Aid allocation and the transfer paradox in small open economies

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1. Introduction

In a recent article in the *American Economic Review*, Yano and Nugent (1999) considered the welfare effect of development aid and demonstrated that a transfer paradox can occur in a small country in the presence of nontraded goods.[2] They asserted that the bulk of foreign assistance is used for the development of infrastructure, particularly in the nontraded goods sector and pointed out that "it is precisely in small developing countries where the negative effects have been alleged most frequently." (p. 431) Development economists may also be concerned with an overexpansion of the nontraded goods sector, which Yano and Nugent claim can more than offset the beneficial effect of the aid and give rise to the transfer paradox in a small country. In this situation, any debt relief effort extended to highly indebted poor countries (HIPCs) by the World Bank will serve no purpose, as it will not alleviate the pains of poverty in these countries.

This paper points out that in a world of two factors, two goods, and a nontraded good, a small country's terms of trade cannot be adversely affected by the capital formation in the nontraded goods sector, and hence Yano and Nugent's (1999) condition on the nontraded goods sector is unnecessary, despite their claim that their result "hinges on a nontraded goods price change due to expansion of the nontraded goods sector." It also is demonstrated that the expansion of the nontraded sector per se is evidence of the positive welfare effect of foreign aid.

The Marshall Plan (George, C. Marshall Foundation, 1968) aid was one of the most successful aid programs during the post World War II era. Between April 1948 and June 1952, 15 European nations

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[2] Yano and Nugent (1999) provide an excellent summary of the literature on the transfer paradox.

received more than \$13 billion from the Marshall Plan. The majority of these recipients were small countries. Moreover, some of the development aid was given to rebuild industries that were soon to compete with the United States. As examples, an alcohol-producing plant in Scotland received aid to reduce British imports, and the Ford Motor in Britain received the aid funds to produce automobiles and to earn foreign exchange. Funds also were used to build a new wharf in North Borneo to help the British colony export vitally needed rubber. In nontraded goods sectors, for instance, aid was used to purchase medicine to combat tuberculosis and to build railroads and water systems in French North Africa (http://marshallfoundation.org). These examples show that while some aid was used in the import-competing sectors, a significant portion of the Marshall Plan aid was also used in Europe's export and nontraded goods sectors. This paper shows that this is a sufficient condition to prevent a transfer paradox in small countries. It also follows that as long as borrowed funds are partly used to expand the nontraded goods sector, there is no need to be overly concerned with the possibility of an adverse welfare effect of debt relief.

2. The Yano–Nugent model

We consider the two-factor model of Yano and Nugent (1999). Let goods X_1, X_2, and X_N be the outputs of the exportable, the importable, and the nontraded good, respectively, which are produced using two factors, capital and labor. Production possibilities are implicitly defined by

$$H(X_1, X_2, X_N, K, L) = 0, \tag{1}$$

where K and L are capital and labor endowments, respectively. Let p_i^* be the foreign price and p_i the domestic prices of good i. The producers' problem is to maximize revenue:

$$B = p_1 X_1 + p_2 X_2 + p_N X_N$$

subject to Eq. (1). The first order conditions are:

$$p_i + \lambda H_i = 0, \quad i = 1, 2, N,$$

where λ is a Lagrange multiplier. Optimal outputs can then be written as

$$X_i = X_i(p_1, p_2, p_N, K, N).$$

Consumer preferences are represented by a monotone increasing and quasiconcave utility function,

$$U = U(D_1, D_2, D_N),$$

where D_i denotes domestic consumption of good i. The budget constraints of consumers are: $p_1 D_1 + p_2 D_2 + p_N D_N = I$, where I is consumer income.

Let $D_i = D_i(p_1, p_2, p_N, I)$ denote the demand function for good i. Import demand is written as:

$$M(p_1, p_2, p_N, I) = D_2(p_1, p_2, P_N, I) - X_2(p_1, p_2, p_N, K, L), \tag{2}$$

which implies $\partial M / \partial I = \partial D_2 / \partial I$.