January 3, 1992

Professor A. K. Dixit
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Dear Professor Dixit:

I am submitting the enclosed manuscript, "The Theory of Comparative Advantage for Many Countries and Many Industries," to you for possible publication in the Econometric Society Monograph Series.

The paper contains many far-reaching results concerning, first, the kind of qualitative production patterns that are viable under a given technology, and how these fit together to form the world production efficiency frontier; second, how to classify technologies in a natural way; and, third, the potential for further developments and applications to various areas of economics.

Unlike the general equilibrium approach – as set forth elegantly in Dixit and Norman, for example – my paper is resolutely partial equilibrium: it ignores the demand side completely. Furthermore, the technology is Ricardian.

The trade-off for these restrictions is a surprisingly rich development of the classical theory. We develop an apparatus of concepts for thinking about these issues: e.g., "technologies in general position", "maximal patterns", and the proper generalization of "comparative advantage" itself. The generality and elegance of the results obtained show that, in a sense, this is the right way to think about these things. On the way, we make contact with graph theory, the transportation problem of linear programming, and combinatorics.

How do these result fit into the existing body of theory?

1. They fill a gap. The classical theory – while not on the front burner of research at present – is still an important part of the whole, yet it attains sharp results only in the 2-industry n-country case, and the 2-country n-industry case. (I speak now of the supply side, excluding the inequality-type correlations one obtains in Dixit-Norman, p. 96). It should be slightly embarrassing to be able to say so much in these cases, and yet so little about the possibilities even in the 3-by-3 case.

2. They introduce some new ways of thinking. (Some of the basic ideas were adumbrated in the pioneering articles of McKenzie and Jones from which I take off.) It is hard to predict what applications these results might have. I refer to Part III for further discussion. (I suspect the classification of technologies is the part most likely to find applications.)

The results of Part II on the 3-industry case lend themselves to diagrammatic exposition. "McKenzie tilings" as in Figure 11, page 49, can and

should appear in textbooks. They give a graphic and – given my results – complete picture of the efficiency frontier when technology is in general position.

3. The proofs are of some independent interest. While using only "elementary" mathematics (except for Theorem 5), some of the results are "deep" (Theorems 1 and 16, for example, and perhaps one or two results from Part II.)

Since writing up this manuscript I have obtained further results which come to another 70 pages or so. However, to incorporate this material would require a major rewriting effort and lead, I believe, to a somewhat indigestible manuscript. (I made this mistake with my first book, Economics of Space and Time (c.700 pages).) I am pleased with the original and believe it stands on its own feet. If it gets a good response, I would like to incorporate this additional material in a second edition.

I enclose a letter from Paul Samuelson responding to a copy of the manuscript that I sent him.

Sincerely yours,

Arnold Faden
Professor of Economics

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enclosures