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THE VALUE OF TIME
IN PASSENGER TRANSPORTATION:
THE DEMAND FOR AIR TRAVEL

REUBEN GRONAU

The Hebrew University of Jerusalem



OCCASIONAL PAPER 109

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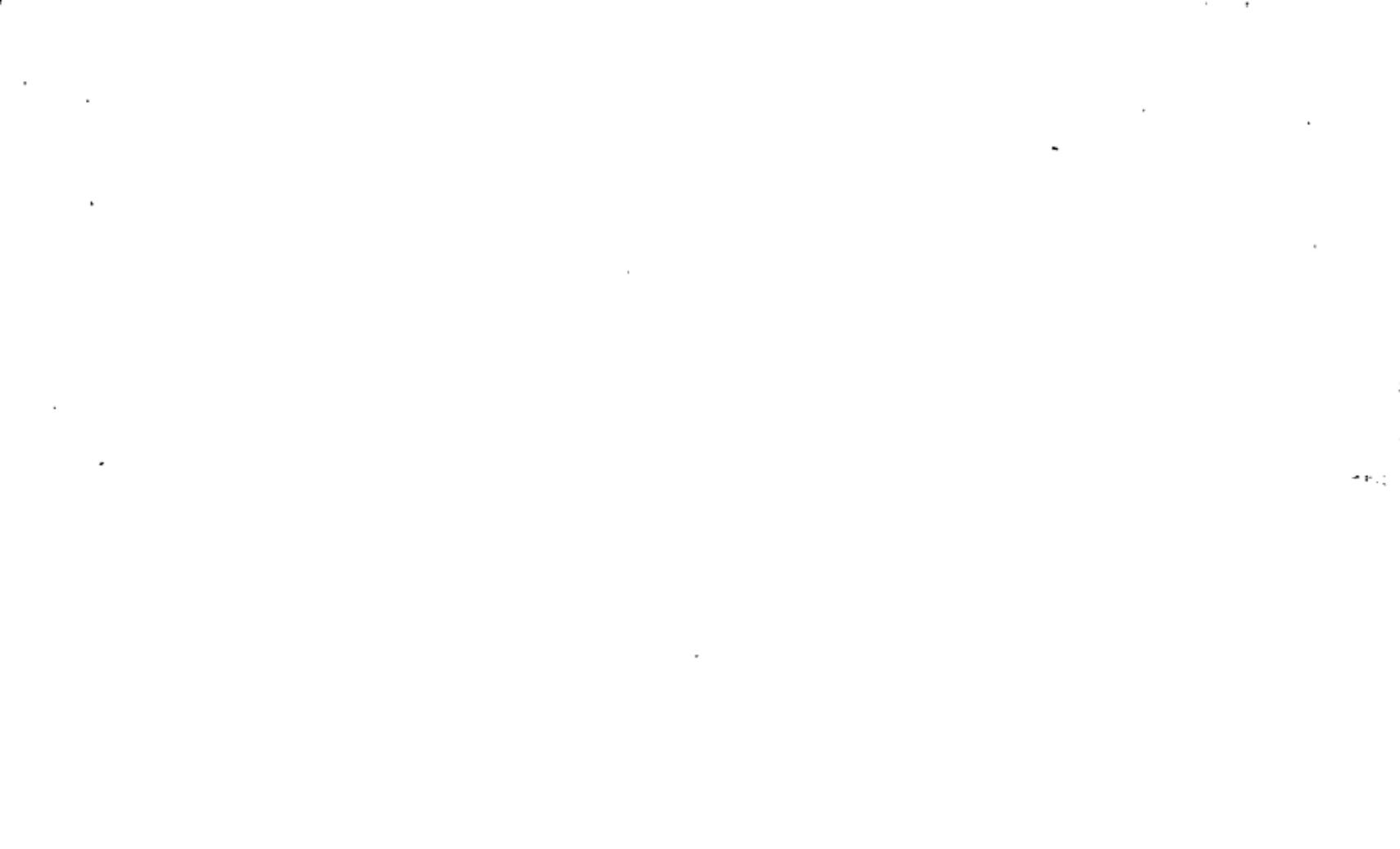
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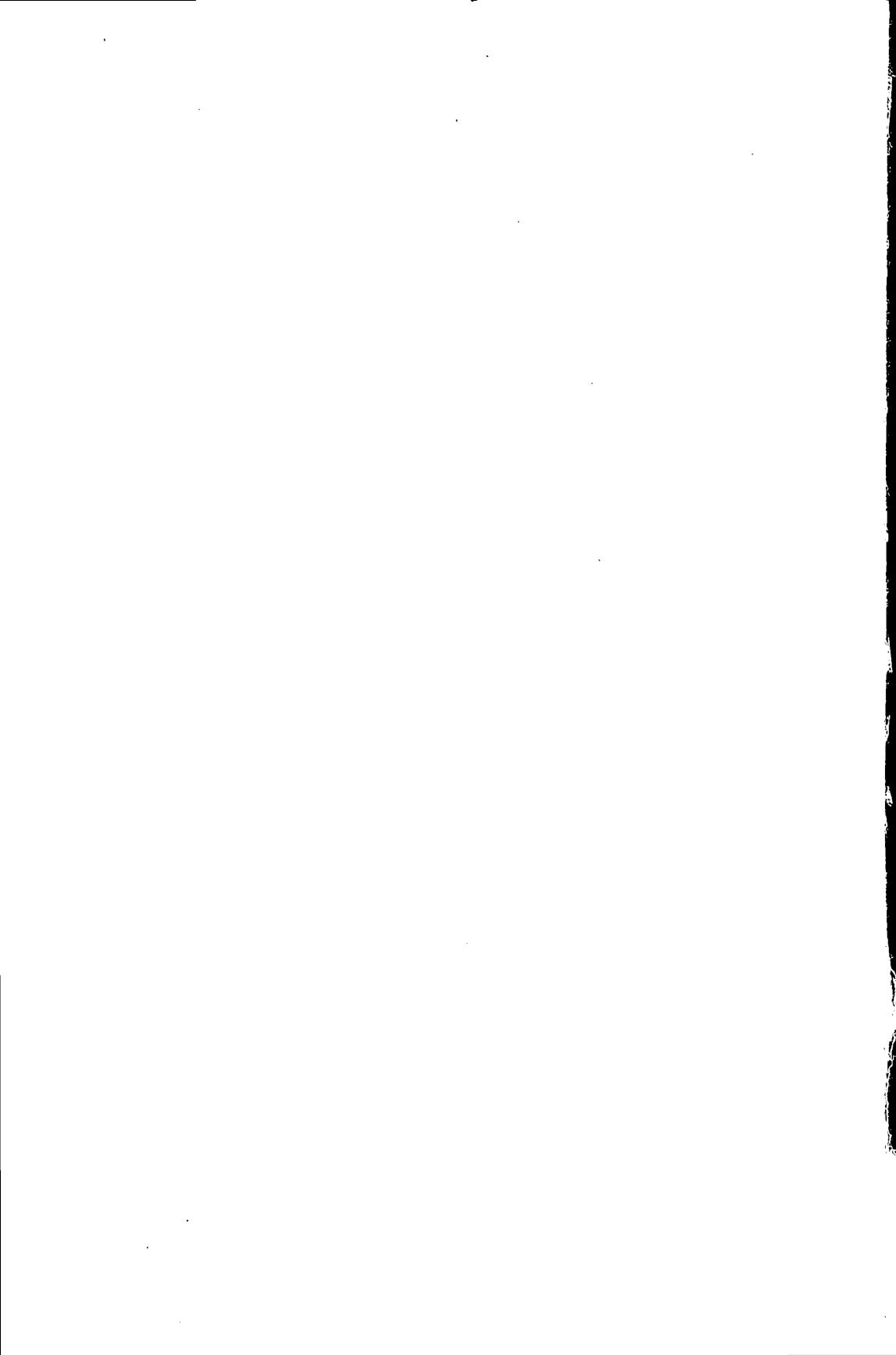
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*(Resolution adopted October 25, 1926, and revised February 6, 1933,
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PREFACE

THIS PAPER by Reuben Gronau has its origins in two streams of work at the National Bureau of Economic Research. On the theoretical side, Gary S. Becker has fashioned a simple and powerful analytical apparatus to deal with the inescapable constraints faced by every individual in the use of time. No matter how high income rises, no matter how rapidly productivity grows, no matter how abundant natural and man-made resources become, each person has available to him a maximum of twenty-four hours in a day, seven days in a week. Starting with this fact, Becker has shown how insights concerning the price of time, the time intensity of various activities, and the substitution possibilities between time and goods and services can illuminate numerous aspects of economic behavior.

Perhaps nowhere is this more relevant than in studying the service industries, an activity which my associates and I have been engaged in for several years. Many of the most important services, such as medical care, education, and personal care, are extremely time intensive; frequently the most valuable input into the production process is the time of the consumer. Other services, such as maintenance and repair, laundry and dry cleaning, domestic servants, and some aspects of banking, are demanded in part because they save time for the purchaser. In our studies of productivity in retailing and personal services, in our attempt to understand the demand for medical care, and in many other phases of our project, we have found ourselves asking what it is that determines the price of time, and how do people take this price into account in making economic decisions.

Reuben Gronau has attempted to answer such questions in one well-defined economic area: passenger demand for air transportation. By

developing and applying Becker's model, and by utilizing data made available to the National Bureau of Economic Research by the Port of New York Authority, he has obtained some highly interesting empirical results.

The first important substantive finding concerns the way the price of time affects the choice between air transportation and other modes of travel. Given the distance traveled, and the price of time, a theoretical model predicts the logical passenger choice among air, rail, and bus transportation. These predictions conform well to actual experience, as is shown in Chapter 4.

A second finding, more tentative than the first, indicates that business travelers behave as if their price of time is approximately equal to their hourly earnings; the price of time of personal travelers appears to be considerably lower (see Chapter 5). In the course of reaching this conclusion, Gronau estimates income and price elasticities of demand for air travel and provides new information on the relation between family income and hourly earnings. To be sure, the value of time to an individual may vary not only with the purpose of the trip, but may also vary with its length, time of day, and other factors. Moreover, the value of time saved in travel may be different for different individuals even when hourly earnings are identical. Thus, the application of Gronau's techniques and estimates to specific problems requires additional empirical information relevant to the particular problem under study.

In the final chapter, which may be of greatest interest to the general reader, the author illustrates how estimates of the price of time could be applied to several problems currently facing policy makers in the transportation field. He discusses the possible impact of the supersonic passenger plane on the demand for air travel, and the possible impact of faster trains on the demand for bus, train, and air transportation.

The problem attacked in this book is complex and controversial; the limitations of the data and of the econometric techniques should be fully recognized. Moreover, the applications of the findings are plainly labeled as illustrative. The study does, however, provide significant support for the conventional wisdom that "time is money" and does so within a theoretical framework that should stimulate and facilitate further research on this important determinant of human behavior.

VICTOR R. FUCHS
VICE-PRESIDENT-RESEARCH

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THIS BOOK is based on my Ph.D. dissertation prepared at Columbia University in 1965–67. The subject was suggested to me by Gary Becker as an outgrowth of his study of the allocation of time. Having established the point of departure Becker continued to advise me throughout, especially with regard to the final exposition and the discussion of the empirical results. More important than his specific contributions, however, is the opportunity I had to work with him, for which I am grateful.

Many people at the National Bureau have been most helpful in reviewing drafts of the study and in advising on specific questions. They include Victor Fuchs, who in addition to advice generously provided me with encouragement; Jacob Mincer, who made several apt suggestions and gave me several good leads; Stanley Diller, whose help was invaluable in writing the first drafts; John R. Meyer and Gerald Kraft, whose extensive comments proved crucial for the shaping of the final draft; and the Directors' Reading Committee, consisting of Emilio G. Collado, Maurice W. Lee, and George Cline Smith.

I am also grateful to Lorraine Catarcio, Rose Ferro, and Roberta B. Watson, who showed super human patience typing the formula-burdened text; to H. Irving Foreman, who drew the graphs; and to Virginia Meltzer, who edited the text.

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Certain data used in this book were derived by the author from punched cards furnished under a joint project sponsored by the U.S. Bureau of the Census and the Population Council and containing selected 1960 Census information for a 0.1 per cent sample of the population of the United States. Neither the Census Bureau nor the Population Council assumes any responsibility for the validity of any of the figures or interpretations of the figures published herein based on this material.

REUBEN GRONAU