Fundamentals of Managerial Economics

Fundamentals of Managerial Economics

Julian GOUGH
and
Stephen HILL

M

© Julian Gough and Stephen Hill 1979
Softcover reprint of the hardcover 1st edition 1979

All rights reserved. No part of this publication may be reproduced or transmitted, in any form or by any means, without permission.

First published 1979 by
THE MACMILLAN PRESS LTD
London and Basingstoke
Associated companies in Delhi Dublin
Hong Kong Johannesburg Lagos Melbourne
New York Singapore and Tokyo

Typeset in Great Britain by
Reproduction Drawings Ltd, Sutton, Surrey

British Library Cataloguing in Publication Data

Gough, Julian
Fundamentals of managerial economics.
1. Finance 2. Management
I. Title II. Hill, Stephen
658.1'5 HG4026

ISBN 978-0-333-26666-3 ISBN 978-1-349-16225-3 (eBook)
DOI 10.1007/978-1-349-16225-3

This book is sold subject to the standard conditions of the Net Book Agreement.

The paperback edition of this book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

Contents

<i>Preface</i>	ix
<i>Acknowledgements</i>	x
1 Business Decisions	1
The nature and components of decision problems, <i>p. 1</i> – Further Reading <i>p. 3</i>	
2 Marginal Analysis and Decisions	4
Introduction, <i>p. 4</i> – totals, <i>p. 4</i> – averages and marginals, <i>p. 4</i> – the application of marginal analysis, <i>p. 8</i> – the concept of a derivative, <i>p. 9</i> – rules for differentiating functions, <i>p. 11</i> – maximisation and minimisation, <i>p. 13</i> – maximising the difference between two functions, <i>p. 15</i> – partial differentiation, <i>p. 17</i> – constrained optimisation, <i>p. 18</i> – Further Reading, <i>p. 20</i> – Questions, <i>p. 20</i>	
3 Uncertainty	22
The nature of uncertainty, <i>p. 22</i> – probability and expected value, <i>p. 23</i> – elementary decision theory, <i>p. 24</i> – the expected value of perfect information, <i>p. 25</i> – minimising losses, <i>p. 26</i> – salvage values, <i>p. 27</i> – utility and decisions, <i>p. 28</i> – estimating utility functions, <i>p. 32</i> – decision-tree analysis, <i>p. 35</i> – posterior probability analysis, <i>p. 37</i> – the binomial distribution, <i>p. 39</i> – conclusions, <i>p. 41</i> – APPENDIX Decision theory: an example in the use of opportunity loss; question, <i>p. 42</i> – Further Reading, <i>p. 44</i> – Questions, <i>p. 44</i>	
4 Profit	46
Defining profit – economist <i>v.</i> accountant, <i>p. 46</i> – managerial earnings and management capital, <i>p. 49</i> – depreciation, <i>p. 50</i> – inflation accounting: Sandilands Report, <i>p. 52</i> – profits and the performance of the firm, <i>p. 55</i> – the source of profits, <i>p. 56</i> – conclusions, <i>p. 57</i> – Further Reading, <i>p. 57</i> – Questions, <i>p. 58</i>	
5 Managerial Objectives	59
Introduction, <i>p. 59</i> – profit-maximising theories, <i>p. 59</i> – other optimising theories, <i>p. 66</i> – Baumol (sales-revenue maximisation), <i>p. 66</i> – Williamson (maximisation of managerial utility), <i>p. 68</i> – Marris (growth maximisation), <i>p. 69</i> – non-optimising theories, <i>p. 71</i> – Simon (satisficing), <i>p. 71</i> – Cyert and March (behavioural theory of the firm), <i>p. 71</i> – conclusions, <i>p. 73</i> – Further Reading, <i>p. 74</i> – Questions, <i>p. 74</i>	

6	Market Structure and Competition	75
	Introduction, <i>p. 75</i> – monopoly, <i>p. 76</i> – perfect competition, <i>p. 79</i> – monopolistic competition, <i>p. 82</i> – oligopoly: collusive and non-collusive, <i>p. 84</i> – conclusions, <i>p. 87</i> APPENDIX Oligopoly and Game theory, <i>p. 87</i> – Further Reading, <i>p. 92</i> – Questions, <i>p. 92</i>	
7	Demand Analysis	94
	Introduction, <i>p. 94</i> – demand functions, <i>p. 94</i> – elasticity, <i>p. 96</i> – demand estimation: survey approaches, direct market experiments, statistical approaches and statistical problems, <i>p. 99</i> – trend relationships, <i>p. 107</i> – forecast assessment, <i>p. 110</i> – Further Reading, <i>p. 111</i> – Questions, <i>p. 111</i>	
8	Production	113
	Introduction: the production function, <i>p. 113</i> – efficient production, <i>p. 119</i> – optimal input combinations, <i>p. 120</i> – production in the short run, <i>p. 123</i> – production in the long run, <i>p. 126</i> – Further Reading, <i>p. 129</i> – Questions, <i>p. 129</i>	
9	Costs	130
	The expansion path and cost functions, <i>p. 130</i> – short-run cost functions, <i>p. 131</i> – the long-run cost curve, <i>p. 135</i> – economies and diseconomies of scale, <i>p. 138</i> – plant size and flexibility, <i>p. 139</i> – break-even analysis, <i>p. 140</i> – dimensions of output, <i>p. 143</i> – empirical cost analysis: short-run cost estimation, functional form, estimating long-run cost curves, <i>p. 145</i> – Further Reading, <i>p. 151</i> – Questions, <i>p. 151</i>	
10	Advertising	152
	Introduction: advertising elasticity, <i>p. 152</i> – advertising as a cost of production, <i>p. 154</i> – advertising and size, <i>p. 154</i> – the optimal advertising budget, <i>p. 155</i> – sales-revenue maximisation, <i>p. 159</i> – advertising and time, <i>p. 161</i> – Further Reading, <i>p. 163</i> – Questions, <i>p. 163</i>	
11	Pricing	164
	Monopoly pricing, <i>p. 164</i> – oligopoly pricing, <i>p. 165</i> – cost-plus pricing, <i>p. 167</i> – multiple-product pricing, <i>p. 169</i> – price discrimination, <i>p. 170</i> – transfer pricing, <i>p. 171</i> – spare-part or component pricing, <i>p. 173</i> – retail pricing, <i>p. 174</i> – government regulations, <i>p. 177</i> – Further Reading, <i>p. 178</i> – Questions, <i>p. 178</i>	
12	Multi-product Firms	179
	Introduction, <i>p. 179</i> – diversification, <i>p. 180</i> – the production of multiple products, <i>p. 182</i> – linear programming: general form, the graphical method, the Simplex method, minimisation problems, <i>p. 184</i> – duality, <i>p. 195</i> – Further Reading, <i>p. 202</i> – Questions, <i>p. 202</i>	
13	Investment	204
	Introduction, <i>p. 204</i> – types of investment decisions, <i>p. 205</i> – traditional appraisal methods, <i>p. 205</i> – discounting, <i>p. 207</i> – the discount rate, <i>p. 209</i> – comparing net discounted present value and internal rate of return, <i>p. 210</i> – multi-period analysis, <i>p. 215</i> – uncertainty and investment decisions, <i>p. 217</i> – the covariance approach, <i>p. 220</i> – capital rationing, <i>p. 221</i> – taxation, <i>p. 221</i> – APPENDIX Table of Discount Factors, <i>p. 222</i> – Further Reading, <i>p. 223</i> – Questions, <i>p. 223</i>	

	<i>Contents</i>	vii
14	Inventories	225
	Introduction, <i>p. 225</i> – inventory and oligopoly, <i>p. 228</i> – inventory models, <i>p. 229</i> – algebraic formulation, <i>p. 232</i> – an example, <i>p. 234</i> – Further Reading, <i>p. 236</i> – Questions, <i>p. 236</i>	
15	Conclusion	238
	<i>Notes and References</i>	239
	<i>Answers to Numerical Questions</i>	248
	<i>Index</i>	250

Preface

The aim of this book can be stated simply: to provide a clear, rigorous and comprehensive text on Managerial Economics. While this objective is simple to define, its attainment is by no means easy. The evidence of this is clear; namely, the plethora of books in the subject area which have singularly failed to achieve this objective. They tend to fall rather unhappily into two camps: the first a watered-down exposition of the theory of the firm with minor concessions to actual decision-making; the second an *ad hoc* mixture of material on decision-making with little unifying theme, founded rather shakily on economic theory.

We believe this book to be distinctive and very different from existing texts with comparable titles. It is essentially the joint view of two individuals, rather than a summary of the work of others. We hope that the result demonstrates the enthusiasm we have for a relatively new and expanding area of economics. Because it is our own work we take full responsibility for any errors or omissions.

There is however another reason why we wrote this book. This stems from our belief that much of microeconomic theory has become so arid and divorced from reality that the very subject-matter of economics is dangerously near being considered irrelevant to the world in which we live. Our aim was, therefore, to keep a firm base in economic theory, but systematically to bring in the complications of real firms – e.g. incomplete information, uncertainty and the time horizon of the firm, managerial objectives, etc. We feel there is a grave danger of economics being dismissed because it has become stylised and rigid, with the attendant risk that readers are forced to turn to other disciplines for the discussion of essentially theoretical issues. It is for this reason that we have attempted to preserve the theoretical basis of the subject-matter and not to be tempted to package the text with descriptive examples and case studies with dubious interpretations and little general significance.

It is our hope that this book will be read by a wide variety of people – students of economics and business, those studying management sciences, businessmen and managers, and other decision-takers where economic factors are of some moment. Our intention is that the book is able to be understood by the interested reader with little (and possibly no) previous knowledge of economics. Obviously some sections of the text will be optional, depending on the background of the reader. Chapter 6, on market structure, can be omitted by those with a firm knowledge of the traditional theory of the firm; for others who do not possess this background the chapter is essential reading to understand the rest of the text. Similarly, Chapter 2, on marginal analysis with sections on introductory

mathematics, can be omitted by those already versed in the area, but to others it allows them to proceed with the book without having to resort to consulting other texts on mathematics.

While the book presumes little previous knowledge, it quickly proceeds to an advanced level. In many of the chapters substantially new material is introduced, and elsewhere existing knowledge is presented in a new way. It is hoped that the reader, on completing the book, will feel that a clear definable area of economics has been traced out, and that the analysis is highly relevant to business decision-taking.

We have suggested questions for discussion and further reading at the end of most chapters. Also, where appropriate, we have included worked examples and further problems for the student to follow up. We hope this will help the student where the text is employed as a course book.

Finally, we would like to acknowledge the cheerful typing of a difficult manuscript by Mrs Sadia Matthews and Mrs Margaret Aven.

J. G.

S. H.

Acknowledgements

The authors and publishers wish to thank the following, who have kindly given permission for the use of copyright material:

The Advertising Association, for a table from *The Case for Advertising*, edited by David Dunbar.

The Controller of Her Majesty's Stationery Office, for a table from *Price of a Dental Preparation - By Cost Components*. N.B.P.I. Report 113, Cmnd 4066.

Extel Statistical Services Ltd, for a table published in *The Guardian*, 3 September 1975.

McGraw-Hill Book Company, for two figures from *Corporate Strategy* (1965), by H. I. Ansoff.

Prentice-Hall Inc., for an extract from *Economic Theory and Operations Analysis*, by William J. Baumol, 3rd ed., © 1972.