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## The psychic distance factor

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# ARTICLES

## Foreign Trade

### The Psychic Distance Factor

by Leon Zurawicki, Warsaw

The importer's decisions are not only influenced by strictly economic calculation. Other factors also play an important role. Among others, the so-called "psychic distance factor" should be mentioned. This factor reflects a rational propensity to buy as near as possible, providing that other conditions such as price and quality of given products are the same, or the differences in quality are proportionally reflected in prices. This would in addition require a perfect substitution between different qualities of the same article. A consideration of this factor seems quite logical, for the shorter distance between the buyer and the supplier enables prompter delivery of merchandise and speedier arrangement of eventual complaint. I'd like to emphasise that I take the price cif into consideration. I therefore survey merely the impact of "psychic distance" on import activities.<sup>1</sup>

It is really very tempting to measure and compare for different countries and different products to what extent the psychic distance factor influences the importers' decisions concerning the choice of suppliers. Providing that the volume of imports of given products from any particular country depends on the price cif quoted by a foreign exporter and on the distance from the country of the supplier to the importer's residence, we assume that this dependence has the character of the following simplified model:

$$Y = D^d \cdot P^p \cdot c, \quad \begin{matrix} d \leq 0 \\ p < 0 \end{matrix}$$

(Y = imports measured in physical quantities, D = distance in km, P = price per unit, c = constant,  $c_1 = \log c$ .)

This can be rewritten into a form that makes computation work easier:

$$\log Y = d \cdot \log D + p \cdot \log P + c_1.$$

#### Dutch Coal Imports as an Example

To illustrate the problem mentioned above we present here the results of the regression analysis carried out in order to find the regression coefficients "d" and "p". The following example refers to the Dutch coal imports in 1959, 1962, 1963 and 1966, basing on the

figures given in the Dutch Statistical Yearbook 1959, 1962, 1963, 1966:

Table 1  
Dutch Coal Imports

Year	Total imports of coal in 1,000 tons	Average price in guilders per ton	d	p	$c_1$	Number of countries exporting to the NL
1959	6,507.3	61.5	-0.60	-1.28	7.06	13
1962	8,922.9	54.2	-0.30	-3.45	10.30	12
1963	9,948.7	57.3	-0.31	-3.02	8.42	13
1966	6,679.0	62.4	-0.52	-2.29	8.03	8

Before interpreting the table above and drawing any conclusions, stress should be put upon the fact that the "d" coefficient represents not only the influence of the psychic distance factor, but also reflects the impact of political preferences or trade discrimination, which by using statistical methods cannot be measured separately. Thus we only get a rough estimation of the size of the psychic distance factor. Moreover, since the total correlation coefficient was very small —  $R = 0.7$  — one should be very careful with comments. To avoid another error, instead of the cif prices, the value of imports from different countries was calculated according to the "cif and duty paid" formula.

Observing this table we can easily get the impression that the value of the "d" coefficient depends on the amount of the country's total imports. The fluctuations in prices do not seem to play an important role. The more a given country imports a definite product, the bigger the coefficient "d", i.e. the smaller the distance barrier. Provided that the nearest sources of supply have been optimally exhausted, the importers of a given country, planning to increase their purchases abroad due to an increased home demand, have either to agree to higher prices or to find suppliers in other countries farther away.

#### Analysis of the EEC Petroleum Imports

Our second analysis examines the imports of petroleum to the EEC countries. Again the same method was used. The results are calculated for the year 1963

<sup>1</sup> This problem was touched in H. Linneemann, *An Econometric Study of Foreign Trade Flows*, Amsterdam 1966.

and base upon the figures from "Import 1963 — Analytical Tables", published by The Statistical Office of the European Communities.

**Table 2**  
**EEC Petroleum Imports in 1963**

Country	The proportion of petroleum imports to GNP compared with France (France = 1)	Average price paid per ton (in Dutch guilders)	d	p	c <sub>1</sub>	Number of observations
France	1.00	68.7	-0.78	-18.88	40.46	12
BLEU	2.93	66.5	+0.79	-1.22	1.62	13
FRG	1.33	62.6	-2.54	+0.55	12.00	12
Holland	2.87	71.2	-0.24	-6.66	15.88	17
Italy	1.15	52.2	+2.17	-1.53	-2.60	19

In this case it is even much more difficult than before to formulate any conclusions. Nevertheless it is interesting to note that the values of the "d" coefficient and the price elasticities for the countries of more or less the same per capita Gross National Product, the same degree of development and industrialisation, the same tariff policy, and situated in the same area, differ so much. The proportion between the value of imported commodity and a country's Gross National Product does not help to explain this difference; the total correlation coefficient in this analysis oscillated between 0.6 and 0.7 — except for France (0.9) and Italy (0.4).

#### EEC Synthetic Dye-stuff Imports

The imports of synthetic dye-stuffs to the EEC countries are now to be examined.

**Table 3**  
**EEC Imports of Dye-stuffs in 1963**

Country	The proportion of dye-stuffs imports to GNP compared with France (France = 1)	Average price per ton (in Dutch guilders)	d	p	c <sub>1</sub>	Number of observations
France	1.00	1,118	-1.25	+1.65	-3.32	12
BLEU	2.84	901	-0.53	+0.57	-1.36	16
FRG	0.62	1,224	-0.55	+2.22	-7.88	14
Holland	2.42	919	-0.65	-0.36	+2.33	19
Italy	1.34	1,224	-0.34	+1.09	-1.99	15

The highly positive price elasticities for France, the Federal Republic of Germany and Italy are mainly due to their purchases of one half of their total syn-

thetic dye-stuffs imports from Switzerland, where the price paid for this commodity is higher than in any other country. This quasi-monopoly position of Switzerland resulted from the fact that it offered a special quality of those products, for which there was no substitute. The lack of perfect substitution between different qualities of the same article, and the fact that in most statistical yearbooks diverse qualities of a given commodity are aggregated and presented in one position, may change completely the results of our research.

However, if we compare, on the one side, France with West Germany and Italy, and Holland with Belgium and Luxembourg, on the other, we can conclude that the greater the significance of the imported commodity to the country's economy, the greater the value of the coefficient "d" and the weaker the distance barrier, the exporting countries have to overcome in their relations with a given country.

#### Some Conclusions

The research work on the psychic distance factor is not yet completed. Other factors such as political preferences, which are only to a certain degree justified by traditional trade links, are reflected in the "d" coefficient and may even play a prevailing role in special circumstances. For example, all the improvements in the world's communication and transportation net, which should diminish the psychic distance barrier, may not find any consideration in the "d" coefficient because of the adverse influence of local integration tendencies.

If we compare the results obtained for countries from different world areas, we must also take into consideration that eventual differences may originate from the country's advantageous—e.g. France—or disadvantageous—e.g. Australia—geographic position.

In order to make the analysis of the psychic distance influence on foreign trade activities more complete, it would be very useful to take into consideration all potential foreign suppliers, i.e. the countries exporting to other countries, but not to a given country; their estimated price, i.e. the average price they quote in the world market and the calculated average distance to a given country, all domestic actual and potential suppliers should be considered. Assuming that free competition exists in the world market—a condition sine qua non of our model—the buyers must be informed about all the supply sources.

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