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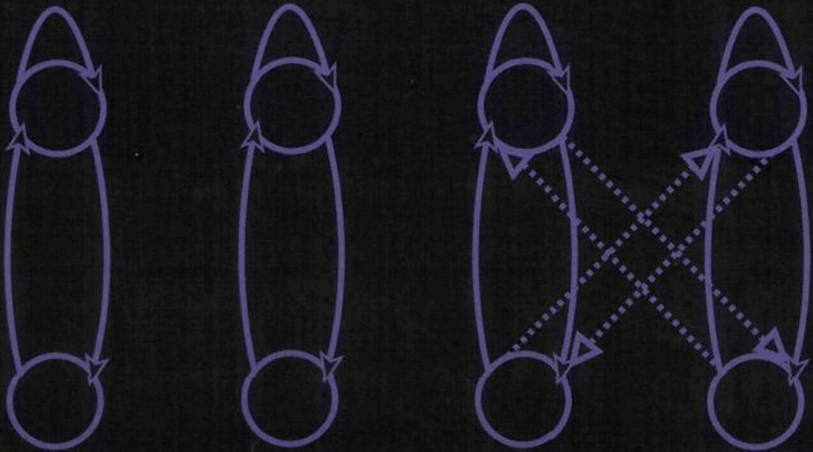

Inframarginal Contributions to Development Economics

edited by

Christis Tombazos
Xiaokai Yang

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Increasing Returns and Inframarginal Economics

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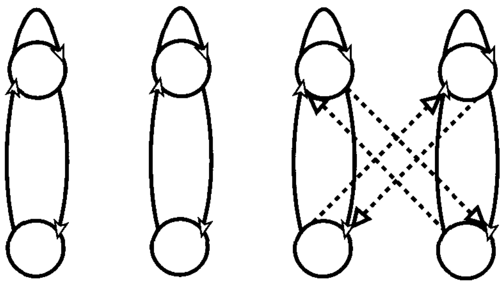

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To Xiaokai

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Preface

As in the case of any anthology of reprinted contributions, primary credit for this volume goes to the authors of the various chapters. We are also grateful to the original publishers for their permission to reprint articles that appear in this volume.

Unlike the remaining contributions, Chapter 1 is written specifically for this volume. It discusses the origins of inframarginal analysis, and provides an introduction to the implementation of the inframarginal methodology in the context of a simple example.

The production of the camera-ready copy of this manuscript was a difficult and labourious task that was managed, almost single-handedly, by our in-house copy editor Aiko Yoshibayashi. We thank Aiko for her extraordinary attention to detail, and her hard work.

We also gratefully acknowledge the generous financial support of the Department of Economics and the Faculty of Business and Economics of Monash University.

Finally, we thank the Research Centre for Increasing Returns and Economic Organisation of Monash University for providing the hardware and office space without which this project would not have been possible.

Christis G. Tombazos
Managing Editor

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Introduction

CHAPTER 1

RETURNING TO THE CLASSICAL TRADITION: THE RELEVANCE AND APPLICATION OF INFRAMARGINAL ANALYSIS TO DEVELOPMENT ECONOMICS

Christis G. Tombazos and Stephen Matteo Miller*

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1. Why Consider the Inframarginal Approach to Economic Development?

Economic development is an observable phenomenon, improvement in the well-being of people, while development economics is the study of that phenomenon. A relatively new sub-discipline of economics known alternatively as "inframarginal economics", "new classical economics" or "the economics of the division of labour," may offer its deepest insights in the study of economic development. This reason alone justifies compiling a collection of essays relating to economic development from the perspective of inframarginal economics, which differs in important ways from more traditional frameworks.

We do not expect that inframarginal economics will be readily embraced by all people interested in the field of development. Arndt[1] provides a fascinating account of the history of the idea of economic development, though it concentrates especially on the 20th century. It shows just how much recent debate there has been about how to define development. For the most part, until the collapse of the Soviet Union, economic development as practiced has been part of a political response from the West to counter the spread of communism to developing countries. Yet, as convincing and detailed as Arndt's story sounds, it does not seem likely that the idea of development only emerged within the last one hundred years. For instance, Arndt makes little mention of Adam Smith.

* We thank Xiaokai Yang for useful discussions.

As Yang and Ng[2] note in the introductory chapter of their well known book, neoclassical economics has focused primarily on the problem of resource allocation, while inframarginal economics, or the economics of the division of labour, gives primary attention, just like Adam Smith, to issues of economic organisation. Economic development is much less about a simple allocation of resources, and much more about explaining first the type of economic organisation that emerges, and only then analysing the resource allocation problem. Put another way, economic organisation puts boundaries on how resources are allocated, and therefore, the underlying reason for variations in economic development are ultimately related to organisational issues about economic activity.

This line of reasoning is also present in the new institutional economics (NIE) view of economic development, including Bates[3] and North[4], among other efforts prior to and since then (see http://coase.org for more references). The motivations are different though, as work in the NIE tradition frequently begins with observations on economic history, while the new classical economics begins from the history of economic thought. Both approaches share common criticisms of standard neoclassical economics. Yet, work among practitioners of the former often make minor adjustments of neoclassical models to fit the historical fact that transaction costs matter for economic performance. Practitioners of the latter typically begin by attempting to mathematically formalise certain aspects of Smith's framework, and then search for evidence to verify inframarginal, and hence, Smithean views of economic performance. So while the issues and explanations of economic performance are often the same, the approaches are different, but it is important to bear in mind that neither approach fully embodies what Smith actually said about economic development.

2. Smith's View of Economics and Economic Development

Many economists today would certainly point to Adam Smith as an early contributor to, if not the founder of, economics. Smith was also preoccupied with where improvements in economic performance, or growth, come from. Hence, he might also be viewed as the first development economist. Economic ideas had, of course, been circulating before him. Levy[5] even claims that the anti-economic content of Plato's Republic was aimed at the economic ideas found in Homer's Illiad. There, the Gods are perfect rational agents, and understand the benefits of positive sum trade, as they make deals with each other, while humans are primitive, and understand only negative sum trade, or war. What Plato's Republic did was to establish an elitist view, that the division of labour for all occupations must be planned, and the agents needed to do so were Philosopher Kings. This view was dominant for roughly the next two thousand years.

In *The Wealth of Nations*[6], Smith challenged this view by appealing to our egalitarian sensibilities. In short, he suggested that the division of labour, which was constrained by market size and population, could arise if each person were left to choose their own occupation. If transaction costs are not prohibitive, a larger market and population makes it possible for people to reap the returns to specialisation.

However, he was a great synthesizer of economic ideas, and to appreciate his contribution, it is necessary to consider his three works, *The Theory of Moral Sentiments* (TMS)[7], *Lectures on Jurisprudence* (LJ)[8], and *An Enquiry into the Nature and Consequences of the Wealth of Nations* (TWN)[6]. Smith's interest in development has its origins in his work on moral philosophy. As Levy[9, 10] puts it:

> It seems to me that Smith is relying on a belief that modestly informed spectators would reach a common judgment about the level of well-being of the median member of different societies to defend economic growth. Smith has told us three things. First, he tells us that the as-if well-being of children is easy for everyone to impute. Second, he has told us that the children of the median member of society will do best in a rapidly growing society. Third, he has told us that one and two suffice for us to conclude that rapid growth is good (see page 313).

So, herein lies the justification for growth. In order to understand where growth comes from, it is first necessary to point out that for Smith, it is man's inherent desire to trade that drives the division of labour, and volume of trade that determines the extent of the division of labour. Furthermore, trade is possible because people share language; whether it's Chinese, French, Jamaican, English, or Swahili. As long as people can communicate, it is language (see Smith TWN I. ii par. 2[6], Levy[11] for an extensive interpretation of Smith's views). Thus, a larger market size with lots of commercial activity means a greater division of labour (see Smith TWN I. iii par. 1[6]). The division of labour increases worker productivity because of improvements to human capital ("dexterity") and physical capital ("the invention of a great number of machines"), as each factor becomes more specialised, and because specialisation itself implies time is no longer lost in switching from one task to another (see Smith TWN I. i par. 5[6]). Rising productivity is of course an indicator of a growing economy. *Lectures on Jurisprudence*[8] includes an early draft of *the Wealth of Nations* that discusses the role of specialisation in economic growth. It also includes a noteworthy discussion of the impediments to growth. Specifically, any factor that drives a wedge between the natural (distortion-free) price, and the observed market price, slows down commercial activity, and hence, the potential for economic growth. These wedges might be caused by monopoly, by taxes or tariffs, or by prices or risk due to various forms of uncertainty including property rights (see Juris-Prudence Part II. Of Police in Smith[8] where he discusses among other things, the relationship between the division of labour and growth, as well as retardants to growth.).

3. Where has the Division of Labour Gone?

Stigler[12] observes that specialisation is the key facet of Smith's explanation of economic growth and development that is surprisingly missing from all of neoclassical economics. For instance, it is notably absent from the neoclassical framework of Marshall and Jevons. Reasons for this anomaly have been offered by a number of authors. Buchanan and Yoon[13] speculate that the neoclassical thinkers sidestepped the issue of the division of labour because they considered it irreconcilable with their theory of distribution. This theory depends critically on constant returns. Yet, division of labour, and the benefits of specialisation, suggest increasing returns to scale.

Others, including Houthakker (p.62)[14] and Yang (p.8)[15], add technical hurdles to what may have discouraged the founders of marginalist economics from addressing issues relevant to the division of labour.

These hurdles originate from the fact that division of labour ultimately boils down to a binary decision of whether or not to produce a particular good. Mathematically, such outcomes are represented by corner solutions and require models that can accommodate such discontinuities. Yet, the marginal revolution relied on calculus that, in turn, requires smooth and continuous functions. Such functions can investigate interior outcomes, but are not suitable to study the discontinuities that characterise the division of labour.

Clearly, nineteenth century mathematical formalism represented a genuine hurdle in reconciling the theory of distribution with classical questions of economic organisation. However, Buchanan and Yoon[13] have recently argued that Marshall's decision to banish division of labour from the core preoccupations of the marginal revolution on the basis that it would undermine the requirement of constant returns was unnecessary. As these authors explain, improvements in the division of labour are in fact consistent with constant returns to scale. This is so because enhancements in the division of labour are generally realised when agents switch from self-production to market production. Hence, as the division of labour intensifies, the economy-wide value of the final output relative to the total value of all inputs increases. This leads to what Buchanan and Yoon refer to as "generalised increasing returns". Still, given any particular pattern of the division of labour, as the quantity of inputs employed *by any one firm* expands, output increases proportionally. It is the reorganisation of the economy that redefines what is produced and exchanged in the market that generates generalised increasing (economy-wide) returns, not the increase in inputs used by any given firm in the absence of any change in the economy-wide division of labour. In other words, generalised increasing returns and constant returns to scale can happily coexist.

Applications of corner solutions and discontinuities to economic models can be traced to Coase[16] and Koopmans[17]. Following Stigler[12], a number of papers from faculty and students at the University of Chicago, including Rosen[18, 19], Becker and Murphy[20], and Tamura[21, 22], among others, began to explore the economics of specialisation. Just as this research was beginning at the University of Chicago, Xiaokai Yang, imprisoned in China as a dissenter to the ideas that defined the Cultural

Revolution, began a remarkable journey to recreate economic theory using a framework that establishes a bridge between modern economics and Smith (see Yang[15] for an excellent summary of relevant contributions).

Unlike Smith, inframarginal economics makes no claims about the relationship between language and trade, nor does it ask what the theoretical justifications for growth are. Instead, it begins with the idea that there are gains from specialisation, that are possible in market economic activity, but there are also transaction costs from using the market. People are consumer-producers. They choose how much of their waking hours to allocate to a specific activity. As the division of labour evolves, individuals move away from self-producing all of their consumption towards producing only one good, which earns income that is used to purchase a wide variety of consumption goods. If transaction costs are high, people are unlikely to find it worthwhile to engage in market activity, and will instead self-produce their consumption in autarky. If, on the other hand, transaction efficiency is high enough, people who otherwise start off identical, will become increasingly specialised in particular occupations, thereby capturing the benefits of specialisation.

Table 1 below compares some aspects of inframarginal and neoclassical models with Smith's theory of economic growth. Clearly, the inframarginal literature is closer than neoclassical theory in capturing Smith's thoughts on development, notwithstanding the absence of any moral content. The aim of this volume therefore is to bring together a number of recent articles on this topic in an effort to summarise the inframarginal explanation of the origins of economic development.

As illustrated by the articles included in this anthology, inframarginal analysis has profound implications on the study of economic development. To assist the non-specialist reader with these contributions, the remaining of this article serves as an introduction to the practical implementation of inframarginal analysis. In particular, the next section outlines the key "steps" of inframarginal analysis, and section 5 implements these steps in the context of a simple model.