

ON TRANSFER PARADOXES AND IMMISERIZING GROWTH

Part II*

T.N. SRINIVASAN

Yale University, New Haven, CT 06520, USA

Jagdish N. BHAGWATI

Columbia University, New York, NY 10027, USA

Received March 1982, final version received November 1983

1. Introduction

In our earlier *comment*, addressed to Chichilnisky (1980), we considered the error (in the form of an invalid Theorem 1) in her analysis of the transfer problem. We address ourselves here to noting some of the flaws in Chichilnisky (1981).

2. Immiserizing growth

Before we discuss the model itself, we need to reproduce some of the author's statements [Chichilnisky (1981, p. 182)] in regard to the theory of immiserizing growth in Bhagwati (1958, 1968):

'Our results also differ both in assumptions and in policy conclusions from others in the existing formalised trade and growth literature on the immiserising effects of growth [cf. Bhagwati (1968, 1972), Mundell (1968)]. In those works the results emerge from assumptions on international markets such as, for instance, different international elasticities of demand for the goods in which the North and the South specialise: the exports of the South are assumed to have inelastic demand internationally while the exports of the North have more elastic demands. Therefore, as the South attempts to grow more than the North, the prices of the exports of the South fall significantly, thus undermining its growth efforts...'

'The results in this paper have a dual character with respect to those of

*Thanks are due to the National Science Foundation Grant no. SCS-8-25401 for support of Bhagwati's research underlying this paper. Conversations with Richard Brecher, Ronald Findlay, Tatsuo Hatta, Neantro Saavedra-Rivano, and Pablo Serra have been very helpful.

Bhagwati (1968, 1972), since ours depend more on the behaviour of supply of factors of production rather than on the elasticity of demand for goods.'

It must be stated that Chichilnisky errs in regard to what Bhagwati (1958) showed as a condition for immiserizing growth in a country. He demonstrated that *either* an inelastic foreign offer curve, *or* ultra-biased growth with negative output-elasticity of supply of the importable good when the foreign offer curve is *elastic*, would make immiserizing growth possible. It is simply wrong to assert therefore that an inelastic foreign offer curve is necessary for immiserizing growth to occur in the Bhagwati case. The asserted 'dual' character of Bhagwati's theorem with that apparently proved in Chichilnisky (1981), with the former depending on inelastic demand and the latter on factor supply, is thus incorrect.

But, apart from this error, there is also no appreciation of the fact that Bhagwati was dealing with *domestic*, exogenously-specified growth that immiserized the growing country. To explore immiserizing growth in her model, and to explore possible duality with Bhagwati as she claims, Chichilnisky would have to solve for the effect of expansion that is both domestic and exogenous, either due to technical change or due to capital accumulation, on domestic welfare: the way it is done in Bhagwati (1958, 1968) and other works. This, she does not do.

Instead, as she is concerned (1981, p. 178, footnote 11), with the effects on the South of assumed 'shifts in the demand of the North', she should be concerned with the very different issue as to whether growth (or other parametric or policy shift) *elsewhere* can harm the South. But in that case it should come as no surprise that growth (or other shift) may imply an adverse shift in the foreign offer curve facing a country and therefore the country loses some of the gains from trade and is immiserized relative to the situation prior to this external growth (or other shift). [Indeed, this is precisely the problem that was analyzed by trade theorists in the postwar period when the more rapid growth in productivity in the United States was alleged by Balogh, Williams, Robertson and others as the source of the dollar shortage (in a monetary model) and, hence, of possible immiserization of its trading partners *via* terms-of-trade deterioration (in a real model).]

Unfortunately, however, even this analysis is erroneous in Chichilnisky (1981) because it is fatally flawed, as is the bulk of the paper, by the false argument that, in the model specified by her, an *increase* in the demand for the exportable (at each price) would *reduce*, rather than increase, the (equilibrium) price of the exportable (p. 178, footnote 11):

'Our case reflects, instead, shifts in the demand of the North, that increase the demand for the exportable at each price. This would under traditional assumptions increase the price of the exportable. In our case just the opposite effect takes place.'

The rest of this section is therefore devoted to showing very simply, using a geometric technique developed by Findlay, that this central proposition cannot hold in the model as specified by her; that, in fact, the model is extremely well-behaved indeed in this regard.¹ The model is, in essence, a $2 \times 2 \times 2$ model with two points to note: the production functions are characterized by fixed coefficients, and the supplies of factors are variable with respect to rewards, in each country. Let the factors be K and L , and the goods be I and B . Then, the following holds for each of the 2 countries. In any incompletely specialized production equilibrium the goods price (p_I/p_B) determines the factor price ratio (w/r) through the usual zero profit conditions under pure competition and constant returns to scale in production. These in turn determine factor quantities (K and L) through the postulated relationships between factor supplies and real factor rewards. Finally, given the factor supplies, output of $I(Q_I)$ and $B(Q_B)$ are determined using the condition that factors are fully employed.

Now, let p_I/p_B increase. We can then see that, if I is the K -intensive good, w/r falls, therefore K increases and L falls. Therefore, as in the argument underlying Rybczynski theorem, Q_I increases and Q_B falls. Therefore, given Walras' law so that we concentrate on the I market, we see in the fig. 1 that Q_I is a monotonically function of p_I/p_B . As for demand for I , this is assumed constant.² Therefore D_I is a vertical line. Now, add both countries to get aggregate D_I^A , Q_I^A curves, as in fig. 2.

One could not therefore get a stronger result; the equilibrium is unique and evidently Walras-stable. Now consider the North to have an increased demand for South's exportable good B , as in Chichilnisky. This is equivalent to the D_I^A curve shifting to the left to $D_I^{A'}$. We then get the orthodox conclusion that p_I/p_B must decrease with increased demand for the B good.³

¹We are indebted to Findlay who demonstrated clearly the well-behaved nature of the Chichilnisky model and hence the error of her contrary assertions, by producing the simple argumentation we have used in the text. This error and several other problems afflicting the details of the Chichilnisky analysis, have been noted by Saavedra-Rivano (1981) in a thorough comment.

²Cf. Chichilnisky (1981, p. 168): 'In contrast with other two good factor two region models, here it is assumed that in each region the demand for the investment/luxury good I^D is exogenously given. As in the following I will be used as a numeraire ($p_I = 1$), this implies that in effect this demand is fixed in nominal terms; in real terms I^D is then a negatively sloped function of its price p_I . While this assumption is rather useful to simplify the computations, it is not essential to prove the main results; more general downward sloping demand curves for I can be postulated without changing the main features of the model.' (our italics). In the text, we have interpreted this to mean that the investment demand is constant. However, if it is drawn with a negative slope, then the argument in the text is even reinforced and does not help Chichilnisky anyway.

³Walrasian instability can, of course, be obtained by suitably changing demand conditions, as known to economists since the work of Johnson many years ago, which formally analyzed income distribution in a general-equilibrium context. But, as Findlay and Saavedra-Rivano note, even this basic change in the model of Chichilnisky cannot yield the conclusion that, in a Walras-stable market, the specified increase in B -demand in the North will reduce the equilibrium price of the B good!

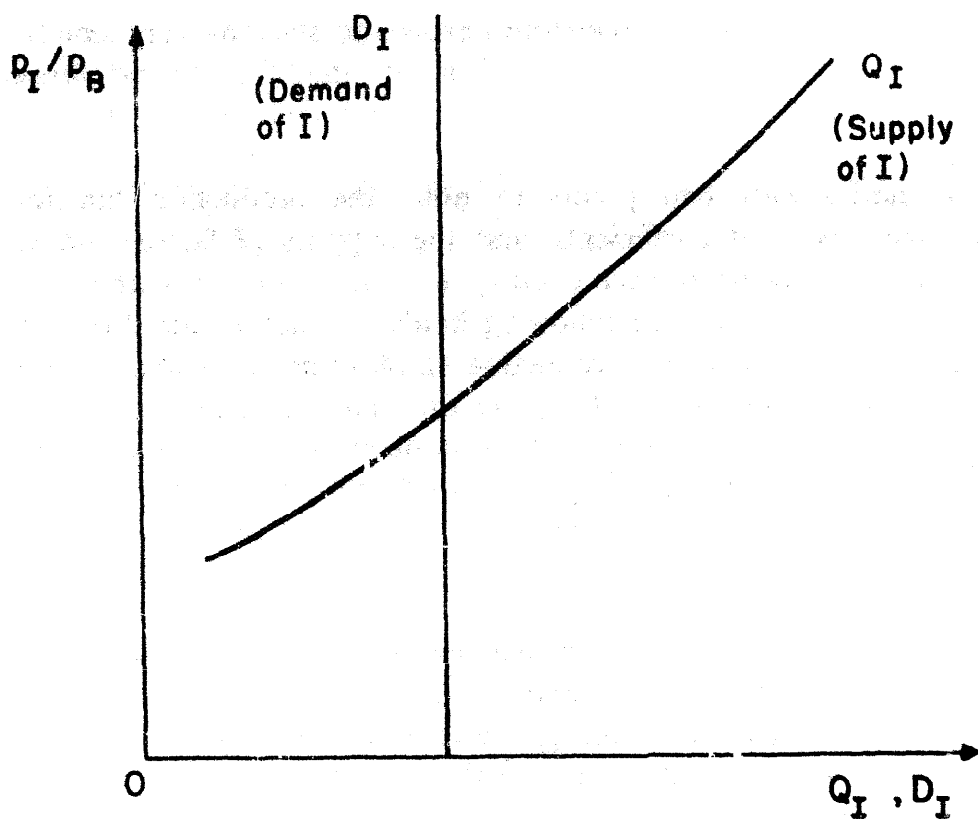


Fig. 1

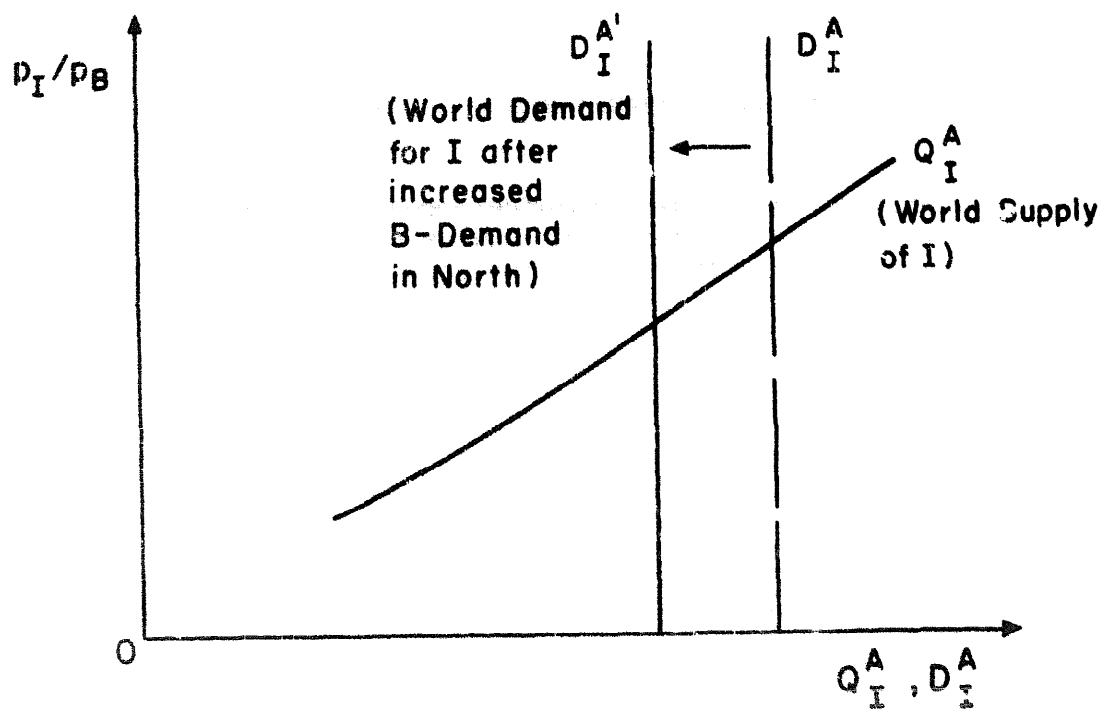


Fig. 2

Unfortunately, therefore, the Chichilnisky assertion to the contrary must be quietly buried.⁴ And, since this assertion is central to her paper, we must necessarily reject the theoretical and policy conclusions drawn in the paper as well.

⁴It should be stressed that the question whether Walrasian stability can be defined differently from the conventional sense in which we use that stability assumption is *totally* extraneous to the error noted in Chichilnisky. First, the fallacious assertion about the effect of the rise in the North's demand for the *B* good leading to a fall in the world price of the *B* good is made by Chichilnisky at equilibrium, and quite independently of the adjustment mechanism (stable or unstable) that one may care to specify. She writes (1981, p. 171): 'It should be noted that the results of this paper are obtained at the equilibria of the model. Therefore they are independent of the adjustment process followed to attain equilibrium.' Second, in contrasting her results with those of Bhagwati and others, Chichilnisky never attributes the differences partly or wholly to differences in the stability assumptions between her and these other authors. On the other hand, Samuelson, Johnson, Jones, Bhagwati and others do consider Walrasian stability in the conventional way.

References

- Bhagwati, Jagdish N., 1958, Immiserizing growth: A geometrical note, *Review of Economic Studies* 25, 201–205.
- Bhagwati, Jagdish N., 1968, Distortions and immiserizing growth: A generalization, *Review of Economic Studies* 35, Nov.
- Chichilnisky, Graciela, 1980, Basic goods, the effects of commodity transfers and the international economic order, *Journal of Development Economics* 7, Dec., 505–520.
- Chichilnisky, Graciela, 1981, Terms of trade and domestic distribution: Export-led growth with abundant labour, *Journal of Development Economics* 8, April, 163–192.
- Findlay, Ronald, 1982, Growth and development in trade models, Working paper (Columbia University, New York) April.
- Saavedra-Rivano, Neantro, 1984, Terms of trade and domestic distribution: A comment. Working paper no. 109 (Columbia University, New York), and *Journal of Development Economics*, this issue.