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PRICING AND EQUILIBRIUM

An Introduction to Static
and Dynamic Analysis

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PUBLISHER'S PREFACE

Since the first edition of Professor Schneider's *Wirtschaftspläne und Wirtschaftliches Gleichgewicht in der Verkehrswirtschaft* appeared in 1952 with the English title *Pricing and Equilibrium*, in the translation of Professor T. W. Hutchison (William Hodge and Company), the book has gone through five further German editions. In most of these, the author introduced substantial changes and as a result, the book, as it now appears, is more than one-third longer than when it was first published in English.

There are many additions, but the main ones are in Chapters II and IV. The theory of production has been given a much more extensive treatment which now includes the essence of the author's *Teoria della Produzione* (Milan, 1942). A section on location and the sales area has been included as an example of heterogeneous competition. The section on price discrimination has been re-written, and a new one added on long-run supply. And in re-casting his sections on the cost and profit plans of multi-product firms, the author has included an introduction to the theory of linear programming.

The present translation of the book's sixth edition is based in part on Professor Hutchison's earlier translation, revised and corrected where necessary. The translator has sought to conform to English notational conventions, and where the author differs from common English usage, algebraic or definitional, the reader's attention has been drawn to this in notes marked with an asterisk.

References to Volume III are to its English version, in the translation of Mr. Kurt Klappholz, with the title *Money, Income and Employment*.

FROM THE FOREWORD TO THE FIRST EDITION

This second volume of the "Introduction to Economic Theory" deals with the economic plans of the household and of the firm and with the theory of economic equilibrium. In writing it I was guided by the principles which I outlined in the foreword to the first volume and in my essay *Das Gesicht der Wirtschaftstheorie unserer Zeit* (Tübingen, 1947). Thus, in the first place, my exposition emphasizes again the unity of economic theory. Secondly, in the discussion of the problems of partial equilibrium, dynamic analysis has been given the extended treatment which is its due. Dynamic analysis occupies so prominent a position in modern theory that the beginner ought to become acquainted with it at the earliest possible stage. If the nature of dynamic analysis has first been understood in relation to the comparatively simple problems of partial equilibrium, then it becomes much easier to examine the theory of the expansion and the contraction of the economy as a whole, which will be dealt with, along with problems of money and employment, in the third volume⁽¹⁾. Though recognizing the great importance of dynamic analysis in modern economics we must not, in our teaching, neglect the static analysis of partial and total equilibrium. The important problem of how the individual plans in an exchange economy are coordinated cannot be fully explained and understood except in the context of both a static and a dynamic theory of economic equilibrium. I have, therefore, in this book laid special emphasis on an exhaustive treatment of this branch of theory.

Erich Schneider

Kiel, September, 1948

⁽¹⁾ *Money, Income and Employment*. (English translation by Kurt Klappholz.) London, George Allen and Unwin Ltd. 1961.

INTRODUCTION

The course of the economic process through time results from the dispositions of the individual economic units engaged. With these different units acting in a particular way, a particular result will emerge from the interplay of these individual dispositions. This result has been studied in a previous volume on social accounting for an already completed period of time. The treatment was of an *ex-post* character.

We now wish to turn our attention to the actual plans and dispositions which are the forces shaping the course of the economic process through time. This is to shift our angle of vision. Previously we were looking back at the past, now we are asking how the economic process will develop in the future from a given initial position if the economic units behave in a particular way. Only thus is it possible to make a causal analysis of economic events and to predict the course to be expected on particular assumptions. If we are to explain the actual course of historical development by means of a causal analysis, we have to start with an analysis of the economic plans of the responsible individuals. For an exchange economy we must analyse, therefore, the economic plans of the households, of the firms, and of the state, because every actual disposition which comes about is the result of a particular economic plan or calculation. Every economic plan is based on particular objectively given conditions, and on expectations. At the same time, the dispositions of an economic individual result from an economic plan based on particular expectations. Whether these expectations are fulfilled will only be known at the end of the economic period for which the plan was drawn up. Generally the actual events resulting from the interaction of the individual dispositions will differ from the assumptions on which those dispositions were based, so that an individual unit in the course of, or at the end of, the planning period will be forced to revise its plans. The divergencies between the expectations on which the particular dispositions were based, and the actual course of events, are the motive force behind the constant revision of economic plans and, therefore, behind changes in dispositions and actions. Consequently, it is not sufficient for the purposes of a genuine causal analysis to ask what the course of the economic process as a whole will be, if the individual units behave in a particular way. It is necessary, rather, to study, in addition, what factors determine these dispositions and actions. To use an expression of the Swedish

economist J. Åkerman, a causal analysis requires an analysis of the "model calculations" of households, firms, and the state, that is, an analysis of models of the calculations which the individual units make in arriving at their dispositions. The analysis of these model calculations is logically the first link in the chain of our investigations, and the first task on which we shall be engaged. We shall first of all be concerned with a closed economy with no state activity. The changes which are brought about by the activity of the state, and by relations with outside economic systems, will be discussed elsewhere. In the first place we are simply concerned to prepare the necessary intellectual tools, and to show how by using them we can solve the simplest forms of problem in the case of an exchange economy. We are, therefore, only concerned with households and with firms. We have to show how the economic plans of these two groups of units are shaped, and how their particular dispositions emerge from them (Chapters I and II). These questions are of a micro-economic character, that is, they relate to the single economic unit. In the case of the business enterprise they belong with the theory of the firm and the study of business administration. We must study these problems here because the central problems of economic systems cannot be answered except by studying the interactions of the dispositions of the individual units. The close connexion between the economics of the firm and of the economy as a whole will be particularly clear at this point. On the one hand, the theory of the firm provides us with an important basis for economic theory. On the other hand, the dispositions of firms, and especially changes in them, can only be fully understood from the point of view of the economy as a whole.

After analysing the economic plans of the households and the firms we then have to answer the question about the interplay between the dispositions of the individual units. This question will lead us to develop the theory of economic equilibrium (Chapter IV). In volume III we will study the general theory of processes of expansion and contraction of the economy as a whole.

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CHAPTER I

The Economic Plan of the Household

1. The Determinants of the Household's Consumption Plan

1. The consumption plan of the household consists of decisions about the quantities of the different goods it desires which it will buy in the coming period, and about the sums of money it will devote to the purchase of these different goods. If we assume that the household faces given prices, which it cannot alter, then the decision about *the physical quantities of the different goods* to be purchased, is one and the same as the decision about *the sums of money* to be devoted to their purchase. This is a realistic assumption and we shall be making it in what follows.

2. The extent of the purchases which a household can make in a particular period is limited by *the purchasing potential* for that period, which is determined as follows:

- (a) by the expected income for the period;
- (b) by the cash holding at the beginning of the period and the possibilities of changing into cash claims which are not legal tender;
- (c) by the credit possibilities available during the period.

The expected income is, therefore, only one of the factors determining the purchasing potential in a period, though, of course, it is the most important factor.

3. If the sum of money to be devoted in the coming period to the purchase of consumers' goods is less than the expected income for the period, then the household is planning a *positive* level of savings during that period. We shall describe such savings as "*planned*" or "*ex-ante*" savings as contrasted with the actual *realized* savings resulting at the end of the period.

If the sum of money to be devoted to consumption in the coming period is greater than the expected income then negative savings are being planned.

The planned saving of the household is, of course, simply the inverse expression of its planned consumption. The decision about

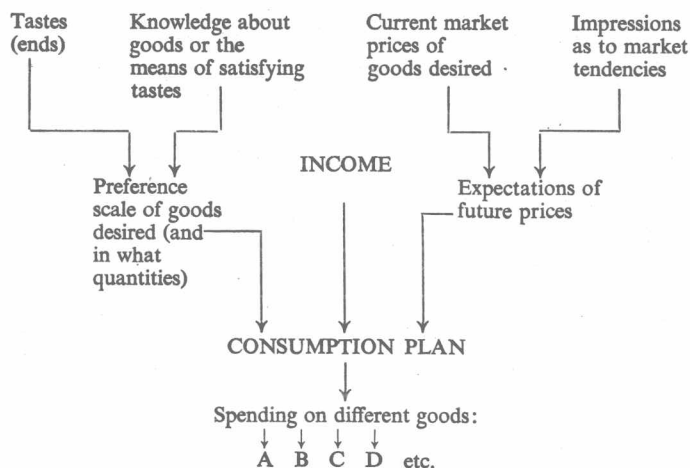
the level of consumption-spending is at the same time a decision about the level (positive or negative) of *ex-ante* savings. *Vice versa* the decision about the level of savings determines the sum of money available for the purchase of consumption goods.

In which order the household makes its decision is a question of fact. For households which plan to add a particular sum in each income period to their total savings, *ex-ante* savings is the primary quantity. By subtracting this quantity from the expected income one arrives at the sum of money available for consumption purposes (or "total consumption-spending", as it might be called), which is then the residual quantity in the plan. On the other hand, for households which fix their consumption-spending first, savings is the residual quantity. In both cases the level of consumption-spending, and of saving, is determined in one single decision. No doubt households exist which do not determine in advance their level of consumption-spending, living simply from day to day and leaving their individual purchases more or less to their spontaneous habits and whims. The sums devoted to consumption will then be determined accidentally. The level of savings will be simply an unintended residual, the household discovering at the end of a period that a particular positive or negative saving has been made. One cannot speak in this case of a consumption *plan* for a particular period. But in what follows we are concerned only with households which make definite decisions for the forthcoming period which are part of a definite economic plan.

4. The consumption-spending planned for a coming period consists of the total of the sums to be devoted to the purchase of the different individual goods. We have to ask what determines these partial sums. We can answer straightaway that given the situation in which it must act, and with free consumers' choice, the household will purchase those goods in those physical quantities which will afford it a maximum of subjective satisfaction, or, to use Pareto's term, a maximum of *ophelimity*.* Since the nature and urgency of the tastes to be satisfied are a subjective problem of the household we may regard them as requiring no further analysis by the theoretical economist. The purchasing plans for particular goods, and the quantities of goods and of money they involve, or, in other words, the allocation of consumption-spending quantitatively and qualitatively, can be taken as data needing no further study at this stage. If a household in the coming period allots 100 dollars for accommodation, 80 dollars for clothing, 20 dollars for bread, etc. this is simply taken to imply that the household obtains the maximum of ophelimity by this combination of expenditure. For the

* The term normal in English literature is *utility*. [Tr.].

course of economic events it is the purchases of goods that are relevant, that is, what the household does and not what it feels. As Lexis put it: "The subjective order of preferences and the use of income by each individual must be *postulated*. For the theoretical economist it is only the results of the overt actions of large groups which have to be studied. Tastes and satisfactions appear to him simply as quantitative expressions, the former as effective demand for a particular quantity of goods, and the latter as a particular quantity of goods possessing a particular price."⁽¹⁾ What are relevant are the sums of money devoted to the purchases of the goods desired by the household, that is, the *effective monetary demand*. We might add that this monetary demand, given the scale of preferences, depends on the expected level of prices and the purchasing potential. Our discussion of the character of the consumption plan of the household, and of its determinants, can be illustrated by the following classification made by Zwiedineck-Südenhorst.⁽²⁾



The modern theory of the consumption, or demand, of the household, is not content with these propositions alone. If the object is simply to explain the course of the economic process in a period of time as resulting from the interplay of individual dispositions, then it is enough to know the different sums of money devoted to the different goods by the individual households in their economic plans.

⁽¹⁾ W. Lexis: *Allgemeine Volkswirtschaftslehre*, Leipzig, 1913, p. 18.

⁽²⁾ O. v. Zwiedineck-Südenhorst: *Allgemeine Volkswirtschaftslehre*, 2nd ed., 1948, p. 45.

The question as to how the course of the economic process is shaped in a particular period is answered by examining the actions of the different economic units, and the economic plans on which these actions are based. The dispositions of the economic units are, however, based on expectations which may well not be fulfilled. For the household, for example, expectations about prices and incomes determine its decisions for the coming period, and these expectations may, in the course of, or at the end of, the period, as a result of the interplay of the independent dispositions of all the other economic units, be seen to have diverged from the *ex-post* facts to a greater or lesser extent. These divergencies, as we have already explained, will cause revisions in plans, leading in their turn to fresh dispositions. To understand and explain the course of the economic process from period to period it is necessary to know how the divergencies between the actual facts, and the expectations on which the plans are based, cause changes in the dispositions of the economic units. For this purpose it is necessary to study the relationships between the dispositions or plans and the elements which determine them. It is therefore necessary to study how changes in tastes, in total consumption-spending, and in the structure of prices, alter the household's dispositions, or its effective physical and monetary demand for particular goods. A knowledge of these relationships is also indispensable in the study of problems of economic control, for example of the question as to how, and to what extent, the physical and monetary demand of the household may be influenced by variations in prices, or how consumption-spending may be affected by changes in income. The theoretical economist is forced, therefore, to analyse on the one hand the quantitative relationships between the physical and monetary demands of the household, and on the other hand, prices, consumption-spending and tastes. We must now turn to the study of these relations.

2. The Quantitative Relationships between Demand, Tastes, Prices and Total Consumption-Spending

1. The consumption plan of a household, as we have seen, depends on:

- (a) tastes, that is, its psychological attitude towards different goods;
- (b) the quantity of money to be devoted to consumption purposes;
- (c) the expected prices of goods.

If these factors are known, the household can tell us what goods will be purchased and in what quantities, and what sums of money will