



'International Trade and Economic Growth in Developing Countries'

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- ***Introduction***

It has long been thought that international trade can increase a country's growth rate. Until recently however the argument for free trade was based upon static considerations of specialisation and the international division of labour. While shifting production more in line with one's comparative advantage should raise income per capita, it does not have any implications for long-run growth.

Endogenous growth theory however has shown that outward orientation can potentially affect a country's growth rate through several channels. In these models however there is no presumption that trade is good for growth. Growth can be lower under free trade, if a country's comparative advantage lies in certain goods. This implication may be particularly relevant for developing countries (LDCs).

- ***What Causes Growth in Endogenous Growth Models?***

Recent developments in growth theory have considered various sources of long-run growth, each of which involves an externality associated with some activity. Examples include, human capital accumulation through either learning by doing or education and technological advance through R&D activities.

- ***What are the Links between Trade and Growth?***

Trade influences a country's growth rate by impacting upon the level of these activities and

by facilitating the transmission of technology across borders.

- ***What Role does Trade Play in LDCs Growth?***

In LDCs it is likely that R&D activity is limited. Trade can still improve a country's growth rate however by allowing the importation of capital and intermediate goods and by facilitating the transmission of knowledge. Such knowledge can be used to adapt and imitate developed countries products.

- ***Why Study Trade and Growth?***

Despite a vast empirical literature there is still no general consensus concerning the benefits from trade and the mechanisms through which these benefits are realised. The existing measures of openness have been criticised for a number of reasons. They are not highly correlated with each other, they potentially measure a number of macroeconomic policies and the evidence concerning the direction of causality is not conclusive. Also the measures developed tend not to relate to the mechanisms through which endogenous growth theory suggests are important. Furthermore, empirical testing of endogenous growth theory is very much in its infancy, particularly with respect to trade and LDCs.



International Trade and Economic Growth: The Role Of North-South Trade in Goods

- **Hypothesis**

Developing countries can benefit from trade with more advanced countries by importing a greater variety and a higher quality of capital and intermediate goods that are used in final manufacturing production.

- **Background**

In models of endogenous growth, trade can impact upon growth by allowing access to the innovative products of other countries. Since most LDCs do little if any innovation it is primarily through trade with developed countries that they profit from higher levels of technological development.

North-South trade in manufactured goods historically has consisted largely of capital and intermediate goods. We may expect therefore that LDCs who import more from the North benefit in terms of higher growth than those LDCs that are closed to international trade or who engage to a greater degree in South-South trade.

- **Method**

We develop a model of endogenous growth in which the use of an expanding variety of intermediates (which can be taken to be capital also) in manufacturing can enhance growth. In the model trade can affect growth by impacting on the number of available varieties of intermediates. Trade can reduce growth however if comparative advantage dictates that

a country specialises in the traditional manufacturing sector.

Using this model we construct an empirical framework to predict imports of Northern manufacturing goods (taken to consist largely of capital and intermediate goods) to a sample of LDCs.

Using actual and fitted values we construct a measure of openness to imports from the North and thereby a measure of access to the North's capital and intermediate goods. Using this measure we test for a relationship between growth and openness to the North's goods in a model of economic growth.

- **Data**

We predict manufacturing imports from 21 OECD countries to a sample of 52 LDCs over a 15-year period (1976-1990), using panel data techniques. To predict such imports we use a variety of measures of factor endowments and gravity determinants of trade (examples include the capital stock, skilled/unskilled labour, area, distance from exporter and the GDP and GDP per capita of the importer and exporter).

The growth model estimated is similar to that estimated by Barro (1998). In addition to our measure of openness to northern imports the model includes initial GDP, population growth, investment, measures of human capital, political variables and regional variables.

- **Results**

The model of trade developed explains a large proportion of the cross-country variation in imports from the North. The gravity determinants of trade all tend to be highly significant and explain the greatest part of the variation. Factor endowments however play an important role in predicting imports in a way that is consistent with the theoretical model developed.

The measure of openness that we construct is not highly correlated with various other measures of openness. This however is a common feature of openness measures (Pritchett, 1995). The measure developed also ranks a number of African countries as relatively open. This doesn't seem to support conventional wisdom, but adds some support to Coe and Hoffmaister (1998) who argue that after controlling for various factors the average African country trades more than would be expected from their model.

The model of growth estimated explains a great deal of the cross-country variation in growth rates. Conventional variables in the growth regression tend to be significant and of the correct sign. Furthermore, the measure of openness included is also highly significant and of the correct sign. This result is robust to the inclusion of various additional variables in the growth model.

- **Conclusions**

Both factor endowments and gravity determinants are important factors in predicting LDCs trade with advanced countries. We find that these factors can explain a great deal of the trade between these two sets of countries.

Using a measure of the extent of departure of a country's trade from that predicted by these determinants to measure trade restrictions we find that such restrictions can impede growth. Those countries that are more open to imports from the advanced countries benefit in terms of higher growth. The likely mechanisms through which such benefits accrue are through the use of a higher quality and a wider variety of capital goods and intermediates and through knowledge spillovers, possibly encouraging imitation.



International Trade and Economic Growth: The Role Of North-South Trade in Ideas

- **Hypothesis**

Developing countries can improve their growth rates through trade by importing knowledge from more advanced countries. The benefits may occur through increased innovation, imitation or the use of such knowledge in production.

- **Background**

Endogenous growth theories suggest that knowledge spillovers are an important determinant of growth. International trade by facilitating knowledge spillovers would therefore be expected to enhance growth.

The role of knowledge spillovers may be more applicable to developed countries than LDCs. In endogenous growth models it is expected that firms use this knowledge in their R&D efforts to create new or improved products. Since LDCs undertake little if any R&D we expect that knowledge spillovers are limited in these countries.

Evidence has been found suggesting that spillovers of knowledge, measured using cumulative past R&D expenditure, do exist between developed economies. Evidence has also been found however suggesting that spillovers are significant between developed and developing economies (Coe, Helpman and Hoffmaister; 1997). Since innovation is limited in LDCs, it is more likely that knowledge spillovers benefit LDCs by encouraging the imitation and adaptation of the developed countries products or by the direct use of

advanced products in manufacturing production.

- **Method**

We test for the effects of foreign knowledge in a simple model of economic growth. More specifically, we test for the growth enhancing effects of the trade weighted knowledge stocks of a small number of developed countries to a sample of LDCs.

Knowledge stocks are constructed for the developed countries and weighted by some measure of trade or trade intensity. The question of how knowledge stocks should be weighted has been the subject of much debate (Keller, 1998; Lichtenberg and van P. Potterie, 1998; Coe and Hoffmaister, 1999). We specify a number of alternative weights to test the sensitivity of our results to the weighting.

- **Data**

We construct knowledge stocks for five OECD countries using past R&D expenditures. These five countries have by far the highest constructed knowledge stocks. These are weighted by measures of the level of imports and import shares of the LDC to give a measure of access to foreign knowledge. The weights are also scaled by country size.

There are 71 LDCs in our sample. Data is collected for three five year time periods on foreign knowledge stocks, GDP growth, investment, human capital and initial GDP.

- **Results**

The model is estimated using panel data techniques. We find that conventional variables included in our growth regression are all significant and of the correct sign.

In terms of the results on the foreign knowledge stock variable we find no evidence of significant knowledge spillovers to our full sample of countries. This result is robust to whichever weighting is used on the knowledge stocks.

What we can show however is that for certain regions in our sample there does indeed exist positive knowledge spillovers, suggesting that they may not occur automatically but are reliant on certain conditions being in place in an economy.

- **Conclusions**

The evidence in favour of North-South knowledge spillovers in the existing literature is mixed and the subject of much debate. We find no evidence of foreign knowledge spillovers in our full sample of countries, using a variety of specifications for foreign knowledge, suggesting they are not an important determinant of growth in LDCs.

We can show that for certain regions spillovers do indeed exist; these regions are Asia and Europe. The results are suggestive of the fact that certain conditions need to be in place within a country for spillovers to take place. Further research looking to identify these conditions is required.

A number of possible conditions are likely to be important. It has long been considered vital to have a stable economic environment and high levels of education and investment for spillovers to take place. The term 'social

capability' was developed specifically to take account of these factors.

Other factors that may be important include trade composition; it may be that imports of only certain goods embody the knowledge of the developed country. The domestic enforcement of property rights may also be important; a lax enforcement of property rights may be conducive to imitation of the developed countries products. Alternatively, it may be that only countries who themselves have a domestic R&D sector are able to benefit from knowledge spillovers; the knowledge being used in R&D to develop new products.