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(Mis)adventures of Comparative  
Advantage in Developing Economies**

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17 May 2021

Online at <https://mpra.ub.uni-muenchen.de/107780/>  
MPRA Paper No. 107780, posted 25 May 2021 01:27 UTC

# Ricardo Through the Looking glass: (Mis)adventures of Comparative Advantage in Developing Economies.

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**Abstract:** Suppose two countries, A and B, manufacture aircraft components – engines and tires. Suppose country A has a comparative advantage in engine manufacturing, perhaps for a simple reason of being situated closer to a source of titanium which is used in fan blade manufacturing. And suppose that country B has comparative advantage in tires, perhaps because of being geographically closer to an oil resource. According to the Ricardian theory, country A should specialize in engines and country B should focus solely on tires. But suppose that a set of engines costs ten million dollars, while a set of tires, including all replacement tires needed over the service life on an aircraft, costs less than one hundred thousand. Will country B benefit from this Ricardian specialization? We aim to provide the simplest possible two-country two-commodity model with the smallest possible set of assumptions, that shows that the specialization does not always benefit all trade participants. Instead, one of the participants may get a disproportionate benefit from trade at the expense of the other.

## Introduction

Ricardo's comparative advantage principle shows how trade based on comparative advantage and specialization results in the most efficient use of world resources. The argument for free trade goes further – not only the welfare of the world as a whole but also the welfare of each participating nation increases.

But there is growing evidence that expanding free trade causes the income gap between developed and developing nations grow rather than shrink<sup>1</sup>. Eric Reinert<sup>2</sup> has argued that this growing income gap is a straightforward consequence of the same principle of comparative advantage. The comparative advantage of less developed countries is in the least sophisticated technologies. Specializing in areas or industries with the lowest added values, the developing countries cannot catch up with the industrial countries. In a developing country, the comparative “advantage” is a looking-glass reflection – everything turns out to work in reverse.

One illustration of this effect is Graham's dynamic theory of uneven economic growth.<sup>3</sup> There are two countries and two commodities, each of the commodities uses its own technology, and the country's specialization is according to its increasing or diminishing returns. The World growth is distributed not just unevenly – the rich is getting richer and the poor is getting poorer.

But we can show that even a simpler set of assumptions can demonstrate the main idea. The requirement of increasing or diminishing returns is not necessary to illustrate that comparative advantage can lead to a loss by a country as a whole. Our very trivial illustration can be used, we believe, as a simple introductory example in any level of International Trade textbook.

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## Results

Consider the following two-country two-commodity model.

1. The world consists of two nations, each of which is producing two commodities.
2. Each nation has a fixed endowment of labor and labor is fully employed and homogeneous.
3. Labor can move freely between industries within a nation but cannot move between nations.
4. No government barriers to trade exist.
5. Transportation costs are zero.
6. Trade is balanced, there are no flows of money between nations.

But we will add “small” modifications to the standard Ricardian assumptions. These modifications will allow us to consider two types of goods – high-technology and commodity goods.

7. The level of technology is *not* fixed for both nations. Different nations use different technologies, *and* different firms *within each nation* utilize a different production method for each commodity.
8. Wages in each country *do* depend on the industry. Higher-productivity industry does not subsidize the lower-productivity one.

Before specialization two countries, United States and Russia, produce TV sets and chairs. This table is reproduced, with a small change – replacement of Canada with Russia, from Thomas Sowell<sup>4</sup>.

PRODUCTS	AMERICAN WORKERS	AMERICAN OUTPUT	RUSSIAN WORKERS	RUSSIAN OUTPUT
chairs	200	100,000	200	90,000
TV sets	300	60,000	300	30,000

In this example Russian high-technology (capital-intensive) industry is relatively less developed than American – American workers are twice as efficient at producing TV sets as Russian workers, while the difference in efficiency in low-cost (low-price, labor-intensive) commodity goods (chairs) is much less pronounced.

Assume that a TV costs \$1,000 while a chair is \$100. This way we are using the dollar price of a good as a proxy of its technological sophistication.

PRODUCTS	AMERICAN WORKERS	AMERICAN OUTPUT	RUSSIAN WORKERS	RUSSIAN OUTPUT
chairs	200	\$10,000,000	200	\$9,000,000
TV sets	300	\$60,000,000	300	\$30,000,000

After specialization, the World output of both TV sets and chairs increases. This table is reproduced, again with the above-mentioned small change, from Thomas Sowell.

PRODUCTS	AMERICAN WORKERS	AMERICAN OUTPUT	RUSSIAN WORKERS	RUSSIAN OUTPUT
chairs	0	0	500	225,000
TV sets	500	100,000	0	0

Now, again, the World output after specialization under the assumption of a \$1,000 TV and a \$100 chair.

PRODUCTS	AMERICAN WORKERS	AMERICAN OUTPUT	RUSSIAN WORKERS	RUSSIAN OUTPUT
chairs	0	\$0	500	\$22,500,000
TV sets	500	\$100,000,000	0	\$0

While the World output increases both in real and in dollar terms, the American output increases disproportionately, from \$70 million to \$100 million per year due to specialization in high-technology products, while Russian dollar output decreases from \$39 million to \$22.5 million due to the loss of high-tech industry.

### **Job losses and job gains**

The dogma of free trade that jobs lost in one industry are replaced by jobs gained in another industry is very true here. The more developed country loses jobs in low-skilled sectors but gains in high-added value sector. The less developed country also compensates for the jobs lost in one sector with jobs gained in another sector. The only difference is that high-skilled jobs are replaced with low-skilled ones, with the corresponding loss of technology and income. The long run effect of free trade is to reallocate workers away from domestic-only industries to export industries, and while this reallocation does lead to a more efficient global utilization of resources, the reallocation of resources in the country on the receiving end of the free-trade punch is the opposite.

### **Discussion**

We have provided a simple example, the simplest to our knowledge, that free trade does not universally benefit all participating countries. Free trade does work *against* developing nations which are not able to – or do not have enough economic expertise to – protect their most valuable industries.

But when does it benefit all parties (or both parties in our simplified example)? Only when – and most importantly *if* – the advanced industry in the less advanced trading partner is brought up to the level of the advanced industry of the more advanced country. It can be shown that there is a range of prices – which we used as proxies for technological level – of the traded commodities when the trade is truly mutually beneficial. In other words, when terms of trade are acceptable to both participants<sup>5</sup>.

Another important point is that full specialization is a static equilibrium point. What happens dynamically? What happens when free trade is established between two nations, one of which is more technologically advanced? Reinert-Vanek effect<sup>6</sup>. Even a trivial two-country two-commodity example can be used to show that in the less advanced nation the most advanced industry is the first to go extinct, should this less advanced country fail to protect it.

Also very important – suppose a nation does have a comparative advantage in a high-tech product, but the market of this commodity is very small. Should this country abandon all else and specialize in this product only? A simple model like ours can be used to show that Ricardo’s comparative advantage also works *against* the country specializing in a niche product, no matter how advanced the product is.

These issues are a subject of further development.

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<sup>1</sup> Ricardo Hausmann and Dani Rodrik, <https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/doomed-to-choose.pdf>, Page 3.

<sup>2</sup> Eric Reinert, *How Rich Countries Got Rich . . . and Why Poor Countries Stay Poor*, Hachette Book Group, Inc. 2019. ISBN: 978-1-5417-6289-3

<sup>3</sup> Eric Reinert, <http://othercanon.org/wp-content/uploads/2020/02/Diminishing>Returns-and-Economic-Sustainability-The-Dilemma-of-Resource-based-Economies-under-a-Free-Trade-Regime.pdf>, Appendix I.

<sup>4</sup> Thomas Sowell, *Basic Economics: A Common Sense Guide to the Economy*, Chapter 21. Fifth Edition, 2015. Basic Books, New York, ISBN: 978-0-465-05684-2

<sup>5</sup> Robert J. Carbaugh, *International Economics*, 17th Edition, 2018. ISBN-13: 978-1337558938, ISBN-10: 1337558931, Page 39 and Figure 2.2. Region of mutually beneficial trade is shown in real terms. But it is possible to construct a simple and clear price-based illustration.

<sup>6</sup> Eric Reinert, <https://www.un.org/en/ecosoc/meetings/2005/docs/Reinert.pdf>, Page 9.