

Input-output models and cost inflation

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The goal of this thesis is the study of various aspects of cost inflation by means of a variety of inter-industry models. To reach this goal it was necessary to develop a theoretical framework which may prove of value in other inter-industry investigations.

The first chapter is an *Introduction to Input-Output Theory*. It shows how a matrix of input coefficients is constructed from the transactions table of an economy. Examples of such matrices are given and the more important theorems concerning them are listed.

In the next three chapters the author enlarges the theory of matrices of input coefficients. The second chapter deals with *A Determinantal Identity*: it shows how the need to simplify a certain determinant led to a new proof and a new importance for an old identity. The third chapter discusses *Related Matrices of Input Coefficients* and develops a core of matrix and determinantal theorems which includes those required in the chapters on inflation as well as others. A by-product is a derivation of the Hawkins-Simon theorems which offers more insight into the theorem than other proofs. The fourth chapter shows that the main results of the third chapter are true in a more general *Non-Linear Input-Output Model*.

The next two chapters are concerned with cost-inflation. The fifth chapter examines the *Consistency of Price and Wage Claims* in a static model involving n firms, workers, and rest-of-world making claims of a certain type; and the results are illustrated by means of a computation with the input-output matrix of the Australian economy. The following chapter turns to *Dynamic Models of Cost Inflation*: here various classic models are generalised to the n -firm case and various modifications are considered

Received 9 September 1975. Thesis submitted to the University of Melbourne (Royal Australian Air Force Academy), April 1975. Degree approved, August 1975. Supervisor: Professor M.N. Brearley.

(many kinds of labour, sector with a growing claim, debt as a cost to firms). The results support the beliefs: that a cost-inflation will only end if some sector, big enough to accommodate the increase in real demands of other sectors, does not have its income geared to the price-index; that a continuing inflation will converge to a steady rate only if some sector lags behind others in the adjustment of its income to price increases.

The final chapter lays a foundation for applying *Network Methods in Models of Production* and, perhaps, models of general equilibrium. In the context of this new approach the chapter also offers some new results.