domestic as well as world markets. Figure 8.3 shows these shifts in demand-supply configurations.

The Board spends all of $CDFE$ on producers and as spin-offs to consumers, causing the supply curve to shift from S to S' , the demand curve to shift from D to D' (demand-stimulating), such that the commodity market finally clears at the quantity, q_B , at the price, P_B . The equilibrium point for the commodity market is now E' .

$\square P_B E' F' P_n$ now denotes the revenue to the Board from the sale of the commodity. Part of this revenue is again spent on demand- and production-stimulating measures, expenditures on which comprise areas like $CDFE$. Now the demand and supply curves receive further shifts as shown by D'' , S'' , and so on, generating higher levels of production, sales and redistribution to producers as well as consumers.

Note further that with the price increase from P_n to P_B , there will be a one-shot increase in price level. If thereafter the Board prices are set at P_n , as shown by new equilibrium points like E'' , no further inflationary pressure is experienced, but the economic benefits of this margin of higher prices are both demand and production stimulation

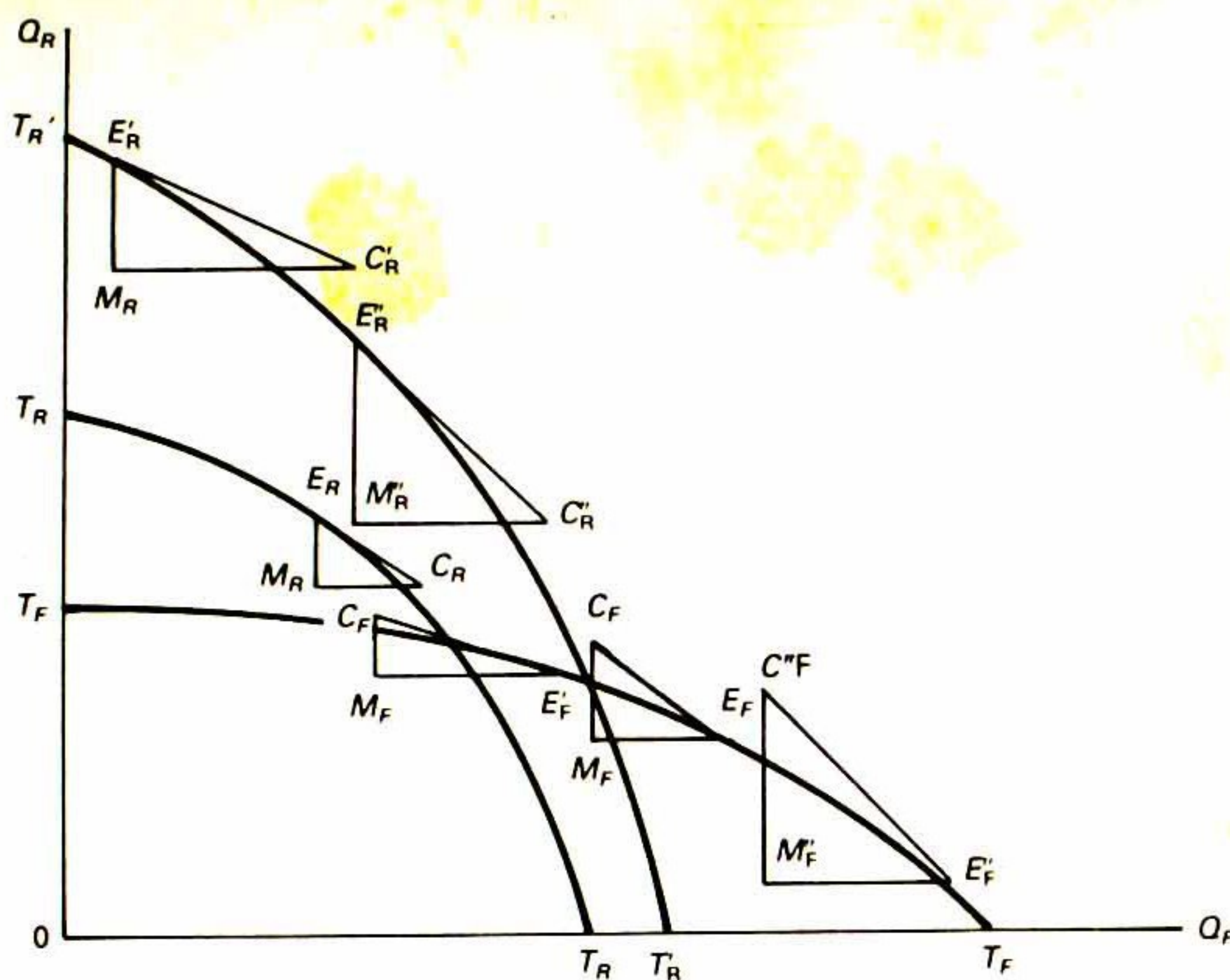


Figure 8.4 Effect of optimal tariff on regional economic welfare under the infant industry argument

as well as redistribution. This is the idea of equity–efficiency simultaneity referred to earlier.

Output, Price Stabilisation and the Infant Industry Argument

We next bring in the optimal tariff picture to close the issue of infant industry protection for the critical commodities and their related resource-based manufacturing diversification. Figure 8.4 shows the effect on domestic economic welfare as a result of the tariff.

Q_R and Q_F denote quantities of goods considered under the infant industry argument and produced domestically and abroad, respectively; and $T_R T_R$ ($T'_R T'_R$), $T_F T_F$ denote domestic and foreign production possibility curves. With optimal tariffs in place and represented by the angle between the terms-of-trade lines for R and F , $E_R M_R C_R$ and $E_F M_F C_F$ denote the trade triangles, with E_R, E_F , as the production points, and C_R, C_F as the consumption points. The terms-of-trade lines are $E_R C_R, E_F C_F$, respectively. The angle between these lines gives the measure of optimal tariff imposed by the Board on

imports affecting critical commodities produced domestically.

After optimal tariffs are imposed, the infant industry argument states that $T_R T_R$ will shift up to $T'_R T'_R$. Consequently, the new trade triangle is $E'_R M'_R C'_R$, with the production point having moved up to E'_R . Consequently, to maintain the optimal tariff ratio and the terms of trade of the two countries, R and F , the production point E_F moves back to E'_F . These changes result in an improvement of economic welfare for the region (this can be shown by the indifference curve at C'_R being higher than at C_R), but this means a deterioration for the foreign country. Likewise, trade between the two countries shrinks but is not totally eliminated, benefiting the region of optimal tariffs. Trade between R and countries other than F in the world economy is enhanced because of the Board's influence in selling the higher levels of domestic production of the critical commodity.

When the period of infant industry protection is over, market adjustment will reinforce the regional production point at E''_R , which is above the old E_R , but may be lower than E'_F . Consequently, E'_F also rises to E''_F and, in the limiting case of free trade, the terms of trade lines $E''_R C''_R$ and $E''_F C''_F$, become parallel to each other. Now, there is an all-round improvement in both production and consumption benefits. A healthy trading pattern is enhanced. The principle of managed international trade thus serves as a graduated catalyst towards liberalised trade in the long run.

Social Cost-Benefit Model for Output and Price Stabilisation under Commodities Board

The social cost-benefit scenario of the tripartite arrangement of managed trade can now be developed. We refer to Figures 8.1 to 8.3 here. For Figures 8.2 and 8.3 we obtain

benefit to producer = ΔAEC + part of [$\square EFDC$ + $\square P_N F' E' P_B$];

cost to producer = sale revenue forgone, $\square CDD'C$;

net benefit to producer = (ΔAEC + part of $\square EFDC$ + part of $\square P_N F' E' P_B$) - $\square CDD'C$ = ΔAEC + part of $\square EFDC$ $\cong 0$;

cost to consumer = ΔDFB + $\square DF'E'D'$ (ΔDFB comes from figures 8.2 and is not shown in figure 8.3 but implied);

benefit to consumer = part of $\square EFDC$ + part of $\square P_N F' E' P_B$;

net benefit to consumer = [part of ($\square EFDC$ + $\square P_N F' E' P_B$)]

$$\begin{aligned}
& -(\Delta DFB + \square DF'E'D') = \text{part of } \square EFDC - \Delta DFB \geq 0; \\
& \text{benefit to Critical Commodities Board} = \square P_N F'E'P_B; \\
& \text{net benefit to Critical Commodities Board} = \square P_N CC'P_B > 0. \\
& \text{Net social benefit} = \text{sum of the above three net benefits} = \\
& \square P_N CC'P_B + \Delta AEC + \text{part of } \square EFDC + \text{part of } \square EFDC \\
& - \Delta DFB = \square P_N CC'P_B + \square EFDC + \Delta AEC - \Delta DFB.
\end{aligned}$$

In the special case, when a price-induced increase in supply is followed by an equal price-induced decrease in demand, $\Delta AEC = \Delta DFB$. Then, net social benefit $= \square P_N CC'P_B + \square EFDC =$ total net benefit to the Critical Commodities Board, consumers and producers taken together, and this is a positive quantity.

The principal objectives of a Critical Commodities Board can now be summarised: they are to put into effect a programme of protection of critical commodities with optimal tariffs and price support over the long run. Second, this process of short-term commodity protection is done for the purpose of market adjustment. A Critical Commodities Board of the type described in this chapter can have an important effect on the implementation of inward-outward strategies of development, particularly with respect to the agricultural and resource-based manufacturing sectors in Malaysia planned under the Fifth Malaysian Plan. A Critical Commodities Board would also have pronounced effects on economic unions, such as ASEAN, on Islamic economic co-operation and on South-East Asia and the Pacific Basin.⁶

ESTABLISHING AN ISLAMIC STATISTICAL INFORMATION SYSTEM: POLICY PERSPECTIVES

Finally, our policy recommendation relates to the development of a generalised statistical system. A preliminary sketch of the information flow in such a system is shown in Figure 8.5.

In Figure 8.5 the following symbols are defined:

- A: data bank on monetary variables: (monetary aggregates, *mu-darabah* yields, government bond yields, interest rates, exchange rates, information on monetary policy, current, historical and projected information on the above variables);
- B: data bank on national income and expenditure accounts (gross national product, consumption, investment, government

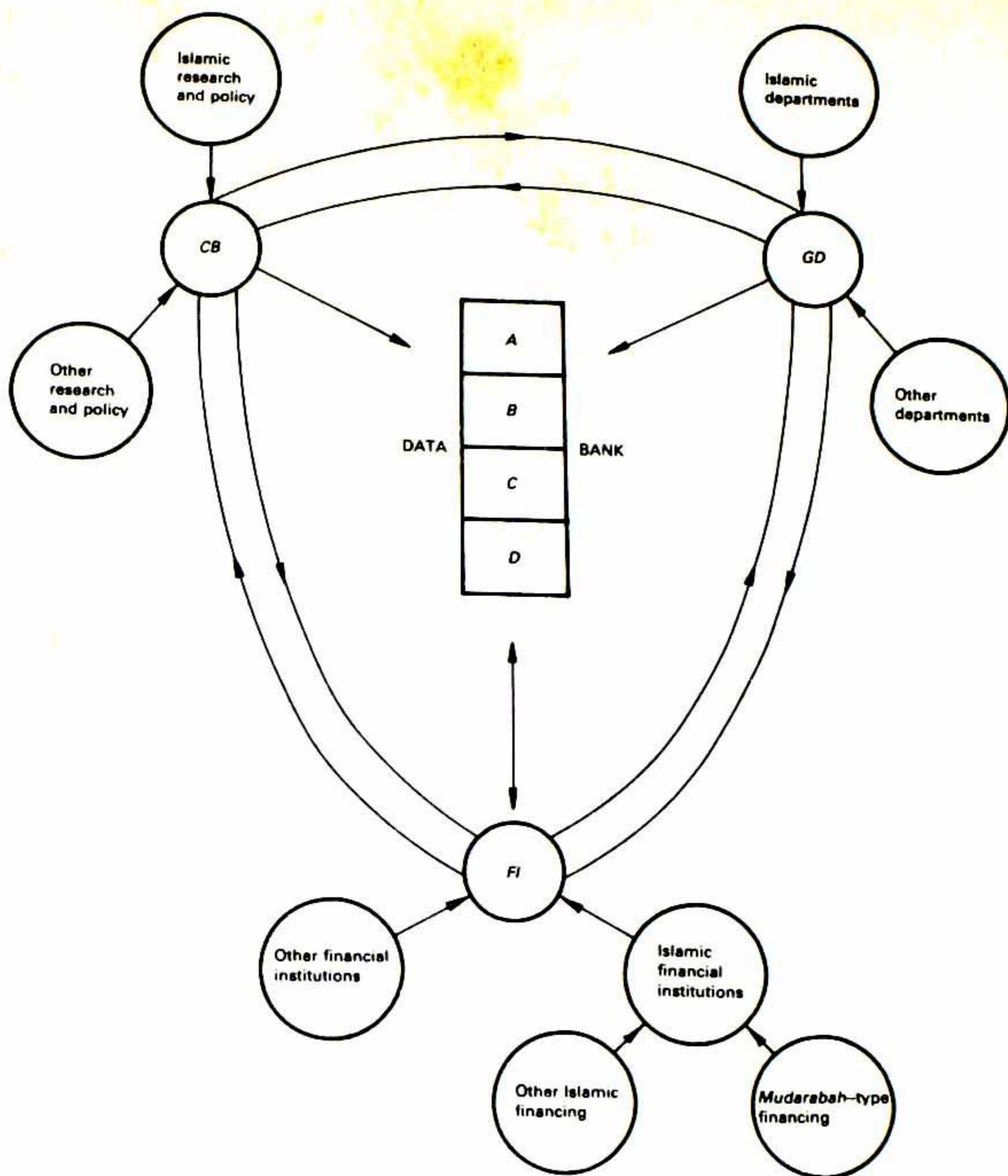


Figure 8.5 Interflow of information among the principal economic institutions relating to a data bank

expenditures, *zakah* revenue and expenditure, balance of payments in current and capital accounts, various financial flows in the balance of payments accounts, fiscal and external sector policy information on the above variables);

- C: data bank on disaggregate economic planning variables (consumer price indices, wages and earnings, employment/unemployment by age and sex, ethnicity, regions, population and labour force, relevant disaggregations by sectors and occupations, investments and GDP by sectors, current, his-

- torical and projected information on the above variables);
- D*: data bank on special information (financial statements of Islamic and other institutions; information on profitability and productivity; distribution of assets; size and ethnic distributions of incomes; and special surveys and statistical information);
- GD*: Government departments on economic matters, which are subdivided into specific Islamic affairs departments on economic matters and other departments in this area;
- CB*: Central Bank, which is again divided into Islamic research and policy departments on financial and economic matters and other departments of economic research and policy;
- FI*: other financial institutions, which are again divided into Islamic financial institutions and other financial institutions. The Islamic financial institutions are further subdivided into *mudarabah*-type financing and other types of Islamic financing modes.

Information flows from the microlevel operations and controls to the major departments are shown by the directions of arrows. This information is then pooled into the various data banks in their assorted categories. Besides retrieval of information from the data bank, there is also a good degree of coordination in information gathering, usage and dissemination of information among the major institutions as shown by the two-way circular flow of information among *GD*, *CB* and *FI*.

The important point to note in the feature of the information system is that the process of Islamicisation of the macroeconomy would be a gradual process, in which institutions, departments, financial instruments and economic policies would all participate in the process of Islamic change. This arrangement does imply a degree of second-best efficiency situation in the process of Islamicisation, but it will be necessary in order to bring about a smooth, experienced and successful transition to fuller Islamic macroeconomic states.

CONCLUSION

The overall perspectives of Islamicisation of the Malaysian macroeconomy as presented in this study throw ample light on the strong

role of Islamic economic institutions, policies and instruments, in bringing about structural development in the Malaysian society. This is the singular aim of the Fifth Malaysia Plan in its varied aspects, as was pointed out in this chapter. This study has thus linked the features of Islamic macroeconomic changes with those aimed at in the Fifth Malaysia Plan. The process of Islamicisation is also seen to be a non-disruptive one, enabling a smooth transition, but it must be based on fundamental institutional changes which must emanate from pure Islamic economic policy-theoretic origins. Scientific in nature as these processes of change are, the Islamicisation of the Malaysian macroeconomy must evolve a broad-based and comprehensive programme encompassing government institutions, the financial institutions, statistical information system and the social economy. With these objectives, goals and planning in mind, the process of Islamicisation of the Malaysian macroeconomy in the years ahead must proceed.

Notes and References

1 Islamic Economic Thought in Comparative Perspectives: Towards an Islamic Theory of Value

1. For a discussion of Scitovsky contours on this topic, refer to the topic in J. M. Henderson and R. E. Quandt, *Microeconomic Theory* (New York: McGraw-Hill, 1971), Ch. 7.
2. Let $U_c = U_c(x_1, x_2, \dots, x_n)$ be the consumer utility derived from the consumption of the bundle (x_1, x_2, \dots, x_n) ; $U_s = U_s(y_1, y_2, \dots, y_n)$ be the seller utility derived from the returns (y_1, y_2, \dots, y_n) , where $y_i = p_{si}x_i - C_i$, with p_{si} denoting seller price for good i , C_i denoting cost of production (optional variable in the equation) of good i or transaction cost for selling good i ; $i = 1, 2, \dots, n$. The maximisation problem now is, $\text{Max } L = U_s(y_1, y_2, \dots, y_n) + \lambda(U_c^* - U_c(x_1, x_2, \dots, x_n))$, where U_c^* is a target utility for the consumer. First-order conditions now yield:

$$\frac{dL}{dx_i} = 0 = \frac{\partial U_s}{\partial y_i} \cdot \frac{dy_i}{dx_i} - \lambda \frac{\partial U_c}{\partial x_i}$$

That is,

$$\frac{\partial U_s}{\partial y_i} \cdot p_{si} = \lambda \frac{\partial U_c}{\partial x_i}, \quad i = 1, 2, \dots, n$$

Since λ is an arbitrary constant, we can select it such that, $\lambda = p_{ci}$, the consumer demand price for good i . Now we have two results:

- (1) If $\frac{\partial U_s}{\partial y_i} = \frac{\partial U_c}{\partial x_i}$, then $\lambda = p_{si}$, meaning that in equilibrium

$p_{si} = p_{ci} (= \lambda)$. In other words, if the first-order condition of equilibrium between the buyer and seller is satisfied, then there is market equilibrium.

- (2) If $\lambda = p_{ci}$, then $\frac{\partial U_s}{\partial y_i} = \frac{\partial U_c}{\partial x_i}$, meaning that in a state of mar-

ket equilibrium, with $\lambda = p_{ci} = p_{si}$, the first-order condition will be satisfied.

We have thus the necessary and sufficient condition for market equilibrium between buyer and seller. Note further that since the above conditions hold for all goods individually, $i = 1, 2, \dots, n$, the equilibrium condition also yields a Walrasian equilibrium (see Henderson and Quandt, *Microeconomic Theory*, Ch. 5).

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$$\text{Value rate of profit} = \left[\left(\frac{\text{rate of exploitation}}{\text{organic composition of capital}} \right) - 1 \right]$$

If the value rate of profit tended to a constant value across industries (that is, to the money rate of profit), then the rate of exploitation and the organic composition of capital must move in opposite directions (or trivially be constant, which is not realistic because the organic composition varies across industries).

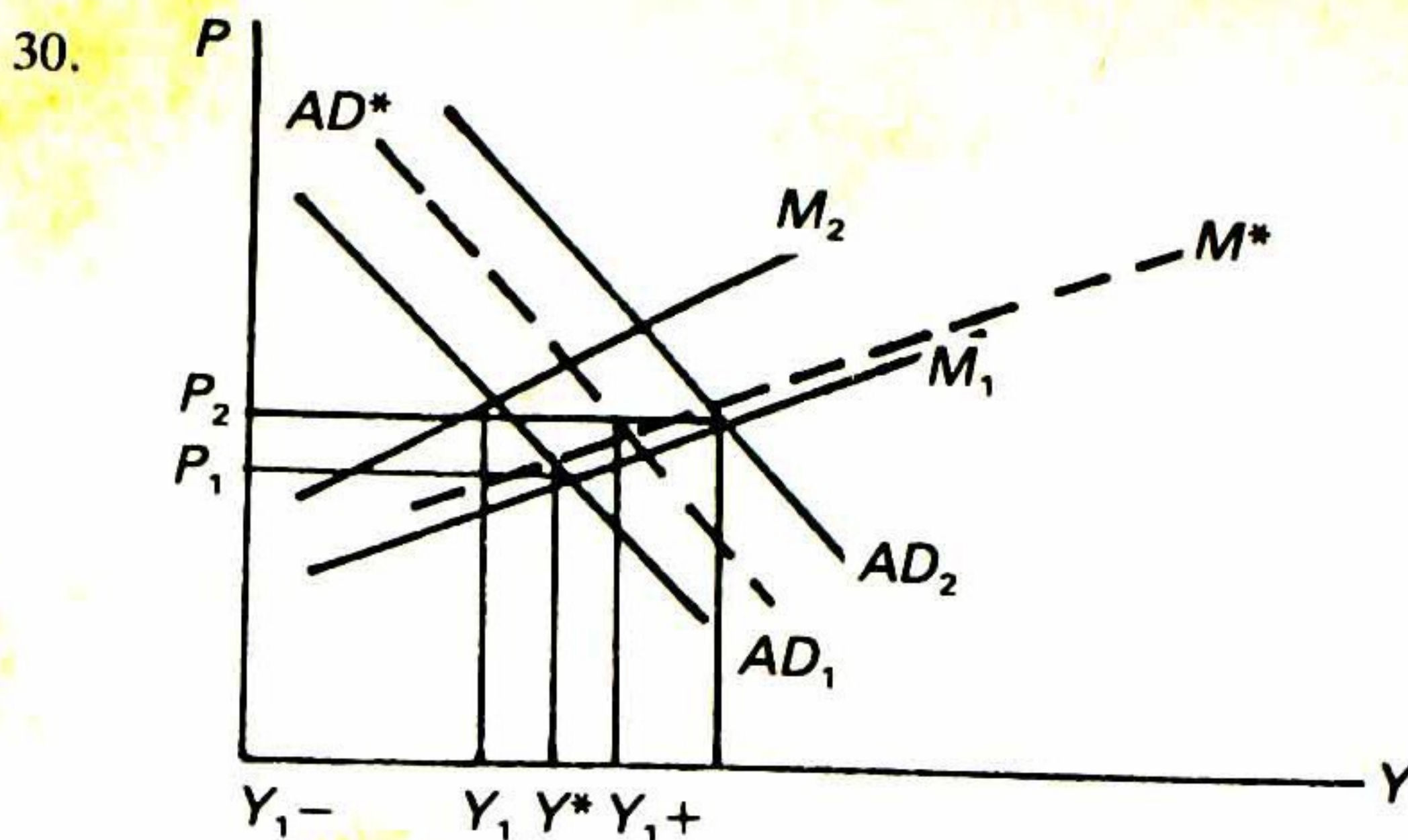
The product price, p_i , is proportional to direct prices, p_D ; that is,

$$p_i = a_i p_D, \quad i = 1, 2, \dots, n \text{ goods.}$$

Now, the rate of exploitation is directly related to product prices and inversely related to organic composition (because of cost of investment). Hence, P_i moves in the same stabilising pattern as the rate of exploitation and the organic composition of capital.

In the long run, when value rate of profit stabilised, so also would the product prices, P_i . Hence P_i is proportional to market prices of goods. But any proportion of market price is itself a market price under the configuration of demand and supply shifts. Hence P_i is itself a market price in the long run.

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$$AD = AD(P, Y), \quad \frac{\Delta AD}{\Delta Y} > 0, \quad \frac{\Delta AD}{\Delta P} < 0.$$

For given AD , let $Y = a_0 + a_1 P$, $a_0 > 0$, $a_1 < 0$,

$$M = M(P, Y), \quad \frac{\Delta M}{\Delta Y} > 0, \quad \frac{\Delta M}{\Delta P} > 0.$$

For given M , $Y = b_0 + b_1 P$, $b_1 > 0$

The Keynesian prescription is for aggregate demand to expand while holding money supply fixed (shown by AD_1 shifting to AD_2 and M_1 unchanged). Consequently, price level rises from P_1 to P_2 and national income increases from Y_1 to $Y_1 +$ (intersection of AD_1 and M_1 , intersection of AD_2 and M_1). The monetarist prescription is for money supply to increase while holding aggregate demand fixed (M_1 shifts to M_2 , AD_1 unchanged). Consequently, price level rises by the same amount as in the Keynesian prescription, from P_1 to P_2 . National income now is $Y_1 -$, supporting the Keynesian claim that increase in money supply may not necessarily increase investment, leading to an increase in national income in the short run.

The resolution between the Keynesian and monetarist prescriptions is shown by targeted increases in aggregate demand (AD_1 shifts to AD^*) and targeted increases in money supply (M_1 shifts to M^*). Now, the price increase is from P_1 to P^* ($< P_2$) and the national income increase is from Y_1 to Y^* ($< Y_1 +$). Y^* is the full employment level of national income. Such a resolution is also consistent with the rational expectations of 'unanticipated' money supply.

31. L. Thurow, *Dangerous Currents, the State of Economics*, (New York: Random House, 1983).
32. M. A. Choudhury, 'Editorial', *Humanomics* (Vol. II, No. 3, 1986).
33. Ibn Taimiyah, *Al Hisbah-Fil-Islam* (Beirut, Lebanon: Darul Kutb al-Arabiyyah, 1967).
34. M. A. Choudhury, 'Principles of Islamic Economics', *Middle Eastern Studies* (Vol. 19, No. 3, 1983).
35. Choudhury, *Contributions*, Ch. 1.
36. M. A. Choudhury, 'Macroeconomic Relations of the Islamic Economic

- Order', *International Journal of Social Economics* (Vol. 13, No. 6, 1986).
37. M. A. Choudhury, *An Islamic Social Welfare Function* (Indianapolis, Ind.: American Trust Publications, 1983), Ch. IV.
 38. M. A. Choudhury, 'Equity-Efficiency Conditions of Competitive-Cooperative Product and Labour Markets', *International Journal of Manpower* (Vol. 7, No. 5, 1986).
 39. Choudhury, *Contributions*, Ch. 9.
 40. A version of this process in the context of social policy formulation is elaborated in M. A. Choudhury, *Social Economics of Manpower* (Occasional Paper, Faculty of Economics, University of Kebangsaan, Malaysia, 1988).
 41. An improved version of this theorem first published in Choudhury, *Contribution*, is to be found in his, *The Paradigm of Humanomics* (Bangi, Malaysia: University of Kebangsaan, Malaysia, and Faculty of Economics, 1988).
 42. M. A. Choudhury, 'Policy-Theoretic Foundations of Ethico-Economics', in M. A. Choudhury (ed.), *Policy-Theoretic Foundations of Ethico-Economics* (Sydney, Nova Scotia; The Centre of Humanomics, University College of Cape Breton, 1988).
 43. M. A. Choudhury, 'A Mathematical Formulation of the Principle of Ethical Endogeneity', paper presented at the Fifth World Congress of Social Economics, University of York, England, 1-4 August 1988.
 44. I. J. Maddox, *Elements of Functional Analysis* (Cambridge: Cambridge University Press, 1970).
 45. M. A. Choudhury, 'A Study of Ethico-Economics'.
 46. Islamic Development Bank, *Twelfth Annual Report 1986-87* (Jeddah, Saudi Arabia), Ch. III.
 47. For a formalisation on Jacobians, see: R. V. Hogg and A. T. Craig, *Introduction to Mathematical Statistics* (New York: Macmillan, 1971).
 48. M. A. Choudhury, 'The Blending of Religious and Social Orders in Islam', *International Journal of Social Economics*, vol. 16, 1989.
 49. K. J. Arrow, *The Limits of Organization* (New York: Norton, 1974).
 50. O. E. Williamson, 'Kenneth Arrow and the New Institutional Economics', in Feiwel, *Arrow and the Foundations of the Theory of Economic Policy*.
 51. S. Marglin, 'What do Bosses Do?', *Review of Radical Political Economy* (Vol. 6, 1974).
 52. J. K. Whitaker, 'The Limits of Organization Revisited', in Feiwel, *Arrow and the Foundations of the Theory of Economic Policy*.
 53. Whitaker, 'The Limits'.
 54. Received social economics is not ethico-economics as explained by the principles of ethical endogeneity. It instead dwells on the history of economic thought, religious thought in the development of economic doctrines and current policy issues of the social economy. Ethico-economics and social economics are distinct fields. See also A. Scaperlanda, 'Is Neo-Humanistic Economics the New Paradigm for Social Economists?' *Review of Social Economy* (Vol. XLIII, No. 2, Oct. 1985).
 55. A Yusuf Ali, (trans.) *The Holy Quran: Text, Translation and Commentary* (McGregor & Werner, 1946) (Sura XIV, v. 24-7).
 56. A. McKee, 'Christian Economic Policy and the Role of Economic

- Science', *Review of Social Economy* (Vol. XLV, No. 3, Dec. 1987).
57. J. Schumpeter, *History of Economic Analysis*, Chs 2, 3.
58. For a critique of these approaches refer to M. A. Choudhury, 'Humanomics in the Perspective of Humanistic Political Economy' (trans. into Japanese), *The Anatomy of a Multiplex Society*, festschrift for Professor Takatsūgu Nato (Tokyo, Japan: Nihon University Press, 1986).
59. A. Gray, *The Development of Economic Doctrine* (London: Longman, Green & Co, 1967).
60. US Catholic Conference, *Economic Justice for All* (Washington, DC: 1986).
61. For other works in this area refer to: J. L. Carrica, 'Restructuring Capitalism for Human and Social Dignity', *Humanomics* (Vol. III, No. 3, Dec. 1987); J. H. Niedercorn, 'Two Biblical Conceptions of an Equitable and Efficient Economy', *Review of Social Economy* (Vol. XLIII, No. 2, Oct. 1985).
62. Blaug, *Economic Theory in Retrospect*.

2 The Ethico-Economic Social Welfare Function of the Islamic Economy

1. Quran (trans. Yusuf Ali), Sura II, v. 23:

This is the Book;
 In it is guidance sure, without doubt,
 To those who fear God,
 Who believe in the Unseen;
 Are steadfast in prayer,
 And spend out of what We
 Have provided for them;

...

2. Quran (trans. Yusuf Ali) Sura VII, v. 32:

Say: Who, has forbidden
 The beautiful (gifts) of God,
 Which He has produced
 For His servants,
 And the things, clean and pure,
 (Which He has provided)
 For sustenance?
 Say: They are, in the life
 Of this world, for those
 Who believe, (and) purely
 For them on the Day
 Of Judgement. Thus do We
 Explain the signs in detail
 For those who understand.

3. Quran (trans. Yusuf Ali) Sura VII, v. 33:

Say: The things that my Lord

Has indeed forbidden are:
 Shameful deeds, whether open
 Or secret, sins and trespasses
 Against truth or reason; assigning
 Of partners to God, for which
 He has given no authority . . .

4. For the concept of 'independence of irrelevant alternatives' in social choice theory, see D. Gauthier, 'Bargaining and Justice', in E. F. Paul *et al.* (eds), *Ethics and Economics* (Oxford: Basil Blackwell, 1985).
5. A. R. I. Doi, 'Non-Muslims and the Shariah', in A. R. I. Doi, *Shariah: The Islamic Law* (London: Ta Ha Publishers, 1984).
6. These can be seen to be summarised in P. J. Hammond, 'On Reconciling Arrow's Theory of Social Choice with Harsanyi's Fundamental Utilitarianism', in G. R. Feiwel (ed.), *Arrow and the Foundations of the Theory of Economic Policy* (London: Macmillan, 1987).
7. J. M. Henderson and R. E. Quandt, *Microeconomic Theory* (New York: McGraw-Hill, 1971), Ch. 7.
8. For concepts on closedness, boundedness and connectedness in preference mappings, see G. Debreu, *Theory of Value, An Axiomatic Analysis of Economic Equilibrium* (New York: John Wiley, 1959), Ch. 1.
9. Ibn Taimiyah, *Al-Hisbah fil-Islam* (Beirut, Lebanon: Darul Kutb al-Arabiyyah, 1967).
10. M. A. Choudhury, *The Paradigm of Humanomics* (Bangi, Malaysia: The National University of Malaysia Press, 1988), Ch. 4; D. Ellerman, 'The Employment Contract and Liberal Thought', *The Review of Social Economy* (Vol. 44, No. 1, April 1986).
11. M. A. Choudhury, 'Macroeconomic Relations in the Islamic Economic Order', *International Journal of Social Economics* (Vol. 13, No. 6, 1986).
12. M. A. Choudhury, *Islamic Economic Co-operation* (London: Macmillan, 1989).
13. S. Ahmad, 'Reflections on the Concept and Law of Riba', *Outlines of Islamic Economics* (Indianapolis, Ind.: Association of Muslim Social Scientists, 1977).
14. Such a form of dynamic optimisation could be done by the calculus of variation, or optimal control theory or dynamic mathematical programming: see M. S. Intrilligator. *Mathematical Optimization and Economic Theory* (Englewood Cliffs, NJ: Prentice-Hall, 1971); see also R. Bellman, *Dynamic Programming* (Princeton, NJ: Princeton University Press, 1957).
15. The important question of empirical viability of the Islamic social welfare function is also brought out in M. A. Choudhury's *An Islamic Social Welfare Function* (Indianapolis, Ind.: American Trust Publications, 1983), Chs I-III. See also J. Tinbergen, 'The Optimum Order Revisited', in Feiwel, *Arrow and the Foundations of the Theory of Economic Policy*.
16. If we denote major switches in the hierarchies of shuratic consensus formation as events in time, then events and time can be interchangeable, and the two-dimensional situation in this case can be reduced to a one-dimensional situation, either of time or event. The transformation of transcendental time into its real world equivalent is thus in terms of the

major event that an ethical policy consideration in the *shura* has on higher stages of social consensus formation. The latter is a major event, influenced by considerations of factors that occur in transcendental time, but which leave a temporal import.

17. A good coverage on these Islamic values of planning is given by O. Llewellyn, 'The Objective of Islamic Law and Administrative Planning for Agricultural Use' (mimeo; Department of Landscape Architecture and Regional Planning, University of Pennsylvania, 1982).
18. A. N. Rugina, 'Toward a Third Revolution in Economic Thinking', *International Journal of Social Economics* (Vol. 10, No. 1, 1983).

3 A Theory of Cost-Benefit Analysis in Islamic Economics

1. M. A. Zarqa, 'An Islamic Perspective on the Economics of Discounting in Project Evaluation', Z. Ahmed *et al.* (eds), in *Fiscal Policy and Resource Allocation in Islam* (Jeddah, Saudi Arabia: International Centre for Research in Islamic Economics, and Islamabad, Pakistan: Institute for Policy Studies, 1983). See also K. Ahmed (ed.), *Studies in Islamic Economics* (Leicester: Islamic Foundations, 1980); Proceedings of the Second International Conference on Islamic Economics held at Makkah, Saudi Arabia (Jeddah, Saudi Arabia: International Centre of Islamic Economics, King Abdulaziz University, 1983); C. Tomkins and R. A. Abdel Karim, 'The Shariah and Its Implications for Islamic Financial Analysis: An Opportunity to Study Interactions Among Society, Organizations and Accounting', *The American Journal of Islamic Social Sciences* (Vol. 4, No. 1, 1987).
2. S. Ahmad, 'Reflections on the Concept and Law of Riba', *Outlines of Islamic Economics* (Indianapolis, Ind.: Association of Muslim Social Scientists, 1977).
3. M. A. Choudhury. *Contributions to Islamic Economic Theory: A Study in Social Economics* (London: Macmillan, 1986), Ch. 3.
4. M. A. Choudhury *An Islamic Social Welfare Function* (Indianapolis, Ind.: American Trust Publications, 1983), Ch.
5. S. N. H. Naqvi, 'Interest Rate and Intertemporal Efficiency in an Islamic Economy' (mimeo, Jeddah, Saudi Arabia: International Centre for Research in Islamic Economics, King Abdulaziz University, 1983).
6. The features which distinguish *mudarabah* from profit-sharing systems in other economic settings are (a) profit-sharing with economic cooperation; (b) profit-sharing eliminating interest-based transactions; and (c) distributive equity.
7. A. Okun, *Equality and Efficiency, the Big Tradeoff* (Washington, DC: The Brookings Institute, 1975).
8. M. A. Choudhury. *The Paradigm of Humanomics* (Bangi, Malaysia: The National University of Malaysia Press, 1989), Ch. 5.
9. M. Muslehuddin, *Insurance and Islamic Law* (Lahore, Pakistan: Islamic Publications, 1969).
10. This also implies that there must be increasing returns to scale in such production systems in order to distribute the product by factor shares that are above the marginal factor products.

11. Such an extended idea of waste control in Islamic economics (*la israf*) shows that sufficient interrelationships must exist between individual preferences (consumption activity) and social preferences (production activity) to comply with the shuratic norm and ethical policy of avoidance of waste in both consumption and production.
12. M. Muslehuddin, *Philosophy of Islamic Law and the Orientalists*. (Lahore, Pakistan: Islamic Publications, undated).
13. Thus the predominantly positivistic nature of neoclassical economics, e.g. L. Robbins, *An Essay on the Nature and Significance of Economic Science* (London: Macmillan, 1935) and M. Friedman, *Essays in Positive Economics* (Chicago, Ill.: University of Chicago Press, 1953).
14. The earlier chapters of the Quran centre around this historical dialectic, pointing out the continuous struggle between right and wrong and the promise of victory for the righteous as exemplified in the lives of the great prophets and teachers of antiquity. Note here a verse of the Quran (Sura XVI, v. 36):

For We assuredly sent
 Amongst every People an apostle,
 (With the command), 'Serve God, and eschew-evil':
 Of the people were some whom
 God guided, and some
 On whom error became
 Inevitably (established). So travel
 Through the earth, and see
 What was the end of those
 Who denied (the truth).

15. This idea of social good was first introduced by the author with regard to Islamic education in M. A. Choudhury, 'A Model of Educational Planning and Development in Islamic Perspective', *Muslim Educational Quarterly* (Vol. 1, No. 1, Aug. 1983). The concept of a social good is to be differentiated from that of a public and private good.
16. *Zakah* is now seen to be a wealth tax that is a selective consumptional transfer in accordance with the Islamic principle of work and productivity which must minimise the free-rider problem among the able-bodied. The most important goal of *zakah* is productive transformation through distributive equity directed in favour of the Islamically well-defined 'needy' category.
17. H. Turabi, 'Principle of Governance, Freedom, and Responsibility in Islam', *American Journal of Islamic Social Sciences* (Vol. 4, No. 1, Sept. 1987); F. Rahman, 'The Principle of Shura and the Role of Umma', *American Journal of Islamic Social Sciences* (Vol. 1, No. 1, 1988).
18. See, for example, W. H. Jean, *The Analytical Theory of Finance: A Study of the Investment Decision Process of the Individual and the Firm* (New York: Holt, Rinehart & Winston, 1970).
19. In the case of an ageing population, more claims would be placed on retirement benefits by the needy, so the use of *zakah* in this direction is expected to increase. But now social investments in the form of low-cost

housing and medical care will also increase, where *zakah* can be directed as socially productive investment for the elderly needy.

20. Quran (Sura VII, v. 58):

From the land that is clean
And good, by the Will
Of its cherisher, springs up
Produce, (rich) after its kind
But from the land that is
Bad, springs up nothing
But that which is niggardly:
Thus we explain the signs
By various (symbols) to those
Who are grateful.

This verse points out the positive correlation between Islamically-requisite investment (referred to here as production of goods) and Islamically-requisite consumption (referred to here as the benefit from the produce of Islamically-requisite consumption).

21. For intertemporal switches between consumer goods and investment goods in a two-sector model of economic growth one may refer to Uzawa 'Optimal Growth in a Two-Sector Model of Capital, Accumulation', *Review of Economic Studies* (Vol. 31, 1964). Clearly now, if I denotes investment, such that, $I(t) = I_0 e^{g_I t}$, C denotes consumption, such that, $C(t) = C_0 e^{g_C t}$, where g_I denotes growth rate of investment, and g_C denotes growth rate of consumption, then for a balance of consumer goods production and increased emphasis on investment over time we must have, $\frac{d}{dt} (I/C) = a$ (positive constant). That is, $(g_I - g_C) e^{(g_I - g_C)t} = b$ (positive constant).

This implies that, $g_I > g_C$. That is, even though consumption would be increasing intertemporally, with g_C increasing, investment would be increasing by more, because g_I would be increasing above g_C .

22. This is the stable characteristic of a growing population. See N. Keyfitz, *Introduction to the Mathematics of Population* (Reading, Mass.: Addison-Wesley, 1968); A. Lopez, *Problems in Stable Population Theory* (Princeton, NJ: Princeton University Press, 1961).

23. Note the interconnectedness between avoidance of waste in consumption and production, and distributive equity in the Islamic economy.

4 A Theory of *Mudarabah*, the Islamic Profit-sharing System of Economic Cooperation

1. J. K. Davies, 'Unionism and the Judeo-Christian Social Gospel', *Humanomics* (Vol. IV, No. 3, Dec. 1987).
2. Leo XIII, *Rerum Novarum*, No. 52, 1891 (New York: Paulist, 1939); John XXIII, *Mater et Magistra* (London: Catholic Truth Society, 1961); John XXIII, *Pacem in Terris* (Glen Rock, NJ: Paulist, 1963); Paul VI,

- Populorem Progressio*, Nos 26, 49, 47, 1967; John Paul II, *Laborem Exercens* (Sydney, Australia: St Paul, 1981).
3. C. D. Skok, 'Key Theological Positions, Underlying the Bishop's Pastoral Letter of the Catholic Social Teaching and the U.S. Economy', *Humanomics* (Vol. III, No. 2, Aug. 1987).
 4. US Bishops Ad Hoc Committee on Catholic Social Teaching and the US Economy, 'First Draft – Bishops' Pastoral: Catholic Social Teaching and the U.S. Economy', *Origins* (Vol. IV, 1984); US Bishops Ad Hoc Committee on Catholic Social Teaching and the US Economy, 'The Second Draft: Catholic Social Teaching and the U.S. Economy', *Origins* (Vol. V 1985); US Bishops Ad Hoc Committee on Catholic Social Teaching and the US Economy, 'The Third Draft: Economic Justice for All: Catholic Social Teaching and the U.S. Economy', *Origins* (Vol. VI 1986); J. Carrica, 'Restructuring Capitalism for Human and Social Dignity', *Humanomics* (Vol. III, No. 3, Dec. 1987).
 5. M. Lutz and K. Lux, *Humanistic Economics* (New York, U.S.A.: The Bootstrap Press, 1988).
 6. J. Vanek, 'The Basic Theory of Financing of Participatory Firms', in J. Vanek (ed.), *Self-Management* (Baltimore, Md: Penguin, 1975).
 7. J. Vanek, 'Some Fundamental Considerations on Financing and the Form of Ownership under Labor Management', in H. C. Bos (ed.), *Economic Structure and Development* (Amsterdam: North-Holland, 1973).
 8. The idea of social control of production being the decisionistic and management aspect of production is more extensive than merely the distributive aspect of production. This idea thereby extends over J. K. Galbraith's idea of the 'theory of social balance': see J. K. Galbraith, *The Affluent Society* (Boston, Mass.: Houghton Mifflin, 1976).
 9. G. J. Dorrien, *The Democratic Socialist Vision* (Totowa, New Jersey: Rowman & Littlefield, 1986), Ch. I.
 10. Dorrien, *The Democratic Socialist Vision*, Ch. 6.
 11. R. Meidner, 'A Swedish Union Proposal for Collective Capital Sharing', in N. Leiber (ed.), *Eurosocialism and America: Political Economy for the 1980s* (Philadelphia, Pa: Temple University Press, 1982).
 12. In the Quran we have the verse (one of many):

O mankind! We created
 You from a single (pair)
 Of a male and a female,
 And made you into
 Nations and tribes, that
 You may know each other
 (Not that you may despise
 Each other). Sura XLIX, v. 13.

13. S. Khalil, *Mukhtasar*, quoted in A.R.I. Doi, *Shariah: The Islamic Law* (London: Ta Ha Publishers, 1984), Ch. 20.
14. M. A. Choudhury, 'Introduction to the Financial Statement of the Firm in an Islamic Economy', in M. A. Choudhury, *Contributions to Islamic*

- Economic Theory: A Study in Social Economics* (London: Macmillan, 1986), Ch. 4.
15. J. Hirshleifer, *Investment, Interest and Capital* (Englewood Cliffs, NJ: Prentice-Hall, 1970), Chs 8, 9.
 16. D. Ellerman, 'On the Labor Theory of Property', *The Philosophical Forum* (Vol. XVI, No. 4, Summer 1985); D. Ellerman, 'The Employment Contract and Liberal Thought', *Review of Social Economy* (Vol. 44, No. 1, April 1986).
 17. M. A. Choudhury, *Contributions*, Ch. 3.
 18. On the analysis of joint production with external economies, refer to L. L. Pasinetti, 'A Mathematical Formulation of the Ricardian System', *Review of Economic Studies* (Vol. 27, 1960). See particularly the section on 'Multi-Commodity Production'.
 19. The point is brought out in M. A. Choudhury, 'The Humanomic Structure of Islamic Economic Theory', *The Journal of Research in Islamic Economics*, (Vol. 2, 1990).
 20. M. Handa, 'Some Economic and Sociological Considerations in Job Attainment and the Labour Market', *Humanomics* (Vol. 1, No. 1, 1984).
 21. For a good account of the struggle between labour and capitalists in the work-place democracy of the USA, and the subsequent prospect for work-place reorganisation, refer to J. Wisman, 'Economic Democracy and American Politics', in M. A. Choudhury (ed.), *Policy-Theoretic Foundations of Ethico-Economics* (Sydney, Nova Scotia: The Centre of Humanomics, University College of Cape Breton, 1988).
 22. Ibn Taimiyyah, *Al-Hisbah-fil-Islam* (Beirut, Lebanon: Darul Kutbal-Arabiyyah, 1967); A. Azim, *Economic Views of Ibn Taimiyyah* (doctoral dissertation, Aligarh University, India, 1984).
 23. M. A. Choudhury, 'A Study of Ethico-Economics in the General Equilibrium Field', *Festschrift in Honour of Anghel N. Rugina, Part I: International Journal of Social Economics* (Vol. 14, Nos 3/4/5, 1987).
 24. M. A. Choudhury, 'A Mathematical Formulation of the Principle of Ethical Endogeneity', paper presented at the Fifth World Congress of Social Economics, University of York, England, 1-4 Aug. 1988 (mimeo; Department of Social Sciences, University College of Cape Breton, Sydney, Nova Scotia).
 25. The terminology of regrettables is taken from K. Stewart, 'National Income Accounting and Economic Welfare. The Concepts of GNP and MEW', *Federal Reserve Bank of St. Louis Review* (Vol. 56, No. 4, April 1974). See also W. Nordhaus and J. Tobin, 'Is Growth Obsolete?', in W. Nordhaus and J. Tobin, *Economic Growth* (New York: National Bureau of Economic Research, 1972).
 26. For a treatment of such a maximisation problem with continuous functions, see K. J. Arrow and M. Kurz, *Public Investment, the Rate of Return, and Optimal Fiscal Policy* (Baltimore, Maryland: Resources for the Future Inc., 1970).
 27. W. W. Leontief, *The Structure of American Economy, 1919-1939* (New York: Oxford University Press, 1951).
 28. Such a predominant feature of *mudarabah* emanates from the general

equilibrium relations of the Islamic economic order (see Chapter 1 of this book).

29. M. A. Choudhury, *Contributions*, Ch. 6.
30. Such a case is seen to violate the concept of economic rationality in neoclassical theory. Along with it, the axiom of transitivity of social choices cannot also hold globally. However, the axiom of economic rationality can be transformed into an axiom including ethical imponderables. Then the transitivity of social states is a manifestation of ethico-economic decisions (see M. A. Choudhury, 'A Conceptual Foundation of Economic Decision Making in an Islamic Framework', *Arab Journal of Social Sciences* (Vol. 1, No. 1, 1986); also reprinted in Choudhury, *Contributions*, Ch. 7).
31. M. N. Siddiqui has developed a model of liquidity preference in a profit-sharing framework: see M. N. Siddiqui, 'Economics of Profit Sharing', Ziauddin Ahmad *et al.* (eds), *Fiscal Policy and Resource Allocation in Islam* (Jeddah, Saudi Arabia: International Centre for Research in Islamic Economics, King Abdulaziz University, and Islamabad, Pakistan: Institute of Policy Analysis, 1983).

5 Resolution of the Great Economic Problems in Contemporary Times in Islamic Economic Perspectives

1. M. Muslehuddin, *Philosophy of Islamic Law and the Orientalists* (Lahore, Pakistan: Islamic Publications, undated).
2. Ibn Taimiyyah, *Al-Hisbah Fil-Islam* (Beirut, Lebanon: Darul Kutbal-Arabiyyah, 1967).
3. M. Muslehuddin, *Insurance and Islamic Law* (Lahore, Pakistan: Islamic Publications, 1969), Ch. 6, makes the following analogy in regard to the exegesis of the following Quranic verse. 'God has permitted trade and forbidden *riba* (Quran, Sura II, v. 275). "The right of *ijtehad*" may be used in regard to questions on which there is no clear text, by every Muslim who is qualified to exercise it . . . To illustrate it more specifically the above-cited Quranic verse: "God has permitted trade and forbidden *riba*", is manifest or *zahir* with regards to the legality and illegality respectively of two transactions, and explicit or *nass* in distinguishing *riba* from trade. But is vague or *mujmual* as to the meaning of *riba* which requires interpretations.'
4. M. A. Choudhury, 'Value, Price and Social Equilibrium', *The Journal of Social Sciences*, Vol. 14, 1989.
5. M. A. Zarga, 'Social Welfare Function and Consumer Behaviour: An Islamic Formulation of Selected Issues', (mimeo; Jeddah, Saudi Arabia: Centre of Islamic Economics, King Abdulaziz University).
6. M. A. Choudhury, 'First-Order Efficiency Conditions of the firm in an Islamic Economy', in Choudhury, *Contributions to Islamic Economic Theory: A Study in Social Economics* (London: Macmillan, 1986), Ch. 4.
7. M. A. Choudhury, 'Equity Efficiency Conditions of Competitive – Cooperative Product and Labour Markets', *International Journal of Manpower* (Vol. 7, No. 5, 1986).

8. M. A. Choudhury, 'Principles of Islamic Economics', *Contributions*, Ch. 1.
9. R. Heilbroner and L. C. Thurow, *The Economic Problem* (Englewood Cliffs, NJ: Prentice-Hall, 1984), Ch. 29.
10. R. G. D. Allen, *Macroeconomic Theory, A Mathematical Treatment* (London: Macmillan, 1967), Ch. 14.
11. R. C. Edwards *et al.* (eds), *Labour Market Segmentation* (Lexington, Mass.: D.C. Heath, 1975).
12. M. A. Choudhury, 'Application of Humanomics I: Humanomic Elements in Regional Economic Co-operation Among Developing Countries', *The Paradigm of Humanomics* (Bangi, Malaysia: The National University of Malaysia Press, 1988).
13. J. von Neumann and O. Morgenstern, *Theory of Games and Economic Behavior* (Princeton, NJ: Princeton University Press, 1944).
14. M. Friedman, 'The Methodology of Positive Economics', in M. Friedman, *Essays in Positive Economics* (Chicago, Ill.: Chicago University Press, 1953).
15. Ilse Rosenthal-Schneider, 'Presuppositions and Anticipations in Einstein's Physics', in P. A. Schilpp (ed.) *Albert Einstein: Philosopher-Scientist* (New York: Tudor, 1951).
16. J. Pheby, 'Inductivism and Deductivism in Economics', in J. Pheby, *Methodology and Economics, a Critical Introduction* (London: Macmillan, 1988).
17. A. Einstein, *The World as I See It* (New York: Covici Friede, 1934).
18. F. S. C. Northrop, 'Einstein's Conception of Science', in Schilpp, *Albert Einstein: Philosopher-Scientist*.
19. B. Russell, 'Philosophical Consequences', in B. Russell, *ABC of Relativity* (London: George Allen & Unwin, 1971).
20. F. E. Close, 'Superstrings', *Science and the Future*, 1988 Year Book, *Encyclopedia Britannica*.
21. F. Capra, *The Turning Point* (London: Fontana, 1983).
22. K. R. Popper, *The Logic of Scientific Discovery* (London: Hutchinson, 1959).
23. J. Pheby, 'Falsification and Economics', in Pheby, *Methodology and Economics*, Ch. 2.
24. T. S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, Ill.: University of Chicago Press, 1970).
25. See the mathematical appendix to J. Hicks, *Value and Capital* (Oxford: Clarendon Press, 1968).
26. M. Bronfenbrenner, 'The Structure of Revolutions in Economic Thought', *History of Political Economy* (Vol. 3, No. 1, 1971).
27. M. Novak, *A Theology of Radical Politics* (New York: Herder & Herder, 1969); T. O. Nitsch and B. J. Malina, 'On the Role of the Transcendent in Human Economy: Towards a New Synthesis', *Humanomics* (Vol. 1, No. 3, 1985).
28. G. J. Dorrien, *The Democratic Socialist Vision* (Totowa, New Jersey,: Rowman & Littlefield, 1986).
29. I. Lakatos, *The Methodology of Scientific Research Programmes* (Cambridge: Cambridge University Press, 1978).

30. M. Friedman, 'The Methodology of Positive Economics', in Friedman, *Essays in Positive Economics*.
31. D. R. Fusfeld, *The Age of the Economist* (Glenview, Ill.: Scott, Foresman & Co, Inc. 1986), Chs 3–6.
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3. M. A. Choudhury, 'The Micro-Economic Foundations of Islamic Economics as a Study in Social Economics', *The American Journal of Islamic Social Sciences* (Vol. 3, No. 2, 1987).
4. M. A. Choudhury, *Contributions to Islamic Economic Theory: A Study in Social Economics* (London: Macmillan, 1986), Ch. 12.
5. A wider application of this concept can be found in M. A. Choudhury, *The Paradigm of Humanomics* (Bangi, Malaysia: University of Kebangsaan, Malaysia Press, 1989).
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7. Choudhury, *Contributions*, Ch. 3.
8. This schematic interrelationship between Islamic economic principles and instruments was first brought out by the author in his Faculty of Economics (National University of Malaysia) Lecture on Islamic Economics, July 1986.
9. This is also the nature of industrial cooperatives that pay both dividends and wages to employees and shareholders.
10. The idea is also brought out in a wider context in M. A. Choudhury,

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 12. For a good exposition on *riba* refer to M. U. Chapra, *Towards a Just Monetary System* (Leicester: The Islamic Foundation, 1985), Ch. 2.
 13. This and other aspects of *zakah* can be studied in a number of papers included in M. Raquibuzzaman (ed.), *Some Aspects of The Economics of Zakat* (Indianapolis, Ind.: American Trust Publications, 1980).
 14. For a formalisation of this idea refer to M. A. Choudhury, *An Islamic Social Welfare Function* (Indianapolis, Ind.: American Trust Publications, 1983), Ch. IV.
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