
Economic policy and technological performance

EDITED BY PARTHA DASGUPTA
AND PAUL STONEMAN



**Centre for
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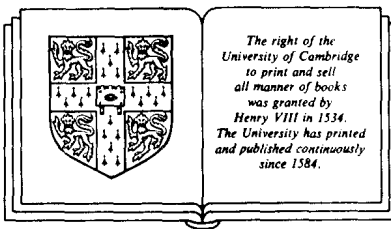
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A growing awareness of the contribution that technological change has made and can make to economic and social welfare has brought science and technology policy to the forefront of public discussions in both national and international forums. The papers in this volume, first presented at a Centre for Economic Policy Research conference held in London in September 1986 on the Economics of Technology Policy, represent a wide ranging contribution to the debate. Generally aimed at the non-specialist, the papers cover both the experience and application of policy as well as providing in-depth discussions of the rationale for intervention in the process of technological change. The authors include both policy-makers (Barber, Ergas and White) and the academic economists (Dasgupta, David, Griliches, Lyons, Pakes, Stiglitz and Stoneman). The volume will be of particular interest to policy makers and their advisers concerned with technology-related issues and will contribute significantly to undergraduate and graduate courses in the same area.

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1 February 1987

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Preface

This volume contains the proceedings of the conference 'Economics and Technology Policy' organised by the Centre for Economic Policy Research and held in London on 1-2 September 1986.

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PAUL STONEMAN
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Introduction

PARTHA DASGUPTA and
PAUL STONEMAN

I Motivation

A great many research problems in economics, as in other disciplines, we would imagine, are internally generated by the subject. Seminal contributions are those which formulate new questions, or pose old questions in a novel and tractable manner. Such contributions often have the habit of attracting large research followings in rapid succession, refining, extending and embellishing the original analysis. It is at this stage that the problems analysed are internally generated; that is, prompted exclusively by the earlier contributions. This is the Baroque stage in a problem area.

Such 'cumulative causation' in the temporal characteristics of research output is not difficult to explain. There are strong dynamic scale economies in any one line of research. The second paper on a well-formulated problem area is a great deal easier to write than the first, the third easier than the second, and so on. There are exceptions, of course; there always are. And in any case, 'cost reduction' cannot go on indefinitely; at some stage decreasing returns set in. But there are extensive spill-overs in learning in the field of academic research. This sets in motion for a time the phenomenon of cumulative causation originating from the initial investment in the production of an 'idea'.

We say this with some feeling. It has been recognized for a long while that 'knowledge' (or 'information'), the output of research and development (R&D) activity, possesses unusual properties – among which the feature we began with is an instance. These properties make it most unlikely that the market mechanism can be relied upon to produce knowledge in appropriate amounts, and to use it efficiently. Furthermore, careful work in economic history has established the importance of technological change for the rise in the productivity of labour hours. Then again, industrial case-studies have indicated the importance of