0.1 Tradeable Goods, Non-Tradeable Goods and Participation

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0.1.1 Countries that do not Participate

A simple account of globalization would have it that international trade in today's world is a club to which all are welcome. True there are numerous, and scandalous, restrictions on access to rich country markets, particularly where agriculture and clothing are concerned. Yet over a large range of goods trade is feasible even on a large scale, as is indicated by the exporting successes of the Asian tiger countries, and now by China and India. Why then are there countries and regions that barely participate in merchandise trade, particularly when primary production is excluded?

This question is particularly pointed in two instances:

- The Arab World
- Sub-Saharan Africa

The UNIDO report on the Arab world notes that the merchanidise exports of region which is home to close to 300 million people are lower than those of Denmark. In the present paper I will concentrate on sub-Saharan Africa, where a similar poor participation in goods trade is observed. See Ng et als. (2000 and 2002) and Yeats et als. (1996). It goes without saying that the

causes of poor export performance are many and various. Most of the economies concerned are in societies that to a greater or less extent are failing. Poor infra-structures, massive health problems from AIDS to malaria, poor quality education, the burden of debt, and the sourge of corruption, all drag down economic performance, and with it possibilities for exports.

This paper adopts a narrower focus than the problem really requires. It concentrates on those points that are amendable to close-to-standard economic analysis. Plainly that defines a limited approach. However it is interesting, in my view, to see that much can be achieved via a narrow treatment of the issues. One feature that encourages me to believe that my treatment may not be worthless is that it appears that a mirror image of my analysis may not be too bad as a partial account of the success of such a country as China. For example where I look at overvalued real exchange rates as an drag on exports, China probably has an undervalued real exchange rate.

If we look at sub-Saharan Africa from a traditional factor availability angle, as with the HOS model, we see a land-rich resource-rich region that is short of labour and short of capital. With the help of foreign capital that points to agricultural exports, and despite heavy protection of that sector in the rich North, Africa has had some success there. For Kenya and Tanzania a visit to any supermarket vegetable section will confirm my point.

0.1.2 Non-Tradeables and the Real Exchange Rate

For the time being assume that goods are divided strictly and completely between tradeable goods that move freely in international trade, and non-tradeable goods that cannot be traded at all. This has to imply that the quality of traded goods, if it varies, can be readily and costlessly assessed. We return to that point later. The non-traded goods may include immobile factors, as in the HOS model. To keep the argument simple, assume one non-traded good.

A mixed price quantity revenue function can be written:

$$R\left[\mathbf{p}, x\right] \tag{1}$$

where $\mathbf{p}$ are traded goods prices, and x is the net output of the non-traded good. Then:

$$-\frac{dR\left[\mathbf{p}, x\right]}{dx} \tag{2}$$

gives the shadow price of the non-traded output. Let the price of non-traded output in international value be q. What happens if q is not equal to (2) when x takes its optimal value? To be specific, let that q be far higher than (2). Then we can write the revenue function in normal form as:

$$R\left[\mathbf{p}, q\right] \tag{3}$$

Full equilibrium obtains when q is flexible. Then the two variables q and U

are determined by:

$$\mathbf{p}\left\{R_p\left[\mathbf{p},q\right]-E_p\left[\mathbf{p},q,U\right]\right\}=0 \tag{4}$$

which is balance of payments equality. Also:

$$R_q\left[\mathbf{p},q\right]-E_q\left[\mathbf{p},q,U\right]=0 \tag{5}$$

is local market clearing for the non-traded good.

With q a pre-determined fixed price the local market for the non-traded good need not clear.

$$E_q\left[\mathbf{p},q,U\right]\neq R_q\left[\mathbf{p},q\right] \tag{6}$$

Then U is determined by (4) alone and either buyers or sellers are rationed in the non-traded goods market. This is the situation as depicted in the *Dutch Disease model*, and in some *IMF adjustment programmes*. This last case requires an inflexible price. Then disequilibrium can be the result of nominal exchange rate mis-valuation.

Theorem 1: *In a one-consumer economy mis-alignment of the real exchange rate q cannot increase utility.*

Proof: When equations (4) and (5) are satisfied the real exchange rate is not mis-aligned and there is a standard general equilibrium. Then the allocation is Pareto optimal, and no other feasible allocation can give the single consumer greater utility. Normally an exchange rate mis-alignment will lower utility. If

exchange rate mis-alignment means an allocation that cannot be supported by any price system, as in (4) and (5), then this allocation must be inefficient. That follows from the *fundamental theorem of welfare economics* (every efficient allocation can be supported by a price system).

An adjustment of the real exchange rate can be brought about by means of **either** a nominal exchange rate re-valuation **or** by alteration of prices of non-tradeables in the domestic currency. If the second takes place smoothly and quickly, the second is redundant.

0.1.3 The Political Economy of the Real Exchange Rate

Theorem 1 is based on a typical one-consumer argument. With many consumers the level of the real exchange rate involves conflicts of interest, just as with free trade. Real exchange rate overvaluation is a common phenomenon, particularly in developing countries. Often one or all of three reasons will help to account for this:

1. To control inflation countries peg their nominal exchange rates to a hard currency. This does not immediately moderate inflation, but if the peg holds the domestic price level will eventually stabilize at a high relative level. Then an over-valued real exchange rate is a consequence of inflation control.

2. An over-valued real exchange rate favours some members of the economy even while it harms others. In particular cheap imports are in the interest

of many of the westernized urban middle classes, the very people who tend to enjoy excessive influence in the imperfect political systems that are found everywhere.

3. In poor dysfunctional economies the rich often hold their wealth in foreign currency. When they cannot or do not do that, they will not wish to see a nominal devaluation reduce the international purchasing power of their wealth, even if it leads to an improved flow equilibrium. Then the point made in 2. above applies. Those with an interest in maintaining an over-valued exchange rate may enjoy a political influence far in excess of their numbers.

0.1.4 Semi-Tradeable Goods and Participation

Initially goods are divided between tradeable goods and non-tradeable goods as before. The home country produces a vector $(\mathbf{y}_0, \mathbf{z})$, where $\mathbf{y}_0$ are tradeables before transformation and $\mathbf{z}$ are non-tradeables. The concept of transformation will be explained immediately. We allow now for many non-tradeable goods. There is a national transformation function:

$$T\left[\mathbf{y}_0, \mathbf{z}, \mathbf{y}\right] \geq 0 \tag{7}$$

where $\mathbf{y}$ are tradeables after transformation. Transformation may take the form of simple transportation, say to rich country markets. but will also include quality control and design when these are necessary for export. The point of

this elaborate specification is that $T[.]$ may be *non-concave*. We may set up the programme:

$$\text{Max } \mathbf{p}.\mathbf{y} \tag{8}$$

subject to:

$$T[\mathbf{y}_0, \mathbf{z}, \mathbf{y}] \geq 0 \tag{9}$$

This gives a reduced-form indirect revenue function for the solution:

$$R[\mathbf{p}, \mathbf{z}] \geq 0 \tag{10}$$

We call the solution to (8) and (9) that gives the function (10) the *centralized optimal solution*. Two questions flow from this analysis.

1. If comparative advantage is defined in terms of autarky prices that differ from world prices, what is comparative advantage with semi-tradeable goods?

2. Will a decentralized market system arrive at the centralized optimal solution?

It is easiest to answer these questions if we assume that transformation involves *separable additive processes*. Then there are $n+1$ functions, where n is the number of tradeable goods. And (9) is equivalent to:

$$\mathbf{y}^i \leq T^i \left[\mathbf{z}_0^i, \mathbf{y}_0^i\right] \tag{11}$$

plus:

$$\mathbf{z} \leq T^{n+1} \left[\sum_0^n \mathbf{z}_0^{n+1}, \sum_0^n \mathbf{y}_0^{n+1}\right] \tag{12}$$

0.1.5 Comparative Advantage

Even if we look only at the centralized optimal solution it is clear that comparative advantage in a semi-tradeable good does not imply comparative advantage in its tradeable version, should any such exist. If my wife makes the finest raspberry jam in the world it does not follow that we can make money by marketing it. To do so we would need to transform it into a tradeable (marketable) good, and this might incur prohibitive costs. The point is clear if we imagine that nearly all goods producible without transformation are non-tradeable. Suppose for instance that a country produces without transformation only one good that can be marketed to the world. It might well be a primary product such as bauxite. Then in autarky we have no relative prices for any pair of tradeable goods, and comparative advantage is undefined.

The point is similar to one made by Macarten Humphries in his Oxford M. Phil. thesis of 2001. He asks whether labour intensive activities are helped when a labour-abundant country opens up to trade. He argues that the labour-intensive product may be displaced by a more attractive capital-intensive prod-

uct. The plastic bucket displaces the local wooden bucket. A few traditional buckets may be sold to tourists, but this in no way compensates for the fall in demand caused by the inflow of plastic buckets. The home country cannot produce its own plastic buckets as this requires capital and large-scale production.

How does this discussion confront the claim of many economists in textbooks and elsewhere that every country must have comparative advantage in something? This is an extension of Ricardo's original argument. I return to that issue below.

Market Equilibrium with Imperfect Competition With non-concave transformations we cannot guarantee a *competitive equilibrium.* To examine participation in an imperfectly competitive context it helps to change the assumptions. Assume that some partially tradeable goods can be sold into foreign markets under two non-standard conditions.

1. First an overhead cost must be paid purely in the non-tradeable good to "buy entry" to the world market. This is expressed as a flow. Think of it as the cost of marketing the good world wide. These costs are different from the overhead production costs of standard IC trade theory, usually taken to be equal for all producers. The cost will vary across firms and in particular will be affected by *order of entry.*

2. Unlike perfect competition, our firms are producing goods which are imperfect substitutes for similar goods produced in other countries. But

they are perfect substitutes for the same product produced by any other national firm. One chinese saucepan is a perfect substitute for any other chinese saucepan, regardless of which firm makes it. At the same time chinese saucepans are an imperfect substitute for Brazilian saucepans.

These are convenient assumptions, which are plainly not strictly realistic, but may be good enough to be useful.

We employ the standard Cournot-Nash approach, see Brander and Krugman (1983). If it enters a firm will solve:

$$\text{Max}_x \left[p\left(X^{'} + x \right) - c \right] x - C_0 \tag{13}$$

where $p\left(..\right)$ is the inverse demand curve, $X^{'}$ is total exports by other national producers, x is the firm's own exports, c is constant marginal production cost, and C_0 is overhead costs. The level of C_0 does not affect the maximization (13), but having it there reminds us that the firm will stay in business only if maximized (13) is non-negative, and also that C_0 may vary between firms. The maximization of (13) requires:

$$p\left(X\right) - c + xp_1\left(X\right) = 0 \tag{14}$$

where X is total exports and the subscript 1 denotes differentiation. From (14):

$$\frac{p}{p + xp_1} = \frac{p}{c} \tag{15}$$

Or,

$$\frac{\eta}{\eta - \frac{x}{X}} = \frac{p}{c} \tag{16}$$

where:

$$\eta = -\frac{1}{p_1}\frac{p}{X} \tag{17}$$

is the elasticity of demand in world markets.

When all exporting forms are identical, except perhaps for variations in C_0, (16) becomes:

$$\frac{\eta}{\eta - \frac{1}{n}} = \frac{p}{c} \tag{18}$$

where n is the number of firms.

Where there is free-entry and n can be treated as a continuous value,a further equilibrium condition says that the marginal firm will make zero profit.

$$\frac{X}{n}(p - c) = C_0 \tag{19}$$

where C_0 is the overhead cost of the marginal (high-cost) producer. Or,

$$pX - Xc = nC_0 \tag{20}$$

Take (18) first and assume for convenience that η is constant. When X increases p falls and the right-hand side of (18) falls. Then n must rise to preserve

equality. This is illustrated by the curve PP in Figure 1, drawn linear for convenience. PP may be taken to stand for profit maximization. What happens to the left-hand side of (20) when X increases depends upon the elasticity of demand η. If demand is not too elastic, and certainly if $\eta < 1$, the left-hand side of (20) will fall as X increases. In that case n falls as X increases. This is illustrated by the curve EE in Figure 1, drawn linear for convenience. EE may be taken to stand for entry-exit.

When C_0 is larger it is immediate by inspection of (20) that n will be smaller given X. This is illustrated in Figure 1 by the broken curve E'E'. Then it can be seen that higher overhead costs - specifically a higher marginal overhead cost - lowers the equilibrium values of both X and n. One thing that would raise C_0 is an increase in the value of the non-tradeable in terms of tradeables. That is an appreciation of the real exchange rate. As expected this will reduce exports.

0.1.6 Slaying the Participation Dragon

Whether we use the competitive model, or the imperfect competition model, the analysis laid out above contains many suggestive ideas that may help to explain low participation in trade. Goods may be standardized and there may be no difficulties in marketing the product on account of its national origin. This is the case with many primary products. Even when these vary, as with particular oils and their sulphur levels, quality control is not a problem and may in any case be reduced by DFI arrangements. That explains why the export of primary products, particularly oil, is a relatively easy way to participate in

international trade.

1. Transport costs are a major problem for trading even standardized products. In such cases getting the product to a seaport may be the main mechanism by means of which a good is made completely tradeable. These costs are at their highest for *landlocked countries* and/or countries with *poor transport infrastructure*. Those problems apply with great force in many African countries. That South Africa is the best trade performer among the sub-Saharan African countries is unsurprising and is explained by several factors. One of these is relatively good transport links. However several poorly performing West-African countries have good ports but often dreadful road/rail systems. On some implications of space and transport see Krugman and Venables (1999).

2. The simple analysis above makes it appear that if one firm can make a profit from exporting once it pays the overhead cost of market entry, then it will go ahead. And if a domestic firm cannot raise the capital, a multinational can do the job. That is too simple for at least two reasons. The model has certainty while in reality large risks attach to entering a market. And the increasing returns implied by a fixed overhead cost mean that the "toe in the water" approach to entry may stand no chance of success. The relatively small dispersed populations of many African countries make a large-scale jump into exporting particularly unattractive.

3. The C_0 values are not necessarily constants. They may depend upon history and upon the participation of other firms. Once people get the idea that the Chinese can make quality machine parts, it is far easier for other Chinese producers to enter the same or similar markets. Then we may encounter waiting games, as analysed by Bliss and Nalebuff (1984), when firms free-ride to avoid the highest "first-in" cost of entry. In sharp contrast to Africa, China has set the manufacturing band-wagon rolling, so that more types of products are produced, partly on the back of previous successes.

0.1.7 Concluding Remarks

A vital aspect of the globalized trading system is the export of non-primary products from the poor countries of the "South" to the rich industrialized "North". How did this come about? Three influences are important:

1. A reduction in protective trade barriers in the North.

2. The removal of gross anti-export distortions in the South, such as controls and tariffs on intermediate inputs.

3. Technical changes in the North that facilitate out-sourcing. For example motor vehicle assembly is more disaggregated, and techniques have been developed that make it possible to have Indonesian workers making jeans to a precise Kalvin Klein specification for sale in the US.

Arguably the third item on above list is of greatest importance. It means that the problem of surmounting the initial barriers against market access are dealt with by rich-country buyers rather than poor-country sellers. We go to a department store and buy a frying pan and we rely on the store and its reputation to guarantee the quality of the product. That the pan was made in China does not concern us. This is much the same as the argument of Kaldor (1949-50) in a sadly neglected paper.

Some small scale economic analysis will never resolve Africa's trading problems. At best it offers partial insights. The economic geography of sub-Saharan Africa is particularly unfriendly to external trade, with huge sparsely-populated territories, poor transport networks and landlocked countries. That said, the Arab world including North Africa, mentioned above, does not suffer from those particular problems to the same extent, yet equally does not participate much in export trade. South Africa is an interesting case in point. Against the background of sub-Saharan Africa, South Africa appears as a success. Viewed more broadly its performance is less impressive.

It is unlikely that simply copying success will be the route to success. Even so, successful examples can be suggestive. The economic miracle in China started as a coastal phenomenon, and although that is changing it remains true that the greater part of the industrialization is a seaboard city activity. How much that might be replicated in Africa is questionable, although South Africa has most of what is required.

0.1.8 References

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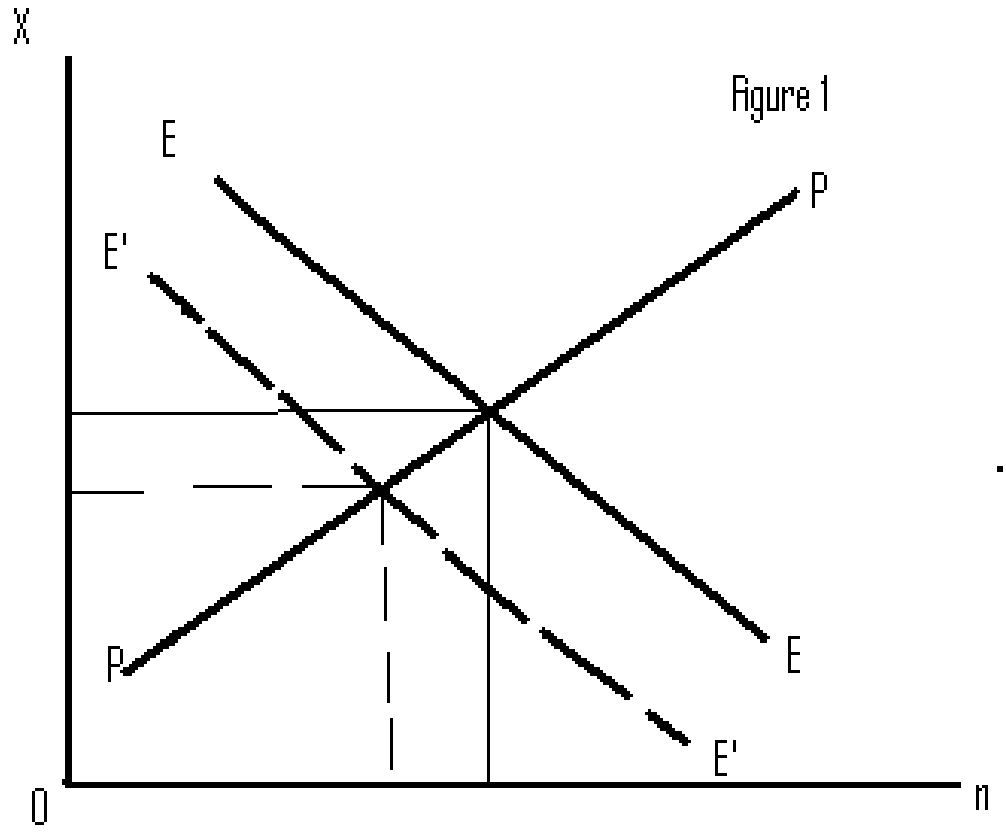

Figure 1