

Measurement Comparative Advantages

Manual

This manual shows you how to use the Excel file *Measuring Comparative Advantages*. Using input-output tables, the file explains how comparative advantages resulting from trade between two countries can be measured by adding the input-output tables of both countries. The measurement is done in the same way as measuring technical change in individual countries, using fluctuating market prices.

The calculations on all worksheets are discussed in detail in the paper *On measuring comparative advantages of foreign trade* that can also be downloaded.

ALL WORKSHEETS

The worksheets in the file first display the sum of the input-output tables for the two distinct countries. For these countries, the user can potentially change the contents of the green-highlighted cells. Potentially, because some of these cells contain formulas that you might want to keep.

These cells, per firm or sector, relate to labour input and the output of commodities produced exclusively with direct labour in the first four worksheets. Indirect labour is also taken into account in the subsequent worksheets. To illustrate how both countries can benefit from their comparative advantages by expanding the production of commodities they can produce relatively easily, some green cells contain formulas describing how they can expand their production using the same production techniques. To modify these production techniques, separate green cells have been added, the results of which are also included in the formulas.

As for wages and prices, the wages in the first four worksheets for England and Portugal are assumed to be equal to one, with a profit margin of 20% in England and 30% in Portugal. However, you can also make changes if you want.

The measured comparative advantages can be found below the input-output table for both countries combined. More information about the measurement method used can be found in the *Manual Measurement Technical Change* that accompanies the Excel file *Measuring Technical Change* published elsewhere on this website and from which the measurement method used here is derived.

SEPARATE WORKSHEETS

The following information applies to the separate worksheets:

- 1 Direct labour only (first)
This sheet shows Ricardo's example where the merchant takes the initiative to exploit the comparative advantages of cloth production in England and wine in Portugal.

- 2 Basic correction (1)
To distinguish between measured comparative advantages and any technical change that may exist in individual countries, this worksheet shows how this distinction can be easily made. Since no mutual trade is assumed in this sheet, any introduced technical change, after correction, results in a value equal to zero for comparative advantages.

- 3 Basic correction (2)
A more complex correction mechanism is needed if the composition of employment, which differs in efficiency, changes over time. These changes can cause changes in the overall picture for both countries, even without technical changes in the individual countries and without mutual trade. The application of this modified correction mechanism is evident if you assume higher production growth in the cloth and/or wine industries in the first worksheet.

- 4 Direct labour only (second)
This sheet again shows Ricardo's example, with the difference that now the efficiently producing Portuguese winemaker takes the initiative to trade. This turns out to be more advantageous for him than in the example where the initiative lies with the independent merchant.

- 5 England and Poland
From now on we also take indirect labour into account. This worksheet shows how England supplies Poland with agricultural machinery, allowing agricultural production to increase significantly there. By paying for the imported machinery with food, the working population in both countries can also increase significantly.

- 6 Germany and Hungary
Initially, all German sectors produce more efficiently than the corresponding sectors in Hungary. Both countries' economic growth is limited by the available labour supply. To facilitate growth, the German car industry, which consists of two sectors: sector B produces engines and sector C assembles cars, decides to take over the engine factory in Hungary in period 2. By limiting its engine production in Germany, labour is freed up, allowing for expansion of the German car production.
In period 3, engine production in Hungary becomes as efficient as in Germany.

- 7 Oligopolistic competition
The central question here is how the measurement of comparative advantage and technical change can help to determine where oligopolistic competition exists. The worksheet also shows how rising unemployment due to oligopolistic competition can be (partly) absorbed by investing in a sector so that not only it itself becomes more efficient than in other countries, but also the sector to which it supplies machinery.
- 8 EU and China
In both countries, sector D produces traditional cars that use fossil fuels, while sector E produces electric vehicles. The supplying sectors A, B, and C produce steel, engines, and electronics, including batteries, respectively.
The EU excels in the production of engines and traditional cars, while China produces batteries very efficiently. Four consecutive scenarios show how the EU and China can benefit from each other
- 9 EU and China (trial)
This worksheet shows the first scenario so that everyone can freely make calculations according to their own insight.