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First-Round Analysis

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Preface

This book is divided into two basic parts: identification of probable first-round price changes resulting from the tax substitution and discussion of the potential implications of these changes for such substantive issues as income distribution, international trade, etc. Chapter 2 gives a detailed analysis of the theoretical issues which must be resolved if changes in tax structure are to be translated into changes in the structure of prices. These include (a) criteria for defining a compensating tax substitution, i.e., for determining tax rates, (b) alternative variants of a value-added tax, (c) the meaning of tax shifting and the treatment of depreciation, (d) fiscal implications of a tax substitution, and (e) the input-output model as a means of analytical synthesis. On the basis of the model developed in Chapter 2, compensating VAT-CIT substitutions and price changes by component of final demand and by industry are examined in Chapter 3, under alternative stipulations concerning the degree of CIT reduction and shifting.

Chapters 4 through 7 analyze the potential consequences of the probable price changes in various substantive dimensions. In Chapter 4, the initial consequences for the size distribution of income are considered. The effects of the tax substitution for the level and composition of desired investment are examined in Chapter 5. The focus of Chapter 6 is on the broad subject of the potential consequences of the tax substitution for international trade. Finally, Chapter 7 contains a miscellany of additional topics, including intergovernmental fiscal effects, interindustry changes in tax liabilities, implications of potential short-run wage adjustments (across industries), regional consequences, and allocative effects.

At the outset we should briefly summarize the purposes which we do *not* intend this book to serve. First, our analysis does not project the consequences which would occur if this change in tax structure was used in a prevailing economic environment; that is, the study does not represent a conditionally predictive or projective exercise. Second, the study does not provide comparative static estimates, either quantitative or qualitative, of the long-run equilibrium consequences of this type of change in tax structure; this is explicitly indicated by the reference in the title to "first-round" effects. Clearly, we could have undertaken a more aggregate analysis of the long-run differential or absolute consequences of such a change in tax structure, focusing on implications for, e.g., macroeconomic balance, capital-labor ratios in the corporate and noncorporate sectors, and relative factor shares. However, because such analyses are well represented in the literature, with results that are quite well-known and accepted, we felt that a somewhat different study would be of potentially great value.

In general terms, we had two interrelated objectives in undertaking the writing of this book: first, to identify the mechanisms by which the effects of the tax substitution would be transmitted through the economy, and second, to indicate the relative magnitudes of the various short-term disequilibria which would result, responses to which would ultimately constitute the long-term effects of the change in tax structure. In general, the available aggregate analyses obscure the very uneven short-run impacts of a tax change at more disaggregate levels, even within the "corporate" and "noncorporate" sectors. However, at this more micro level we do not have well-articulated general equilibrium models capable of supporting comparative static analyses of long-run equilibrium states. The focus on the micro dimension thus has implied an analysis of the short-run, or "first-round," effects of the change in tax structure and of their transmission through the economy, especially through interindustry transactions, since these are particularly important in the case of a tax on value added at each stage of production.

Given this initially restricted focus, however, it was important for us to identify the relative magnitudes of the various disequilibria which would emerge in the intermediate run as the result of such a large-scale change in fiscal structure. This has led to our examination, in the second half of the study, of the initial impacts of the tax change (and of resultant first-round changes in prices, profits, and terms of trade) on income distribution, investment demand, import and export demand, and the balance of payments. While we have limited ourselves to a first-round analysis which does not trace the later-round effects of the indicated initial changes in, e.g., investment, import and export demands, the indicated short-run demand shifts suggest the longer-run general equilibrium adjustments which will be induced. Thus, we have attempted to indicate (1) immediate consequences, behavior in response to which long run adjustment will be brought about, and (2) the differences at the micro (e.g., industry) level in the degree of initial disequilibrium and disruption which can be expected to accompany the change in tax structure.

In light of our objectives, the use of an input-output framework has not been greatly restrictive. In the long run, certainly, as capital-labor ratios, the composition of demand, etc., are altered in direct or indirect response to the change in tax structure, an input-output formulation would effectively dissolve many of the most interesting questions. But, in the short run, the restrictive relationships imposed by the input-output system can in fact be viewed as fixed. Since we have attempted to identify initial impacts on, e.g., investment, on the basis of a theoretical formulation not confined by input-output rigidities, utilization of the input-output framework has not been seriously confining. On the contrary, it has provided the only basis available for meaningfully examining the transmission of initial responses between industries and identifying the concomitant initial impacts on the structure of final demand.

Because we have been interested in the differential, not absolute, effects of this change in tax structure, it has been necessary to compensate for the macroeconomic impacts of the change. Clearly, as has been discussed, in the long run the level and composition of aggregate demand can be anticipated to change, and such changes would require further compensatory action if differential effects were to be identified. This is not to say that we are uninterested in later-round adjustments, as indicated by our concern with shifts in investment and international trade demands. However, we have not attempted, because we are unable, to trace through the ultimate differential consequences of the change in tax structure. Nonetheless, we have emphasized (and indicated the short-run disequilibrium origins of) the various macroeconomic effects which will constitute the most important consequences of this change in tax structure.

We particularly acknowledge the attention and advice given throughout the course of the study by Carl S. Shoup, without whose intellectual contributions and encouragement the inquiry would never have taken place. We are also especially grateful to John R. Meyer for his continuing interest and constructive criticisms. Edward K. Smith, with whose support this program of research in public finance was developed, has been a constant source of advice and support. The form, structure, and substance of the manuscript have benefited greatly from the incisive criticism provided by a review committee consisting of Shoup, Richard A. Musgrave, Wassily Leontief, and Dan Throop Smith. Our research has also been strengthened by the responses of the Harvard and Stanford public finance seminars to earlier versions. Finally, the study has benefited, in substance and in exposition, from critiques by Emilio G. Collado and by the NBER's Board Reading Committee consisting of Frank Boddy, Roy Moor, and William Vickrey. The intensive examination by Vickrey has been most helpful in emphasizing the restrictions and limitations of the analysis. Of course, the authors alone bear final responsibility for any shortcomings of the study.

This study was greatly assisted by the contribution of services and data by Cybermatics, Inc.; Milton L. Godfrey of Cybermatics prepared the basic input-output data, implemented the tax substitution simulations, provided the appendixes to this volume, and served generally as a source of expert advice and technical information. We also acknowledge grant support of the National Bureau's program of Research on Federal Tax, Expenditure and Transfer Substitutions from the Office of Economic Research of the Economic Development Administration, Department of Commerce [Grant Number OER 396-G-71-17 (99-7-13227)]. This broader program of research has also been assisted financially by the United Nations Department of Economic and Social Affairs and by the International Division (European and International Affairs) of the Ford Foundation, under whose auspices a parallel study of large-scale changes in government expenditure (disarmament) was undertaken.

We are thankful to Frances Selhorst for her capable research assistance during the basic stages of our effort. Elisabeth Parshley, Sydney Shulman, Wendy Graves, and Nellie Zorc deserve our appreciation for their participation in the preparation of the manuscript. Finally, we must also acknowledge the ability and insight of our editor, Ester Moskowitz. The charts were drawn by the late H. Irving Forman with his customary skill.

During the preparation of this study the authors were affiliated with the NBER, Dresch and Lin as research associates and Stout as visiting fellow.

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