Foreign demand
and the development of dutch exports

by

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1. Introduction

1) Demand for imported goods depends on a heterogeneous group of factors: the level of economic activity, location of countries and of their productive resources, price differences and others. Changes in the demand for foreign products in the short run mainly relate to the changes in domestic economic activity and changes in the ratio between domestic and foreign costs of supply. In most cases changes in the cost-ratio result in changes in the ratio between domestic and foreign prices, but there are exceptions, as also the market shares of the suppliers are important in this respect.

2) Not only total imports but also the composition of imports by countries of origin reflect changes in cost and price ratios. The market share of the suppliers is a factor here too, as countries with a small share in the market are not in a position to let their supply price diverge significantly from the price at which the biggest suppliers are able to stay in the market.

3) To an exporting country with small shares in its markets of destination, international prices will therefore be exogenous. This means that the only important short-term indicator for the possible growth of its exports are the changes of imports in its countries of destination.

4) A first approximation — however crude — is the comparison between exports and the development of world imports. This method is crude because it does not take into account the geographical pattern of exports, narrowly related to the location of the exporting country, and it also disregards the commodity composition both of exports and of world imports, which may be different to an important extent. To get a better basis for comparison world imports must be broken down by countries or country groups of destination and by commodity categories.
5) For the purpose of this analysis, such a breakdown has been made by ten countries or groups of countries and eight product groups (1) for the years 1925-1938 and 1953-1960. For this period, annual percentage changes of imports by commodity and by country have been calculated. The problem arises, however, how to aggregate this mass of information in such a way that conclusions can be drawn. To this end, first the things we are interested in have to be formulated more carefully. Briefly, an answer was sought to these questions:

— did exports of the countries examined keep up with the growth of their markets (which means that they kept their market shares)?
— does it make sense to distinguish in such a detailed way between destinations and commodities?
— can the relationships that will be found serve as a tool in forecasting exports?

2. Method

6) The following notation has been adopted:

\[ B = \text{exports}, \]
\[ M = \text{imports, excluding imports of the country examined}. \]

All symbols represent annual percentage changes, with the exception of cases where a tilde (\(\sim\)) is added, which implies absolute figures. Suffixes are added with the following significance:

\( w = \text{world}, \)
\( l, \ldots, f = \text{countries}, \)
\( l, \ldots, s = \text{commodity groups}. \)

7) On the basis of the available statistical data it is possible to make year by year comparisons between, for example, Dutch chemical exports to France with French total imports of chemicals. In this way 80 markets can be analysed (10 countries and 8 commodities), but this will probably add little to our understanding. Therefore, aggregation is necessary and this raises the question of finding appropriate weights.

8) It will be clear that aggregates must be made in such a way that the importance of the markets as seen from the exporting country is given due attention. This can be reached if the shares of these markets in the exports of the country of origin are taken as weights. This share can be symbolized by

\[ q_{st} = \frac{\tilde{\beta}_{st, t-1}}{\tilde{\beta}_{t-1}}. \]

(1)

(1) All figures used for the period 1925-1938 and 1952-1957 have been taken from W. Tims, “World Import Trade, 1925-1957” in The Manchester School of Economic and Social Studies.
9) Thus, the weights are in fact the composition of exports in the preceding year. The next step is easy: the percentage change of imports in each separate market is multiplied by its appropriate weight. In general, three ways of aggregation are possible: addition by countries, addition by commodity groups and, as a final step, addition for the world as a whole. These three aggregates can be written as:

\[
M_{st} = \sum_{i=1}^{s} M_{sl} \cdot q_{st} \text{ (aggregated for each country over commodities)}
\]

(2)

\[
M_{st} = \sum_{j=1}^{t} M_{sl} \cdot q_{st} \text{ (aggregated for each commodity over countries)}
\]

\[
M_{sl} = \sum_{i=1}^{s} \sum_{j=1}^{t} M_{st} \cdot q_{sl} \text{ (aggregated over commodities and countries)}
\]

10) In this way it is possible to compare exports by country or commodity group with imports of the country of destination or with world imports of each commodity group, respectively, taking into account the specific commodity composition, or geographical pattern, respectively of exports. The final aggregate, \(M_{st}\), gives the combination of both.

11) Between the very crude comparison of total exports with total world trade and the detailed way represented by the aggregates given, some other positions can be constructed. As will be seen in a later stage, these are particularly important if exports forecasts are to be made.

12) The first variation starts from total imports of each country, \(M_{l}\). By weighting these annual percentage changes with the appropriate weights, being the share of each country of destination in exports of the country of origin \(q_{l}\) we get a new basis for comparison. In this case only the geographical pattern is taken into account, and in an analogous way (by taking \(M_{s}\) and \(q_{s}\)) a second variation is constructed that is limited to the commodity composition.

3. Results

13) \(M_{st}\), \(M_{s}\) and \(M_{l}\) have each been calculated for the Netherlands for the whole period under review. By means of regression on the annual percentage changes of exports the first and second questions, stated in the introduction can be answered. Only one remark has to be added about the Dutch part of this study: As a breakdown by SITC groups of Dutch exports for the pre-war years was not available, this composition
has only been calculated for the years 1925, 1929, 1934 and 1938. The average composition in the first and the last year of each 5-year period has been used as the weighting scheme for all years in-between.

14) For the period 1925-1938 and 1953-1960 four correlations are made between Dutch exports and world imports weighted in a more or less complicated way, as described before.

15) First of all the easiest approach is chosen: total Dutch exports are correlated with total world imports \((M)\) excluding Dutch imports. Next, the product composition of Dutch exports is taken into account \((M_s)\). The third step only allows for the geographical breakdown \((M_I)\). In the last and most complicated step both points of view are taken together: world imports are weighted with the geographical breakdown and product composition of Dutch exports, \(M_{sl}\).

16) The table gives regression coefficients and constant and, in brackets, their standard errors.

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<th>exogenous variables</th>
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17) The correlation coefficients do not differ very much. The refinement, however, makes the coefficient somewhat higher. The regression coefficients diverge little from one. The changes of the constant, however, are very interesting.

18) In equations (1) to (3) the constant is not only much larger than unity, but also diverges significantly from zero. This suggests that there would be some factor resulting in an extra gain for Dutch exports over world trade. But if these results are compared with the last equation, where there is no longer a constant term of any significance, it can be concluded that the apparent gain has to be ascribed to the favourable composition of Dutch exports. This means that the Netherlands are exporting to markets that are more rapidly growing than the world average.
19) In graph 1 the differences between Dutch exports and weighted world imports have been drawn, and also exports by country of destination and the corresponding weighted imports. At the same time, the difference between Dutch exports and the unweighted imports of the different territories is shown in thin lines. The differences between the two lines are not very big. This was already suggested by the high correlation coefficient between \( B \) and \( M_r \).

20) The importance of the United Kingdom in the years before the war is remarkable. With the exception of 1936 the United Kingdom is responsible for a great part of the fluctuations in \( B - M_t \). The share of the United Kingdom in Dutch exports declined significantly after the war (from 20% to 10%). No explanation could be given for the heavy changes in \( B_t - M_{st} \) for Germany in 1934-35-36.

21) After the war we can observe that the differences between \( B \) and \( M_{st} \) are much larger than before the war. Tracing back these differences by countries, we find that only the deviations for the country-group "rest of the world" show some resemblance to the aggregate deviations. This implies that to some extent the differences between exports to the other countries and total imports of these countries have compensated each other. Such a development can be understood, as it will be easy to shift exports within a commodity category from one country to another, if there are differences in competitive relations or prices to be met in the markets.

22) In graph 2 the deviations between \( B \) and \( M_{st} \) have been presented in a breakdown by product groups. It appears that the category "food" had the most important share in the total deviations, but in the after-war years machinery contributed to a large extent as well. Again some compensation can be observed between the other groups. This behaviour is less easily understood.

23) A simple correlation for the period 1953-1960 between \( B_N \) and \( M_{st} \) gives a regression equation that compares badly with the results for the total period:

\[
(3) \quad B_N^* = 0.415 \cdot M_{st} + 5.35 \quad R = 0.762
\]

24) What can be the reasons for the fact that for these years \( M_{st} \) does not explain exports as well as for the longer period? Here we have to think about factors on the supply side, because the main difference between the years before and those after the war consists in the level of utilization of productive resources. In contrast to often very high unemployment figures in the thirties, the fifties are characterized by a high level of capacity utilization as shown by the unemployment percentages.

25) In this situation, as we have experienced in the Netherlands in a number of post-war years, it became impossible to keep pace with
foreign demand because the opportunities to expand production were rather limited and home demand, to the contrary, increased at such a rate that exports in some sectors of industry got a residual character. This development was aggravated by the strong rise of prices in the home market, comparing with only moderate price increases on foreign markets.

26) It must be noted that in this way a lag of exports behind foreign demand can develop itself without any change of Dutch export prices, in relation to competing prices. In the situation described it cannot be concluded that the competitive position changes in any way. If domestic price increases are accompanied by a wage rise — because of tensions on the labour market — this will result in lower profit margins on exports, taking international prices as given.

27) In our analysis it seems appropriate to stress the tensions on the supply side. For this reason, the reciprocal unemployment percentages have been included in the regressions, considering that they give reasonable indication of these tensions. Supposing the “normal” elasticity between $B$ and $M_{sl}$ to be unity, we get as a result:

$$ (4) \quad (B - M_{sl})^* = -25.78 \left( \frac{1}{\tilde{w}} \right) + 14.83 \quad R = 0.950 $$

Or, starting from the geographically weighted variant:

$$ (5) \quad (B - M_{d})^* = -28.12 \left( \frac{1}{\tilde{w}} \right) + 17.31 \quad R = 0.946 $$

28) From equation (4) can be calculated that $(B - M_{sl})$ becomes equal to zero at an unemployment percentage of 1.7, whereas in equation (5) this break-even point is reached at 1.6 per cent of unemployment. At a lower unemployment rate there seems to be a tendency for shares in foreign markets to decline, and at higher rates small increases can be recorded. An important characteristic of both equations is that a change with, say, 0.5% in the unemployment rate has a much larger influence if the level is already low in comparison with the same change occurring at a higher level.

29) In this respect attention have to be drawn to the fact that in the years covered by the latter equations $\tilde{w}$ never came down below the 1% level. This however being the case in 1961, application of the equation to this year is not allowed because at that level the relation is very sensitive to small changes of $\tilde{w}$ whereas no such situation occurred between 1953 and 1960.

30) The interested reader can find a more elaborate treatment of this problem in “Central Economic Plan 1961” (English version), p. 119 and 120.
4. Conclusions

31) Dutch exports appear to show a close relationship with the fluctuations of foreign demand, although in the years after the war this relationship was sometimes disturbed as a consequence of the growth of domestic demand and the degree of utilization of productive resources. These disturbances were up till now of a cyclical kind as there occurred a recovery of market shares after some time-lapse.

32) In the past years the main sectors reflecting these disturbances were “food” and “machinery”. Food production does not seem to have a high supply elasticity in the short run, whereas both domestic and foreign demand showed sizeable fluctuations. For machinery the rapid expansion of investment caused the relative deterioration of Dutch shares in foreign markets. In a geographical breakdown it seems to be the “rest of the world” that takes the main share of the disturbances. As this country group contains a number of difficult markets involving relatively great risks, and at the same time is located far from the country of origin, it may be supposed that exporters direct their products, originally destined for these markets, to the attractive domestic market. In periods of diminishing tensions in the home economy they again try — successfully up till now — to regain their former positions in the foreign markets.

33) The method given is a fairly good starting point for obtaining export forecasts. A difficulty is that $M_{st}$, giving the best relationship, cannot be applied in short-term analyses because statistical data become available too late. The somewhat less satisfactory equation based on $M_t$ must be used.