ELSEVIER Structural Change and Economic Dynamics 11 (2000) 167–179
www.elsevier.nl/locate/econbase

STRUCTURAL CHANGE AND ECONOMIC DYNAMICS

Economic dynamics in a simple model with exhaustible resources and a given real wage rate☆

Heinz D. Kurz [a,*], Neri Salvadori [b]

[a] *Department of Economics, University of Graz, RESOWI 4F, A-8010 Graz, Austria*
[b] *University of Pisa, Pisa, Italy*

Accepted 2 June 1999

Abstract

The paper elaborates a dynamic input–output model with exhaustible resources. Discoveries of new deposits and technical progress are set aside. It is assumed that there is a 'backstop technology' (based on solar energy), which implies that exhaustible resources are not indispensable in production. Given the real wage rate and the consumption pattern of profit and royalty recipients, it is then shown that the paths followed by the royalties paid to the owners of resources, the quantities produced of the different commodities, and their prices are determined once a sequence of nominal profit rates is given. © 2000 Elsevier Science B.V. All rights reserved.

JEL classification: C67; Q32; Q42

Keywords: Exhaustible resources; Input–output analysis; Classical theory

☆ We wish to thank Christian Bidard for his valuable comments on our earlier work on the problem of exhaustible resources (see Kurz and Salvadori, 1995, ch. 12, 1997), which have been partly responsible for the elaboration of the model below. We also wish to thank Giuseppe Freni and Christian Lager for useful discussions.

* Corresponding author. Tel.: +43-316-3803444; fax: +43-316-3809520.
E-mail address: heinz.kurz@kfunigraz.ac.at (H.D. Kurz).

0954-349X/00/$ - see front matter © 2000 Elsevier Science B.V. All rights reserved.
PII: S0954-349X(99)00008-9

1. Introduction

For well-known reasons, an economic system using exhaustible resources, such as ores of coal, oil or metal, constitutes one of the most difficult objects of investigation in the theory of production (see, for example, Kurz and Salvadori, 1995, ch. 12; Kurz and Salvadori, 1997). In order to render the problem manageable, theorists frequently have recourse to strong simplifying assumptions. In much of the literature the problem is studied in a partial framework with a single kind of exhaustible resource: the prices of all commodities except the price of the resource are assumed to be given and constant over time. With natural resources that are used to produce energy, for example, this is clearly unsatisfactory, because it can safely be assumed that energy enters as an input in the production of most, if not all, commodities, which implies that a change in the price of energy has an impact on the prices of many, if not all, commodities. Hence, a general framework of the analysis is needed. Moreover, since with exhaustible resources both relative prices, income distribution and the quantities produced will generally change over time, in principle a dynamic analysis is required tracing the time paths of prices, quantities and the distributive variables.

Piero Sraffa, a pioneer of the modern 'classical' theory of production, distribution and value (see Sraffa, 1960; and Unpublished Papers and Correspondence, Trinity College Library, Cambridge, UK, as catalogued by Jonathan Smith), was perfectly aware of these difficulties already at an early stage of his work. As is well known, he adopted the concept of production as a *circular flow*, which he had encountered in the writings of the physiocrats and the classical economists, and also in Marx. However, he was clear that the assumption of self-replacement of an economic system, which is to be found in these authors and on which he based some of his analysis, was a bold one. In the following note dated 25 March 1946 from his hitherto unpublished papers[1] he first points out a difference between a *physical real cost* approach to the problem of value and distribution, which he endorsed, and the labour theory of value:

> The difference between the 'Physical real costs' and the Ricardo–Marxian theory of 'labour costs' is that the first does, and the latter does not, include in them the natural resources that are used up in the course of production (such as coal, iron, exhaustion of land) [Air, water, etc. are not used up: as there is an unlimited supply, no subtraction can be made from ∞]. This is fundamental because it does away with 'human energy' and such metaphysical things.

He added:

[1] The reference to the papers follows the catalogue prepared by Jonathan Smith, archivist. We should like to thank Pierangelo Garegnani, literary executor of Sraffa's papers and correspondence, for granting us permission to quote from them.

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
✓ امکان دانلود نسخه ترجمه شده مقالات
✓ پذیرش سفارش ترجمه تخصصی
✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
✓ دانلود فوری مقاله پس از پرداخت آنلاین
✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات