

PRINCIPLES OF BUILDING ECONOMICS

JOHN RAFTERY

An orange line graph is plotted across the lower half of the cover. It starts at the bottom left, rises to a peak, falls to a trough, rises to a second peak, falls to a second trough, and then rises again towards the right edge. The line is thick and solid.

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PRINCIPLES OF BUILDING ECONOMICS

AN INTRODUCTION

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To my parents

Preface

The aim of this book is to provide a critical introduction to some important and fundamental, aspects of building economics. The book is intended to be a core text for students and it is hoped it will be read by practising professionals wanting a stimulating and at times, provocative 'read'. It draws on ideas from economics to describe and understand the production of the built environment.

The need for a book such as this first became clear to me when I began to teach courses on building economics to students reading for degrees in architecture, engineering and surveying. I quickly learned that it was just not possible to write short reading lists as the necessary material was scattered across a wide range of books and journals. While it was possible to recommend standard texts on the *techniques* of building economics there was no one, authoritative but accessible, source on the underlying principles. This is an important gap in the literature, as in volatile economic conditions the use of techniques needs to be 'intelligent'. That is to say, the user needs to be aware of how changes in the economic environment affect the inputs and outputs of plans and forecasts.

This book is, therefore, intended to complement and be used in conjunction with a text on techniques such as Ferry and Brandon (1991). Together they would provide a rigorous and comprehensive introduction to the theory and practice of building economics.

The book is in three parts. The first part contains a macro and micro economic introduction to the subject which considers how economic thought has developed since Adam Smith and goes on to introduce key issues such as the current divergence of opinion in economics, markets, price determination and the role of government in a mixed economy. The fundamental concepts of cost, price and value are considered in detail. The text takes account of how 'green accounting' produces an entirely

different definition of cost.

Part two considers the demand side beginning with a consideration of the problems of intertemporal choice in construction project appraisal. There are chapters on demand for construction and on the problem of obsolescence in the built environment.

Part three is an examination of the supply side of the industry. This part contains chapters on the theory of the firm, the operation of the firm, price determination for construction projects, the design process and cost models.

The eclectic nature of a text such as this makes it impossible to give more than the briefest of introductions to each subject. An extensive bibliography is provided for those who wish to pursue areas of individual interest. Throughout the text the use of statistics and mathematics has been kept to a minimum.

John Raftery
Greenwich
May 1990

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Part I

Introduction to Building Economics

- Chapter 1 A Macro and Micro Economic Introduction
- Chapter 2 Concepts of Value, Cost and Price
- Chapter 3 The Construction Industry

Chapter 1

A Macro and Micro Economic Introduction

Introduction

This chapter attempts to survey the field covered by 'Building Economics' and to address some areas previously neglected in the literature of the subject. We will begin by asking what building economics is and whether it is, as some assume, a branch of 'general' economics? That controversial question (to those in the field) will lead us to consider, in outline form, the history of economic thought. For our purposes here we will be giving particular attention to the diversity of approach and the concentration on specific issues, which are inherent to many schools of economic thought. This leads us to an examination of contemporary approaches and finally to a brief review of some of the fundamental concepts through which orthodox economists view the world.

What is Building Economics?

Conventional definitions of Building Economics tend to imply that economics is a body of knowledge and theories about which there is general agreement. According to Hillebrandt (1985: 3):

'Construction economics is a branch of general economics. It consists of the application of the techniques and expertise of economics to the study of the construction firm, the construction process and the construction industry.'

Hillebrandt is, as usual, concise. Her definition prompts two observations. Firstly, that quantity surveyors and building cost consultants may have a vested interest in elevating what they do to the level of 'economics' with its implications of pro-

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fessional, as opposed to technical skill, and its association with scientific methods, theories, conjectures and refutations. It could be argued, for example, that this claim is not wholly convincing and that building economics has much more in common with, the so-called, cost and management accounting.

To support this contention, we may call as evidence the fact that the objectives of practising economists and building economists are different. Put simply, mainstream orthodox economics is the study of how people and society choose to employ scarce resources, which may have alternative uses, to produce and distribute various goods, services, and factor-incomes therefrom among the members and groups in society. Building economics is conventionally said (by UK based practitioners) to be about helping clients to achieve, frequently mentioned but rarely defined, 'value for money' from their new or rehabilitated buildings. This is sometimes misunderstood to be about cost minimisation. In fact, in both public and private sectors it may be said to be about maximising the difference between the cost of the building to the owner (the price charged by the contractor) and its value, either in use or exchange.

It could be argued that these two objectives are not compatible. Further evidence to support this cost accounting contention may be found by consulting key (UK) texts on building economics such as Seeley (1983) or Ferry and Brandon (1991). The arguments do not stand up however, building economics, at least as it is practised in the UK, is a branch, if of anything, of microeconomics. It is concerned with identifying optimal allocations of resources for building owners or developers. This is undoubtedly much more than mere cost accounting.

Decisions concerning the appraisal of and allocation of resources to buildings and civil engineering projects take place in a relatively long time frame. The time taken to conceive of, and then design and construct such a facility is usually measured in years. The benefits from the project do not normally arise until it is in operation. Thus, in order to initially appraise the project, the eventual input costs and benefit stream will have been forecast a long time in advance. Such forecasts need to take account of dynamic economic conditions and technological advances. They cannot be made by mechanical application of formulae. The building economist needs to be able to adjust forecasts to take account of changes in underlying conditions.

Optimal allocation of resources for an individual *vis à vis* one project will not necessarily lead to an overall optimum across

the portfolio of investments for that individual, nor will such a local optimum necessarily have any direct bearing on the optimal allocation for society. To contend that building economics is primarily about a combination of technical skills, informal optimisations, cost accounting, cost control, price forecasting and resource allocation, is not to diminish it in any way, for these are important and necessary if we wish to advance our individual and collective economic welfare. Nor is it to suggest that it is possible to practice these skills in the absence of any knowledge of economics. On the contrary, it is crucial that any practitioner of building economics has a thorough knowledge of economising behaviour, of the workings of the economy and, most importantly, of the consequences of economic policy decisions.

The second observation, prompted by the definition is that it does not (nor does it have to) explicitly acknowledge that there is much disagreement amongst economists on techniques, theories, methods and models of real world activity. The encroachment of mathematics into twentieth century economics gives the illusion of precision and has led one distinguished applied economist to conclude:

'The economic journals indicate that many of the most prestigious academic economists are working on theoretical mathematical models that begin with entirely arbitrary and unrealistic assumptions and lead to precisely stated and irrelevant conclusions as far as the real world is concerned.'

(Kamarck 1983: 122)

Economics is a social science and not a 'pure' science. It is not usually possible to perform laboratory experiments. There are many untested and untestable models. There are divisions between different schools of thought.

Building Economics and Qualitative Reasoning

However, we must be careful to avoid rejecting the positive attributes of economics. The real world is sufficiently complex that without some conceptual framework, some tests of logic, some theoretical underpinnings, a thinking individual will drown in a morass of data. Ideally of course, it would be convenient to have precise quantitative reasoning for every decision. Here

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however, we take the view that qualitative reasoning is frequently sufficient to form a basis for informed decision making. For example, it will be important for construction professionals to know whether some variable (interest rates, public spending, savings ratios, real earnings, inflation, for example) is likely to increase or decrease; what the consequences of this are and whether they are likely to be large or small.

For informed judgements we need often to be aware only of the direction and general order of magnitude of changes. In order to achieve this, we need to be able to establish causality among economic variables and their relationships with government decisions. This approach necessitates a familiarity with both the built environment and its process of production and also with the strengths and limitations of economics as it is currently understood. On this latter point we commence by briefly reviewing the history of the development of economic thought.

The History of Economic Thought

Overview: Economics, Value Judgements and Ideologies

John Maynard Keynes was convinced of the immense influence of ideas as is shown by this famous quote:

'... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back.'

(Keynes 1936: 383–4)

The development of economic thought took place (and continues to take place) in a discontinuous way. The questions examined by the various schools are usually those which are of contemporary relevance at a particular point in time in a given set of circumstances. The analysis of one question and thus the exclusion of some other, is therefore a form of value judgement. Karl Marx and Friedrich Engels pointed out the existence of 'ideological bias' in their criticisms of classical economics. By

this they meant that peoples' ideas are likely to glorify the interests of those groups (or classes) in society that are in a position to exert themselves and thus to lead to analyses and conclusions which diverge from the 'truth'. They themselves appear to have been exceptions to this rule.[1]

In the medieval universities there was a finite amount of knowledge, of the world, the arts and sciences, which could be taught. As time went on, it became clear that as new discoveries were made and older theories refuted, the sum of knowledge changed, mainly by being increased. New paradigms evolved which reflected the consensus view. We moved from notions of a flat earth around which everything else revolved, to the idea of a spherical earth revolving around the sun.

At the beginning of this century we moved away from Newtonian deterministic physics to a paradigm based on relativity and the notion of uncertainty and probabilistic, as opposed to deterministic, descriptions of the world. One objective of the review of the history of economic thought outlined below, is to indicate the main developments in our knowledge of economics. Additionally, and more importantly, we will demonstrate that the position we occupy now, is conditioned by our history and by social and economic conditions in the late twentieth century, and as such is a transient position.

Problems of public administration, agriculture, commerce and finance were discussed and written about in ancient China and, more recently, in Graeco-Roman times. According to Schumpeter (1954: 51–2) the most important writers were Confucius (551–478 BC), Meng Tzu (Mencius, 372–288 BC), Plato (427–347 BC) and Aristotle (384–322 BC). Detailed histories of economic thought sometimes start from this position. For our purposes here we will begin with the time of the industrial revolution and look at five distinct 'ages', Classical, Marxian, Neo-classical, Keynesian and Post Keynesian and finally, some contemporary alternatives.

Classical Economics

The four major contributors to classical economics may be usefully placed in the context of the Industrial Revolution. In relation to which, Adam Smith wrote before, David Ricardo and Thomas Malthus during, and John Stuart Mill after (Dasgupta, 1985: 11–19). Before considering each of these authors in their turn,