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**THE IMPACT OF TRADE WITH DEVELOPING COUNTRIES
ON EMPLOYMENT IN DEVELOPED COUNTRIES
Empirical Evidence from Recent Research***

Prepared by the
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INTRODUCTION

The benefits of foreign trade accruing to the developing countries can only be adequately appreciated within the framework of overall policy objectives. It is commonly agreed that the priority goals of any development policy are the creation of a large number of new jobs, thereby contributing to an increase in the level of overall production, the improvement of living standards, in particular those of the poorest members of society, and the alleviation of unemployment and underemployment. Whereas domestic policies are crucial to the achievement of these ends, the expansion of export industries has only a limited direct and indirect effect upon employment compared with the impact made by industries producing for domestic markets. However, exports are necessary since they provide the bulk of foreign exchange earnings needed to finance the importation of goods and services, which will continue to be increasingly essential inputs into the development process - despite the variance of development strategies. In view of the present scarcity of factors of production other than unskilled labour, the developing countries should expand exports of labour-intensive manufactures. In these markets, they are competitive and can count on high market shares. At the same time, they should maximise the number of unskilled workers per unit of human and physical capital engaged in production for export.^{1/}

The expansion of exports in competitive production lines is essentially a market-oriented strategy. It is thus in line with the position adopted by those industrialised countries within the North-South dialogue which favour market-oriented strategies against regulatory

^{1/} This is, by no means, an optimal long-term solution. As the level of development increases, constraints on the availability of physical capital and human skills in the developing countries will become less severe. This in turn will influence the pattern of trade between developing and developed countries bringing it closer to an exchange of "manufactures against manufactures", while at present the shift (as reflected in current statistics) is from an exchange of "primary commodities against manufactures" to "unskilled labour-intensive manufactures against skilled labour-intensive manufactures".

measures as a means of reducing the income gap between rich and poor countries. During recent years, the developing countries have considerably increased their market shares in developed countries in respect of several labour-intensive product groups. Faced with choosing between adjustment to these imports and protection against them, the developed countries have not only maintained their trade barriers, but have also taken steps to increase them; for example, the European Economic Community very recently introduced additional restrictions on steel, textiles and clothing imports from third countries. Given the inconsistency between these trade impediments and the assistance provided to developing countries in order to build up production capacities in these very industries, a consultation system is being discussed at the EEC level providing for the linkage of decisions on industrial investment in developing countries to the production capacities in EEC member countries and likely market conditions. The protectionist measures adopted result from the developed countries' concern about the relative and absolute decline of employment in the industries adversely affected by imports from developing countries at a time when overall growth-rates are slow and unemployment is increasing. The measures are conceived as a means of maintaining the structural status quo and avoiding a further increase in unemployment.

In this context, it is relevant to assess the effects of imports from developing countries on employment in developed countries since this will indicate to what extent liberal foreign trade attitudes might conflict with internal employment objectives. The aim of this paper is to provide empirical data on this subject based on studies available. As certain primary commodities must of necessity be imported to maintain production, the discussion is restricted to manufactured goods, it being assumed that all manufactures imported from developing countries compete with domestic production in developed countries. A brief theoretical overview is given of the possible economic impact of substituting imports for domestic production, followed by a presentation of the scope, methodology and results of quantitative studies undertaken by international organizations and national institutes. The most important results are appended in tables. In the final chapter, an attempt is made to draw conclusions on the basis of the various studies, despite different approaches adopted, and to indicate further research requirements.

I THEORETICAL CONSIDERATIONS

Changes in employment arise from a complex set of factors. As the effects due to the various determinants cannot be observed individually, they must be attributed by model calculations based upon more or less simplifying assumptions. A detailed discussion of the methodological problems involved lies beyond the scope of this paper.^{2/} In the following chapter, the most important relationships are briefly stated to provide a background against which the approaches used in the various empirical studies on the employment impact of trade with developing countries can be seen.

Substituting imports for domestic production has an immediate effect on a number of economic variables and it induces further repercussions. The most important changes and their linkages are shown in the figure on page 5, it being assumed for demonstration purposes that the world as a whole is subdivided into two entities: A (developed countries) and B (developing countries):

(i) If A replaces domestic output of a product by import of the same product from B, the output of that product as well as employment and the value added in the industry concerned decrease in A while production, employment and value added in the same industry increase in B (direct or initial effects).

(ii) Moreover, by virtue of inter-industrial linkages, production, employment and value added in the other industries are effected negatively in A and positively in B (indirect or linkage effects). Here, an induced decrease in A's imports of intermediate goods from B and increased imports by B of intermediate goods from A must be taken into account as well.

(iii) The net foreign exchange earnings accruing to B through the initial increase in exports after deduction of imports induced and exports forgone permit an increase in aggregate final demand according to the marginal

^{2/} A very detailed treatment of the methodological questions is given by W.S. Salant and B.N. Vacoara, *Import Liberalization and Employment. The Effects of Unilateral Reduction in United States Import Barriers*, Washington D.C., (The Brookings Institution), 1961. See also H.F. Lydall, *Trade and Employment. A Study of the Effects of Trade Expansion on Employment in Developing and Developed Countries*, International Labour Office, Geneva, 1975, pp. 17-35. Some notions are taken from the latter and have been used in the representation of the effects below.

propensity to import. Thus, further increases in employment in B can materialize (foreign-exchange multiplier effects).

(iv) Spending B's foreign exchange on imports increases A's production in export industries as well as in those industries providing intermediate goods; it, thus, directly and indirectly exerts positive employment and value-added effects (expenditure effects).

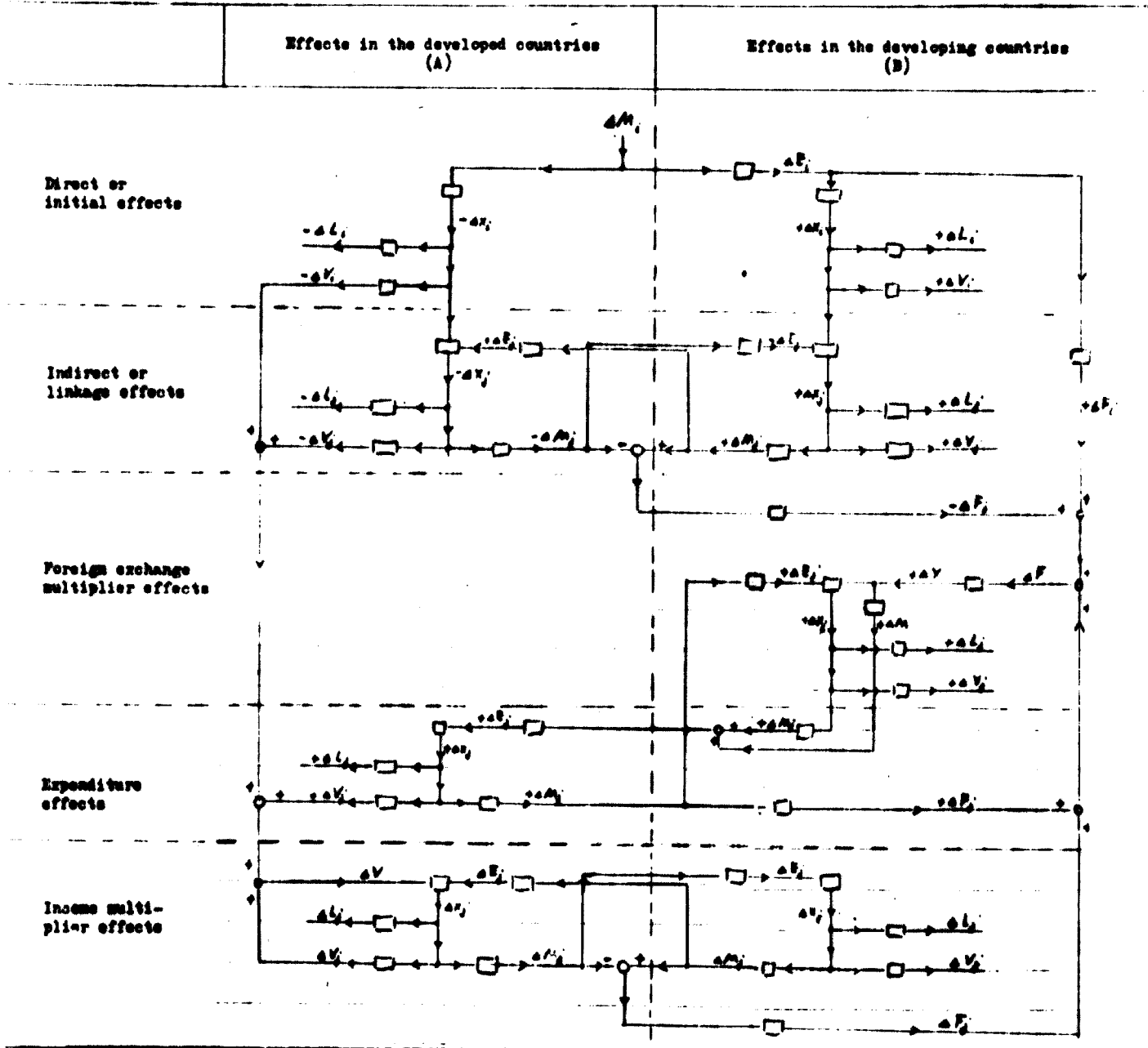
(v) The net changes in value added in A - which can be assumed to be positive^{3/} - induce multiplier effects by changes in consumption which in turn affect production, employment and trade flows (income multiplier effects).

Further effects, though not considered here, arise from changes in prices, investment and growth in both developed and developing countries. Moreover, it must be considered that A and B comprise a number of individual countries, the competitive position of which differs and influences the distribution among the individual countries of the effects described above. Ideally, all effects and repercussions due to internal and external linkages have to be taken into account simultaneously when the level and sectoral patterns of the employment impact in developed countries arising from increased imports from developing countries are calculated. Information must be available on the functional relationships between the variables; if the calculations are carried out for future trade flows, projections of these relationships are necessary.

For reasons of data availability and data processing time, the empirical studies available provide only partial analyses concentrating on a few relationships between the variables mentioned above. Moreover, simplifying assumptions as to functional relationships are made, assuming in general that one value unit of imports replaces one value unit of domestic production, and that labour displacement and job creation follow the average sectoral labour-output ratios. Projections of the employment impact are based on trend extrapolations.

^{3/} Results of empirical studies support this view.

Diagram of employment effects arising from replacement of production in developed countries by imports from developing countries



Meaning of symbols: ΔM , ΔE , ΔX , ΔL , ΔV , ΔF and ΔY represent changes in imports, exports, gross value of production, employment, value added, foreign exchange and aggregate final demand, respectively. i is the industry the products of which are additionally imported, j represents all industries $j = 1, \dots, n$. The symbol \square represents a functional relationship between the variables the form of which is left open.

II EMPIRICAL STUDIES

General overview on the studies available

The analysis of adjustment to trade in general and in relation to developing countries is not new. However, only recently has broader research been carried out in this field. Several empirical studies are available in which an attempt is made to quantify the effects on employment in developed countries of trade with developing countries (See the synopsis on pages 7 - 8 for summary).

The first, mostly very rough, calculations were prepared by UNCTAD, ILO and OECD. These computations only took into account the labour displacement effects due to imports without consideration being given to the employment created by increased demand in the developing countries arising from their foreign exchange earnings. The most comprehensive approach covering the latter aspect is to be found in Lydall's analysis (1975) which attempts to cite figures for a broader assessment of the employment implications of trade for both groups, developing and developed countries. Some very recent studies (1976 to 1978) relating to individual countries are available in respect of France, Federal Republic of Germany, the Netherlands, and the United Kingdom. Whereas the study of the United Kingdom covers the employment effects of trade in only four groups of products, the other studies attempt to assess the employment implications of total trade in manufactures with developing countries for both imports and exports. This has been done at different levels, ranging from 13 commodity groups (France), through 17 sectors (the Netherlands) to some 30 groups (Federal Republic of Germany). Some of the studies also include other structural aspects such as the impact on regions and different groups of labour. In addition to these studies on West European countries, numerous analyses have been conducted on the employment effects of trade in the United States. These are very detailed, but in general only cover total foreign trade without isolating those effects arising from trade with developing countries. For reasons of completeness, such studies are included among the references attached to this paper, but they are not dealt with in detail, since information on

Studies on the employment effects in developed countries resulting from trade in manufactures with developing countries

Study	Developing countries covered	Consideration of trade in manufactures		Breakdown of the employment effects		Methodological features		Preparation of this study
		Trade flows covered	Sectoral breakdown	Sectoral	Other	Price basis	Productivity of persons affected	
1972-3 (1974)	Canada, USA, Belgium, France, FRG, Italy, Netherlands, UK	Increases in imports, 1953-61	-	-	-	1958 prices	output-labour ratio 1958 estimated to be twice the value-added per person employed in manufacturing	pp. 9-10 table 1
1975	North America, EC (Belgium, France, FRG, Italy, Netherlands, UK, Austria, Denmark, Finland, Norway, Portugal, Sweden, UK)	Increases in imports of selected product groups, 1961-65	8 product groups (SITC)	8 industries (SITC)	-	import values at current prices, output values at 1965 prices	average output-labour ratio 1961	pp. 10-11 table 2
Little, Robinson, Scott (1976)	USA, UK (excl. EC)	\$1 billion increase in exports of UK's attributed to G.D.P. of countries proportionate to their 1965 imports from UK's comparable countries	7 product groups (SITC), estimated according to 1965 proportions of UK imports from comparable countries	6 industries (SITC)	-	1965 prices	average output-labour ratio as in Little (1968)	pp. 11-12 table 3
1977	USA, EC (excl. UK, FRG (continental))	1964 increase in imports estimated to arise from an elimination of tariffs and from the Kennedy Round	n.a.	-	-	1964 prices	unweighted and weighted average output-labour ratio in manufacturing 1964	pp. 12-13 tables 4 and 5
1978	USA, UK, FRG	estimated increase in imports 1969-73 assuming growth rates twice as high as 1965-69	20 product groups (SITC)	20 industries (SITC)	-	current prices	average output-labour ratio 1969 (USA:1967)	pp. 13-15 table 6
1979	USA, UK, France, FRG	imports of selected product groups leaving EC's with \$1 million net foreign exchange; \$1 million net exports in 1970 commodity structure	Imports: 6 product groups; exports: 20 product groups	20 industries	-	UK, 1974, UK 1963, France and FRG 1959 prices	average output-labour ratio 1958 for USA, 1963 for UK, 1959 for France and FRG	pp. 16-21 tables 7-11
1977	UK	increase in imports 1964-71	207 "import-competing" commodity groups	207 "import-competing" industries, results aggregated to 19 industry classes	-	current prices	average output-labour ratio 1963	pp. 24-26 tables 10 and 11
1977	UK	increase in imports less exports of selected product groups, 1970-75	4 product groups	4 industries	-	physical units	average output-labour ratio 1970	pp. 27-29 table 12
1978	France	Imports and exports, 1970 and 1976; increases in imports and exports 1976-85 estimated on alternative assumptions incl. trend extrapolations	13 product groups	13 industries	-	1976 prices	average output-labour ratios in the respective year, future ratios estimated by extrapolating the 1970-76 trends	pp. 30-34 tables 13-15
1978, 1980 (1982)	FRG	increase in imports of selected product groups 1970-80 estimated by extrapolating the 1969-76 trends	15 product groups	15 industries	-	current prices	average output-labour ratio 1980 estimated by extrapolating the 1962-70 trends and alternatively 1/3 lower than average	pp. 35-36 table 16

Studies on the employment effects in developed countries resulting from trade in manufactures with developing countries (continued)

Study	Developed countries covered	Consideration of trade in manufactures		Broadness of the employment effects			Methodological features		Presentation in this paper
		Trade flows covered	Sectoral breakdown	Sectoral	Other	Price base	Productivity of persons affected	Direct versus indirect effects	
Doko, Glamma, Bam, Bm (1976)	FED	Increase in imports and exports 1973-75 estimated according to various hypotheses on the basis of 1962-73 and 1969-73 trends	31 product groups 3 groups broken down by subgroups according to SITC	31 industries; 5 industries studied in more detail 3 of which are broken down into sub-industries	regional breakdown ("Kreise", "Städte") of displacement by imports in 5 selected industries - German versus foreign workers	current prices	average output-labour ratios 1985 estimated by extrapolating 1962-73 trends	direct	pp. 36-40 table 1-1
Giannini, Sebata (1976)	FED	Increase in imports and exports 1973-75 estimated by extrapolating the 1969-74 trends and, alternatively, assuming a 20 per cent higher growth rate	29 product groups	29 industries	regional breakdown ("Bundesländer") of net employment effects due to trade with LDC's plus 20% - German versus foreign workers	current prices	average output-labour ratios 1985 estimated by extrapolating the 1962-74 trends, productivity of persons displaced 1/3 lower than average	direct	pp. 40-42 table 2
Holter (1976)	FED	Increase in imports, 1962-75	24 product groups	24 industries	-	current prices	average output-labour ratios 1975	direct	pp. 42-43 table 2
Schmieder (1977)	FED	200 million of imports and exports in the 1972 commodity structure; increase in imports of 4 selected product groups 1975-80 estimated by extrapolating the 1972-75 trends	30 product groups	45 industries (30 manufacturing industries)	-	1972 prices	average output-labour ratios 1976	direct and indirect	pp. 44-45 tables 22 and 23
Schmieder (1978a)	FED	20 billion of imports and exports in the commodity structure of trade increase 1972-76	30 product groups	64 industries (30 manufacturing industries)	34 occupational groups, 4 skill-subcategories	1972 prices	average output-labour ratios 1976	direct and indirect	pp. 45-47 tables 24-26
Schmieder (1978b)	FED	Exports 1976	32 product groups (30 manufacturing groups)	44 industries (30 manufacturing industries)	selected occupational groups	1972 prices	average output-labour ratios 1976	direct and indirect	pp. 47-49 table 27
Kol, Hansen (1978)	The Netherlands	B.F. 10 billion of imports and exports in the 1973 commodity structure	17 product groups	35 industries (17 manufacturing industries)	4 skill-subcategories	1973 prices	average output-labour ratios 1973	direct and indirect	pp. 50-52 tables 28 and 29

employment implications in the United States of trade with developing countries is meagre. In this paper, only one study is reviewed in greater detail as it provides estimates of the labour displacement due to imports from developing countries in the sixties.

The most important results of the various studies are presented in the tables, which should be read in conjunction with the synopsis on pages 7 - 8, and the description given below.

Earlier studies by UNCTAD, ILO and OECD^{4/}

The first attempt to estimate labour displacement^{5/} in developed countries due to increased imports from developing countries was described in the Report of the Secretary-General to the First Session of UNCTAD in 1964^{6/} (Table 1). By dividing the increase in imports of manufactures from developing countries between 1953 and 1961 by twice the value-added per person employed in manufacturing in 1958, rough estimates were derived of the number of people not employed in eight developed countries due to the additional imports. Thus, it was assumed that one unit of imports displaces one unit of gross value of production, the latter being twice the value added. The figures for the displacement of labour thus arrived at are relatively small viewed against the manpower displaced in agriculture or the increment in the active labour force over the same period of time. The numbers displaced

^{4/}The description of these studies is based in part on the survey given by C. Hsieh, *Measuring the Effects of Trade Expansion on Employment: a Review of Some Research*, in: *International Labour Review*, Vol. 107, No. 1, January 1973.

^{5/}It should be kept in mind that the employment equivalents thus estimated do not mean the actual number of jobs or workers displaced. The latter might very well be nil, or the actual employment in the industry affected might have, in fact, increased where the total demand for the products of the industry was expanding. These estimates (and those in the other studies) only aim to show the "pure effects" of import (or export) increases on the simplifying assumption that everything else during the period remained unchanged. The "labour displacement" figure can be interpreted only as indicating the extent to which actual employment might have been below the level which would have been recorded if imports from developing countries had remained constant throughout the period.

^{6/}United Nations, *Towards a New Trade Policy for Development*, Report by the Secretary-General of the United Nations Conference on Trade and Development, New York 1964, pp. 62-63.

by import growth as a proportion of the net increase in the active labour force ranged from 0.2 per cent in Italy and Canada to a maximum of 2.4 per cent in the United Kingdom.

The aim of the first ILO study^V was to assess the loss of employment owing to increased imports from developing countries in eight selected branches of manufacturing between 1961 and 1965 in the three main industrial areas of the world which import the largest amounts of manufactures from developing countries: North America, the European Economic Community (EEC, six member states) and the European Free Trade Association (EFTA). The eight groups of products were selected on account of their quantitative importance and/or the high growth-rates in imports. In each of the developed countries covered, the number of employment opportunities lost during 1961-1965 were obtained by multiplying the labour force employed in each selected industry in 1961 by the ratio of the increase in the value of imports in the corresponding categories from developing countries between 1961 and 1965 to the gross value of production of the industry in 1961 (valued at 1965 prices). A summary table of results is given in Annex Table 2, while the original study also showed the results for the individual countries.

The main finding was that in the eight industries combined the total number of workers who would have lost their jobs, or been obliged to change their jobs, as a result of increased imports from developing countries in the period 1961 - 1965, amounted to about 27,000 in North America, 35,000 in the (old) EEC area and 20,000 in the EFTA area. These numbers represent less than 0.2 per cent of the total labour force in manufacturing in 1965 in each industrial area. Compared with the volume of the individual sectors, the magnitudes involved were very small. The highest losses occurred in the clothing industry, on an average, some 0.8 to 1.9 per cent of the labour force in this industry in 1965. The study also revealed that displacement caused by higher imports from developing countries was in most cases only a small fraction of

^V ILO, Some Labour Implications of Increased Participation of Developing Countries in Trade in Manufactures and Semi-Manufactures, in: United Nations, Proceedings of the United Nations Conference on Trade and Development, Second Session, Vol. III: Problems and Policies of Trade in Manufactures and Semi-Manufactures, New York, 1968, pp. 149-167.

the employment losses attributable to increases in labour productivity during the same period. Once again these ratios were highest in the clothing sector ranging for the three industrial areas between 12 and 32 per cent.

A study by Little, Scitovsky and Scott^{8/} prepared for the OECD Development Centre attempts to estimate the employment effects on particular industries which would probably be the most severely affected (i.e. textiles, clothing, leather, footwear, chemicals, metal products) in the United States, the six (old) EEC countries and the United Kingdom, were the total developing country exports of manufactures to be increased by \$1 billion per year, i.e. 20 to 25 per cent per year as compared with an annual increase of about 9 per cent per annum in developing countries' total exports of manufactures in the period 1953 to 1965. It is assumed that \$0.9 billion of this increase would go to OECD countries, this amount being divided among them in proportion to their total imports from developing countries in 1965; thus, \$744 million would go to the industrialized countries covered in this study. The increases in the various commodities are distributed in accordance with the 1965 proportions of United Kingdom imports from the Commonwealth countries. As to the number of persons displaced per unit of additional imports, the same assumptions and data are used as in the ILO study described above.

The main findings were that the number of workers directly affected, as a proportion of the labour force in the industry concerned in 1965, both in the United States and in the EEC area plus the United Kingdom, was greatest in the leather industry, amounting to some 2 per cent per annum, followed by the textiles and clothing industries (around 1 per cent) and the footwear industry (some 0.7 per cent). These figures increased slightly when rough estimates were added for the adverse indirect employment effects arising in the textiles and leather industries from additional imports of clothing and footwear, respectively.

^{8/} I. Little, T. Scitovsky and M. Scott, *Industry and Trade in Some Developing Countries: A Comparative Study*, London (Oxford University Press), 1970, pp. 285-289 and appendix to Chapter 8, pp. 459-466.

Compared with the percentages of employees leaving in a year for "normal reasons" (excluding discharges and lay-offs) which are estimated to range from 8 to 24 per cent per year in sixty-six different manufacturing industries in the United States, the study states that even the worst case (of job losses in the leather industry) was well below the rates of labour turnover commonly found.

A second ILO study^{9/} gives some crude estimates of the overall displacement of jobs in the United States, the (old) EEC, the UK and the continental member states of EFTA arising as a result of additional imports from developing countries which would be induced by: (a) the elimination of tariffs by these industrial areas on imports of manufactures from all countries; and (b) the Kennedy Round. These import increases as estimated by B. Balassa (see Table 4) refer to the year 1964; they exclude processed agricultural products and comprise additional imports due to increases in domestic consumption as well as decreases in domestic production as a result of removal or reduction of tariffs. The direct employment effect is estimated by means of data on the average number of persons employed in manufacturing per unit of gross value of manufacturing production in 1963, expressed in 1964 prices, in the individual areas. This ratio is also calculated as an unweighted average of ratios in a number of manufacturing sectors and as a weighted average, the weights being the percentage contribution of imports in 1964 from developing countries in each commodity group to the total imports from developing countries of the eight selected groups (textiles, clothing, leather products and footwear, wood products and furniture, chemicals, iron and steel, engineering products, and other products) into the industrial area concerned. The indirect employment

^{9/} ILO, Quantitative Effects of Removal or Reduction of Trade Barriers against Imports of Manufactures from Developing Countries on Labour Displacement in European and North American Industrialized Countries, in: UN, Investment in Human Resources and Manpower Planning. Papers presented to the Eighth Session of Senior Economic Advisers to ECE Governments, New York, 1971, pp. 66-74.

effects are calculated using ratios of indirect to direct effects as provided by a study for a number of manufacturing sectors.^{10/} As the results based on weighted and unweighted averages of the employment coefficients differ but slightly, only the latter are reproduced in the Table 5. They show that the overall magnitude of labour displacement is strikingly small, in both absolute and relative terms. The Kennedy Round has been found to have almost negligible effects on employment. Of greater interest are the hypothetical results ensuing from the elimination of tariffs. They show that in the United States, although the estimated consequential increase in imports of manufactures from developing countries amounts to 74 per cent of the 1964 level, the estimated number of workers directly displaced in the manufacturing sector as a whole is no more than some 27,000 or 0.16 per cent of total labour force in manufacturing. The total number of workers displaced in the whole economy (including the indirect effect) is estimated to be about 43,000 or some 0.06 per cent of total civilian employment. In the other three industrial areas, the displacement effect is even smaller according to these estimates.

The second study prepared by UNCTAD for its Third Session in 1972^{11/} attempts to illustrate the employment impact of increased imports of all manufactures from developing countries (broken down by 20 commodity groups) in the United States, the United Kingdom and the Federal Republic of Germany. It is assumed that for each commodity group, the percentage increase in imports by these countries during 1965-1969 will double during 1969-1973. For the latter period, this implies an average yearly increase of \$3,000 million in imports of manufactures

^{10/} W. S. Salant and B. Vaccara, op. cit., Appendix Table F.1, pp. 340-350, provide estimates of the direct and indirect employment changes per \$1 million shift in buying from domestic to imported goods in 1953 domestic prices for 72 protected industries in the United States. Using these data, the overall ratio of indirect to direct effect in the United States works out to 60.5 per cent for the unweighted average and to 58.7 per cent for the weighted average. In the light of these figures, it was assumed that the ratio of indirect to direct effect applicable to the other three industrialized areas covered by the study fell within the range of 0.55 to 0.70.

^{11/} UNCTAD, Adjustment Assistance Measures, Report by the UNCTAD Secretariat, document TD/121/Supp. 1 and Technical Annex 1, 14 January 1972.

by the three countries alone, (compared with an increase of \$744 million in the United States, the United Kingdom and all six countries of the old EEC as assumed in the OECD study described above). Concentrating again on the direct effect, the resultant number of workers displaced per year during 1969-1973 is estimated to amount to some 95,000 in the United States, 58,000 in the United Kingdom, and 47,000 in the Federal Republic of Germany (Table 6). This would represent 0.5, 0.7 and 0.5 per cent, respectively, of the total labour force in manufacturing industries in those countries (1969 for the Federal Republic of Germany and the United Kingdom, and 1967 for the United States). As regards the individual industries affected, the employment effect varies considerably between industries and countries. The yearly rate of labour displacement is typically below 1 per cent. The exceptions are generally the industries producing footwear and clothing, leather and leather products, wood and cork products as well as basic metal manufactures which can be said to be the most sensitive to the assumed large increase in imports from developing countries.

In the case of the United States, it has been possible to study further the impact on some of the industries on a more disaggregated basis. The results show that within the textile industry weaving, synthetics and wool show the highest displacement effect, in both absolute and relative terms. Within the footwear and clothing sectors, the absolute effect on clothing is three times that on footwear whereas, compared to their magnitude, footwear is hit more strongly (4.2 per cent of 1967 employment). Within the electrical machinery manufacturing sector, nearly one third of the displacement effect is concentrated on radio and television equipment which represents 4.4 per cent of the 1967 employment in this sub-sector. Within the non-electrical machinery sub-sector, only office machines, outlery and handtools are affected, the displacement effect in these two sub-sectors representing 0.9 and 0.5 per cent, respectively, of their 1967 employment.

The study also estimates average yearly losses in employment which would occur due to increases in labour productivity (based on the development of employment per unit of value added in the individual

industries 1965-1969). It transpires that even in the industries showing annual job losses due to additional imports of more than one per cent of their employment, only in four cases are these losses higher than those arising from increasing productivity:^{12/} leather and leather goods industry in the Federal Republic of Germany (1.1 times); footwear and clothing industry (7.4 times), basic metal manufactures industry (2.7 times) as well as miscellaneous manufactured articles industry (1.4 times) in the United Kingdom. In the other industries identified as most sensitive, this ratio ranges from 0.3 to 0.5 in the United States, from 0.3 to 0.4 in the United Kingdom, and from 0.2 to 0.7 in the Federal Republic of Germany. In all other cases, the labour displacement arising from additional imports represents only a very small fraction of the losses due to productivity increases. (The ranking of industries according to this ratio follows by and large that according to the relation of the labour displacement by imports to employment.)

The results of the studies reviewed above demonstrate the smallness of the requisite adjustment to imports from developing countries in relation to the other problems that have to be tackled by dynamic industrial economies. A comparison of the probable magnitudes involved shows that the employment problems - both overall and at an industry level - resulting from increased competition from imports from developing countries are likely to be far more manageable than the employment problems presented by rising labour productivity.

All the studies presented so far are concerned solely with estimating the negative effects additional imports have on employment in developed countries. However, under normal circumstances, increases in imports will give rise to additional exports. The issue is, therefore, one of changes in the sectoral pattern of employment rather than mere job displacement. This fact is stated in some of the studies described above, though no attempts are made to estimate employment creation induced by exports. One study, however, attempts to tackle the question in a more balanced way taking into account international and intranational interdependences, and this is described below.

^{12/} The cases where productivity decreased are left aside. This was found in three industries in the United Kingdom during the period to which the data are related.

A comprehensive analysis

One study^{13/} which was prepared in conjunction with the ILO World Employment Programme aims at estimating the likely effects on employment in developed and developing countries, respectively, of an increase in exports of selected products from the latter to the former. 12 groups of manufactures were selected which constitute a fairly representative sample of special interest to developing countries: processed meat, textiles, knitwear, footwear, clothing, made-up textiles, wood products, oils and fats, non-ferrous metals, sundry metal products, electrical goods and precision instruments. Since these are products that developing countries can supply most competitively on the world market, and since most of these types of products at present enjoy only restricted access to developed country markets, it is reasonable to assume that were tariffs or non-tariff barriers reduced, exports of such products from the developing to the developed countries would increase substantially.

The study proceeds on the assumption that, by some method, a liberalization of trade between developed and developing countries would lead to an exact replacement of \$1 million value of output of one of the selected groups of products in a developed country by an equal value of imports of products of the same type from developing countries. As to the impact of this replacement on employment in the importing and exporting countries, four sets of effects are considered:

Initial effects. Drop in employment in the developed country's industry, the products of which are replaced by imports, and a corresponding increase in employment in the same industry of the exporting developing country.

Linkage effects. Domestic labour requirements induced by the demand of the final-processing industry for intermediate products: in developed countries they occur as a further reduction in employment, and in

^{13/} H. F. Lydall, Trade and Employment. A study of the Effects of Trade Expansion on Employment in Developing and Developed Countries, ILO, Geneva, 1975.

developing countries as a further increase in employment. Linkage effects on sectors producing primary goods are not considered, it being assumed that a shift in production of manufactures from developed to developing countries does not affect primary production in either group.^{14/}

(Foreign exchange) multiplier effect. The developing country has additional net foreign exchange earnings which are equal to the gross value of its exports of the final product considered minus the value of any imports induced, or exports forgone as a result of the export of this final product. If these earnings are available to finance general imports of goods and services, it should be possible to expand aggregate demand, and hence employment, within the developing country according to the marginal propensity to import.

Expenditure effect. Increase in employment in developed countries due to additional exports on the assumption that developing countries spend the whole of the net proceeds of their increased exports to developed countries on additional purchases from these countries.

Lydall terms the first two effects "primary effects" and the last two "secondary effects".

For the limited subject of our paper, Lydall's calculations are of relevance insofar as they relate to the (negative) initial and linkage effects of additional imports from developing countries on employment in developed countries, as well as to the (positive) expenditure effect on employment in developed countries.^{15/}

^{14/} This assumption is to consider the fact that a part of the backward linkages of actual manufacturing production in developed countries is going to developing countries anyway via imports from these countries.

^{15/} As to its broader aim, Lydall's analysis shows that for a given amount of trade increase more employment is created in developing countries than is lost in industrialized countries. The total primary effect of an expansion of exports from developing countries sufficient to lead to the displacement of one worker in the EEC in 1975 is, on the average, an increase in employment of more than two workers in countries with a per capita GDP of \$500 in 1963 prices, and more than 4.6 workers in countries with a per capita GDP of \$100 in 1963 prices. Corresponding figures for the effects when one worker is displaced in the United States in 1975 are more than 2.8 and 6.5 workers respectively. Taking the multiplier effect into account, under the most favourable circumstances, the total effects in a very poor country of an increase in its exports to Western Europe or the United States could amount to as many as 20 extra workers finding employment for every worker displaced in the developed countries. However, it should be recalled that these numbers are gross figures on the assumption that the goods, the import of which is financed by the additional foreign exchange, cannot be produced in the developing countries. If they can be produced domestically, the employment generated by this alternative production also has to be taken into account. In this case, only the net employment gain arising from the additional division of labour can be ascribed to the exports.

The calculations with respect to expenditure effects were derived from standardized input-output tables (broken down by 20 sectors) prepared by the Economic Commission for Europe. The calculations refer to France (1959), the Federal Republic of Germany (1959), the United Kingdom (1967) and the United States (1958) and show the employment in the 20 sectors in these countries directly and indirectly created by \$1 million exports to developing countries. The sectoral breakdown of these exports relates to 1970. (In the case of France and the Federal Republic of Germany the export structure used was that of the (old) EEC to developing countries, while the vectors used for the United Kingdom and the United States were based on their own exports to developing countries). The imports induced when producing the additional \$1 million exports are assumed to induce further exports, the premise being that all the proceeds earned by the suppliers of these imports would be re-spent in the same developed country. These "second-round" exports were distributed across the supplying industries according to the sectoral structure of the total exports as shown in the input-output table. The final estimates of the employment effects accruing from the expenditure of \$1 million by developing countries in the four selected countries are shown in Table 7.

In addition, estimates were prepared, relating to the same countries and the same years, of the (negative) employment effects of an increase in the imports of the products of each of the six industries in the standardized input-output table, to which the twelve product groups covered by the study belong. Theoretical calculations had to be made of the displacement effects arising from additional imports (of each group of product separately) sufficient to produce a net increase of \$1 million in the foreign exchange earnings of the developing countries. Since the imports induced and exports forgone (when developing countries increase their exports to developed countries) differ from one developing country to another, it was assumed that, on an average, the net foreign exchange earned by \$1 million of exports from developing countries to developed countries is equal to the value-added generated

in the developed countries' non-primary industries per \$1 million of final demand for the respective commodity group.^{16/} On this basis, a calculation is made of the decrease in employment arising from a decrease in final demand for the products of the industry concerned which leads to a \$1 million drop in the value added of non-primary industries. The results which comprise both the direct and indirect effects (except for those on primary product industries) are given in Table 8.

In order to show the kind of shift in the employment pattern that might be expected in the developed countries as a consequence of a balanced increase in imports and exports, the industrial breakdown of each figure in Table 8 is compared with the column of figures for the same country in Table 7. The differences between the two sets of figures are presented in Tables 9(a) - (d), each of which shows the net changes in employment in a given developed country resulting from increases in imports of one or other of the six product groups, balanced by an export outflow of corresponding total value.

The following conclusions are drawn from these results:

- (i) The column totals show that while imports of certain products (such as textiles and clothing) are likely to have a negative net effect on total employment in developed countries, imports of some other products, such as processed foods and metals, may have a positive net effect.
- (ii) From the industrial breakdown, it can be seen that an increase of imports of any one type of product from developing countries, taken separately, is likely to have quite a significant redistributive effect on the labour force in the importing developed countries. The narrower the range of imports allowed to enter from developing countries, the greater the likely disturbance to the existing pattern of employment in the developed countries. Inevitably, imports from developing countries are likely to be fairly specialized, even within the product range of a given industry. Nevertheless, the broader the scope of any import liberalization, the greater the probability that the necessary employment adjustments

^{16/} That means that the foreign exchange outlays induced and earnings forgone in the developing countries when they increase their exports to developed countries by \$1 million are assumed to be equal to the value added in the developed countries generated in primary industries per \$1 million of final demand for the products of the industry concerned.

can be made within existing industries rather than between industries.

- (iii) Expansion of trade between developing and developed countries is a two-way flow. While additional imports from developing countries may in some cases create substantial problems of adjustment for developed countries, the transaction has an important positive side. In particular, such industries as chemicals, metals, transport equipment and machinery will expand their output and employment, and even agriculture may benefit significantly in some of the developed countries.

The author concludes that the policy problem becomes one of weighing the large potential benefits to aggregate employment in developing countries to be derived from an expansion of their exports against the adjustment problems created for the developed countries through the acceptance of additional imports from developing countries. Due regard should also be paid to the alternative, that of the developing countries possibly being forced to place greater emphasis on the building of their own heavy industries or, in other words, to take on their own shoulders the costs of adjustment which the developed countries have been unwilling to accept.

Lydall's study represents the most comprehensive analysis hitherto of the employment impact of additional trade between developing and developed countries and attention is drawn to the relevant linkages and repercussions, in particular the exports of developed countries induced by the developing countries' foreign exchange earnings. By adopting a global stance, the author is able to reveal the considerable benefits in terms of employment in the developing countries which arise from additional trade, and he provides a balanced picture of the impact in developed countries. The numerical results are doubtless subject to several reservations. First, the data used are rather old, and as the author himself indicates, no great significance should be attached to the absolute numbers of persons affected in the developed countries. Owing to increases in labour productivity and rising product prices in terms of dollars, the numbers of persons affected by increased imports or exports worth \$1 million would be substantially smaller today in all four countries, especially in France and the Federal Republic of Germany. Moreover, the results for the developed countries depend to some extent on the inclusion of linkage effects on primary good industries on the export side and their exclusion on the import side. Finally, although the calculations are embodied in a comprehensive framework, the various sets of employment effects are

computed step-wise as partial analyses; consequently, not all the repercussions have been treated endogenously, some of them have been considered on the basis of their assumed magnitude. Despite these limitations, the results as a whole provide a sound basis for a discussion of the employment impact of intensified trade between developing and developed countries in its world-wide context and in a balanced way. As to the results presented for the employment impact in developed countries, the relations between various magnitudes are the important factors and in this respect the analysis reveals a fairly consistent pattern as to the net shifts in employment in developed countries resulting from a balanced increase in their trade with developing countries.

Recent country studies

The following studies for individual developed countries are based on more recent statistical material and some of them take into account other aspects of the adjustment problem which extend beyond the sectoral dimension, such as the impact on regions, occupations and levels of qualification.

United States of America

In respect of the United States, many quantitative analyses have been prepared on the relationship between trade and employment, though few specific data are available for trade with developing countries. Nevertheless, the more general studies do provide an indication of the upper limit of the possible disruptive effects of increased imports from developing countries which, in general, constitute a relatively small fraction of total imports.

C. Hsieh^{17/} has reviewed some older studies which in the main relate to the following topics:

Estimates of the number of jobs attributable to the export of merchandise and the number of domestic jobs required to produce goods that would displace competitive imports;

Estimates of employment reduction per unit increase in imports;

Analyses of the relationship between actual changes in imports and changes in employment;

Estimates of the numbers of workers who have applied or are likely to apply for adjustment assistance.

^{17/} C. Hsieh, op. cit., pp. 16-24. Hsieh draws mainly on the following sources: Bureau of Labor Statistics, Foreign Trade and Employment, in: Commission on International Trade and Investment Policy, United States International Economic Policy in an Interdependent World, Compendium of Papers, Vol. I, Washington, 1971; R. B. Schwenger, A Conceptual Framework for Measurement of the Impact of Foreign Trade on Workers, report submitted to the Manpower Administration, U.S. Department of Labor, Washington, 1971; W.S. Salant and B.N. Vaccara, op. cit.; Bureau of Labor Statistics, The Relationship between Imports and Employment: An Analysis of 27 Import-Competing Industries (1954-59) and Two Industry Case Studies, Washington, 1962; W. C. Shelton (Bureau of Labor Statistics), The Relationship between Changes in Imports and Employment in Manufacturing in the United States, 1960-65, paper presented at the annual meeting of the American Statistical Association, Detroit, 1970.- Moreover, various structural aspects of the employment impact of U.S. trade, in particular the occupational dimension, are dealt with in D.J.B. Mitchell, The Occupational Structure of U. S. Exports and Imports, in: Quarterly Review of Economics and Business, Vol. 10, 1970, pp. 17-30; idem, Recent Changes in the Labor Content of U.S. International Trade, in: Industrial and Labor Relations Review, Vol. 28, No. 3, April 1975, pp. 355-375; as well as idem, Labor Issues of American International Trade and Investment, Baltimore and London (The Johns Hopkins University Press), 1976.

In his summary of the results of these studies, Hsieh states that "the estimates tend to suggest, inter alia, the relative unimportance of import increases as a factor accounting for the total change in employment compared with the displacement effects of productivity increases and the positive effects of demand increases, although employment in some industries has been hurt by increased imports." He goes on to indicate "that labour displacement attributable to import expansion within realistic limits would in the aggregate (and also within broad industrial groups, but not necessarily within each industrial sub-group) be small in relation to the number of voluntary quits occurring in a normal year."^{18/}

More recently, R. E. Baldwin and W. E. Lewis^{19/} have analysed the consequences of a multilateral tariff reduction on both U.S. export and import-competing industries, in the course of which they estimated trade and employment effects of a 50 per cent across-the-board tariff cut in over 350 industries, in 50 states and on some 14 occupational groups. The findings are based on direct plus indirect employment effects, due account being taken of input-output relationships. Excluding the industries most affected by quantitative restrictions (agricultural products, textiles and clothing), total labour displacement is found to be 151,200 jobs (148,200 in manufacturing). These losses are for the most part offset by induced exports, leaving the US economy a net loss of 15,200 jobs (31,700 in manufacturing). Moreover, the net employment changes in both agriculture and the textile industry (including clothing) are estimated to amount to +1,135 and -88,000 jobs, respectively, whereby the non-tariff trade restrictions have been converted into their ad valorem equivalents and a 50 per cent reduction of these protective levels assumed. In the conclusions of the study it is stated: "Not only are aggregate economic effects of a significant tariff-cutting exercise small, but the effects on individual industries, on various

^{18/} C. Hsieh, op. cit., p. 28.

^{19/} R. E. Baldwin and W. E. Lewis, U. S. Tariff Effects on Trade and Employment in Detailed SIC Industries, paper prepared for the U.S. Department of Labor Conference on the Impact of International Trade and Investment on Employment, Washington D. C., 2-3 December 1976. A summary of results is to be found in R.E. Baldwin, Trade and Employment Effects in the United States of Multilateral Tariff Reductions, in: American Economic Review, Vol. 66, No. 2, May 1976, pp. 142-148.

occupational groups, and on employment in different states are minimal in most cases. For example, . . . normal industry growth can handle any adverse employment impact, in all but 20 industries, if the reductions are staged over a ten-year period. Employment changes both by skill group and by state are insignificant, especially if the cuts are staged over a ten-year period."^{20/}

In a study on structural adjustment measures, Ch. R. Frank Jr.^{21/} provides figures on the effects of foreign trade on employment in the United States between 1963 and 1971, in which he cites separate figures for effects due to imports from developing countries. The analysis is concentrated on 207 "import-competing" industries^{22/} which account for about 46 per cent of total manufacturing output in the United States and 40 per cent of total manufacturing employment in 1971: the results are aggregated for 19 industry classes. In order to analyse the impact of trade on employment, change in employment is broken down by increases in employment potential due to expansion of domestic demand and exports, and declines due to increased imports and labour productivity.^{23/} As can be seen from Table 10, the most important factors affecting employment growth are changes in labour productivity and domestic demand. The loss of job potential due to increased labour productivity was about six to nine times as great as the loss due to net foreign trade (imports less exports) between 1963 and 1971. Growth of domestic demand had a favourable impact which was more than eight times as large as the unfavourable trade effect. In absolute terms, the import-competing industries lost a job potential of some 600,000 jobs due to increased

^{20/}R. E. Baldwin, op. cit., p. 148.

^{21/}Ch. R. Frank, Jr., Foreign Trade and Domestic Aid, Washington D. C. (The Brookings Institution), 1977.

^{22/}In these 207 industries out of approximately 1,000 in the five-digit SIC category, for at least one year between 1963 and 1969, imports were a significant fraction of output and/or very large in absolute terms (greater than 3 per cent of domestic output and greater than \$10 million, or greater than 5 per cent of output and greater than \$5 million, or greater than 10 per cent of output regardless of absolute value, or greater than \$25 million regardless of the ratio of imports to output).

^{23/}The growth of employment r_e in each of the five-digit, import-competing industries is decomposed into these four components by using the following formula:

$$r_e = r_d(D/Q) + r_x(X/Q) - r_m(M/Q) - r_p$$

where r_d , r_x , r_m , and r_p are the percentage rates of growth of domestic demand, exports, imports, and productivity, respectively. The ratios of domestic demand, exports, and imports, respectively, to output Q are the quotients D/Q , X/Q , and M/Q . The terms $r_d(D/Q)$ and $r_x(X/Q)$ can be interpreted as the contributions of the growth in domestic demand and exports, respectively, to the growth of employment, and $r_m(M/Q)$ and r_p as the (negative) contributions of the growth of imports and productivity, respectively.

imports in the period 1963-1971. The net effect after making provisions for increased exports amounts to some 350,000, i.e. 44,000 jobs per year representing about 0.2 per cent of total manufacturing employment in the United States. Assuming about one job lost indirectly for each lost directly, some 88,000 jobs can be estimated to have been lost per year due to trade in import-competing industries. Considering job gains in industries which are principally engaged in export, the figures on job changes due to total net foreign trade would be substantially more optimistic than those cited for the import-competing industries covered in the analysis.

The study then proceeds to attribute job losses to imports from developing countries separately (which in 1971 achieved a market share of 3.8 per cent of total output of the import-competing industries as compared to 1.2 per cent in 1964). The changes in total imports from 1964 to 1971 from Africa, Asia, and Latin America are used to prorate the three regions' contributions to changes in job potential. The results of these computations are given in Table 11. The total loss of job potential due to increased imports from developing countries was thus estimated to be nearly 300,000 jobs: about one-half of the loss in job potential due to imports from all sources between 1963 and 1971. Asia is largely responsible for this loss of job potential, whereas Latin American imports had no effect on jobs in the United States. The most striking losses occurred in the apparel, and electrical equipment and supplies industries. Other sectors feeling a significant impact were primary metal products, transportation equipment, and miscellaneous manufactures. The total loss of job potential due to imports from developing countries during the period under consideration amounts to about 42,000 jobs per year or approximately 0.2 per cent of the labour force in manufacturing, without taking account of job expansion brought about by increased exports. This figure can be compared with nearly 11 million job changes and hirings that occurred in the United States in one year.^{24/}

^{24/} IERD, Prospects for Developing Countries 1978-85, November 1977, p. 134, as taken from I. Mintz, U.S. Import Quotas: Costs and Consequences, Washington D. C., American Enterprise Institute for Public Policy Research, 1973, p. 5, citing Council of Economic Advisers, Annual Report, 1970, p. 151.

Based on alternative projections until 1980, an estimate is given of the number of workers eligible for adjustment assistance due to increasing net import competition from all sources. For the second half of the seventies, this number is computed to be 70,000 to 90,000 persons per year at most. The resultant costs are estimated to amount to no more than \$350 million a year, \$285 million a year being the more likely average. In the study it is stated that this would be a small price to pay compared with the billions of dollars lost to consumers through restrictive trade policies.^{25/}

In order to give an approximate idea of the magnitude of possible labour displacement resulting from developing country imports, more recent data presented by IERD in respect of the textile and clothing industry in the United States might be quoted.^{26/} In 1973, domestic production of this industry amounted to \$60 billion, which represents some \$50 billion if revalued at world-market prices. Employment in the industry stood at about 2.3 million persons, while imports from developing countries were \$2 billion or 4 per cent of domestic output. Taking the average sectoral labour-output ratio, these figures indicate that a 25 per cent increase in imports would reduce employment in the textile and clothing industry in the United States by one per cent or 23,000 jobs.

^{25/} Ch. R. Frank, Jr., op. cit., p. 169.

^{26/} IERD, op. cit., p. 133.

United Kingdom

In respect of the United Kingdom, a recent study^{27/} quantifies the relevance to employment of increased imports from developing countries during the period 1970-1975. The focus is on four main product groups in which import competition has been widely considered to be the prime cause of domestic unemployment: footwear, clothing, cotton textile fabrics and textile yarns. All four industries saw a decline in employment over the five-year period ranging from 12.0 per cent in the clothing industry (which accounts for nearly two-thirds of the total employment in the four industries under consideration), 22.5 per cent in both the footwear and cotton textile industries, to 30.7 per cent in the textile yarn industry. The study attempts to identify the various influences acting upon the development of sectoral employment. Similar to the study on the United States^{28/} employment changes in each of the four sectors are identified as being due to: changes in productivity (measured by output per man in real terms), and changes in total domestic consumption (measured by output plus imports less exports, again in real terms), as well as changes in net import penetration (i.e. imports less exports) isolating those arising from increases in trade with developing countries.

As can be seen from the results of the model calculations^{29/} reproduced in Table 12, the significance of the individual sources of change in employment varies considerably between the sectors. Domestic demand was never the most important cause of a decline in employment; in clothing a substantial increase in demand even helped to offset about half of the job losses. Taking all four industries together, increased productivity emerges as the most important job displacement factor, almost twice as important as increasing (net) import penetration. Whereas

^{27/} V. Cable, British Protectionism and LDC Imports, in: ODI Review, 2/1977, pp. 29-48.

^{28/} See Frank (1977), presented above on pp. 24-26.

^{29/} The model calculations compared with the actual employment changes leave a substantial unexplained residual factor, notably in clothing where there were 12,000 to 15,000 extra workers in the industry than might have been expected. This is supposed to be due to retention of redundant workers through the Temporary Employment Subsidy.

for footwear and cotton textile fabrics, imports have been as important as productivity growth, or even the predominant factor, in giving rise to job losses, the major thrust of imports into Britain has not been from the developing countries - the principal exporters have been other developed countries or industrialized centrally planned countries. In each case, increased trade with developing countries emerges as the least important cause of employment losses. Its relative influence is highest in clothing and cotton textile fabrics where it accounts for some 17 per cent of all identified job losses; in footwear about 8 per cent of the jobs lost can be ascribed to increased (net) import penetration from developing countries, and in textile yarns the loss factor is less than 1 per cent. In relation to sectoral employment, the annual loss of jobs as a result of competitive imports from the developing countries (less exports to them) is little more than 1 per cent in clothing (the worst case), 0.8 per cent for cotton textile fabrics, 0.4 per cent for footwear, and negligible for textile yarn.

The figures presented above are direct employment effects in the respective industry based on average labour-output ratios. As to the indirect effects on other manufacturing industries, the study estimates that these would amount to some 20 per cent (clothing), 25 per cent (shoes) and 15 per cent (textiles) of the respective direct effect.

In the study an analysis is made of data on the regional distribution and the share of female workers in the labour force of the import-competing industries. The conclusion drawn from a cursory examination of the figures is that the regional dimension of trade adjustment to imports from developing countries is relatively unimportant because the relevant industries are not particularly concentrated in high unemployment regions. The general effect on female manual labour, however, is considered to be important.

Most recently, the calculations presented above have been extended to cover the British three digit SIC industries in the range 211-499. First preliminary results^{30/} tend to support the general

^{30/} V. Cable, Source of Employment Displacement in UK Industries Competing with LDC Imports, preliminary draft, 4 April 1978.

conclusion that (net) import penetration by developing countries was the least important source of labour displacement in the United Kingdom industries during the 1970-75 period, the most important factor being productivity growth which was not met by sufficiently rising domestic demand.

France

A French study^{31/} was issued most recently presenting the results of research at SETEF (Société d'Etudes Economiques et Financières) undertaken on behalf of the Ministry of Co-operation and the Commissariat Général du Plan as a contribution to the working group on "L'appareil productif français face aux changements des économies du Tiers-Monde" headed by Yves Berthelot. It updates SETEF studies carried out in 1974 and 1975 on the consequences on the French industries of the industrialization in developing countries, supplementing them by attempts to estimate possible future developments and the resultant impact on manufacturing employment in France. Thus, the study analyses, inter alia, the employment impact of trade in manufactures with developing countries^{32/} in 1970 and 1976, and provides estimates of future employment effects based on alternative hypotheses as to the development of imports and exports in trade with developing countries until 1985. For purposes of the analysis, manufacturing is subdivided into thirteen sectors.

Employment in 1970 and 1976, which is related to exports on one side and to labour saved because of imports on the other, is estimated in proportion to total production of the individual industries, i.e. using average labour-output ratios in the respective years and concentrating on the direct effect in the corresponding industries. The results are shown in Table 13. Since the export of manufactures to developing countries grew faster than the import of manufactures from developing countries during the period 1970 - 1976 (by 12.5 per cent per year in volume compared to 5.5 per cent annual increase of imports), employment creation due to additional exports was much higher than employment displacement due to additional imports, yielding a net employment increase of 100,000 persons. In 1976, about 360,000 persons (representing 6.6 per cent of total employment in manufacturing) were directly engaged in work for exports, whereas some 90,000 persons were not required due to imports, i.e. 1.7 per cent of the labour force

^{31/} J. Haas, L'industrialisation des PVD: caractéristiques, -évolution des échanges, hypothèses sur les conséquences en France, SETEF, Paris, 1978.

^{32/} Including French overseas départements and territories.

engaged in manufacturing. As to the individual sectors, the net employment relevance was positive except for three sectors; the highest negative balance in absolute terms was observed in textiles and clothing as well as in wood, furniture and miscellaneous (some 7,000 persons in each sector) with the highest negative balance in relative terms being in leather and shoes (3.0 per cent of sectoral employment). The most positive balance in both absolute and relative terms was found in mechanical and electrical engineering (amounting to some 135,000 persons or 12.2 per cent of sectoral employment).

In order to assess future changes in employment due to changes in trade with developing countries, import and export figures were projected for 1980 and 1985 based on three different hypotheses.^{33/} In respect of exports, these hypotheses were that:

- a) the sectoral growth rates observed during 1970-1976 would continue until 1985;
- b) as a), except that the maximum annual growth rate would not exceed 10 per cent;
- c) in contrast to past trends, a pattern of development would be derived from pessimistic expectations as to the future international competitiveness of the individual sectors.

The import projections were based on the hypotheses that:

- d) the sectoral growth rates observed during 1970-1976 would continue until 1985;
- e) as d) but assuming a minimum annual growth rate of 5 per cent;
- f) the imports of sensitive sectors (textile and clothing; leather and shoes; wood, furniture and miscellaneous articles; printing and publishing) were assumed to grow at only 6 per cent per year, with the imports of the other sectors as observed during 1970-1976 with a minimum growth of 5 per cent per year.

^{33/} The sector "shipbuilding, aircraft, weapons" has been omitted as the figures are uncertain and do not permit valid comparisons.

The direct employment implications of the projected trade figures are derived from average labour-output ratios estimated for 1985 by taking into account increases in sectoral productivity on the basis of growth rates for 1970-1976. The resultant changes in employment until 1985 as compared with 1976 are shown in Table 14 in respect of all hypotheses as to future trade. Table 15 shows both a very unfavourable and a very favourable pattern of employment development which have been drawn from Table 14 by matching the smallest gains and highest losses on the one hand and the highest gains and smallest losses on the other. It shows that, compared with 1976 employment, 1977-1985 trade with the developing countries could on balance affect total manufacturing employment to a degree of +5 per cent in the very favourable alternative or to -5 per cent in the very unfavourable alternative.

In summary, the study states that from 1977-1985 some 0.3 to 0.8 per cent of the jobs in manufacturing are threatened each year by additional trade with developing countries. If one deducts from this figure those persons who could theoretically find new jobs in their original sector as a result of increased exports, this would leave some 0.04 to 0.6 per cent of the persons working in manufacturing being forced to seek new jobs outside their original sector each year; in total, the (gross) annual job creation effect of additional trade amounts to 0.3 to 0.9 per cent of manufacturing employment. Thus, the projected pressure on employment arising from additional trade with developing countries in total is considerably lower than that arising from increases in productivity which, depending on the sector, were found to range from 1.0 to 5.8 per cent per year during 1970-1976.

The global figures disguise the very different impacts on the individual industries. In a very unfavourable case, textiles and clothing could experience a net displacement effect until 1985 of nearly 31 per cent of its 1976 employment, i.e. 4 per cent per year which is exactly equal to the annual increase in productivity observed in this sector 1970-1976. All other sectors would be less affected. However, the adverse effect is not negligible in the four sectors (land) transport equipment, leather and shoes, wood, furniture and miscellaneous, and glass. The highest positive net employment effect is to be observed in mechanical and electrical engineering, where it ranges from some 20,000 additional jobs created until 1985 (the unfavourable alternative) to nearly 160,000 (the favourable alternative); 2 and 14 per cent, respectively, of the 1976 employment in this sector.

The study concludes that the likely development of trade in manufactures with developing countries will not represent a heavy global threat to industrial employment in France; nevertheless, it touches upon difficult problems of adaptation or conversion of enterprises and industrial sectors. As the study states, a policy aiming at stopping or slowing down the growth of imports from developing countries would not provide a solution to employment problems in France. Such a policy would imply difficulties in the expansion of French exports, thus limiting the creation of alternative jobs. As a good strategy it is recommended that the expansion of French exports be actively promoted thus creating new jobs, thereby making it easier to reabsorb the declines in economic activity due to competition of developing countries.

In order to place these projections in perspective within the broader framework of overall industrial development, the study also provides projections of consumption, imports, exports and productivity in France and other industrialized countries for the period 1974-1985 broken down by nine major product groups. The projections are based on the development of consumption, imports (from both developing countries and other countries), exports and production at constant prices, 1971-1974. It transpires that the future development of industry in France depends mostly on the growth of consumption, productivity and trade with countries other than developing countries. The study concludes that the competitiveness of French industry must be increased to a greater degree than in the other industrialized economies. A strategy involving defence against competition with developing countries would decrease the pace of modernization of French production capacities, thus leaving them in a state of weakness compared with the other industrialized countries.

As to the other dimensions of structural adjustment due to trade with developing countries, the report of the Berthelot working group points to the regional impact.^{34/} It turns out that the decline in

^{34/} Commissariat Général du Plan, Rapport du groupe chargé d'étudier l'évolution des économies du Tiers-Monde et l'appareil productif français, January 1978, pp. 24-26. The statements concerning the regional impact are based on data given by INSEE (Institut National de la Statistique et des Etudes Economiques), Développement des échanges avec le Tiers Monde et problèmes régionaux d'emplois, Paris, 7 October 1977.

traditional activities reinforces the regional inequalities, even if the development of capital goods exports is taken into account. Whereas the industries threatened by imports represent nearly 40 per cent of manufacturing employment in some ten "départements", those industries exporting an important share of their production to developing countries are in general dispersed over a wider area. Moreover, the industries affected by imports are characterized by a high percentage of female employees: 66 per cent and 53 per cent of employment in textiles and clothing, and leather and shoes, respectively, as compared with an average of 26 per cent for industry as a whole. As for the resultant regional problems, the report recommends that temporary employment subsidies be envisaged in order to reduce the slump in employment in the sectors adversely affected and to promote production for export.

Federal Republic of Germany

In the Federal Republic of Germany, studies on the employment impact of trade with the developing countries have been undertaken at the Institute of World Economics and the German Institute of Economic Research. The first institute has been conducting detailed analyses of the characteristics and main determinants of the trade pattern as well as projections of the likely direct employment effects up to 1985. The second institute has published studies on the levels as well as sectoral, occupational and skill-category structures of direct and indirect employment effects and their evolution over the past few years, which serve as a basis for an assessment of the employment impact of further trade increases.

Direct effects

The estimations made by the Institute of World Economics of future changes in the level and structure of employment are concentrated on direct effects, whereby extrapolations are made of past trends relating to labour productivity in the individual industries and industry-specific imports and exports into and from the Federal Republic of Germany. All values are at current prices. Various publications provide analyses of the resultant estimates of the number of jobs in the final year of the projection period that are either not required or required owing to import and export increases over the last year of observation.

Fels and Horn^{35/} limit their analysis to the labour displacement effects of additional imports estimated for 1980 as compared with 1970 in 15 selected groups of raw material-intensive or labour-intensive products which are considered to be of special interest to developing countries. In variant I it is assumed that imports and labour productivity will increase at the same annual rate as during the period 1962-1970. Variant II is based on the assumption that the total imports of the products under consideration will increase twice as rapidly as during the sixties,

^{35/} G. Fels and E.-J. Horn, Der Wandel der Industriestruktur im Zuge der weltwirtschaftlichen Integration der Entwicklungsländer (Changes in the Industrial Structure Arising from the Integration of the Developing Countries in the World Economy), in: Die Weltwirtschaft, No. 1, 1972, pp. 123-126.

the sum of additional imports being distributed among sectors according to the commodity structure which arises from variant I. Moreover, in variant III it is assumed that the productivity of the persons displaced is one third below the average productivity as projected for the respective sector, thus a displacement effect is obtained which is fifty per cent higher than in variant II. Given these assumptions, total labour displacement in the seventies ranges from some 200,000 (variant I) to some 500,000 (variant III). As shown in Table 16, the highest numbers occur in electrical engineering, clothing, and non-ferrous metals accounting for more than half of the total estimated labour displacement. Viewed in terms of size, the industries most strongly hit are leather manufacturing, musical instruments etc., footwear, non-ferrous metal, leather production and clothing, each sector revealing an annual loss between some 1 to 2 per cent (variant I) and 3 to 6 per cent (variant III) of its employment in 1970.

For the period 1973 to 1985, Dicke, Glisman, Horn and Neu^{36/} estimate the employment effects of projected increases in trade in manufactures between the Federal Republic of Germany and the developing countries broken down by 31 industries. While labour productivity and exports are projected by extrapolating the trends of 1962 to 1973, the extrapolation of imports in variant I is based on the trends during the same period and, alternatively, in variant II on development between 1969 and 1973 when imports from developing countries increased considerably for most manufactures. The projected import growth in the individual sectors is restricted to twice the growth rate of total imports from developing countries. On these assumptions, import increases up until 1985 will displace between 350,000 (variant I) and 600,000 (variant II) persons, i.e., 4 to 8 per cent of the total labour force in manufacturing in 1973 or some 0.4 to 0.6 per cent per year (see Table 17). The estimated positive employment effect of additional exports amounts to some 200,000 jobs which are mainly created in the capital goods industries. The highest displacement effects occur in iron and steel, electrical engineering, precision and optical goods, office and computing machinery, leather

^{36/} H. Dicke, H.H. Glisman, E.-J. Horn and A.D. Neu, *Beschäftigungswirkungen einer verstärkten Arbeitsteilung zwischen der Bundesrepublik und den Entwicklungsländern (Employment Effects of an Increased Division of Labour between the Federal Republic of Germany and Developing Countries)*, Tübingen (J.C.B. Mohr/Paul Siebeck), 1976.

manufacturing, textiles, clothing as well as in the food, beverages and tobacco industries. According to variant II, more than 20,000 jobs in each of these industries will be redundant by 1985, some 230,000 in clothing industry alone. Viewed in terms of size, musical instruments etc. and leather production are also strongly hit, losing up to one third of their 1973 employment (variant I).

The study then proceeds to analyse in greater detail the displacement effects in the industries producing precision and optical goods, leather manufactures, footwear, textiles and clothing. In total, these five industries have to bear nearly two thirds of the calculated job losses. In relative terms, clothing and leather manufacturing are the most seriously affected of all 31 industries, losing up to two thirds and more of their 1973 employment, the other three industries less seriously so, losing up to some 13 to 17 per cent of their 1973 employment according to the respective variant showing the most negative result. For the five industries (and the subsectors of three) import increases between 1972 and 1985 - concentrating on imports from overseas developing countries for reasons of data availability - are projected according to a variant III. Here, the results of four different approaches are weighted together, assuming that imports of the individual product groups will increase according to:

- (i) the linear trend in the period 1962 to 1973 of the share of imports from developing countries in domestic consumption, domestic consumption being assumed to grow at the same annual rate as between 1962 and 1973 (weight 0.15);
- (ii) the annual growth rate in the period 1962 to 1972: variant I (0.25);
- (iii) approach ii, but adjusting downwards the growth rates of subsectors above the average rate of the respective sector (0.45);
- (iv) the annual growth rate in the period 1969 to 1972, variant II, but adjusting downwards the growth rates of subsectors above the sectoral average (0.15).

The employment figures calculated for variant III are considered the displacement likely to take place, should liberalisation proceed according to past trends. As Table 18 shows, the restriction on overseas developing

countries yields results which do not significantly differ from the order of magnitude given in Table 17 except for two of the five industries. In the precision and optical goods industry, the labour displacement is far higher, but this is judged to be due to particular circumstances in other optical and photographic goods as well as projection and cinematographic appliances which are not likely to continue and thus cause the high displacement estimated from mere trend extrapolations; the likely job losses up to 1985 for the total industry are supposed to be even below the 17 per cent shown in Table 17. The labour displacement in footwear is also far higher; this is judged to be more realistic than the relatively low amount shown in Table 17. The likely job losses up to 1985 are estimated to lie between 20 and 30 per cent of the 1972 employment.

As to the intra-industrial distribution of labour displacement, Table 18 shows that the individual subsectors are affected to varying degrees by increasing imports from developing countries. In the precision and optical goods industry, the most important losses - in both absolute and relative terms - will occur in other optical and photographic goods as well as projection and cinematographic appliances. Within textiles, it is mainly cotton spinning, knitting and hosiery mills as well as other textile industry that will be affected: they might lose up to 20 per cent of their employment. In clothing, outer garments for men and boys as well as dressing of fur skins and fur clothing industry might be threatened in their entirety until 1985, while outer garments for ladies, girls and children, linen and lingerie industry as well as hat and cap making might lose some 30 to 40 per cent of their 1972 employment; in the corsetry and other clothing industry the estimated jobs losses account for less than 20 per cent of the 1972 employment.^{37/}

Moreover, model calculations were carried out to assess the labour displacement of liberalization measures in excess of past liberalization trends on which the analyses had hitherto been based. As can be seen

^{37/} Moreover, employment effects are projected of increases in total imports, total exports and domestic consumption. The net changes in employment arising from all these factors combined until 1985 are estimated to amount to the following shares of the respective sectoral employment in 1972: +1 per cent in precision and optical goods industry, -50 per cent in leather manufacturing, -100 per cent in footwear industry, -10 per cent in textile industry and -82 per cent in clothing industry.

from Table 18, total removal of tariffs in the five industries could threaten an additional 50,000 jobs (assuming that a decrease in tariffs by one per cent point induces an increase in demand for imports of two per cent points) while removal of non-tariff barriers impeding textile and clothing imports could make another 150,000 redundant - mainly in clothing - (assuming a price elasticity of domestic supply of 1.5 and a tariff equivalent of the quantitative restrictions amounting to 33.7 per cent in textiles and to 45 per cent in clothing). Thus, total additional labour displacement by additional liberalization measures might touch 200,000 jobs, i.e. 2.5 per cent of total labour in manufacturing in 1973 or 0.2 per cent each year, if liberalization is distributed evenly until 1985. As to the individual industries, the study finally concludes that leather manufacturing and clothing appear to be threatened almost in their entirety by increasing imports from developing countries, in particular, if existing trade restrictions are totally removed; in the footwear industry, one third of the jobs are likely to be threatened and in the textile industry around one quarter; the precision and optical goods industry is said to be affected only to a relatively small extent.

The study then turns to the regional implications of these projections. Assuming that the five industries in the individual regions are affected according to the industry-specific average, several "Kreise" and "Städte" show accumulated labour displacement until 1985 of more than 20 per cent of their total work force in manufacturing in 1970 and in some areas reaching even 35 to 45 per cent: some 3 per cent each year (if calculated for variant III plus additional removal of trade barriers - variant IV, see Table 19). The regions most strongly hit are concentrated in Bavaria and - to a lesser extent - in Hesse and Baden-Württemberg; in general, they lie in backward areas benefiting from regional policy measures.

In order to avoid the unemployment rates projected by the model calculations, an anticipatory structural adjustment policy is recommended. Diminishing the calculated displacement figures by the remigration of foreign workers as well as normal retirement (voluntary and for reasons of age), the cost of promoting occupational and regional mobility as well as offering incentives to create competitive jobs in structurally

weak regions is estimated to amount to DM 250 to 400 million annually in the period 1975 to 1985. The "price" of this additional trade liberalization with developing countries is not felt to be high, in particular when compared with the funds provided each year to maintain old structures, e.g. in agriculture. By re-orienting the structural policy in the Federal Republic of Germany, it is argued that no problems would arise with the provision of funds to ease and promote the adjustment process in the industries most strongly affected by the intensified division of labour with developing countries.

Hiemenz and Schatz^{38/} provide estimates of the employment effects in the manufacturing industries broken down into 29 sectors (excluding mineral oil, ship building and aircraft) due to projected increases of imports and exports in trade with developed countries and with developing countries for the period 1973 to 1985. The employment effects are calculated on the basis of sectoral labour productivities for 1985 which were obtained by taking those for 1974 and increasing them by the average annual rate of change per man-hour over the period 1962-1974, after adjusting the values for the recession year 1974 to allow for the under-utilization of physical capacity. The productivity of the labour made redundant by additional imports was taken as being one third lower than the average productivity of workers in the industry concerned because below-average productivity can be assumed for contracting enterprises and redundant workers, while job creation due to additional exports was estimated according to the average productivities projected for 1985. In Table 20 the results are shown for trade between the Federal Republic of Germany and the developing countries, increases in which were projected according to two hypotheses. In variant I, imports and exports are assumed to grow at the average annual growth rates calculated for 1968-1974 by means of an exponential trend function (import increases being restricted to a maximum rate of 50 per cent per year)^{39/} In variant II, future growth rates are assumed to lie 20 per cent above the annual averages of 1968-1974 (import increases being restricted to a maximum rate of 60 per cent per year).

^{38/} U. Hiemenz and K.-W. Schatz, *Transfer of Employment Opportunities as an Alternative to the International Migration of Workers: The Case of the Federal Republic of Germany (I)*, ILO-World Employment Programme, Working Paper WEP 2-26/WP7, Geneva, August 1976.

^{39/} In the original study, two versions of variant I are considered; in Ia productivity is assumed to increase at the same rate as from 1962 to 1974 and in Ib only at half that rate. Both approaches yield similar results, version Ib on average showing some 25 per cent higher net labour displacements than Ia. Here, only the results of version Ia are reproduced.

As to the order of magnitude and sectoral pattern, the displacement figures calculated in variant I correspond by and large to those obtained by Dicke, Glisman, Horn, and Neu, on the assumption that no liberalization measures will be introduced that extend beyond a continuation of the past trend. In total, a net displacement due to increases in imports from, and exports to, developing countries until 1985 is computed to amount to 5.8 per cent of total manufacturing employment in 1974; an average of 0.5 per cent each year. Set against the size of the respective sector, the highest net losses are calculated for leather manufacturing and clothing which by 1985 will have lost some 70 per cent of their 1974 employment, followed by precision and optical goods and footwear with more than 30 per cent, as well as electrical engineering, fine ceramics and musical instruments etc. with some 20 per cent. The highest net gain occurs in mechanical engineering, where increased trade with developing countries is estimated on balance to increase employment from 1974 to 1985 by 17 per cent.

While alternative I aims at describing what seems to be a plausible course of events up to 1985, the aim of alternative II is to provide an indication of the branches in which employment effects would occur (and to what extent), if the existing possibilities for the division of labour between the Federal Republic of Germany and the developing countries were utilised more rapidly than in the past. In overall terms, alternative II leads to a net labour displacement which is two and a half times that calculated for alternative I. As regards the relative impact on the individual industries, the order in the radical alternative II is, with minor exceptions, identical with that in alternative I. However, in variant II, the development according to greatest competitive advantage and disadvantage is more marked than hitherto in both the negative and positive direction. All the industries shown in the trend projection I as being very vulnerable to developing country competition would have to expect even greater employment losses under alternative II. Some other industries hitherto practically unaffected by competition from these countries (and as projected in alternative I) would experience considerable drops in employment as a result of their greater market penetration; the iron and steel industry and the automotive industry are examples. On the other hand, the net employment gains in mechanical engineering would increase considerably.

In order to give an idea of the regional employment implications in the Federal Republic of Germany of an extended international division of labour, the study provides a breakdown by Bundesländer (Federal Provinces) of the net employment effects calculated in variant I, including projected increases in trade with developed countries. On the assumption that the regional employment effects in individual industries are at the same level as the national average of the industry concerned, the relative effect upon total manufacturing in four Länder ~~transpires~~ to be higher than the national average (Berlin, Bavaria, Rhineland-Palatinate and Lower Saxony), four Länder will lose employment according to the national average (Saarland, Baden-Württemberg, Lower Saxony and Hesse), while three Länder are less affected than the national average (North-Rhine Westphalia, Schleswig-Holstein and Hamburg).

The study then proceeds to analyse the employment impact on local and foreign workers. On the assumption that each group would be affected in proportion to its share of employment in a given industry, increased trade with developing countries would on balance make 87,000 (variant I) to 239,000 (variant II) foreigners redundant, i.e. 19.6 and 18.5 per cent respectively of the total net labour displacement estimated up to 1985. As these shares are only slightly above the average share of foreign workers in the total labour force in manufacturing in the Federal Republic of Germany (17.6 per cent in 1972) one cannot, on the basis of these calculations, assume that foreign workers as a whole are employed to a particularly great extent in industries that are particularly vulnerable to competition from developing countries. However, implementation of a strategy of employing local instead of foreign workers could lead to a considerable redistribution of job losses and creations in favour of local workers.

In order to be able to depict the projected displacement as being large or small, Wolter^{40/} provides calculations of past displacement during the period 1962 to 1975, associated with growth of imports from developing countries, with total import growth and with productivity

^{40/}F. Wolter, Adjusting to Imports from Developing Countries - The Evidence from a Human Capital Rich - Resource Poor Country, in: H. Giersch (ed.), Reshaping the World Economic Order. Symposium 1976, Tübingen (J.C.B. Mohr/Paul Siebeck), 1977, pp. 120 and 129.

changes. As shown in Table 21, in all manufacturing industries combined the direct labour displacement in that period is estimated in terms of causes as follows (in thousand persons):

Growth of imports from developing countries	132.8
Growth of imports from all sources	1684.4
Changes in labour productivity	6531.1

Upon comparing these figures with the projected labour displacement due to the growth of imports from developing countries until 1985 - variant I of Hiemens and Sohats - the latter is far higher than labour displacement due to the same cause in the past. However, it is lower than displacement due to import increases from all sources in the past and far lower than displacement due to productivity increases in the past. Only in the clothing industry does the estimated future displacement due to imports from developing countries exceed that caused by productivity growth in the past; for leather production, leather manufacturing and footwear industries combined both figures are nearly equal. In overall terms, the cumulative net displacement due to intensified trade with developing countries from 1973 to 1985 (some 450,000 persons) is even below the annual displacement due to productivity growth in the past (on an average of some 500,000 persons each year). The study concludes that, while it is true that the expected adjustment burden is eased considerably by the positive employment effects of increasing exports to developing countries, net displacement could still be considered large enough to call for appropriate adjustment strategies.

Direct and indirect effects

Some studies undertaken at the German Institute of Economic Research provide analyses of the employment impact of German trade in manufactures - broken down by 30 commodity groups - with overseas developing countries, in which consideration is given not only to the direct effects on industrial sectors involved in the trade flows, but also to the indirect effects on industries producing intermediate inputs for those industries. To this end, the intermediate input-structures are taken as given in the 1972 input-output table, all values are expressed at 1972 prices^{41/} and

^{41/} To deflate the import and export values, the sectoral price indices of total foreign trade of the Federal Republic of Germany serve as proxy because no separate indices are available for trade with developing countries.

use is made of 1976 labour productivities. The breakdown of the employment effects is by some 45 sectors, 30 occupational groups and 4 skill-categories.

A general conclusion in the first publication of such model calculations by Schumacher^{42/} is that imports of manufactured products from developing countries to the value of DM 1 billion would displace about 22,000 workers in the Federal Republic of Germany while the latter country's exports to developing countries of the same amount would increase employment by nearly the same number of jobs (imports and exports both at 1972 prices and commodity structures). Thus, by virtue of the calculation it is suggested that if imports from the developing countries and exports from the Federal Republic of Germany to those countries rise by about the same amount, the net effect on jobs is virtually nil (see Table 22). The study then concentrates on additional imports of precision and optical products, leather manufactures (including footwear), textiles as well as clothing sectors in which developing countries are considered to enjoy a substantial competitive advantage and which, apart from textiles, have particularly high labour coefficients in the Federal Republic of Germany, both directly and totally (they include the necessary intermediate inputs). Assuming that imports from developing countries in those areas of activity will continue to rise at the same average rate as between 1972 and 1975 at constant prices, by 1980 the Federal Republic of Germany will need about 140,000 fewer workers than if these goods were produced at home (see Table 23). Setting against these negative employment effects the positive effects of a rise in exports of the same order (the commodity pattern chosen being that of exports from the FRG to developing countries in 1972-1974), more than 80 per cent of the workers made redundant because of higher imports were able to find jobs in increased export production. Consequently, on balance in 1980 some 30,000 to 50,000 fewer workers would be needed, i.e. 6,000 to 10,000^{43/} new jobs a year

^{42/} D. Schumacher, Increased Trade with the Third World: German Workers will have to Switch Jobs, but not Lose Them, in: Deutsches Institut für Wirtschaftsforschung, Economic Bulletin, No. 5/1977, pp. 37-41.

^{43/} The higher figures hold true if imports of the selected product groups are assumed to grow according to their 1972-1975 growth at current prices.

would be required to keep these workers in employment. As to the sectoral restructuring implied, the figures suggest that by 1980 the clothing industry would have some 70,000 fewer workers than in 1975: 24 per cent less (or an annual loss of 5 per cent). The decline in employment in textiles would be about 23,000, nearly 7 per cent or 1.3 per cent per year (about two thirds of this displacement would arise from increases in clothing imports). In the precision and optical goods industry the reduction would be about 11,000, i.e. some 7 per cent or 1.5 per cent per year. In leather, there would be a decline of possibly 5,000 persons, i.e. nearly 6 per cent or 1.2 per cent per year as compared with 1975 employment.

In a later study^{44/} the structural dimensions of trade in manufactures with developing countries are analysed on the basis of more recent trade data and in more detail as to the sectors,^{45/} occupations and skill-categories involved. Regarding the overall effect, the study confirms the order of magnitude of the employment impact of a given unit of imports and exports calculated earlier. Furthermore, the results given in Table 24 indicate a slightly increasing labour impact on both sides, tending to increase the net displacement which nevertheless remains small. Taking the commodity structure of import and export increases between 1972 and 1976, more than 95 per cent of the workers displaced by additional imports could find a new job by virtue of additional exports (22,400 out of 23,300 per DM 1 billion of exports and imports at 1972 prices). However, on looking at the sectoral breakdown given in Table 25^{46/} it can be seen that about half of the

^{44/} D. Schumacher, Beschäftigungswirkungen von Importen aus Entwicklungsländern nicht dramatisieren (Employment Effects of Imports from Developing Countries should not be Dramatised), in: Wochenbericht des Deutschen Instituts für Wirtschaftsforschung, No. 1/1978, pp. 6-11.

^{45/} Here, the sector "handicrafts, small scale industries and other manufacturing" is no longer considered separately but distributed among the various manufacturing industries to which its activities belong.

^{46/} The differences between Tables 25 (given per DM 1 billion) and 22 (given per DM 100 million) are mainly due to the differences in the commodity structure of the increase in trade 1972 to 1976 as compared to that of trade in 1972. Between 1972 and 1976 the development of imports from developing countries was characterised by an above-average growth-rate of clothing, electrical equipment, machinery, precision and optical goods as well as hardware and metal goods, whereas the import of food, beverages and tobacco as well as non-ferrous metals declined even in absolute terms. Within the exports to developing countries, since 1972, vehicles, electrical equipment and constructional steel showed above average growth rates, whereas the exports of chemical products grew only very slowly.

jobs for export production are created in industries other than those in which redundancies due to imports occur. The net displacement effects are concentrated in clothing and textiles; most of the others must be borne by leather and the musical instruments etc. industries. The highest positive net effects are to be found in mechanical engineering, vehicle construction and constructional steel; the remaining net job gains are spread over a variety of industries.

Multiplying the sectoral employment figures given in table 25 per DM 1 billion of imports and exports by 3.7 an impression is obtained of the magnitude and pattern of structural changes in the Federal Republic of Germany due to an intensified division of labour with the developing countries between 1972 and 1976 (hypothetically setting an equal amount of additional exports against the actual increase in imports).^{47/} According to these model calculations, the net loss in clothing was equivalent to 6 per cent of its 1976 employment. The corresponding relations in the textile, musical instruments etc. and leather industries are 2 to 3 per cent. These losses attributed to the increase in trade with developing countries are only a fraction of total actual job losses during the four-year period under consideration, even in the industries most strongly hit by developing country competition, which account for one fifth of total losses in clothing and musical instruments etc. and one tenth and less in textiles and leather.

On the other hand, the net employment gains between 1972 and 1976 attributed to increasing trade with the developing countries are relatively highest in mechanical engineering, vehicle production, constructional steel and foundries, achieving about 1 per cent of the respective sectoral employment in 1976. The changes are more strongly felt in the adversely affected sectors than in those which are beneficiaries.

The study then turns to the occupational implications^{48/} of the sectoral restructuring discussed above. As certain occupations (organizational, administrative and office activities) are required

^{47/} During the four year period, imports of manufactured goods from developing countries increased by some DM 3.7 billion excluding commodity groups which showed a decrease in imports while exports of manufactures to developing countries rose by some DM 14.6 billion (all figures at 1972 prices).

^{48/} For reasons of availability of data, the calculations referred to below were undertaken at a less disaggregated sectoral level (36 sectors as compared to some 45 in the calculations presented above). However, as deviations in the resulting totals are negligible comparability is not touched.

in all sectors, occupational restructuring is restricted to a part of those persons forced to change the industry. As can be calculated from Table 26, some 30 per cent of the jobs in export production belong to an occupational group different from that of the workers displaced by imports. 75 Per cent of those whose occupational skills are no longer required have a textile or clothing occupation, 10 per cent are tanners, makers of leather or furskin goods. The additional jobs offered which, however, are not suited to the workers displaced relate to locksmiths, mechanics and related occupations (40 per cent), metallurgical workers and metal workers (more than 20 per cent) and engineers, chemists, physicists, mathematicians or technical graduates (10 per cent). As to the level of qualification, the results indicate that on balance persons without vocational training are released. In order to acquire sufficient qualifications for export production, they must undergo vocational training, 70 per cent on-the-job in enterprises and 30 per cent formal education at schools; one third of the latter even need a university degree.

From these results, the conclusion is drawn that the employment problem arising from intensified trade with developing countries is for the most part one of restructuring. the problem of shifting labour to other sectors and - to a lesser extent - to other occupations and higher qualification levels. These structural changes, it is argued, should not be dramatised given the size and force of the economy in the Federal Republic of Germany despite the current high rate of unemployment.

In another study that concentrates on the employment impact of exports,^{49/} it is calculated that in 1972 some 440,000 persons in the Federal Republic of Germany were directly or indirectly required to produce merchandise exports to (overseas) developing countries which consist almost exclusively of manufactured goods. In 1976, nearly 700,000 persons were needed, 70,000 less than in 1972 due to increases in productivity and 330,000 more due to increases in exports. The employment effect of exports of services is estimated to amount to some 100,000

^{49/} D. Schumacher, 800 000 Erwerbstätige für den Export in Entwicklungsländer beschäftigt (800 000 Persons are Working for Exports to Developing Countries), in: Wochenbericht des Deutschen Instituts für Wirtschaftsforschung, No. 5/1978, pp. 58-61.

persons in 1976. Thus, in total, 800,000 or 3 per cent of all persons engaged in 1976 in the Federal Republic of Germany worked for exports to developing countries.^{50/} As can be seen from Table 27, one half of the employment impact arising from merchandise exports is due to direct effects, the other half stems from indirect effects. In manufacturing, more than 6 per cent of the persons engaged directly or indirectly worked for exports to developing countries. The share was highest in mechanical engineering (13 per cent).^{51/} Above average percentage shares were also engaged in the production of exports to developing countries (some 7 to 9 per cent) in the metal production and processing industries, in chemicals, rubber and asbestos manufactures, vehicle production and electrical equipment. As to the occupational breakdown some 120,000 locksmiths and mechanics were required, 105,000 organizational, administrative and office staff, 65,000 metallurgical workers and metal workers, 55,000 engineers, chemists, physicists, mathematicians and technical graduates (including specialized technicians) as well as 30,000 sales and procurement clerks, 30,000 electricians and 30,000 fitters. In total, two thirds of the persons engaged in respect of exports to developing countries belonged to these seven occupational groups, one third alone to the metal-related occupations. Finally, the study concludes that the employment relevance of exports to developing countries increased considerably during the recent years,^{52/} due almost

^{50/} This figure is confirmed by a study of Prognos AG which gives a number of 850,000 using a similar approach. Considering exports to southern European countries as well, this figure rises to some 1.14 million or 4.5 per cent of total employment. See Prognos AG, *Binnenwirtschaftliche Wirkungen der Entwicklungshilfe und der Exporte in Entwicklungsländer* (Impact of Development Aid and Exports to Developing Countries on the Domestic Economy), summary of the study in: *Entwicklungspolitik, BMZ-aktuell*, Bonn, 19 April 1978, pp. 7, 22 and 23.

^{51/} Excluding shipbuilding. Here, to a certain extent deliveries might consist of sales of assets in place of current production.

^{52/} For comparison: On the same methodological ground a hypothetical number of persons can be calculated which is not required due to imports in place of home production. The "labour value" thus estimated for total 1976 imports of manufactures from developing countries amounts to some 230,000 or less than 1 per cent of all persons engaged in the Federal Republic of Germany in that year. 170,000 persons of these would relate to manufacturing industries representing 1.9 per cent of 1976 manufacturing employment in the Federal Republic of Germany.

exclusively to additional demand by the OPEC countries, which, in 1976, accounted for half of the exports from the Federal Republic of Germany to developing countries. In order to stimulate demand among the other developing countries, increased development aid is recommended.

A recent study carried out at the German Institute of Development Policy by Ashoff and Weiss^{53/} focuses precisely on the impact which development aid has on the economy of the donor country. As to the employment effect, the study shows that, in 1976, deliveries from the Federal Republic of Germany financed by bilateral aid directly or indirectly assured the jobs of some 19,000 persons. Adding deliveries financed by multilateral funds, this number nearly doubles and accounts for 36,000 persons or some 10 per cent of the employment effect of total exports from the Federal Republic of Germany to developing countries, excluding OPEC countries. From the figures given in the study, it can be calculated that the employment effect of additional DM 1 billion of development aid from the Federal Republic of Germany (at 1976 prices) amounts to some 10,000 persons on the assumption that around 60 per cent of the funds are spent for products from the Federal Republic of Germany (as actually in 1976). This number rises by 50 per cent and amounts to some 15,000 persons when the Keynesian multiplier effects are considered as well.

^{53/} G. Ashoff and D. Weiss, *Binnenwirtschaftliche Wirkungen der deutschen Entwicklungspolitik (Impact of German Development Policy on the Domestic Economy)*, Deutsches Institut für Entwicklungspolitik, Berlin, February 1978.

The Netherlands

A recent study carried out at the Netherlands Economic Institute analyses the impact of trade in manufactures with developing countries on the Dutch economy. As can be seen from Kol and Mennes⁵⁴, the Dutch manufacturing industry shows a remarkably high trade dependence. In 1974, the share of imports in apparent domestic consumption was equal to 46 per cent. The share of imports of manufactures from developing countries, however, is still very low, amounting to 2.6 per cent of apparent domestic consumption. This share is growing at an annual rate of 6 per cent whereas the annual rate of growth of the share of imports from developed countries is not more than 2 per cent. Between 1970 and 1974 employment in Dutch manufacturing industry declined by some 15,500 man-years due to a declining revealed competitiveness relative to foreign suppliers. This means an annual decline in the number of persons employed in manufacturing industry of some 0.35 per cent. These 15,500 man-years were distributed as follows: 10,000 man-years due to improved competitiveness of developing countries relative to Dutch producers and 5,500 man-years which can be attributed to increasing competitiveness of developed countries.

The study goes on to provide results of an input-output analysis of the income and employment effects of trade which are represented here as far as they relate to the employment impact of trade with developing countries. The calculations are based on 1973 data: trade is broken down by 17 groups of manufactured goods, and the resulting employment effects in the Dutch economy are given by 35 industries and 4 skill categories. Thus calculated, the employment forgone due to D.fl. 10 million of imports is equal to 180 man-years, whereas a corresponding amount of exports generates employment equal to 167 man-years. An equal increase on both sides according to the 1973

⁵⁴ J. Kol and L.M. Mennes, Penetratie door ontwikkelingslanden op de Nederlandse markt voor industrieproducten. Gevolgen voor inkomen en werkgelegenheid (The role of the Developing Countries in the Dutch Market of Manufactures. Impact on Income and Employment), The Netherlands Economic Institute, deel rapport 6, Rotterdam, February 1978. See as well L.M. Mennes, Adjustment of the Industrial Structure of Developed Economies in Particular the Netherlands, paper submitted to the International Symposium on Maritime Research and European Shipping and Shipbuilding, Rotterdam, 29-31 March 1978.

commodity composition on balance releases 7 per cent of the persons affected by imports (see Table 28). Nearly 40 per cent of the persons finding jobs arising from additional export production must change the branch of industry. While the highest net losses occur in food products, wood and furniture, textiles, clothing, as well as leather and footwear, the highest net gains appear in metal products and machinery, chemical products, electrical engineering as well as transport equipment. An equal rise by D.fl. 1 billion in imports and exports, which is equal to one third of total Dutch imports of manufactures from developing countries in 1973, would adversely affect the most strongly hit sectors cited above by 2 to 4 per cent of their 1973 employment while the benefiting sectors cited above would gain around 1 per cent of their 1973 employment.

As to skill requirements, table 29 shows that a simultaneous increase in imports and exports of D.fl. 10 million results in a net gain in employment of 4 man-years for the more skilled groups and a net loss of 17 for the less skilled ones. In other words, an increase in trade with developing countries is to the benefit of the more skilled groups whereas the decline in employment is concentrated in the less skilled groups.

As can be calculated from the figures given in the study, in 1973, production of total exports of manufactures to developing countries required nearly 90,000 persons in the Netherlands, i.e. 2.1 per cent of total Dutch labour force. In the manufacturing industries 60,000 persons or 5.3 per cent of all persons engaged worked for these exports. On the other hand, the total employment hypothetically forgone due to imports of manufactures from developing countries in place of domestic production can be estimated to amount to some 55,000 persons or 1.3 per cent of the 1973 overall employment, in manufacturing alone nearly 40,000 or 3.4 per cent.

Comparing the Dutch input-output study with the analysis of direct and indirect employment effects of trade between the Federal Republic of Germany and the developing countries shows that the results are similar

in terms of structural implications although the absolute results are different. These differences are due to various reasons; for example, the higher overall import penetration of the Netherlands leaving a smaller employment effect per unit final demand in the domestic economy. Moreover, the productivity figures used relate to 1973 as against those of 1976 used in the study on the Federal Republic of Germany, and the level of disaggregation is lower.^{55/}

^{55/} Recalculating the results for the Federal Republic of Germany based on the commodity structure of 1972 trade with developing countries (see Table 22) for 1972 productivity figures, in total, yields 273 persons set free by DM 10 million of imports and 252 persons required for the same amount of exports. Relating these numbers to the value added effects of the same units of trade gives ratios which come close to those which can be calculated for the Dutch economy from 1973 data.

III SUMMARY AND CONCLUSIONS

In order to assess the employment impact in developed countries of trade in manufactures with developing countries, several studies have been reviewed. Some older estimates relating to the sixties show that the direct labour displacement due to imports from developing countries differs according to country and sector, but in all cases it affects only a small fraction of the total labour force in manufacturing in the developed countries. Both calculations based on historical import flows and those assuming considerable increases in future imports demonstrate that the resultant job losses are insignificant compared with those due to rising productivity or fluctuations in aggregate demand. A study on changes in sectoral employment in the import-competing industries of the United States during the sixties distinguishes between those changes which are due to changes in productivity, and those due to domestic consumption or foreign trade. It shows the small magnitude of job losses due to imports from developing countries and demonstrates the dominant role of productivity increases as a factor reducing the number of jobs available. A similar study in the United Kingdom analyses the employment losses during the first half of the seventies in four sectors in which import competition was considered to be the prime cause of domestic unemployment, and shows that increased trade with developing countries in all cases was the least important cause of employment losses. A more comprehensive study prepared within the ILO World Employment Programme takes account of the relevant linkages and repercussions, due consideration being given to direct, indirect and multiplier effects, as well as induced trade flows when imports of several manufactures from developing countries are increased. The results show that, for a given trade increase, more employment is created in developing countries than is lost in industrialized countries. As to the developed countries, the analysis demonstrates that the issue is one of sectoral restructuring of labour rather than mere job displacement when account is taken of the increased exports developed countries derive from the increased foreign exchange earnings of developing

countries. While imports of certain products are likely to have a negative net effect on total employment in developed countries, imports of some other products may have a positive net effect, the redistributive impact on the sectoral pattern of employment being considerable in each case. Studies encompassing both direct and indirect effects and based on more recent data for the Netherlands and the Federal Republic of Germany confirm this conclusion in principle. They reveal only a small negative net effect on jobs when imports from, and exports to, developing countries are increased by the same amount and according to their commodity structure in the first half of the seventies. However, shifts in the sectoral pattern of employment accompanied by shifts in the occupational and skill structures are inevitable. However, the absolute extent of such shifts induced by import increases during the last years was again small compared with overall employment; it will grow in the future, but still remain relatively small, even when high import increases have taken place. This is confirmed by studies concentrating on the direct labour effects of projected trade increases up to 1985 for the Federal Republic of Germany and France, showing that the future net displacement effects per year are likely to be higher than in the past but still far below the job losses ascribable to increasing productivity.

The summary conclusions that can be drawn are as follows: in the past, the total employment impact of imports of manufactures from developing countries was almost negligible. Even in the industries most strongly affected by imports from developing countries, these are responsible only for a fraction of job losses observed during recent years and are found to be less important than other factors. In the future, the displacement effect will rise, but even assuming high import increases, it will remain small compared with total manufacturing employment, job losses due to rising productivity and to trade with other than developing countries, as well as effects arising from shifting demand. By way of example, if productivity increases by 3 (4) per cent per year, after 10 years a quarter (third) of the original labour input is saved: on an average 2.6 (3.2) per cent of the original number of

persons engaged are displaced each year assuming constant demand. Moreover, the job losses are to a varying degree offset by additional exports to developing countries which are likely to be supplemented by net income multiplier effects. While, in general, the sectors most strongly affected include clothing, textiles, leather products and footwear as well as parts of mechanical and electrical engineering, the beneficiaries on the export side are the capital goods industries. Problems will arise because the displacement effects are highly concentrated in a few (relatively small) industries (in which the displacement due to future imports from developing countries might surpass that due to productivity increases), in structurally weak regions and disadvantaged groups of labour (female, low-skilled workers), whereas the job creation effects of induced exports are more widely spread over the economy, in sectors and regions tending to require an above average input of skilled labour.

In Table 30 an attempt is made to compile the results of the more recent studies in a common sectoral scheme. The changes in employment attributed to increases in trade with developing countries are shown by annual averages as percentages of sectoral employment, i.e. changes divided by the number of years under consideration and related to total sectoral employment in the year chosen for comparison, except for column (1) where figures represent average annual changes as per cent per year. The figures are taken from the studies directly or calculated on the basis of their results. The procedures are described in the footnotes of Table 30. Columns (10) and (11) represent UNIDO estimates of employment effects based on the results of input-output studies reviewed in this paper for the Federal Republic of Germany and the Netherlands assuming a 20 per cent annual increase in imports and an increase in exports of the same absolute amount. As the figures are the results of model calculations on different and more or less arbitrary assumptions, they cannot be viewed as satisfactorily exact quantifications, but should be taken as rough indicators. Comparisons between the columns should be only made with great caution, keeping in mind the differences in scope, details and methodology used in the various studies. The results are, however, similar.

In order to give an idea of the overall magnitude of gross displacement and restructuring within manufacturing likely to arise from trade expansion with developing countries, the total impact on manufacturing industries calculated in the studies is related in Table 31 to total manufacturing employment.^{56/} The figures estimated for the future, which in part assume improbably high import increases, can be viewed as a maximum. According to these figures, the annual gross displacement due to imports might achieve 0.6 to 0.9 per cent of manufacturing employment, the number of changes between manufacturing industries might range from 0.1 to 0.4 per cent and the number of persons released in manufacturing might on balance be as high as 0.5 per cent. Relating these figures to total employment reduces the ratios to less than one third of the values given above.

These orders of magnitude are confirmed by some rough calculations at the world-wide level. In Tables 32 and 33, imports and exports of developed and developing countries are related to their GDP in order to assess the relative importance of their trade linkages with various regions. While imports and exports of developing countries (excluding OPEC) trading with developed countries amount to some 16 and 12 per cent, respectively, of their GDP in 1975, the same trade flows represent less than 3 and around 2 per cent, respectively, of the developed countries' GDP. In addition, Table 34 shows that some 80 per cent of the developed countries' exports consist of manufactures whereas around one third of the developing countries' exports are manufactures (SITC 5-8), i.e. the "employment balance" of trade in manufactures with developing countries is clearly positive for the industrialized world. It can be estimated that more than twice as many persons are required to produce exports to developing countries than are saved due to imports, both figures playing a small role when compared with overall employment in developed countries.

^{56/} Unlike Table 30, all figures in Table 31 for the Federal Republic of Germany are related to manufacturing employment including handicraft, and small scale industry; the US figure in column (1) is related to total manufacturing employment including non-import-competing industries.

As to the possible labour displacement by future imports, the following calculation might offer a rough indication of the order of magnitude: assuming a rise in manufactured imports from developing countries by some \$100 billion from 1975 to 1985^{57/} and taking the (direct plus indirect) labour-output ratios of 1976 in the Federal Republic of Germany as a lower limit and the same figures plus 50 per cent as an upper limit for the developed region as a whole,^{58/} the cumulative gross labour displacement over the 10-year period might be estimated to range from 3.5 to 5.3 million persons in total,^{59/} of which 2.8 to 4.2 million persons would be in manufacturing alone. The average annual displacement then represents some 0.1 to 0.2 per cent of total employment, some 0.4 to 0.7 per cent of manufacturing employment.^{60/} If past growth trends in productivity continue, about one third of this job displacement would occur in any event and - by way of comparison - by 1985 more than 20 million jobs would be threatened by technical progress in manufacturing alone. On the other hand, taking into account the fact that developing countries have always imported more from the developed countries than they have exported, it is reasonable to assume that for each \$ of foreign exchange earned by additional exports to developed countries at least one \$ is spent on products from the developed countries, offsetting to a considerable extent, the displacement effects due to imports. Thus, considering the positive net income multiplier effects as well, the overall net employment effect might tend to be zero, leaving developed countries with the task of restructuring.

^{57/} As suggested by IBRD in some projections; see IBRD, *Prospects for Developing Countries 1978-85*, op. cit., p. 135.

^{58/} The input-output calculations for the Federal Republic of Germany presented above suggest 35,400 persons theoretically required to produce \$1 billion of the increase in manufactured imports from developing countries 1972-76 (at 1976 prices and labour productivities).

^{59/} The larger figure is also put forward in IBRD, *Prospects for Developing Countries 1978-85*, op. cit., p. 135.

^{60/} Total labour force in developed countries amounts to some 65 million persons in the manufacturing sectors and to some 300 million in the economies as a whole. The aggregated figures are taken from IBRD, *Prospects for Developing Countries 1978-85*, op. cit., p. 135, and are based upon data of the UN Yearbook of Industrial Statistics, 1974.

The past and projected shifts in sectoral employment patterns due to trade with developing countries as described above might be compared with the overall structural trends in developed countries as observed in the past. Table 35 shows the sectoral employment trends in six countries of the EEC^{61/} from 1961 to 1975. In total, between 1961 and 1970 an average of more than 700,000 persons lost their jobs each year, mainly in agriculture, and had to find jobs in another sector. Between 1970 and 1975, an average of 950,000 persons per year lost their jobs, mainly in agriculture and the manufacturing industries. Unlike the sixties, some of them could not find jobs elsewhere. The average annual displacement figures represent nearly 1 per cent of total employment. From 1970 to 1975 in agriculture, solid fuels as well as textiles, clothing and leather, some 3 to 4 per cent of the work force lost their jobs on a yearly average. These figures reveal only part of the structural changes because the sectors are broadly defined categories, and more changes would have been revealed, had the industries been more narrowly defined as in the studies reviewed above. Moreover, several countries are aggregated and, therefore, changes within individual countries are offset to some extent. In view of the shifts in the sectoral employment pattern indicated by these albeit understated figures, the negligible impact of imports from developing countries on structural changes in developed countries in the past becomes evident and their impact in the future can be expected to remain small, even if they are assumed to grow considerably.^{62/}

Trade with developing countries is not a cause of unemployment in developed countries and counter-measures are no means of reducing unemployment. The employment problem in developed countries must be solved by means of a comprehensive policy which aims at stimulating final demand as well as limiting the supply of labour. This has to be conceived anyway, with or without increased trade with developing countries. The positive employment effect of trade barriers is small

^{61/} United Kingdom, the Federal Republic of Germany, France, Italy, the Netherlands, Belgium.

^{62/} Thus, the empirical evidence tends to support the view put forward in an earlier UNIDO document stating that "for the developed countries, the impact on overall employment of industrial redeployment to developing countries seems to have been overemphasized" (UNIDO, *Redeployment of Industries from Developed to Developing Countries: Studies Undertaken by UNIDO*, Note by the Secretariat, document ID/B/199, 28 March 1978, paragraph 34).

and only of a short-term nature as they conserve old and uncompetitive structures and impede future growth potential on the export side. Increased imports from the developing countries mean rising demand for high-skill capital goods, the production of which creates high incomes in developed countries. In order to meet the problems which arise when shifting employment from import-competing to export industries and which are likely to occur even after provision is made for normal departures, an appropriate adjustment policy must be conceived comprising retraining measures and incentives to locate competitive production in disadvantaged regions.

To this end, further research should concentrate on a very disaggregated identification of persons adversely affected, on analyses of alternative employment opportunities (the creation of which has to be integrated into a comprehensive strategy to overcome the overall unemployment in developed countries) and on a quantification of the costs of restructuring involved. Moreover, a set of comparable studies for the individual developed countries on job losses and gains due to trade with developing countries would provide a basis for a rational discussion of common trade measures. Finally, computations within the framework of a world-wide model could be helpful in assessing the contribution of changes in volume and pattern of trade in manufactures to employment in developing countries, as well as the overall magnitude of structural changes in developed countries.

While recommending liberalization of imports from developing countries because this is in line with the market oriented position as well as the development aid policy of developed countries (and - as seen above - shows no serious negative employment impact), its limits as a means of redeploying production must be observed. First, on the average, export oriented production amounts only to a small fraction, most production being directed towards the domestic market. Secondly, at present only a small number of developing countries which are able to offer competitive products on the world market can expect immediate benefits from further trade liberalization. Thirdly,

because of the large difference between developed and developing countries in respect of technological know-how and research capacities, the comparative advantages of developing countries prevailing at present might disappear in a few years following the development of more productive and at the same time more capital-intensive techniques in developed countries. For these reasons, liberalization of imports of manufactures from developing countries can be seen only as a first necessary, albeit insufficient step. It must be accompanied by a packet of measures within the framework of development aid and technical aid policies aiming at increasing the overall level of development and, thus, providing the preconditions for the more even and durable distribution of benefits arising from international trade.

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**Table 1. Displacement of labour by increased imports of manufactures^{a/}
from developing countries in selected developed countries, 1953-1961**

Country	Numbers displaced ^{b/}	Decrease in agricultural labour force	Net increase in active labour force	Numbers displaced as proportion of	
				Decrease in agricultural labour force	Net increase in active labour force
United Kingdom	30,398	130,000	1,255,500	23.4	2.4
United States ^{c/}	23,303	953,000	7,606,000	2.5	0.3
Federal Republic of Germany	14,513	1,132,500	2,592,500	1.3	0.6
Belgium-Luxembourg	5,981	82,000	-4,400 ^{d/}	7.3	
Italy	4,793	916,000	2,136,700	0.5	0.2
Netherlands	2,727	85,500	371,500	3.2	0.7
France ^{c/}	2,690	1,304,000	124,000	0.2	2.2
Canada ^{c/}	1,910	220,000	1,295,000	0.9	0.2

^{a/} Excluding metals.

^{b/} Estimated as the increase in imports of manufactures from developing countries from 1953 to 1961 in 1958 prices divided by twice the value added per person employed in manufacturing in 1958.

^{c/} Data relate to period 1953 to 1962.

^{d/} Minus sign indicates decrease in active labour force.

Source: United Nations, Bureau of General Economic Research and Statistics.

Source: United Nations, Towards a New Trade Policy for Development, report by the Secretary-General of the United Nations Conference on Trade and Development, New York 1964, p.62.

Table 2. Provisional estimates of employment opportunities lost due to increases of imports from developing countries in selected branches of manufacturing in selected developed countries, 1961-1965

Region	In '000s	As percentage of employment loss directly associated with productivity increase	As percentage of total employment in the branch in 1965	As percentage of total manufacturing employment in 1965
			I. Processed foods	
North America	1.4	0.7	0.08	0.007
EEC	2.8	2.7	0.24	0.013
EFTA (excl. Switzerland)	-0.2	-0.4	-0.03	-0.002
			II. Textiles (incl. make-up textile goods except wearing apparel (ISIC 244))	
North America	7.5	3.8	0.66	0.039
EEC (excl. Luxembourg)	10.2	5.5	0.54	0.048
EFTA (excl. Switzerland)	2.9	1.9	0.28	0.025
			III. Clothing	
North America	10.0	11.9	0.78	0.052
EEC	12.7	31.7	1.20	0.059
EFTA (excl. Switzerland and Portugal)	10.3	14.1	1.86	0.095
			IV. Footwear	
North America	0.6	1.9	0.22	0.003
EEC (excl. Netherlands and Luxembourg)	0.6	3.7	0.16	0.003
EFTA (excl. Switzerland and Portugal)	1.2	7.1	0.84	0.011
			V. Wood products and furniture	
North America	4.7	4.5	0.44	0.024
EEC	5.8	5.4	0.70	0.032
EFTA (excl. Switzerland)	3.3	5.2	0.66	0.030

Table 2. Continued

Region	In '000s	As percentage of employment loss directly associated with productivity increase	As percentage of total employment in the branch in 1965	As percentage of total manufacturing employment in 1965
North America	1.1	16.0	0.83	0.006
EEC (incl. France)	2.4	n.a.	1.11	0.011
(excl. France)	1.8	21.0	1.12	0.012
EFTA (excl. Switzerland and Portugal)	-0.2	-6.0	-0.31	-0.002
VI. Leather and leather products, except wearing apparel				
North America	1.6	1.0	0.19	0.008
EEC	0.2	0.07	0.02	0.001
EFTA (excl. Switzerland)	2.3	n.a.	0.39	0.021
(excl. Switzerland, Portugal)	2.3	1.7	0.40	0.022
VII. Chemical and chemical products				
North America	0.4	0.2	0.03	0.002
EEC (excl. Netherlands, Belgium, Luxembourg)	0.2	0.2	0.01	0.001
EFTA (excl. Switzerland and Finland)	0.5	n.a.	0.07	0.005
(excl. Switzerland, Finland and Portugal)	0.4	0.5	0.05	0.004
VIII. Metal products, except machinery and transport equipment				

Source: ILO, Some Labour Implications of Increased Participation of Developing Countries in Trade in Manufactures and Semi-Manufactures, in: United Nations Conference on Trade and Development, Second Session, Vol. III: Problems and Policies of Trade in Manufactures and Semi-Manufactures, New York, 1968, p. 153.

Table 1. Effects of a billion-dollar increase in exports of manufactures from developing countries on employment in developed countries

Industry	Value of extra exports to		Number of workers displaced		Percentage fall in employment	
	U.S.A. (\$ million) (1)	U.K. + E.E.C. (\$ million) (2)	U.S.A. (thousands) (3)	U.K. + E.E.C. (thousands) (4)	U.S.A. % (5)	U.K. + E.E.C. % (6)
Textiles	122	113	9.4	24.9	0.9	0.9
Clothing	75	69	8.9	17.2	0.8	1.2
Leather	32	29	2.5	5.0	2.1	1.9
Footwear	14	12	1.6	3.3	0.7	0.7
Chemicals	24	23	0.7	1.0	0.1	0.1
Metal products	5	5	0.2	0.5	negl.	negl.
Other manufactures ^{a/}	115	106	n.a.	n.a.	n.a.	n.a.
Total ^{b/}	387	357	n.a.	n.a.	n.a.	n.a.

Taking into account indirect effects of clothing and footwear imports on textiles and leather industry^{c/} the additional workers displaced would be as follows:

	(3)	(4)	(5)	(6)
Textiles	2.0	3.8	0.2	0.1
Leather	0.2	0.5	0.2	0.2

Adding these to the workers directly displaced gives the following direct and indirect displacements:

Textiles	11.4	28.7	1.1	1.1
Leather	2.7	5.5	2.3	2.1

^{a/} Estimates of employment effects not available.
^{b/} Total extra exports to the United States, the E.E.C., and United Kingdom, are \$744 million. Exports to the rest of the world, including the developing countries themselves, make up the rest of the \$1 billion.

^{c/} Estimates based on W.S. Salant and B. Vaccara, *Import Liberalisation and Employment. The Effects of Unilateral Reductions in United States Import Barriers*, The Brookings Institution, Washington, D.C., 1961.

Source: I. Little, T. Seitovsky, N. Scott, *Industry and Trade in Some Developing Countries. A Comparative Study*, London (Oxford University Press), 1970, pp. 267-268.

Table 4. Estimated increases in the industrial countries' non-preferential imports of manufactured goods from developing countries
(Estimates for twenty-nine commodity groups)
(In \$ million)

Importing areas	Value of imports, f.o.b., of manufactured goods from developing countries in 1964	Estimated increases			
		Elimination of tariffs		Kennedy Round	
		Amount	Percentage increase	Amount	Percentage increase
United States	645.3	477.4	73.9	120.9	18.7
Canada	56.1	22.5	40.1	5.7	10.2
European Economic Community	363.7	141.0	38.7	59.5	16.4
United Kingdom (non-preferential)	52.9	15.9	30.0	5.0	9.5
Continental European Free Trade Area	107.0	30.4	28.4	6.5	6.1
Japan	64.6	14.7	22.8	7.8	12.1
Total	1,290.6	701.9	54.4	205.5	15.9

Source: United Nations, The Kennedy Round estimated effects on tariff barriers, Report by the Secretary-General of UNCTAD, Part Two, "The structure of protection in industrial countries and its effects on the exports of processed goods from developing countries", prepared by Professor Bela A. Balassa (New York, 1968), pp. 199, 206 and 208. Figures for estimated percentage increase were calculated by the ILO.

Source: ILO, Quantitative Effects of Removal or Reduction of Trade Barriers against Imports of Manufactures from Developing Countries on Labour Displacement in European and North American Industrialized Countries, in: UN, Investment in Human Resources and Manpower Planning, papers presented to the Eighth Session of Senior Economic Advisers to ECE Governments, New York, 1971, p.67.

**Table 5. Estimates of labour displacement^{a/} as a result of
(a) the elimination of tariffs and (b) the Kennedy Round
(Based on Professor Balassa's estimates of the effects on
1964 imports of manufactures from developing countries)**

A. In number of workers displaced

Region	Direct effect	Indirect effect	Total effect
1. Elimination of tariffs			
United States	25,900	15,800	42,700
EEC	18,700	10,300-13,100	29,000-31,800
United Kingdom	2,400	1,300-1,700	3,700-4,100
Continental EFTA area	4,000	2,200-2,800	5,200-6,800
2. The Kennedy Round			
United States	5,800	4,000	10,800
EEC	7,900	4,300-5,500	12,200-13,400
United Kingdom	700	400-500	1,100-1,200
Continental EFTA area	800	500-600	1,300-1,400

Table 5. Continued

B. Relative magnitude

Region	Direct effect as per cent of		Total effect as per cent of		
	Total manufac- turing employment in 1964	Increase in total manufac- turing employment in 1964	Total civilian employment in 1964	Increase in total civilian employment in 1964	Total unemployment in 1964
	1. Elimination of tariffs				
United States	0.156	9.65	0.062	2.77	1.13
EEC	0.083	n.a.	0.039-0.043	n.a.	3.24-3.56
United Kingdom	0.027	1.86	0.015-0.016	1.25-1.37	1.05-1.15
Continental EFTA area	0.071	n.a.	0.034-0.037 ^{b/}	n.a.	n.a.
	2. The Kennedy Round				
United States	0.039	2.44	0.015	0.70	0.29
EEC	0.035	n.a.	0.017-0.018	n.a.	1.37-1.50
United Kingdom	0.008	0.58	0.005-0.005	0.39-0.43	0.33-0.36
Continental EFTA area	0.015	n.a.	0.007-0.008 ^{b/}	n.a.	n.a.

^{a/} For the United States, the EEC and the United Kingdom, estimates are based on weighted coefficients of the number of workers displaced per million-dollar increase in imports of manufactures from developing countries, the weights being the percentage contribution of imports from developing countries in each group to the total imports from developing countries of the eight selected product groups into the industrial area concerned in 1964. For the continental EFTA area unweighted coefficients were used.

^{b/} Total civilian employment relates to 1960.

n.a. - not available

Absolute figures of number of workers displaced were rounded to hundreds in table 5 (A); the percentage figures given in table 5 (B) were calculated from unrounded figures.

Source: ILO, Quantitative Effects of Removal or Reduction of Trade Barriers against Imports of Manufactures from Developing Countries on Labour Displacement in European and North American Industrialized Countries, in: UN, Investment in Human Resources and Manpower Planning, papers presented to the Eighth Session of the Senior Economic Advisers to EOE Governments, New York, 1971, pp. 72-73.

Table 6. Employment effects of increased imports of manufactures from developing countries in the United States of America, the United Kingdom and the Federal Republic of Germany on the assumption that the percentage increases experienced during the period 1965-1969 double during the period 1969-1973

Industry	Estimated average yearly increase in imports 1969-1973 (thousand dollars)			Average yearly number of employees displaced by increased imports			Average yearly number of employees displaced by increased imports					
	USA	UK	FRG	USA	UK	FRG	as percent of employment in 1969			per average yearly number of employees displaced due to increases in labour productivity		
							USA ^{a/}	UK	FRG	USA	UK	FRG
Food	144,732	73,926	15,199	2,767	6,270	740	0.193	1.104	0.135	0.045	0.401	0.047
Beverages	1,425	1,725	10,778	35	114	658	0.016	0.085	0.433	0.004	0.018	0.133
Tobacco products	982	-49 ^{b/}	82	15	-3 ^{b/}	10	0.020	-0.007 ^{b/}	0.080	0.004	-0.003 ^{b/}	0.004
Textiles	55,142	1,017	34,545	2,588	116	3,114	0.279	0.019	0.608	0.029	0.007	0.116
Footwear, wearing apparel and made-up textiles	574,386	69,798	104,742	37,062	17,559	13,197	2.341	3.697	2.563	0.520	7.393	0.623
Wood and cork products	171,395	1,231	15,820	8,496	121	942	1.528	0.103	1.327	0.297	-0.051 ^{c/}	0.100
Furniture	20,705	-132 ^{b/}	63	1,136	-25 ^{b/}	8	0.267	-0.018 ^{b/}	0.002	0.063	0.030 ^{b/}	-
Paper and paper products	6,248	-5 ^{b/}	1,684	192	-1 ^{b/}	138	0.030	-	0.065	0.008	-	0.013
Printing and publishing	6,833	954	595	323	148	49	0.032	0.040	0.019	0.007	0.027	0.004
Leather and leather goods	23,933	4,924	36,645	1,277	845	3,419	1.228	1.798	5.998	0.273	-2.394 ^{c/}	1.091
Rubber products	12,661	1,671	2,420	456	251	286	0.173	0.193	0.200	0.041	0.051	0.067
Chemicals	85,974	28,702	13,663	1,978	3,661	849	0.179	0.794	0.146	0.060	0.144	0.018
Petroleum products	79,221	-5,781 ^{b/}	-1,593 ^{b/}	510	-200 ^{b/}	-51 ^{b/}	0.359	-0.426 ^{b/}	-0.138 ^{b/}	0.039	-0.122 ^{b/}	-0.020
Non-metallic mineral products	66,753	21,980	5,146	2,701	3,547	483	0.457	1.085	0.112	0.131	0.333	0.026
Basic metal manufactures	37,901	146,613	196,075	1,044	15,095	15,168	0.082	2.676	2.218	0.025	2.676	0.341
Metal products excluding machinery	37,108	2,752	889	1,446	380	95	0.108	0.073	0.011	0.027	0.037	0.002
Machinery other than electric	69,238	8,291	15,932	2,660	1,042	1,963	0.143	0.099	0.166	0.029	0.031	0.183
Electrical machinery apparatus and appliances	438,939	7,716	20,584	18,969	1,429	2,364	1.000	0.172	0.232	0.286	0.033	0.042
Transport equipment	7,193	2,768	4,155	192	306	329	0.011	0.028	0.041	0.005	0.016	0.006
Miscellaneous manufactured articles	245,030	28,757	43,429	10,767	7,877	3,422	0.880	2.100	0.837	0.195	1.400	0.134
Total	2,085,884	396,858	520,863	94,614	58,532	47,183	-	-	-	-	-	-

^{a/} As percent of employment in 1967.

^{b/} Decrease in imports and thus increase in employment.

^{c/} Decrease in labour productivity and thus increase in employment.

SOURCE: UNCTAD, Adjustment Assistance Measures, Report by the UNCTAD Secretariat, document TD/121/Supp. 1, 14 January 1972, Technical Annex, tables 1-3, 5, 6; several figures were corrected because of inconsistency.

Table 7: Estimated effects on employment in selected developed countries of \$1 million of exports to developing countries^{a/} (employment measured in number of persons)

Industry in which ultimate employment changes occur	France, 1959	F.R.G., 1959	United Kingdom, 1963	United States, 1958
Agriculture	61.0	53.6	3.8	25.8
Coal, crude petroleum, natural gas	5.9	16.2	8.4	2.3
Other mining and quarrying	5.7	4.9	2.4	1.0
Food, beverages and tobacco	3.8	4.2	4.9	1.8
Textiles	21.6	20.1	14.7	4.0
Clothing	4.6	5.7	3.9	1.4
Wood products, paper and printing	13.8	17.5	13.1	7.1
Rubber	4.7	4.9	3.6	1.2
Chemicals	25.1	24.7	15.8	6.2
Petroleum and coal products	1.1	0.9	0.7	0.4
Non-metallic mineral products	8.6	11.2	10.2	1.8
Ferrous and non-ferrous metals	24.3	24.7	24.5	8.7
Transport equipment	24.3	29.0	30.6	7.7
Machinery and other manufactured goods	105.8	147.2	105.6	33.4
Electricity, water, gas	4.6	4.1	3.7	0.8
Building and other construction	4.5	2.3	1.9	0.6
Trade	13.1	31.4	6.3	11.4
Transport and communication	18.7	20.6	14.6	5.3
Other services (material sphere)	0.9	0.8	0.8	0.7
Other services (non-material sphere)	18.7	11.3	36.4	8.9
Total	370.8	435.3	305.9	130.5

^{a/} The estimates relate to the effects of \$1 million of exports (at factor cost for the European countries and at market prices for the United States) in the year to which the input-output table refers, distributed by industry in proportion to the composition of exports to developing countries in 1970. The 1970 export distributions used for France and the Federal Republic of Germany were based on total exports to developing countries of the old EEC. The distribution for the United Kingdom and the United States were based on the exports of each of these countries to developing countries in 1970.

Source: H.F. Lydall, Trade and Employment. A Study of the Effects of Trade Expansion on Employment in Developing and Developed Countries, ILO, Geneva, 1975, p.107.

Table 8: Estimated effects on employment in selected developed countries of an increase in imports leading to a \$1 million decrease in value added in non-primary industries (employment measured in number of persons)

Industry providing initial imports	France, 1959	F.R.G., 1959	United Kingdom, 1963	United States, 1958
Food, beverages and tobacco	264	315	181	119
Textiles	423	427	336	192
Clothing	384	530	398	189
Wood products, paper and printing	337	385	303	153
Ferrous and non-ferrous metals	240	233	266	120
Machinery and other manufactured goods	313	428	307	132

a/ The estimates relate to a change in value added in non-primary industries worth \$1 million at factor cost in the European countries and \$1 million at market prices in the United States.

Source: H.F. Lydall, Trade and Employment. A Study of the Effects of Trade Expansion on Employment in Developing and Developed Countries, ILO, Geneva, 1975, p.108.

Table 9. Industrial distribution of net employment effects in selected developed countries of a balanced increase in exports worth \$1 million associated with an equal increase in imports provided by different industries

(a) Federal Republic of Germany, 1959

Industry in which ultimate employment changes occur	Industry providing the initial imports					
	Food, beverages & tobacco	Textiles	Clothing	Wood products, paper & printing	Ferrous and non-ferrous metals	Machinery & other manufactured goods
Agriculture	54	54	54	54	54	54
Coal, crude petroleum, natural gas	16	16	16	16	16	16
Other mining & quarrying	5	5	5	5	5	5
Food, beverages & tobacco	-161	4	2	3	4	4
Textiles	18	-293	-52	8	19	17
Clothing	4	3	-359	4	5	5
Wood products, paper and printing	4	3	7	-263	10	7
Rubber	4	4	4	4	4	4
Chemicals	18	10	19	18	20	19
Petroleum & coal products	-1	1	1	1	-1	0
Non-metallic mineral products	7	9	10	6	6	8
Ferrous & non-ferrous metals	20	22	21	20	-91	4
Transport equipment	27	27	28	27	26	26
Machinery and other manufactured goods	132	141	140	138	129	-180
Electricity, water, gas	1	1	2	1	-2	2
Building and other construction	-1	1	1	1	1	1
Trade	-23	-9	-8	-2	1	5
Transport & communication	1	9	12	7	-5	8
Other services (material sphere)	-1	0	0	0	0	0
Other services (non-material sphere)	-4	0	2	2	1	2
Total	120	8	-95	50	202	7

Table 9. Continued

(b) France, 1959

Industry in which ultimate employment changes occur	Industry providing initial imports					
	Food, beverages & tobacco	Textiles	Clothing	Wood products, paper & printing	Ferrous & non-ferrous metals	Machinery & other manufactured goods
Agriculture	61	61	61	61	61	61
Coal, crude petroleum, natural gas	6	6	6	6	6	6
Other mining & quarrying	7	7	7	7	7	7
Food, beverages & tobacco	-136	3	2	3	4	4
Textiles	20	-310	-63	16	21	20
Clothing	4	4	-234	4	4	4
Wood products, paper & printing	5	6	8	-243	10	9
Rubber	3	2	1	4	4	3
Chemicals	18	10	20	20	23	21
Petroleum & coal products	0	1	1	1	-1	0
Non-metallic mineral products	6	8	8	7	8	7
Ferrous & non-ferrous metals	22	23	23	23	-117	1
Transport equipment	20	24	24	23	24	23
Machinery & other manufactured goods	95	102	101	99	74	-119
Electricity, water, gas	1	0	2	1	-4	1
Building and other construction	-1	-1	2	1	-1	0
Trade	-10	2	5	3	5	2
Transport & communication	3	5	10	2	-2	5
Other services (material sphere)	-1	-1	0	0	-1	0
Other services (non-material sphere)	-16	-4	3	-4	6	3
Total	107	-52	-13	34	131	58

Table 9. Continued

(e) United Kingdom, 1961

Industry in which ultimate employment changes occur	Industry providing the initial imports					
	Food, beverages & tobacco	Textiles	Clothing	Wood products, paper & printing	Ferrous & non-ferrous metals	Machinery & other manufactured goods
Agriculture	4	4	4	4	4	4
Coal, cruds petroleum, natural gas	8	8	8	8	8	8
Other mining & quarrying	2	2	2	2	2	2
Food, beverages & tobacco	-100	4	5	5	5	5
Textiles	13	-276	-45	7	14	13
Clothing	4	3	-269	3	4	3
Wood products, paper and printing	5	10	5	-198	8	4
Rubber	3	3	1	3	3	2
Chemicals	10	13	13	10	8	12
Petroleum & coal products	1	1	1	1	1	1
Non-metallic mineral products	8	10	9	7	9	8
Ferrous and non-ferrous metals	23	23	23	22	-138	3
Transport equipment	29	30	29	29	28	28
Machinery and other manufactured goods	96	99	94	91	87	-105
Electricity, water, gas	1	0	1	1	-1	0
Building & other construction	0	0	1	0	0	0
Trade	1	4	4	3	4	3
Transport & communication	5	7	8	0	3	6
Other services (material sphere)	0	0	0	0	0	0
Other services (non-material sphere)	12	25	14	5	-9	2
Total	125	-30	-92	3	40	-1

Table 9. Continued

(d) United States, 1958

Industry in which ultimate employment changes occur	Industry providing the initial imports					
	Food, beverages & tobacco	Textiles	Clothing	Wood products, paper & printing	Ferrous & non-ferrous metals	Machinery & other manufactured goods
Agriculture	26	26	26	26	26	26
Coal, crude petroleum, natural gas	2	2	2	2	2	2
Other mining & quarrying	1	1	1	1	1	1
Food, beverages & tobacco	-50	1	-1	1	2	2
Textiles	3	-138	-4	2	3	3
Clothing	1	1	-129	1	1	1
Wood products, paper and printing	1	3	1	-99	5	3
Rubber	1	0	-3	0	1	0
Chemicals	4	1	4	4	5	5
Petroleum & coal products	0	0	0	0	0	0
Non-metallic mineral products	0	1	1	1	0	0
Ferrous and non-ferrous metals	7	8	8	7	-57	-3
Transport equipment	7	7	7	7	7	5
Machinery and other manufactured goods	28	30	31	29	26	-44
Electricity, water, gas	0	0	0	0	-1	0
Building & other construction	-1	0	0	0	0	0
Trade	-6	-3	1	-1	-8	-2
Transport & communication	-4	0	0	-2	-3	0
Other services (material sphere)	0	-1	-1	0	0	0
Other services (non-material sphere)	-8	0	-2	-1	1	0
Total	12	-61	-58	-22	11	-1

Source: H.P. Lydall, Trade and Employment. A Study of the Effects of Trade Expansion on Employment in Developing and Developed Countries, ILO, Geneva, 1975, pp. 110 and 111.

Table 10. United States of America: Sources of Growth of Employment in Selected Import-Competing Industries, 1963-71

Per cent per year

SIC industry class	Growth rate		Contribution to growth of employment					
	Total employment ^{a/} (1)	Production man-hour ^{b/} (2)	Productivity per employee (3)	Productivity per man-hour (4)	Domestic demand (5)	Exports (6)	Imports (7)	Trade ^{c/} (8)
20. Processed foods	0.5	0.2	2.7	-3.0	3.5	0.1	-0.4	-0.3
22. Textiles	-7.5	-7.7	-9.5	-9.7	2.2	0.1	-0.2	-0.1
23. Apparel	-3.6	-4.8	-6.2	-7.4	3.4	0.0	-0.8	-0.8
24. Wood products	0.9	0.7	-0.5	-0.8	1.9	0.1	-0.6	-0.5
25. Furniture	3.7	3.1	-0.5	-1.2	4.8	0.0	-0.5	-0.5
26. Paper products	0.3	-0.1	-3.1	-3.6	6.9	1.2	-4.7	-3.5
27. Printing and publishing	3.1	3.1	-0.4	-0.4	5.0	0.1	-1.5	-1.5
28. Chemicals	2.0	1.5	-2.9	-3.4	5.0	0.6	-0.7	-0.1
29. Petroleum and coal products	10.4	9.5	-5.4	4.5	6.4	0.0	-1.5	-1.5
30. Rubber and plastic products	4.2	3.8	-0.4	-0.8	7.0	-1.5	-1.0	-2.5
31. Leather products	-2.3	-2.7	-1.7	-2.1	1.2	0.0	-1.8	-1.8
32. Stone, clay, and glass products	1.2	0.6	-1.6	-2.2	3.0	0.3	-0.6	-0.2
33. Primary metal products	2.7	1.6	2.5	1.4	1.7	-0.1	-1.4	-1.5
34. Fabricated metal products	-0.4	-0.9	-3.4	-3.9	3.2	0.6	-0.8	-0.2
35. Machinery except electrical	2.4	0.3	-1.0	-3.1	3.6	0.7	-0.9	-0.2
36. Electrical equipment and supplies	2.8	-3.4	-2.8	-9.0	6.7	0.7	-1.8	-1.1
37. Transportation equipment	2.4	1.8	-1.9	-2.5	4.0	1.0	-0.7	0.3
38. Instruments	0.9	-1.4	-9.3	-11.5	10.3	1.2	-1.2	-0.1
39. Miscellaneous manufactures	0.8	-0.1	-2.4	-3.3	4.1	0.4	-1.3	-0.9
Total	0.7	-0.8	-2.9	-4.3	4.0	0.4	-0.9	-0.5

^{a/} Algebraic sum of columns 3, 5, 6, and 7; numbers have been rounded.

^{b/} Algebraic sum of columns 4, 5, 6, and 7; numbers have been rounded.

^{c/} Algebraic sum of columns 6 and 7; numbers have been rounded.

Source: Ch. R. Frank, Jr., Foreign Trade and Domestic Aid, Washington, D.C. (The Brookings Institution), 1977, p. 29.

Table 11. United States of America: Change in Number of Jobs Available Due to Increased Imports from Less Developed Countries in Selected Import-Competing Industries, 1964-71

SIC industry class	Less developed countries				Contribution to growth of employment, 1963-71, per cent per year
	Africa	Asia	Latin America	Total	
	Number of jobs				
20. Processed foods	-2,960	-1,913	-36	-4,908	-0.15
22. Textiles	1	-1,684	-252	-1,934	-0.07
23. Apparel	-2,647	-51,860	81	-54,426	-0.75
24. Wood products	-506	-5,482	73	-5,915	-0.21
25. Furniture	-321	-2,645	1	-2,964	-0.12
26. Paper products	-6	-71	-169	-245	-0.09
27. Printing and publishing	0	-1,026	0	-1,026	-1.44
28. Chemicals	-304	-3,870	-24	-4,197	-0.15
29. Petroleum & coal products	-2,656	-383	-68	-3,106	-0.46
30. Rubber & plastic products	-186	-12,194	-4	-12,383	-0.59
31. Leather products	-3,395	-6,186	-70	-9,650	-0.49
32. Stone, clay & glass products	-185	-5,841	-6	-6,032	-0.65
33. Primary metal products	4,432	-29,474	-437	-25,479	-0.39
34. Fabricated metal products	-272	-7,940	-4	-8,215	-0.48
35. Machinery except electrical	-872	-11,911	-38	-12,821	-0.27
36. Electrical equipment and supplies	-5,479	-73,082	70	-78,490	-1.49
37. Transportation equipment	-612	-33,256	-14	-33,881	-0.23
38. Instruments	-28	-9,690	0	-9,717	-0.78
39. Miscellaneous manufactures	-1,606	-18,495	-19	-20,119	-1.21
Total*	-17,582	-276,987	-899	-295,487	-0.45

* Totals may be slightly off due to rounding.

Source: Ch.R. Frank Jr., Foreign Trade and Domestic Aid, Washington, D.C. (The Brookings Institution), 1977, p.37 - Own calculations based on tables 3-4, 3-6 and 3-9 on pp.29, 32 and 37 of the source.

**Table 12. Estimates of direct causes of job loss in the UK
in sensitive sectors, 1970-1975**
(number of persons)

		Footwear	Clothing	Cotton Textile (Fabrics)	Textile Yarns
Employment (mid-year)	1970	97,100	364,000	61,200	83,000
	1975	75,300	320,500	47,400	57,500
Job change due to:					
productivity change	1970-75	-8,100	-81,900	-4,700	-11,000
consumption change	1970-75	-5,700	+54,600	+300	-10,200
net import penetration	1970-75	-8,100	-30,800	-8,400	-7,100
of which LDCs	1970-75	-1,710 ^{a/}	-19,450	-2,225	-215
(unexplained residual)	1970-75	+100	+14,600	-1,000	+2,800
Average annual loss of employment due to LDC trade	1970-75	0.4%	1.1%	0.8%	0.05%

^{a/} 3,200 including COMECON.

Sources: Footwear statistics obtained from Business Monitor Reports, NEDO and Footwear Industry Statistical Review, 1975.

Clothing from NEDO Statistical Bulletin, March 1977. 1970 import and export data based on trade statistics, corrected to conform to NEDO output and trade series. Employment, 1970/75, as calculated by NEDO from Census Returns includes temporarily stopped workers (56,000 in first quarter of 1974, reduced since due to Temporary Employment Subsidy).

Textiles from NEDO Textile Trends 1966-75. For yarns, cotton and yarn production figures were combined. For fabrics, cotton and allied fabric production figures are used.

Sources: V. Cable, British Protectionism and LDC Imports, in: ODI Review, 2/1977, p.40.

Table 13. Employment in France theoretically affected by trade in manufactures with developing countries, 1970 and 1976

Industry	1970						1976					
	Exports		Imports		Exports less imports		Exports		Imports		Exports less imports	
	in thousand persons	as % of employment	in thousand persons	as % of employment	in thousand persons	as % of employment	in thousand persons	as % of employment	in thousand persons	as % of employment	in thousand persons	as % of employment
ferrous and non-ferrous metals	24.9	3.8	15.2	2.3	9.7	1.5	40.7	5.2	15.6	2.0	25.1	3.2
Mechanical and electrical engineering	72.8	5.0	1.2	0.1	71.6	4.9	142.9	12.8	7.3	0.6	135.6	12.2
Transport equipment (excl. ships + aircraft)	29.6	7.0	0.1	0.3	29.5	6.7	47.5	9.6	1.3	0.3	46.2	9.3
Shipbuilding, aircraft, arms	9.8	7.8	0.05	0.04	9.75	7.7	33.3	15.0	0.3	0.2	33.0	14.8
Textiles, clothing	21.5	3.2	5.9	0.9	15.6	2.3	16.9	2.7	24.2	3.8	-7.3	-1.1
Leather, footwear	2.8	2.1	4.4	3.2	-1.6	-1.1	3.0	2.3	6.8	5.3	-3.8	-3.0
Wood, furniture, various industries	24.2	4.1	8.2	1.4	16.0	2.7	6.2	1.7	12.7	3.5	-6.5	-1.3
Food, beverages, tobacco	9.4	1.1	20.0	2.4	-10.6	-1.3	22.9	5.0	19.1	4.2	3.8	0.8
Building materials	2.9	1.1	3.2	1.3	-0.3	-0.2	3.8	1.8	0.3	0.2	3.5	1.6
Glass	3.1	4.7	0.05	0.1	3.05	4.6	4.7	6.3	0.1	0.2	4.6	6.1
Chemicals	27.1	7.0	13.5	3.5	13.6	3.5	34.6	5.7	3.7	0.6	30.9	5.1
Paper, paperboard	2.6	2.3	1.6	1.4	1.0	0.9	2.7	2.1	1.6	1.2	1.1	0.9
Printing, publishing	4.2	1.5	0.1	0.03	4.1	1.5	3.6	1.6	0.2	0.01	3.4	1.6
Total manufacturing	233.9	4.3	73.5	1.3	160.4	3.0	362.9	6.6	93.2	1.7	269.7	4.9

^{a/} Uncertain figures which do not permit valid comparisons.

Source: J. Haas, L'industrialisation des PVD: caractéristiques, évolution des échanges, hypothèses sur les conséquences en France, SETHZ, Paris, 1970, compiled from tables on pp. 35-38.

Table 14. Employment effects in France due to estimated evolution of trade in manufactures with developing countries, 1976-1985

Industry	Possible gains in employment by increases in exports						Possible losses in employment by increases in imports					
	Hyp. a		Hyp. b		Hyp. c		Hyp. d		Hyp. e		Hyp. f	
	in thousand persons	as % of employment 1976	in thousand persons	as % of employment 1976	in thousand persons	as % of employment 1976	in thousand persons	as % of employment 1976	in thousand persons	as % of employment 1976	in thousand persons	as % of employment 1976
Ferrous and non-ferrous metals	45.3	5.8	45.3	5.8	13.4	1.7	0.6	0.1	6.5	0.8	6.5	0.8
Mechanical + electrical engineering	251.7	22.5	115.4	10.3	115.4	10.3	94.5	8.5	94.5	8.5	94.5	8.5
Transport equipment (excl. ships + aircraft)	54.0	11.0	20.0	4.1	-5.6	-1.1	42.9	8.7	42.9	8.7	42.9	8.7
Shipbuilding, aircraft, arms												
Textiles, clothing	-5.0	-0.8	-5.0	-0.8	-16.9	-2.7	178.2	26.0	178.2	26.0	4.5	0.7
Leather, footwear	0.2	0.2	0.2	0.2	-3.0	-2.3	6.5	5.1	6.5	5.1	0.7	0.5
Wood, furniture, various industries	-5.4	-1.5	-5.4	-1.5	-6.2	-1.7	12.1	3.4	12.1	3.4	2.2	0.4
Food, beverages, tobacco	64.8	14.2	15.1	3.3	0.7	0.2	-1.2	-0.3	1.8	0.4	1.8	0.4
Building materials	2.0	0.9	1.8	0.8	-3.8	-1.8	-0.3	-	-	-	-	-
Glass	4.1	5.5	3.5	4.7	-4.7	-6.3	0.7	0.9	0.7	0.9	0.7	0.9
Chemicals	14.7	2.4	14.7	2.4	-2.6	-0.4	-3.2	-0.5	-	-	-	-
Paper, paperboard	0.2	0.2	0.2	0.2	0.2	0.2	-	-	-	-	-	-
Printing, publishing	-0.7	-0.3	-0.7	-0.3	-0.7	-0.3	0.4	0.2	0.4	0.2	-	-
Total manufacturing	425.9	7.8	205.1	3.8	86.2	1.6	331.2	6.1	343.6	6.3	153.8	2.7

a/ Description of the several hypotheses see on p. 31 of the text.

b/ Uncertain figures, employment concerned is assumed to remain unchanged.

Source: J. Haas, L'industrialisation des PVD: caractéristiques, évolution des échanges, hypothèses sur les conséquences en France, SETEP, Paris, 1968, p. 45.

Table 15. Net employment effects in France due to estimated evolution of trade in manufactures with developing countries, 1976-1985
-very unfavourable and very favourable evolution-

Industry	Very unfavourable evolution				Very favourable evolution			
	Possible gains by exports	Possible losses by imports	Net effects (+gains, -losses)		Possible gains by exports	Possible losses by imports	Net effects (+gains, -losses)	
	in thousand persons	in thousand persons	in thousand persons	as % of employment 1976	in thousand persons	in thousand persons	in thousand persons	as % of employment 1976
Ferrous and non-ferrous metals	13.4	6.5	+6.9	+0.9	45.3	0.6	+44.7	+5.7
Mechanical and electrical engineering	115.4	94.5	+20.9	+1.9	251.7	94.5	+157.2	+14.1
Transport equipment (excl. ships and aircraft)	-5.6	42.9	-48.5	-9.8	54.0	42.9	+11.1	+2.8
Shipbuilding, aircraft, arms ^{1/}								
Textiles, clothing	-16.9	178.2	-195.1	-30.7	-5.0	4.5	-9.5	-1.5
Leather, footwear	-3.0	6.5	-9.5	-7.4	0.2	0.7	-0.5	-0.4
Wood, furniture, various industries	-6.2	12.1	-18.3	-5.1	-5.4	2.2	-7.6	-2.1
Food, beverages, tobacco	0.7	1.8	-1.1	-0.2	64.8	-1.2	+66.0	+14.4
Building materials	-3.8		-3.8	-0.8	2.0	-0.3	+2.3	+1.1
Glass	-4.7	0.7	-5.4	-7.2	4.1	0.7	+3.4	+4.5
Chemicals	-2.6		-2.6	-0.4	14.7	-3.2	+17.9	+9.0
Paper, paperboard	0.2		+0.2	+0.2	0.2		+0.2	+0.2
Printing, publishing	-0.7	0.4	-1.1	-0.5	-0.7		-0.7	-0.3
Total manufacturing	86.2	343.6	-257.4	-4.7	425.9	141.4	+284.5	+5.2

^{1/} Uncertain figures, employment concerned is assumed to remain unchanged.

SOURCE: J. Mann, L'industrialisation des PVD: caractéristiques, évolution des échanges, hypothèses sur les conséquences en France, SEFEP, Paris, 1968, p. 46.

Table 16. Estimated labour displacement in the Federal Republic of Germany by increased imports of selected manufactures from developing countries 1970-1980^{a/}

Industry	Variant I		Variant II		Variant III	
	Persons displaced					
	in thousand	as % of employment 1970	in thousand	as % of employment 1970	in thousand	as % of employment 1970
Raw material intensive industries	42.8	4.0	97.7	9.2	146.2	13.8
Iron making industry	12.8	3.8	24.3	7.2	36.4	10.9
Industry of non-ferrous metals	16.8	13.5	39.7	31.8	59.5	47.6
Saw-mills and timber processing	2.2	3.1	5.2	7.4	7.7	11.1
Leather production	1.5	10.3	3.5	24.4	5.3	36.6
Food, beverages & tobacco	9.5	1.8	24.9	4.8	37.3	7.3
Labour-intensive industries	122.2	3.9	239.8	7.6	359.7	11.4
Electrical equipment	37.2	3.4	68.7	6.2	103.0	9.4
Precision engineering and optical goods	1.2	0.7	2.3	1.3	3.4	2.0
Industry of hardware and metal goods	0.3	0.1	0.7	0.2	1.1	0.3
Timber manufactures	0.5	0.2	1.2	0.5	1.8	0.8
Musical instruments, toys, jewellery & sport articles	11.1	18.5	21.8	36.4	32.7	54.6
Plastic manufactures	1.2	0.7	2.3	1.4	3.4	2.1
Leather manufactures	7.8	19.6	14.9	37.3	22.3	55.9
Footwear	15.7	17.5	29.0	32.4	43.5	48.7
Textile industry	15.7	3.1	36.5	7.3	54.8	10.9
Clothing industry	31.5	8.3	62.4	16.5	93.6	24.7

^{a/} Assumptions underlying the several variants see pp. 35 and 36 of the text.

Source: DIW, R. Krengel u. Mitarbeiter, Produktionsvolumen und potential, Produktionsfaktoren der Industrie im Gebiet der Bundesrepublik Deutschland einschliesslich Saarland und Berlin (West). Statistische Kennziffern, 11. Folge (1959-1970), Berlin, 1971 - Statistisches Bundesamt, Fachserie C, 'Aussenhandel', Reihe 7: Sonderbeiträge, Aussenhandel nach Ländern und Warengruppen und -zweigen des Warenverzeichnisses für die Industriestatistik, Stuttgart u. Mainz, current issues - Own calculations.

Source: G. Pels and E.-J. Horn, Der Wandel der Industriestruktur im Zuge der weltwirtschaftlichen Integration der Entwicklungsländer (Changes in the Industrial Structure Arising from the Integration of the Developing Countries in the World Economy), in: Die Weltwirtschaft, No.1, 1972, p. 125.

Table 17.

Employment effects of an increased division of labour with developing countries in West German manufacturing industry, 1973-1985

Industry	Labour Displacement by additional imports				Employment by additional exports (assuming average annual growth rates as in 1962-73)	
	Variant I: average annual growth rates as in 1962-73		Variant II: average annual growth rates as in 1969-73		in thousand persons	as % of employment in 1973
	in thousand persons	as % of employment in 1973	in thousand persons	as % of employment in 1973		
Raw material and production goods industries	24.6	1.6	53.4	3.4	42.9	2.7
Industry of building materials	0	0	0	0	0.6	0.2
Iron making industry	12.2	3.9	34.1	10.8	6.1	1.9
Iron + steel foundries	0.2	0.1	0.4	0.4	0.5	0.5
Steel drawing + cold rolling mills	0	0	0	0	0.5	0.8
Chemical industry	3.2	0.5	6.1	1.0	33.1	5.6
Saw mills and timber processing	8.9	13.1	12.5	18.5	0.2	0.3
Pulp, paper + paperboard	0.1	0.1	0	0	1.5	2.4
Rubber + asbestos manufactures	0	0	0.2	0.2	0.4	0.3
Capital goods industries	56.3	1.4	166.8	4.2	144.6	3.7
Constructional steel	0.3	0.1	0.8	0.4	-0.5	-0.2
Steel forging	0.7	0.5	1.9	1.3	0.2	0.2
Machinery construction	0.8	0.1	0.8	0.1	65.4	6.0
Road vehicle construction	5.6	0.9	15.7	2.5	39.0	6.2
Shipbuilding	0.1	0.1	0.5	0.7	7.0	9.7
Aircraft	0.1	0.3	5.2	12.8	2.1	5.1
Electrical equipment	28.4	2.6	79.2	7.3	28.0	2.6
Precision engineering + optical goods	9.5	6.0	26.4	16.8	3.9	2.5
Industry of hardware + metal goods	2.9	0.7	14.1	3.4	-1.4	-0.3
Office + data processing machines	8.0	10.1	22.2	28.3	0.9	1.1

Table 17 (cont.)

Industry	Labour Displacement by additional imports				Employment by additional exports (assuming average annual growth rates as in 1962-73)	
	Variant I: average annual growth rates as in 1962-73 ^{a/}		Variant II: average annual growth rates as in 1969-73 ^{a/}		in thousand persons	as % of employment in 1973
	in thousand persons	as % of employment in 1973	in thousand persons	as % of employment in 1973		
Consumer goods industries	249.3	13.0	366.2	19.0	9.5	0.5
Fine ceramic industry	1.7	2.3	4.8	6.3	0.3	0.4
Glass industry	0.7	0.7	1.9	2.0	0.2	0.2
Timber manufactures	1.6	0.7	4.6	1.9	0.2	0.1
Musical instruments, toys, jewelry + sport articles	17.6	32.0	10.0	18.2	0.1	0.1
Paper + paperboard manufactures	0.4	0.3	0	0	0.4	0.3
Printing + duplicating	0.4	0.2	0.5	0.2	0.5	0.2
Plastics manufactures	5.4	2.8	11.5	6.0	4.1	2.1
Leather production	3.7	36.1	1.2	11.8	0	0
Leather manufactures	24.6	67.9	36.2	100	0.1	0.2
Footwear	8.8	12.6	1.0	1.5	0.3	0.4
Textile industry	32.1	7.4	60.6	14.0	3.0	0.7
Clothing industry	152.3	42.4	233.8	65.0	0.4	0.1
Food, beverages + tobacco	12.0	2.4	20.6	4.1	3.9	0.8
Total manufacturing industry ^{b/}	342.2	4.3	607.0	7.6	200.9	2.5

^{a/} The maximum annual increase in the individual industries is restricted to twice the rate of increase of total imports of manufactures from developing countries. The figures of the groups of industries and of total industry are calculated by summing up the figures of the individual industries.

^{b/} Excluding non-ferrous metal as well as mineral oil industry.

Source: Krengel u. Mitarbeiter, Produktionsvolumen und -potential, Statistische Kennziffern, current issues. Statistisches Bundesamt, Fachserie G, Reihe 7: Sonderbeiträge, Außenhandel nach Ländern und Warengruppen und -zweigen des Warenverzeichnisses für die Industriestatistik, current issues. Own calculations.

Source: H. Dicke, H.H. Glismann, E.-J. Horn, A.D. Neu, Beschäftigungswirkungen einer verstärkten Arbeitsteilung zwischen der Bundesrepublik und den Entwicklungsländern (Employment Effects of an Increased Division of Labour between the Federal Republic of Germany and Developing Countries), Tübingen (J.C.B. Mohr/Paul Siebeck), 1976, p. 96.

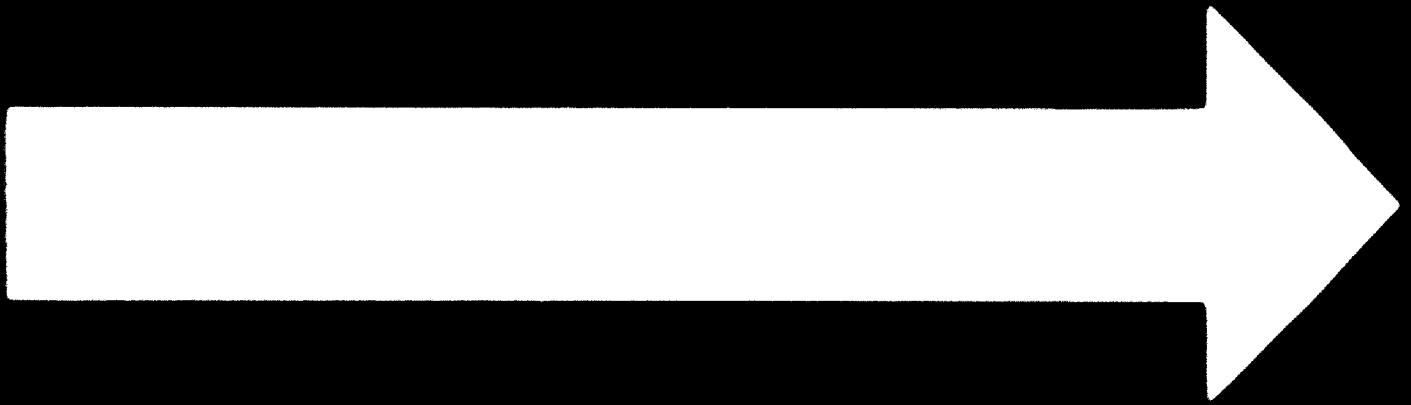
Table 18.
Employment effects of increased imports from (overseas) developing countries
on selected industries of the West German economy at alternative liberalisation
strategies, 1972-1985

Industry	Labour displacement by additional imports assuming that					
	liberalisation continues as in the past (variant III)		additionally protection by tariffs is completely removed		additionally protection by non-tariff barriers is removed as well (variant IV)	
	in thousand persons	as % of employment in 1972	in thousand persons	as % of employment in 1972	in thousand persons	as % of employment in 1972
Precision engineering and optical goods industry (including watch-making industry)	41.0	26.4	49.7	32.2	49.7	32.2
Manufacture of spectacles + spectacle frames	0.4	2.9	0.5	3.4	0.5	3.4
Manufacture of other optical and photographic goods as well as pro- jection + cinematographic appliances	34.0	69.6	41.4	84.8	41.4	84.8
Instrument making	1.7	3.5	2.0	4.1	2.0	4.1
Medical + orthopaedic appliances industry	0.1	0.8	0.1	0.9	0.1	0.9
Watch-making industry	5.0	16.2	5.7	18.6	5.7	18.6
Leather manufactures industry	20.0	52.2	23.4	59.8	23.4	59.8
Footwear industry	24.0	30.3	27.5	34.7	27.5	34.7
Textile industry	48.0	11.4	60.3	14.3	99.1	23.5
Processing of wool fibre	.	.	.	.	.	.
Woolen spinning, manufacture of woollen yarn incl. putting up for retail sale	0.3	2.3	0.3	2.6	.	.
Woolen weaving (excluding carpet weaving), combined woollen spinning and weaving	1.0	2.3	1.2	2.8	.	.
Cotton spinning, cotton yarn including putting up for retail sale	6.0	18.9	6.8	21.5	.	.
Cotton weaving (excluding carpet weaving), combined cotton spinning and weaving	6.0	6.6	7.6	8.3	.	.
Processing of textile raw materials on silk processing machines	0.5	2.1	0.6	2.4	.	.
Processing of textile raw materials on linen and hemp processing machines	0.2	1.2	0.2	1.4	.	.
Processing of jute and hard fibres, rope walks	.	.	.	.	.	.
Knitting and hosiery mills	20.1	14.9	25.2	18.7	.	.
Other textile industry	15.0	20.3	18.4	24.8	.	.
Clothing industry	187.0	90.8	212.4	97.7	331.3	90.0
Outer garments for men and boys	95.1	100.0	.	.	.	.
Outer garments for ladies, girls and children	52.1	32.6	66.5	41.6	.	.
Linen and lingerie industry (including the manufacture of household, bed and table linen)	19.1	43.2	24.8	56.0	.	.
Corsetry	3.5	17.2	4.1	20.1	.	.
Hat and cap making	1.6	34.2	1.9	40.4	.	.
Dressing of fur skins, and fur clothing industry	7.6	121.9	.	.	.	.
Other clothing industry	10.0	18.5	12.4	22.9	.	.

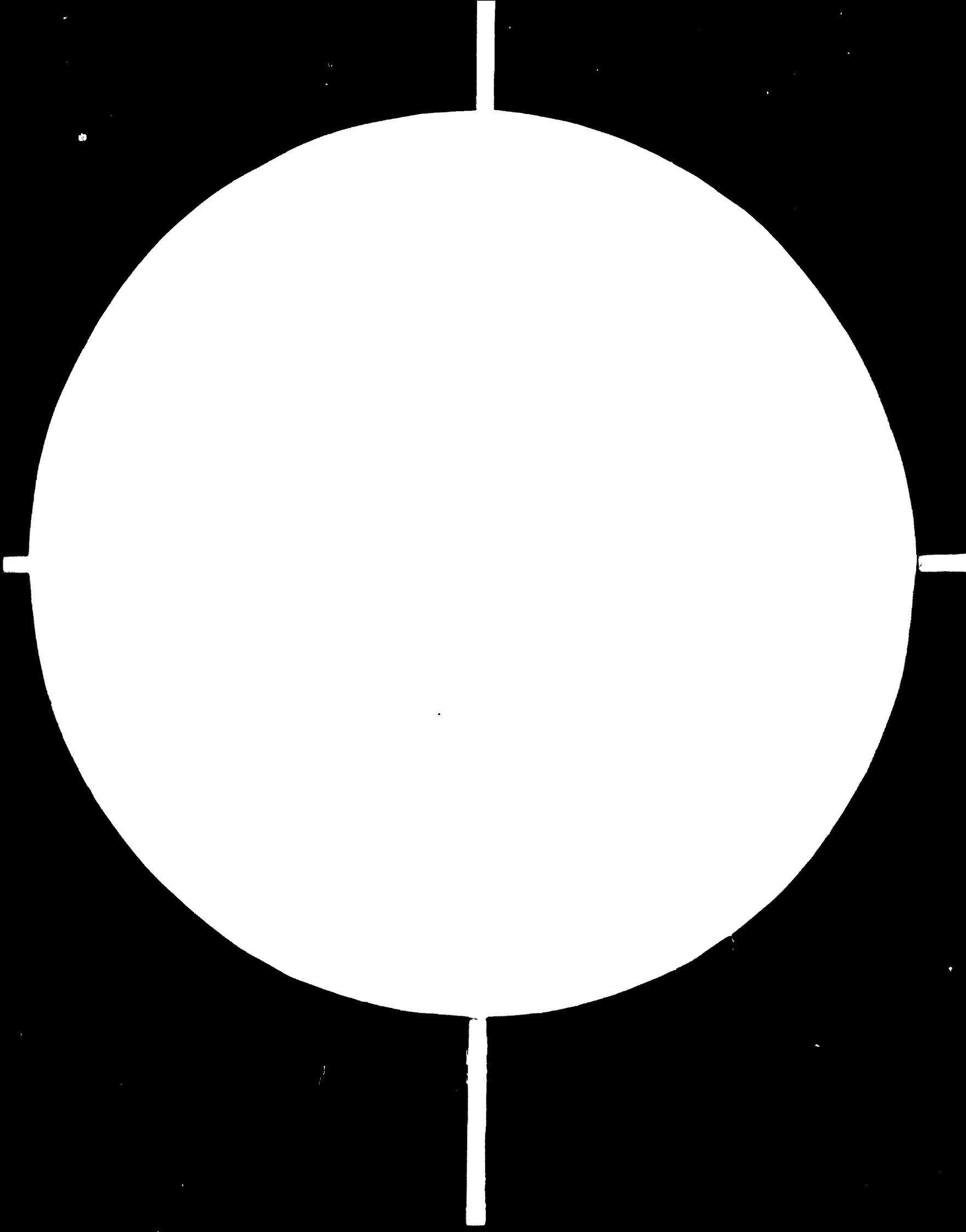
Source: Own calculations.

Source: N. Diche, H.N. Giesen, E.-J. Horn, A.D. Nau, Beschäftigungswirkungen einer verstärkten Arbeitsteilung zwischen der Bundesrepublik und den Entwicklungsländern (Employment Effects of an Increased Division of Labour between the Federal Republic of Germany and Developing Countries), Tübingen (J.C.B. Mohr/Paul Siebeck), 1976, p. 107.

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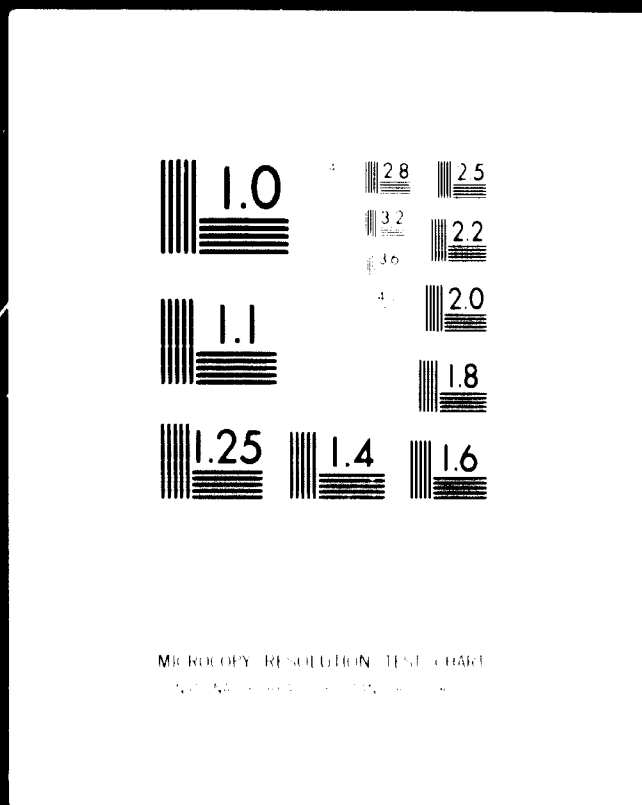


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Table 20.

Employment effects of an increased division of labour with developing countries in West German manufacturing industry, 1973-1985

Industry	Variant I: average annual growth rates as in 1968-1974				Variant II: average annual growth rates 20 per cent higher than in 1968 - 1974			
	Changes in employment by additional							
	Imports	Exports	Imports and Exports		Imports	Exports	Imports and Exports	
	in thousand persons		as % of employment in 1974		in thousand persons		as % of employment in 1974	
RAW MATERIAL + PRODUCTION GOODS INDUSTRIES^{a/}	-50.2	64.1	13.9	0.8	-153.5	98.2	-55.3	-3.0
Industry of building materials	-0.1	2.7	2.6	1.2	-0.1	4.0	3.9	1.8
Iron making industry	-38.9	29.4	-9.5	-3.0	-136.1	47.9	-88.2	-27.9
Iron + steel foundries	-1.3	1.5	0.2	0.2	-4.5	2.2	-2.3	-2.2
Steel drawing + cold rolling mills	0	1.7	1.7	2.6	-0.1	2.6	2.5	3.9
Industry of non-ferrous metals	0	1.5	1.5	1.2	0	2.6	2.6	2.1
Chemical industry	-5.0	22.8	17.8	2.9	-7.3	32.0	24.7	4.1
Sawmills and timber processing	-4.0	0.1	-3.9	-6.0	-5.3	0.1	-5.2	-8.0
Pulp, paper and paper board	-0.1	3.1	3.0	5.0	-0.1	5.0	4.9	8.2
Rubber and asbestos manufactures	-0.8	1.3	0.5	0.4	0	1.8	1.8	1.4
CAPITAL GOODS INDUSTRIES^{b/}	-449.0	314.6	-134.4	-3.6	-1052.8	433.3	-619.5	-16.4
Constructional steel	-0.3	0	-0.3	-0.1	-3.3	0	-3.3	-1.6
Steel forging	-5.9	2.1	-3.8	-2.6	-14.7	3.0	-11.7	-8.1
Machinery construction	-1.7	196.8	195.1	17.3	-11.5	282.2	270.7	24.0
Road vehicle construction	-61.1	50.2	-10.9	-1.8	-182.5	72.6	-109.9	-18.0
Electrical equipment	-299.7	58.7	-241.0	-21.4	-691.2	66.1	-625.7	-55.4
Precision engineering + optical goods	-56.6	4.6	-52.0	-33.0	-105.5	6.4	-99.1	-62.8
Industry of hardware and metal goods	-23.7	2.2	-21.5	-5.4	-44.1	3.0	-41.1	-10.3
CONSUMER GOODS INDUSTRIES	-333.6	14.1	-319.5	-17.8	-513.4	20.2	-493.2	-27.5
Fine ceramic industry	-15.5	0.7	-14.8	-20.2	-24.8	1.0	-23.8	-32.6
Glass industry	-4.1	0.3	-3.8	-4.2	-12.7	0.4	-12.3	-13.5
Timber manufactures	-5.0	0.3	-4.7	-2.0	-7.7	0.5	-7.2	-3.1
Musical instr., toys, jewelry, sport art.	-9.2	0.2	-9.0	-17.0	-13.2	0.2	-13.0	-24.5
Paper and paper board manufactures	-1.6	0.9	-0.7	-0.5	-3.1	1.4	-1.7	-1.3
Printing and duplicating	-0.1	0.5	0.4	0.2	-0.1	0.7	0.6	0.3
Plastic manufactures	-9.1	3.7	-5.4	-2.8	-15.8	5.5	-10.3	-5.3
Leather production	-0.5	0	-0.5	-5.8	-0.7	0	-0.7	-8.0
Leather manufactures	-24.5	0.1	-24.4	-73.0	-33.4	0	-33.4	-99.9
Footwear	-19.5	0.3	-19.2	-31.3	-34.1	0.4	-33.7	-55.0
Textile industry	-40.7	6.6	-34.1	-8.7	-57.6	9.5	-48.1	-12.2
Clothing industry	-203.8	0.5	-203.3	-65.5	-310.2	0.7	-309.5	-99.8
FOOD, BEVERAGES AND TOBACCO INDUSTRIES	-13.4	7.4	-6.0	-1.2	-17.2	11.0	-6.2	-1.3
TOTAL MANUFACTURING^{a/ b/}	-846.2	400.2	-446.0	-5.8	-1736.9	562.7	-1174.2	-15.2

^{a/} Excluding mineral oil.
^{b/} Excluding ship building and aircraft.

Source: U. Hiemans and K. W. Sohats, Transfer of Employment Opportunities as an Alternative to the International Migration of Workers: The Case of the Federal Republic of Germany (I), ILO-World Employment Programme, Working Paper WEP 2-26/WP7, Geneva, August 1976; compiled from tables 17, 18 and 19 on pp. 49, 51 and 55.

Table 21.
West German Industry: Projected Displacement and Employment Effects of Trade with
Developing Countries 1973-1985 as Compared to Displacement Effects of Total Import
Growth and Productivity Changes 1962-1975 (thousand persons)

Industries	Displacement due to increas- ing imports from LDCs 1973-1985 ^a	Employment due to increas- ing exports to LDCs 1973-1985 ^b	Displacement due to total import growth 1962-1975 ^c	Displacement due to import growth from LDCs 1962-1975 ^d	Displacement due to change in labour pro- ductivity 1962-1975 ^e
Industry of building materials	0.1	2.7	22.4	0.5	181.7
Iron making industry	38.9	31.1	67.5	1.2	318.3
Iron and steel foundries	1.3	1.5	5.6	0.0	62.6
Industry of non-ferrous metals	0.0	1.5	49.5	2.9	77.3
Chemical industry	5.0	22.8	165.3	2.9	802.1
Wood, pulp, paper, paperboard	4.1	3.2	50.3	2.4	168.0
Rubber + asbestos manufactures	0.8	1.3	33.0	0.6	94.9
Constructional steel	0.3	0.0	10.8	0.0	101.4
Machinery construction	1.7	196.8	168.2	5.1	549.0
Road vehicle construction	61.1	50.2	242.6	3.6	486.4
Electrical equipment	299.7	58.7	188.9	11.7	1189.3
Precision engineering + optical goods	56.6	4.6	54.5	3.9	153.1
Steel forging	5.9	2.1	8.9	0.3	83.8
Industry of hardware + metal goods	23.7	2.2	51.3	2.0	275.6
Fine ceramic + glass industry	19.6	1.0	37.1	0.8	177.7
Timber manufactures	5.0	0.3	24.8	1.8	224.4
Musical instruments, toys, jewelry, sport articles	9.2	0.2	33.0	6.9	28.4
Paper + paper board manufactures	1.6	0.9	12.5	0.2	89.0
Printing + duplicating	0.1	0.5	9.6	0.2	133.6
Plastic manufactures	9.1	3.7	35.4	1.1	240.1
Leather, leather products, footwear	44.5	0.4	57.8	7.4	46.1
Textiles	40.7	6.6	141.8	24.2	463.4
Clothing	203.8	0.5	144.6	45.9	160.6
Food, beverages, tobacco	13.4	7.4	69.0	7.2	426.4
Manufacturing	846.2 ^a	400.2 ^b	1684.4	132.8	6531.1

^aAccording to Variant 1 in table 20. ^bCalculated as $DM_{175} = (M_{175} - M_{162}) : LP_{175}$ where D = displacement effect; $M_{175(62)}$ = imports of industry i in 1975 (1962); LP_{175} = labour productivity of industry i in 1975 measured as sales per employee.
^cCalculated as $DII_{162-75} = (NPV_{175} : \Pi_{162} - NPV_{175}) : E_{175} : H_{175}$ where NPV_{175} = volume of net production in 1970 prices of industry i in 1975; $\Pi_{162(75)}$ = labour productivity of industry i in 1962 (1975) as measured by volume of net production per hours worked; E_{175} = employees of industry i in 1975; H_{175} = hours worked in industry i in 1975. ^dExcept mineral oil industry, ship building and aircraft.

Source: G. Fels, E.-J. Horn, K.-W. Schatz and F. Wolter, Analyse der Erfordernisse und Konsequenzen einer Ausparungsstrategie im Vergleich zu einer Universalstrategie, Institut für Weltwirtschaft, Kiel, April 1976 (mimeo.). - Statistisches Bundesamt, Fachserie G, Reihe 7, various issues. - Rolf Krengel u. Mitarb., Produktionsvolumen und -potential, Produktionsfaktoren der Industrie im Gebiet der Bundesrepublik Deutschland einschliesslich Saarland und Berlin (West), Statistische Kennziffern, Berlin, various issues. - Own calculations.

Source: F. Wolter, Adjusting to Imports from Developing Countries - The Evidence from a Human Capital Rich-Resource Poor Country -, in: H. Giersch (ed.), Reshaping the World Economic Order. Symposium 1976, Tübingen (J.C.B. Mohr/Paul Sieback), 1977, p. 129.

Table 22.

Employment effects in the Federal Republic of Germany per unit of imports and exports in trade of manufactures with (overseas) developing countries at the commodity structure in 1972 (number of persons)

Industry in which ultimate employment changes occur	Direct and indirect effects ^{a/}			Direct effect on the respective industry of a simultaneous increase in imports and exports each of DM 100 million ^{b/}
	of an increase in imports of DM 100 million	of an increase in exports of DM 100 million	of a simultaneous increase in imports and exports each of DM 100 million	
Agriculture, forestry and fishing	-353	62	-290	-
Electricity	-11	11	-1	-
Gas and water	-4	6	2	-
Mining	-16	28	8	-
Industry of building materials	-10	11	1	-1
Iron and steel industry	-22	79	58	22
Iron and steel foundries	-3	21	18	1
Steel drawing + cold rolling mills	-4	16	12	6
Industry of non-ferrous metals	-162	31	-130	-111
Chemical industry	-82	215	133	119
Mineral oil refining	-4	3	-1	-1
Rubber + asbestos manufactures	-9	26	17	7
Saw-mills and timber processing	-35	4	-31	-30
Pulp, paper + paper board	-6	9	2	2
Constructional steel	-5	23	18	11
Machinery construction	-33	463	430	356
Road vehicle construction	-9	160	151	133
Aircraft	-2	3	1	1
Shipbuilding	-2	41	39	38
Electrical equipment	-58	223	165	111
Precision engineer. + optical goods	-14	46	32	27
Steel forging	-5	26	21	6
Industry of hardware and metal goods	-31	69	39	34
Fine ceramic industry	-3	9	6	5
Glass industry	-9	13	4	3
Timber manufactures	-17	9	-9	-8
Mus. instr., toys, jewelry, + sport art.	-48	6	-42	-42
Paper and board manufactures	-19	16	-3	3
Printing and duplicating	-12	16	4	4
Plastics manufactures	-20	22	3	0
Leather industry (incl. footwear)	-77	7	-70	-61
Textile industry	-290	41	-248	-177
Clothing industry	-198	6	-193	-192
Food, beverages and tobacco	-222	22	-197	-164
Handicr. tra., small enterpr. a. o. man.	-86	59	-27	-
Construction	-8	8	1	-
Wholesaling	-94	87	-7	-
Retailing	-12	11	-1	-
Railways	-25	28	3	-
Shipping, waterways and harbours	-3	4	0	-
Other transport	-37	31	-6	-
Communications (post)	-25	27	2	-
Credit institutes and insurance	-35	24	-11	-
Other services	-102	122	19	-
Public sector (incl. social insurance)	-30	21	-9	-
Total	-2,252	2,165	-87	102

^{a/} In line with 1976 productivity.

^{b/} Labour coefficient multiplied by the balance of higher imports and exports.

Sources: DIW calculations based on the DIW's 1972 input-output table (R. Pischner, R. Stöglin and H. Wessels, Input-Output-Rechnung für die Bundesrepublik Deutschland 1972, Beiträge zur Strukturforchung des DIW, No. 38, Berlin, 1975) and IAB data for the sectoral labour coefficients in 1976 (E. Spitznagel, Anwendung des erweiterten Input-Output-Modells auf das "Programm zur Stärkung von Bau- und anderen Investitionen", in: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, No. 3/1976).

Source: D. Schumacher, Increased Trade with the Third World: German Workers will have to Switch Jobs, but not Lose them, in: Deutsches Institut für Wirtschaftsforschung, Economic Bulletin, No. 5/1977, p. 39.

Table 23.

Employment effects in the Federal Republic of Germany of higher imports from (overseas) developing countries of selected goods, 1975-1980 (number of persons)

Industry in which ultimate employment changes occur	Direct and indirect effects ^{a/} of estimated increases in imports ^{b/} of					Direct effect on the four industries concerned ^{c/}
	Precision engineering and optical goods	Leather manufactures and footwear	Textiles	Clothing	Total of the four product groups	
Agriculture, forestry and fishing	-285	-196	-174	-1,194	-1,849	-
Electricity	-49	-15	-60	-237	-360	-
Gas and water	-19	-7	-19	-67	-112	-
Mining	-70	-19	-67	-243	-400	-
Industry of building materials	-24	-5	-13	-60	-101	-
Iron and steel industry	-146	-14	-19	-169	-347	-
Iron and steel foundries	-53	-3	-6	-32	-94	-
Steel drawing and cold rolling mills	-17	-6	-7	-104	-134	-
Industry of non-ferrous metals	-188	-8	-15	-68	-279	-
Chemical industry	-209	-168	-651	-1,524	-2,553	-
Mineral oil refining	-11	-5	-14	-56	-85	-
Rubber and asbestos manufactures	-36	-59	-30	-266	-391	-
Saw-mills and timber processing	-23	-6	-6	-43	-78	-
Pulp, paper and paper board	-24	-20	-26	-139	-209	-
Constructional steel	-17	-4	-8	-47	-75	-
Machinery construction	-254	-33	-91	-423	-801	-
Road vehicle construction	-17	-5	-12	-94	-128	-
Aircraft	-1	-0	-1	-3	-5	-
Shipbuilding	-1	-0	-1	-3	-5	-
Electrical equipment	-524	-23	-54	-277	-878	-
Precision engineer. + optical goods	-11,071	-2	-6	-30	-11,110	-10,608
Steel forging	-115	10	-10	-51	-186	-
Industry of hardware and metal goods	-136	-92	-81	-750	-1,059	-
Fine ceramic industry	-13	-8	-4	-27	-53	-
Glass industry	-126	-4	-12	-50	-192	-
Timber manufactures	-40	-19	-26	-405	-490	-
Mus. instr., toys, jewelry, + sport art.	-30	-2	-1	-13	-46	-
Paper and board manufactures	-84	-37	-102	-643	-867	-
Printing and duplicating	-78	-24	-45	-396	-543	-
Plastics manufactures	-337	-140	-34	-477	-987	-
Leather industry (incl. footwear)	-48	-4,838	-15	-237	-5,139	-4,240
Textiles industry	-58	-103	-7,930	-15,317	-23,408	-6,675
Clothing industry	-19	-7	-18	-70,371	-70,416	-69,976
Food, beverages and tobacco	-63	-22	-47	-331	-463	-
Handicr. tra., small enterpr. a.o. man.	-640	-158	-218	-1,988	-3,004	-
Construction	-53	-16	-33	-205	-307	-
Wholesaling	-582	-219	-475	-3,111	-4,387	-
Retailing	-47	-27	-52	-372	-498	-
Railways	-124	-43	-106	-595	-869	-
Shipping, waterways and harbours	-14	-6	-15	-73	-108	-
Other transport	-153	-51	-139	-718	-1,061	-
Communications (post)	-234	-67	-126	-1,045	-1,471	-
Credit institutes and insurance	-126	-66	-137	-897	-1,226	-
Other services	-687	-247	-545	-4,543	-6,021	-
Public sector (incl. social insurance)	-111	-48	-99	-775	-1,033	-
Total	-16,959	-6,852	-11,546	-108,470	-143,828	-91,499

^{a/} In line with 1976 productivity. 1972 and 1975.

^{b/} Assuming average annual rates of real growth in imports as shown between 1972 and 1975. ^{c/} Labour coefficient multiplied by the rise in imports.

Source: DIW calculations based on the DIW's 1972 input-output table (R. Piechner, R. Stöglin and H. Wessels, Input-Output-Rechnung für die Bundesrepublik Deutschland 1972, Beiträge zur Strukturforchung des DIW, No. 38, Berlin, 1975) and IAB data for the sectoral labour coefficients in 1976 (E. Spitznagel, Anwendung des erweiterten Input-Output-Modells auf das "Programm zur Stärkung von Bau- und anderen Investitionen", in: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, No. 3/1976).

Source: D. Schumacher, Increased Trade with the Third World: German Workers will have to Switch Jobs, but not lose them, in: Deutsches Institut für Wirtschaftsforschung, Economic Bulletin, No. 5/1977, p. 41.

Table 24.

Total employment effects in the Federal Republic of Germany
per unit of imports and exports in trade of manufactures
with (overseas) developing countries, 1972 - 1976
(number of persons)

Commodity structure as of	Direct and indirect effects ^{a/}		
	of an increase in imports of ^{b/} DM 1 billion	of an increase in exports of ^{b/} DM 1 billion	of a simultaneous increase in imports and exports each of DM 1 billion ^{b/}
Trade 1972	- 21,903	21,884	- 19
Trade 1973	- 21,979	21,782	- 197
Trade 1974	- 21,948	21,820	- 128
Trade 1975	- 22,422	22,027	- 392
Trade 1976	- 22,413	22,148	- 266
Increase in trade 1972-76	- 23,274	22,428	- 846

^{a/} In line with 1976 productivity.

^{b/} At 1972 prices.

Sources: DIW calculations based on the DIW's 1972 input-output table and IAB data for the sectoral labour coefficients in 1976 (E. Spitznagel, Anwendung des erweiterten Input-Output Modells auf das "Programm zur Stärkung von Bau- und anderen Investitionen", in: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, No. 3/1976).

Source: D. Schumacher, Beschäftigungswirkungen von Importen nicht dramatisieren (Employment Effects of Imports from Developing Countries should not be Dramatised), in: Wochenbericht des Deutschen Instituts für Wirtschaftsforschung, No. 1/1978, p. 8.

Table 25.

Employment effects in the Federal Republic of Germany per unit of import and export increases in trade of manufacturers with (overseas) developing countries, 1972-1976: breakdown by industries

Industry in which the ultimate employment changes occur	Direct and indirect effects ^{a/}			
	of an increase in imports of DM 1 billion ^{b/}	of an increase in exports of DM 1 billion ^{b/}	of a simultaneous increase in imports and exports each of DM 1 billion ^{b/}	
	Number of persons			as % of employment in 1976 ^{c/}
Agriculture, forestry and fishing	-334	502	168	0.01
Electricity	-79	96	17	0.01
Gas and water	-34	51	17	0.02
Mining	-139	206	67	0.03
Industry of building materials	-45	205	160	0.06
Iron and steel industry	-342	619	277	0.09
Iron and steel foundries	-70	326	255	0.27
Steel drawing and cold rolling mills	-58	141	83	0.13
Industry of non-ferrous metals	-131	335	204	0.18
Chemical industry	-689	1,006	317	0.05
Mineral oil refining	-92	26	-67	-0.23
Rubber and asbestos manufactures	-238	314	76	0.06
Saw-mills and timber processing	-149	70	-79	-0.10
Pulp, paper and paper board	-80	59	-21	-0.04
Constructional steel	-45	804	760	0.26
Machinery construction	-1,061	4,807	3,746	0.33
Road vehicle construction	-436	2,832	2,396	0.30
Aircraft	-61	99	38	0.09
Shipbuilding	-42	347	306	0.41
Electrical equipment	-2,614	2,998	385	0.04
Precision engineer. and optical goods	-525	322	-203	-0.10
Steel forging	-202	455	254	0.09
Industry of hardware and metal goods	-516	490	-26	-0.01
Fine ceramic industry	-138	51	-88	-0.13
Glass industry	-83	128	45	0.05
Timber manufactures	-222	257	34	0.01
Mus. instr., toys, jewelry, and sport art.	-569	31	-538	-0.77
Paper and board manufactures	-197	135	-61	-0.05
Printing and duplicating	-121	145	24	0.01
Plastics manufactures	-242	250	8	0.00
Leather industry (incl. footwear)	-833	41	-792	-0.61
Textile industry	-3,721	422	-3,299	-0.91
Clothing industry	-5,866	71	-5,795	-1.63
Food, beverages and tobacco	-112	321	209	0.03
Construction	-62	89	27	0.00
Wholesaling	-802	819	16	0.00
Retailing	-114	143	29	0.00
Railways	-212	260	48	0.01
Shipping, waterways and harbours	-28	31	3	0.00
Other transport	-252	288	35	0.01
Communications (post)	-265	266	1	0.00
Credit institutes and insurance	-215	255	40	0.01
Other services	-1,046	1,108	63	0.00
Public sector (incl. social insurance)	-190	205	16	0.00
Total	-23,274	22,428	-846	-0.003

^{a/} In line with 1976 productivity.

^{b/} At 1972 prices and at the commodity structure of the increase in trade 1972-76; excluding non-ferrous metals, constructional steel, printing and duplicating as well as food, beverages and tobacco on the import side and mineral oil products on the export side because imports and exports, respectively, in these products decreased between 1972 and 1976 (at constant prices).

^{c/} Outside manufacturing as % of employment in 1975.

Sources: DIW calculations based on the DIW's 1977 input-output table and IAB data for the sectoral labour coefficients in 1976 (E. Spitznagel, Anwendung des erweiterten Input-Output Modells auf das "Programm zur Stärkung von Bau- und anderen Investitionen", in: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, No. 3/1976).

Source: D. Schumacher, Beschäftigungswirkungen von Importen nicht dramatisieren (Employment Effects of Imports from Developing Countries should not be Dramatised), in: Wochenbericht des Deutschen Instituts für Wirtschaftsforschung, No. 1/1978, p. 8. - Own calculations.

Table 26.

Employment effects in the Federal Republic of Germany per unit of import and export increases in trade of manufactures with (overseas) developing countries, 1972-1976; breakdown by occupational groups and skill-categories (number of persons)

Occupation and type of vocational training, respectively	Direct and indirect effects ^{a/}		
	of an increase in imports of DM 1 billion ^{b/}	of an increase in exports of DM 1 billion ^{b/}	of a simultaneous increase in imports and exports each of DM 1 billion ^{b/}
Occupation			
Field crop farmers, livestock farmers, fishery workers	-328	504	176
Miners and quarry workers	-75	117	42
Stones masons, makers of building materials	-39	56	17
Chemical engineering technicians, plastics processing technicians	-513	503	-10
Metallurgical workers, metalworkers	-974	2,215	1,241
Locksmiths, mechanics + related occupations	-1,779	1,262	2,483
Electricians	-819	1,101	282
Fitters + metalworkers not elsewhere specified	-610	1,012	402
Ceramics and glass workers	-102	88	-14
Wood preparation workers, woodworkers	-94	69	-25
Paper-makers and processors	-136	89	-46
Printers	-129	116	-12
Tanners, makers of leather + furkin goods	-784	65	-719
Textile + clothing occupations	-5,822	326	-5,497
Food industry occupations	-163	247	85
Building trades	-129	197	68
Interior decorators + upholsterers	-236	61	-175
Joiners, cabinet-makers + model makers	-285	297	12
Painters, varnishers + related trades	-123	235	112
Goods clearance inspectors, dispatching clerks	-660	501	-159
Unskilled workers, duties not specified	-1,064	786	-278
Machine operators + related occupations	-225	336	111
Engineers, chemists, physicists, mathematicians + technical graduates	-1,002	1,445	442
Specialised technicians	-191	315	125
Sales + procurement clerks	-1,131	1,028	-103
Service sector clerks + related occupations	-208	235	27
Transport sector workers	-600	685	85
Storekeepers, storeroom clerks + materials handling workers	-524	618	94
Organizational, administrative + office staff	-3,199	3,306	106
Cleaners	-610	331	-279
Miscellaneous service occupations	-789	736	-53
Police and security staff	-195	221	26
Housekeeping occupations	-34	34	0
Other	-211	175	-36
Total	-23,783	22,392	-1,391
Type of vocational training			
No vocational training	-10,442	8,011	-2,431
On-the-job vocational training	-10,973	11,697	724
Formal vocational and technical education	-2,362	2,682	320
of which: university education	-476	577	101
Total	-23,777	22,390	-1,387

^{a/} In line with 1976 productivity; breakdown by occupation and type of vocational training as of 1970.

^{b/} At 1972 prices and at the commodity structure of the increase in trade 1972-76; excluding non-ferrous metals, constructional steel, printing and duplicating as well as food, beverages and tobacco on the import side and mineral oil products on the export side because imports and exports, respectively, in these products decreased between 1972 and 1976 (at constant prices).

Sources: DIW calculations based on the DIW's 1972 input-output table and IAB data for the sectoral labour coefficients in 1976 (E. Spitznagel, Anwendung des erweiterten Input-Output Modells auf das "Programm zur Stärkung von Bau- und anderen Investitionen", in: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung No. 3/1976), as well as the occupational and skill structure of employment by industries in 1970 (W. Karr and R. Leupoldt, Strukturwandel des Arbeitsmarktes 1950 bis 1970 nach Berufen und Sektoren, Beiträge zur Arbeitsmarkt- und Berufsforschung No. 5, Nürnberg, 1976; P. Gerstenberger, A. Chaberny and K. Gottwald, Entwicklungstendenzen im Beschäftigungssystem, Stuttgart, 1976).

Source: D. Schwaner, Beschäftigungswirkungen von Importen nicht dramatisieren (Employment Effects of Imports from Developing Countries should not be Dramatized), in: Wochenbericht des Deutschen Instituts für Wirtschafts-

Table 21.

Direct and indirect employment effects in the Federal Republic of Germany due to exports of manufactures to (overseas) developing countries, 1976

Industry	Employment effects			
	Direct	Indirect	Total	
	in thousand persons			as % of employment in 1976 ^{2/}
Agriculture, forestry and fishing	3.8	16.0	19.8	1.1
Electricity	0	3.2	3.2	2.3
Gas and water	0	1.7	1.7	1.8
Mining	1.2	7.4	8.6	3.5
Industry of building materials	2.4	3.0	5.4	1.9
Iron and steel industry	6.9	14.8	21.8	7.2
Iron and steel foundries	1.8	6.4	8.2	8.5
Steel drawing and cold rolling mills	1.5	3.2	4.6	7.5
Industry of non-ferrous metals	2.8	7.2	10.0	8.9
Chemical industry	31.6	19.2	50.9	8.6
Mineral oil refining	0.0	0.9	0.9	3.0
Rubber and asbestos manufactures	2.5	6.9	9.5	7.5
Saw-mills and timber processing	0.3	1.6	1.9	2.4
Pulp, paper and paper board	0.6	1.6	2.3	4.2
Constructional steel	10.8	5.5	16.3	5.7
Machinery construction	114.0	34.5	148.5	13.0
Road vehicle construction	59.3	10.5	69.8	8.8
Aircraft	1.9	0.1	2.0	4.8
Shipbuilding	11.3	0.5	11.8	15.8
Electrical equipment	52.7	28.9	81.6	7.9
Precision engineer. + optical goods	9.3	3.7	13.0	6.3
Steel forging	2.6	10.3	12.9	4.5
Industry of hardware + metal goods	9.0	10.6	19.6	4.8
Fine ceramic industry	1.3	0.9	2.3	3.4
Glass industry	1.3	3.0	4.2	4.8
Timber manufactures	2.7	3.2	5.8	1.2
Mus. instr., toys, jewelry, + sport art.	1.4	0.2	1.6	2.2
Paper and board manufactures	1.0	3.8	4.8	3.8
Printing and duplicating	1.0	4.3	5.3	2.3
Plastics manufactures	2.1	5.7	7.6	3.9
Leather industry (incl. footwear)	0.9	1.0	1.9	1.5
Textile industry	7.5	5.6	13.2	3.6
Clothing industry	1.4	0.7	2.1	0.6
Food, beverages and tobacco	4.5	5.6	10.1	1.3
Construction	0	2.7	2.7	0.2
Wholesaling	0	26.4	26.4	2.1
Retailing	0	4.3	4.3	0.2
Railways	0	8.5	8.5	2.0
Shipping, waterways and harbours	0	1.0	1.0	1.2
Other transport	0	9.4	9.4	1.9
Communications (post)	0	8.5	8.5	1.8
Credit institutes and insurance	0	7.8	7.8	1.2
Other services	0	36.6	36.6	1.3
Public sector (incl. social insurance)	0	6.6	6.6	0.2
Total	351.3	343.7	695.0	2.8

^{2/} Outside manufacturing as % of employment in 1975.

Source: DIW calculations based on the DIW's 1972 input-output table and IAB data for the sectoral labour coefficients in 1976 (E. Spitenagel, Anwendung des erweiterten Input-Output Modells auf das "Programm zur Stärkung von Bau- und anderen Investitionen", in: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, No. 3/1976).

Source: D. Schumacher, 800 000 Erwerbstätige für den Export in Entwicklungsländer beschäftigt (800 000 Persons are Working for Exports to Developing Countries), in: Wochenbericht des Deutschen Instituts für Wirtschaftsforschung, No. 5/1978, p. 60. - Own calculations.

Table 20.

Employment effects in the Netherlands per unit of imports and exports in trade of manufactures^{a/} with developing countries, 1973: breakdown by industries

Industry in which the ultimate employment change occur	Direct and indirect effects			
	of an increase in imports of D.fl. 10 million	of an increase in exports of D.fl. 10 million	of a simultaneous increase in imports and exports each of	
			D.fl. 10 million	D.fl. 1 billion
	man-years			man-years as % of employment 1973
Agriculture, forestry, fishery	-22.6	23.5	0.9	0.03
Coal mining	-0.1	0.4	0.3	0.50
Other mineral mining (excl. mineral oil and earth gas)	-0.1	0.2	0.1	0.14
Food products (animal husbandry)	-4.3	6.4	2.1	0.41
Food products (other)	-29.2	7.8	-21.4	-1.84
Beverage, tobacco	-0.2	1.6	1.4	0.50
Textiles	-17.3	5.1	-12.2	-1.91
Clothing	-11.8	0.3	-11.5	-2.25
Leather, footwear	-4.5	0.3	-4.2	-3.82
Wood, furniture	-20.3	2.3	-18.0	-2.95
Paper	-1.4	2.3	0.9	0.29
Printing, publishing	-2.2	3.5	1.3	0.16
Petroleum products	-0.1	0.5	0.4	0.36
Chemical, Rubber and plastic products	-7.6	23.5	15.9	1.36
Building materials, pottery, glass ware	-1.0	1.2	0.2	0.04
Basic metals	-4.3	3.9	-0.4	-0.11
Metal products, machinery	-6.2	24.3	18.1	0.93
Electrical engineering	-5.5	14.7	9.2	0.74
Transport equipment	-9.6	17.3	7.7	0.90
Optical, other industry	-1.2	1.2	0	0.00
Public utilities	-1.3	1.6	0.3	0.07
Building and construction	-2.2	2.5	0.3	0.01
Wholesale and retail trade	-12.0	8.8	-3.2	-0.04
Hotels, cafés, restaurants	-0.7	0.7	0	0.00
Repair of consumer products	-2.1	1.7	-0.4	0.04
Maritime and air transportation	-0.1	0.1	0	0.00
Other transportation and storage	-2.6	2.2	-0.4	-0.02
Communication	-1.4	1.3	-0.1	-0.02
Banking and insurance	-2.3	2.6	0.3	0.02
Homeownership	0	0	0	0.00
Government services to business	-2.7	2.8	0.1	0.01
Medical and veterinary service	-0.2	0.2	0	0.00
Culture and recreation	-0.4	0.5	0.1	0.03
Other government services	2.1	1.9	-0.2	-0.01
Goods and services unclassified	0	0	0	0.00
Total	-179.6	167.2	-12.4	-0.03

^{a/} On the import side excluding petroleum products.

Source: J. Kol, L.B.M. Mennes, Penetratie door ontwikkelingslanden op de Nederlandse markt voor industrieproducten. Gevolgen voor inkomen en Werkgelegenheid (The Role of the Developing Countries in the Dutch Market of Manufactures. Impact on Income and Employment), The Netherlands Economic Institute, dselrapport 6, Rotterdam, February 1978, p. 30. - Own calculations.

Table 29.

Employment effects in the Netherlands per unit of imports and exports in trade of manufactures^{a/} with developing countries, 1973: breakdown by skill-categories

Skill-category	Direct and indirect effects				
	of an increase in imports of D.fl. 10 million		of an increase in exports of D.fl. 10 million		of a simultaneous increase in imports and exports each of D.fl. 10 million
	man-years	as % of total	man-years	as % of total	man-years
Basic lower level	-82	45.6	68	40.7	-14
Broadened lower level	-73	40.6	70	41.9	-3
Medium level	-18	10.0	20	12.0	2
Semi-high and high levels	-5	2.8	7	4.2	2
Level unknown	-2	1.0	2	1.2	0
Total	-180	100.0	167	100.0	-13

^{a/} On the import side excluding petroleum products.

Source: J. Kol, L.B.M. Mennes, Penetratie door ontwikkelingslanden op de Nederlandse markt voor industrieproducten. Gevolgen voor inkomen en werkgelegenheid (The Role of the Developing Countries in the Dutch Market of Manufactures. Impact on Income and Employment), Netherlands Economic Institute, deelrapport 6, Rotterdam, February 1978, p.32.

Table 30. Average annual changes in manufacturing employment in selected developed countries due to increased trade in manufactures with developing countries: by industries as % of sectoral employment

Industry	Changes due to imports					France			Imports and exports as % of 1975 as % of 1975 employment
	U.S.A.	U.K.	P.R.G.	U.K.	P.R.G.	U.K.	France	P.R.G.	
	(1) ^{a/}	(2) ^{b/}	(3) ^{c/}	(4) ^{d/}	(5) ^{e/}	(6) ^{f/}	(7) ^{g/}	(8) ^{h/}	(9) ^{i/}
301 Food	-0.1	-0.2	-1.1	-0.1	-0.1	-0.1	-0.0	-0.1	0.0
302 Beverages	-0.1	-0.0	-0.1	-0.1	-0.4	-0.1	-0.0	-0.1	0.0
303 Tobacco	-0.1	-0.0	0.0	-0.1	-0.1	-0.1	-0.0	-0.1	-0.1
304 Textiles	-0.1	-0.3	-0.0	-0.5	-0.6	-0.5	-3.4	-0.7	-0.8
305 Wearing apparel	-0.8	-2.3	-3.7	-1.2	-2.6	-0.5	-0.8	-5.5	-1.5
306 Footwear	-0.5	-1.2	-1.8	-0.6	-6.0	-0.5	-0.8	-0.5	-0.6
307 Leather and leather products	-0.2	-1.5	-0.1	-0.2	-1.3	-0.1	-0.0	-0.5	-0.1
308 Wood and wood products	-0.1	-0.3	0.0	-0.1	-0.0	0.0	0.0	0.0	0.0
309 Wood products (3311)	-0.1	-0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0
310 Furniture and fixtures	-0.1	-0.0	0.0	-0.1	-0.0	0.0	0.0	0.0	0.0
311 Paper and paper products	-1.4	-0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.0	-0.0
312 Paper, paper products (3411)	-0.5	-0.4	0.4	-0.0	0.1	0.0	-0.0	0.0	0.0
313 Print products (3412, 3419)	-0.6	-0.2	-0.2	-0.0	-0.2	-0.0	-0.0	0.0	0.0
314 Printing and publishing	-0.7	-0.5	-1.1	-0.0	-0.1	-0.0	-0.8	-0.1	0.1
315 Chemicals	-0.4	-0.1	-2.7	-0.0	-2.2	-0.0	0.1	-0.3	0.1
316 Glass and glass products	-0.4	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	0.0	0.0
317 Other non-metallic mineral products	-0.5	-0.2	-0.2	-0.0	-0.0	-0.0	-0.0	-0.1	0.0
318 Iron and steel basic industries	-0.4	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
319 Iron and steel foundries	-0.5	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
320 Iron and steel mills	-0.4	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
321 Steel, ironing and coil rolling mills	-0.5	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
322 Non-ferrous metal basic industries	-0.5	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
323 Non-ferrous metal products	-0.3	-0.1	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
324 Structural steel	-1.5	-1.0	-0.2	-0.1	-0.2	-0.1	0.2	-1.8	0.0
325 Fabricating	-0.2	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
326 Metal construction	-0.8	-0.9	-2.1	-0.2	-0.8	-0.2	-1.1	-0.2	0.4
327 Aircraft	-1.2	-0.5	-0.7	-1.3	-0.6	-0.1	-0.5	-0.5	-0.1
328 Precision and optical goods	-0.5	-0.5	-0.7	-0.1	-0.6	-0.1	-0.5	-0.5	-0.01
329 Musical instruments and other manufactures	-42.2	-94.6	-58.8	-10.2	-47.2	-10.2	-28.6	-37.2	-1.3
330 Total manufacturing industries (excl. persons)	-42.2	-94.6	-58.8	-10.2	-47.2	-10.2	-28.6	-37.2	-1.3
331 Basis of calculation	Frank (1977)	UNCTAD (1972)	UNCTAD (1972)	Holker (1976)	UNCTAD (1972)	Cable (1977)	Haas (1978)	Hienzen, Schaefer (1978)	Schraeder (1978)

^{a/} Taken from table 11 (related to employment in import-competing industries only). ^{b/} Taken from table 6. ^{c/} Calculated on the basis of table 21. ^{d/} Calculated on the basis of table 21. ^{e/} Calculated on the basis of table 21. ^{f/} Calculated on the basis of table 21. ^{g/} Calculated on the basis of table 21. ^{h/} Calculated on the basis of table 21. ^{i/} Calculated on the basis of table 21.

^{1/} Jan projection on the basis of table 25 assuming a 20 per cent annual growth rate of total imports and attributing additional exports of the same amount to the commodity structure of their increase in 1972-76. ^{2/} Jan projection on the basis of table 26 assuming a 20 per cent annual growth rate of total imports and attributing additional exports of the same amount to the commodity structure of their increase in 1972-76. ^{3/} Food products (animal husbandry). ^{4/} Food products (other than animal husbandry). ^{5/} Textile yarns. ^{6/} Cotton textile fabrics. ^{7/} Including rubber and paper production. ^{8/} Including pottery, china, earthen ware. ^{9/} Including registers and printing plates.

^{10/} Including other manufacturing. ^{11/} Including rubber and plastic products. ^{12/} Including pottery, china, earthen ware. ^{13/} Including registers and printing plates.

^{14/} Including several plastic products.

Table 31. Average annual changes in manufacturing employment in selected developed countries due to increased trade in manufactures with developing countries: totals^{a/}

	Changes due to imports						Net changes due to imports and exports			
	U.S.A.		U.K.	F.R.G.		France	F.R.G.		Netherlands	
	Imports 1964-71 ^{b/}	Estimated imports 1969-73	Estimated imports 1969-73	Imports 1962-75 ^{c/}	Estimated imports 1969-73 ^{c/}	Estimated imports and exports 1976-85	Imports 1972-76	Estimated imports and exports 1976-80	Imports and exports 1973-77	Estimated imports and exports attributed 1973-77
(1)	(2)	(3)	(4)	(5)	(7)	(9)	(10)	(11)	(11)	
Changes due to imports - thousand persons	-42.2	-94.6	-58.5	-10.2	-47.2	-43.0	-18.0	-48.8	-10.2	
as % of manufacturing employment ^{d/}	-0.22	-0.50	-0.66	-0.11	-0.47	-0.79	-0.20	-0.55	-0.91	
Changes due to exports - thousand persons						14.4	16.7	45.3	9.4	
as % of manufacturing employment ^{d/}						0.26	0.19	0.51	0.83	
of which: creation of jobs in another industry than that of displacement due to imports - thousand persons										
as % of man. employment ^{d/}										
Net changes - thousand persons						3.1	8.9	23.9	4.6	
as % of manufacturing employment ^{d/}						0.06	0.10	0.27	0.41	
Basis of calculation	Frank (1977)	UNCTAD (1972)	UNCTAD (1972)	Wolter (1976)	UNCTAD (1972)	Hans (1978)	Schmacher (1978a)	Klemens, Schatz (1976)	Schmacher (1978a)	Kol, Kennes (1978)

^{a/} Sources and assumptions as in table 30.
^{b/} Different from table 30, the changes are related to total manufacturing employment 1969 including non import-competing industries.
^{c/} Different from table 30, the changes are related to total manufacturing employment including handicraft and small-scale industries.
^{d/} Basic years as in table 30.

Table 32. Merchandise imports^{a/} of developed and developing countries in relation to their domestic production, 1963-75

Origin of imports	1963	1966	1970	1971	1972	1973	1974	1975
Imports of developed market economies as % of their GDP								
Developed market economies	6.3	6.9	8.0	8.3	9.2	11.1	12.8	12.1
Developing market economies ^{b/}	1.3	1.3	1.3	1.2	1.3	1.7	2.2	2.0
OPEC	0.6	0.6	0.6	0.8	0.9	1.2	3.1	2.6
Centrally planned economies	0.3	0.4	0.4	0.4	0.4	0.6	0.8	0.7
Total	8.5	9.2	10.3	10.7	11.8	14.6	18.9	17.4
Imports of developing market economies^{b/} as % of their GDP								
Developed market economies	10.4	11.1	10.6	10.6	10.9	13.3	16.9	16.4
Developing market economies ^{b/}	2.3	2.3	2.1	2.0	2.3	2.8	3.5	3.2
OPEC	1.1	1.0	0.9	1.1	1.3	1.9	4.8	4.2
Centrally planned economies	1.5	1.6	1.4	1.3	1.3	1.8	1.9	1.8
Total	15.3	16.0	15.0	15.1	15.8	19.8	27.0	25.7
^{a/} According to export statistics of exporting regions. ^{b/} Excluding OPEC.								
Sources: UN, Monthly Bulletin of Statistics, various issues; IBRD, World Bank Atlas, various issues; own calculations.								

Table 33. Merchandise exports of developed and developing countries in relation to their domestic production, 1963-75

Destination of exports	1963	1966	1970	1971	1972	1973	1974	1975
Exports of developed market economies as % of their GDP								
Developed market economies	6.3	6.9	8.0	8.3	9.2	11.1	12.8	12.1
Developing market economies ^{a/}	1.5	1.5	1.6	1.5	1.7	2.0	2.7	2.8
OPEC	0.3	0.3	0.4	0.4	0.5	0.6	0.9	1.4
Centrally planned economies	0.3	0.4	0.4	0.4	0.5	0.7	0.9	1.0
Total	8.6	9.3	10.5	10.8	11.9	14.5	17.4	17.3
Exports of developing market economies^{a/} as % of their GDP								
Developed market economies	8.9	8.8	8.4	7.7	8.6	11.1	13.7	11.8
Developing market economies ^{a/}	2.3	2.3	2.1	2.0	2.3	2.8	3.5	3.2
OPEC	0.2	0.3	0.3	0.3	0.4	0.5	0.8	1.0
Centrally planned economies	0.9	1.1	0.9	0.8	0.8	1.0	1.3	1.2
Total	12.4	12.4	11.7	11.0	12.1	15.7	19.5	17.3
^{a/} Excluding OPEC.								
Source: UN, Monthly Bulletin of Statistics, various issues; IBRD, World Bank Atlas, various issues; own calculations.								

Table 34. Trade between developing^{a/} and developed countries by commodity classes, 1975

SITC No.	Commodity class	Exports of developing to developed market economies as % of total	Exports of developed to developing market economies as % of total
0 + 1	Food, beverages and tobacco	26.3	11.8
041 - 045	of which: cereals	1.1	6.1
2 + 4	Raw materials excluding fuels	18.6	4.4
3	Mineral fuels and related materials	20.9	1.7
5	Chemicals	2.0	11.8
7	Machinery and transport equipment	5.4	44.4
6 + 8	Other manufactured goods	26.1	23.3
55	of which: textile yarn and fabrics	3.4	2.9
67	iron and steel	0.9	7.1
68	non-ferrous metals	4.9	1.2
69	other manufactured metal products	0.4	2.7
84	clothing	6.9	0.6
1 - 9	Total (in * billion)	55.0	90.8

^{a/} Excluding OPEC.

Source: UN, Monthly Bulletin of Statistics, May 1977; own calculations.

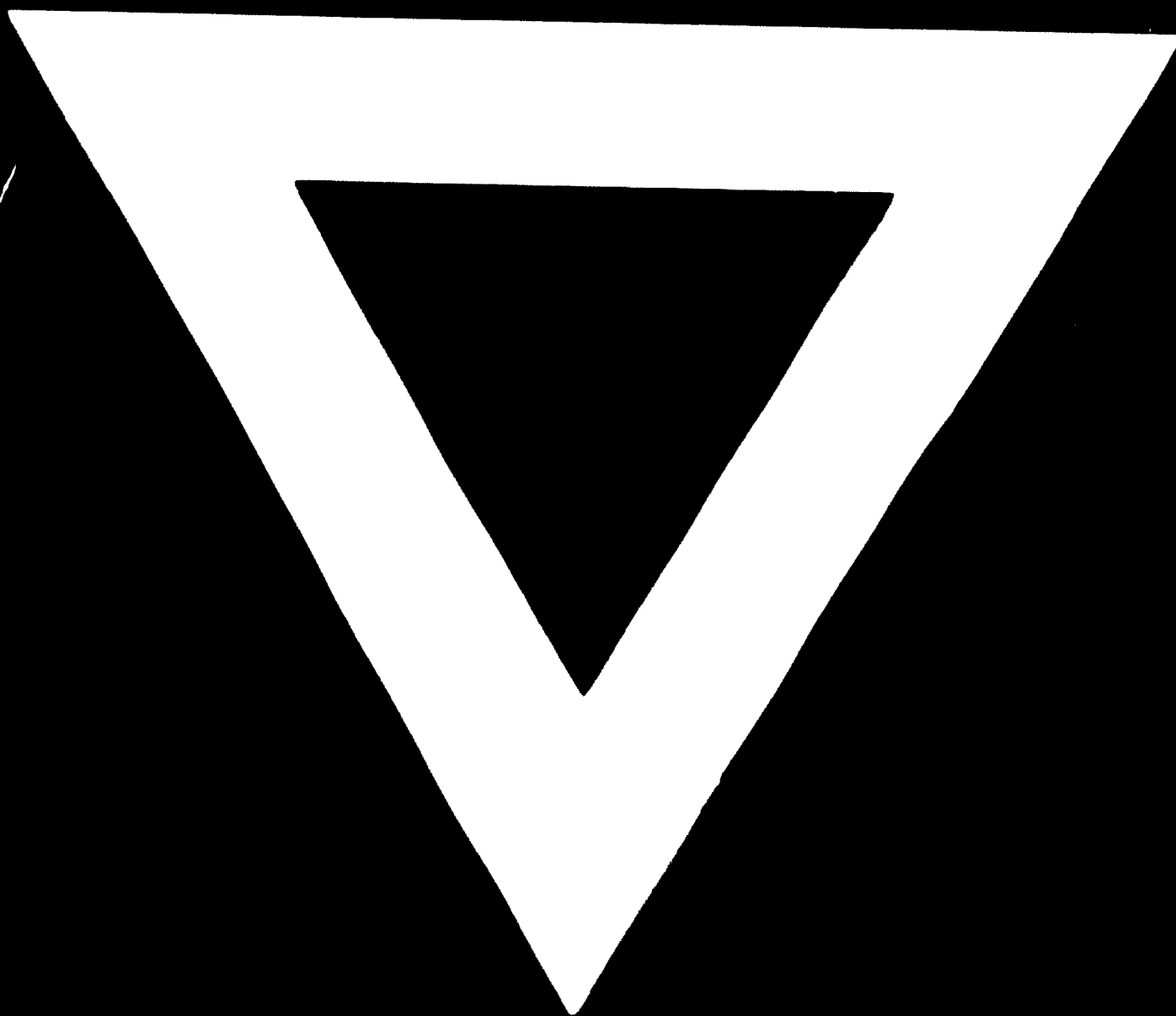
Table 35. Development of employment in six EEC countries^{a/} 1961-1975

Industry	Employment (thousand persons)			Average annual changes in employment			
	1961	1970	1975	1961 - 1970		1970 - 1975	
				thousand persons	as % of 1961 employment	thousand persons	as % of 1970 employment
Agricultural products	15,510	9,992	8,181	-617	-4.0	-362	-3.6
Fuel and power products except solid fuels	1,081	1,213	1,206	15	1.4	-1	-0.1
Solid fuels	1,563	842	679	-80	-5.1	-33	-3.9
Intermediate products except chemical products	4,063	3,804	3,505	-29	-0.7	-60	-1.6
Chemical products	1,654	1,888	1,888	25	1.5	0	0.0
Capital goods	11,317	13,069	12,618	195	1.7	-90	-0.7
Food	3,263	3,195	2,982	-8	-2.1	-43	-1.3
Consumption goods except textiles, clothing and leather	4,644	5,057	4,940	45	1.0	-23	-0.5
Textiles, clothing, leather	6,122	5,367	4,452	-84	-1.4	-187	-3.4
Total manufacturing	31,063	32,380	30,386	146	0.5	-399	-1.2
Construction	7,959	8,709	7,950	83	1.0	-152	-1.7
Transport and communication services	5,522	5,723	5,967	22	0.4	49	0.9
Trade services	11,749	12,390	12,555	71	0.6	33	0.3
Other market services	12,294	15,509	17,450	357	2.9	388	2.5
Non-market services	10,948	13,071	14,829	236	2.2	352	2.7
Total	97,689	99,829	99,203	238	0.2	-125	-0.1

^{a/} United Kingdom, France, FRG, Italy, Netherlands, Belgium.

Source: Commission des Communautés Européennes, Direction Générale des affaires économiques et financières, Les mutations sectorielles des économies européennes de 1960 à la récession, Rapport du Groupe d'experts d'analyses sectorielles, Bruxelles, January 1978, p. 64; own calculations.

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