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A Share Structure Analysis of International Trade Flows in Some Forest Products 1962-1981

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A SHARE STRUCTURE ANALYSIS OF INTERNATIONAL TRADE FLOWS IN SOME FOREST PRODUCTS 1962-1981

Ann Francescon

August 1983 WP-83-76

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FOREWORD

The objective of the Forest Sector Project at IIASA is to study longterm development alternatives for the forest sector on a global basis. The emphasis in the Project is on issues of major relevance to industrial and governmental policy makers in different regions of the world who are responsible for forestry policy, forest industrial strategy, and related trade policies.

The key elements of structural change in the forest industry are related to a variety of issues concerning demand, supply, and international trade of wood products. Such issues include the development of the global economy and population, new wood products and substitution for wood products, future supply of roundwood and alternative fiber sources, technology development for forestry and industry, pollution regulations, cost competitiveness, tariffs and non-tariff trade barriers, etc. The aim of the Project is to analyze the consequences of future expectations and assumptions concerning such substantive issues.

The research program of the Project includes an aggregated analysis of long-term development of international trade in wood products, and thereby analysis of the development of wood resources, forest industrial production and demand in different world regions. The other main research activity is a detailed analysis of the forest sector in individual countries. Research on these mutually supporting topics is carried out simultaneously in collaboration between IIASA and the collaborating institutions of the Project. In this paper, we present the detailed results of a share structure analysis of international trade flows of Sawnwood (Coniferous and Non-Coniferous separately) Panels, Furniture, and Builders' woodwork plus prefabricated buildings, over the years 1962 to 1981. The analysis is based on UN importers' data, supplemented by exporters' reports where the former give no data, and excludes intra-regional trade. In future the analysis will be completed for other products, and these results will also be updated as improvements to the Forest Sector Project database are completed. Changes that are being made to the trade database are outlined.

> Markku Kallio Project Leader Forest Sector Project

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A SHARE STRUCTURE ANALYSIS OF INTERNATIONAL TRADE FLOWS IN SOME FOREST PRODUCTS 1962-1981

Ann Francescon

I. INTRODUCTION

Share structure analysis can be used to study the structure and dynamics of international trade flows over time. It does not explain the reasons for the structure, nor why it is changing, but nevertheless can give a very useful insight into the changing patterns of trade. This paper presents the results of such an analysis for five forestry products for the years 1962 to 1981. It is a complement to more developed gravitational and trade $intensity^{[1]}$ analysis which will be carried out in the IIASA Forest Sector Project (FSP) over the coming months, which will examine the factors influencing trade in forest products. We also intend in FSP to complete a detailed share structure analysis for remaining forest products. Note that throughout this analysis we are excluding the effect of *intra*-regional trade -i.e., trade within a region. For some regions, e.g., North America and Western Europe, this is guite substantial, and there may be a case for considering this in later analysis. Also on the whole there is a very large amount of information contained in the data we have analysed, and it is only possible here to pick out some major trends, rather than mention every detail.

^[1] For a detailed description of gravitational and trade intensity analysis, see 'Historical analysis of international trade flows in forest products - a preliminary paper' (Francescon 1983).

Improvements in the FSP Trade Database

This paper is a follow-up to an earlier paper^[1] in which a preliminary analysis of three products for three years was carried out. It was noted then that the quality of the trade value data used was rather poor, since the only computerized data available was either importers' or exporters' reports to the UNSO, and a quick comparison showed large discrepancies between them. Thus use of either one or the other as a database was bound to be somewhat unrepresentative of actual trade flows. Since then improvements to the database have been made. Firstly computerisation of FAO trade volume matrices is well underway, and in future a detailed comparison and possible integration of FAO volume and UNSO volume and value data will be made. For the moment, for the UNSO value data alone, integration of the importers' and exporters' reports has been carried out. The importers' reports are taken as a base and supplemented with exporters' reports (subject to a 20% increase to account for the difference in c.i.f. and f.o.b. prices -later we will check this difference in detail for different products) where there is a zero report by the importer. There are of course more complex ways of integrating importers' and exporters' reports — for example, also always taking the higher of the two to represent the actual trade flow; this option will be investigated during the final preparation of the FSP trade database to be used for gravitational and trade intensity analysis. For the moment, simply 'filling in' blanks in the importers' matrix does result in a large increase in the coverage of trade flows. The next section presents an overview of results, with details for individual products following in section III. All figures and maps referred to are to be found in Appendices A and B respectively. Appendix C lists the product classification for this analysis.

II. GENERAL OVERVIEW OF RESULTS

It is of course very difficult to summarise briefly the large amount of information that can be found by examining the past trends of trade shares in the five products considered. However it is possible to pick out one or two patterns which seem to crop up for each of the products, and which are quite interesting.

We consider firstly the *import* picture and the way it has altered over the last two decades. For all five products, Western Europe has been and generally still is the largest importer, although its market share has decreased in the case of Coniferous Sawnwood, Furniture and Builders' woodwork. The main exception to Western Europe continuing to be the largest importer, is Builders' Woodwork, where the Rest of Asia and Africa now both have higher shares (27% and 36% respectively). In fact both of these developing regions have sharply increased their import shares of all five products (except for Furniture in the case of Africa). What is also particularly noticeable from the graphs of the time series of these trade shares (see Appendix A) is the common *timing* of many of the changes. The early seventies, around 1973 and 1974 mark a common turning point for many trade shares. For example, for all products except Coniferous Sawnwood, it is after 1973/74 that Africa and/or the Rest of Asia appear to sharply increase their imports (which were previously remaining fairly constant, or even decreasing) and thus the overall share of imports by developing regions is rapidly increased, and indeed reaches a peak of around 50% and 70% for Furniture and Builders' Woodwork respectively. These imports come from *developed* regions, particularly Western Europe. For the other three products, the import share for developing regions does not become more 30%, so the import market is still dominated by trade between developed regions.

Considering the *export* markets of each of these products; Coniferous Sawnwood exports are still dominated by developed countries, namely Scandinavia, North America and Eastern Europe, their overall share being over 95% throughout the last two decades. A similar dominance by developed countries has also existed for Furniture and Builders' woodwork, with their overall export share being between 95% and 85% throughout. However this share has been slightly decreasing; in the case of Furniture, this is due to a sharp increase in ASEAN exports after 1972/73 to a level of 5%. In the case of Builders' Woodwork it is interesting that the decrease was fairly steady until just before 1972, as a result of Nordic and Western Europe's decreased share. At this point although the Nordic region's share dropped sharply, this was accompanied by a doubling of Western Europe and North America's shares to a peak in 1976/77, after which the latter dropped back to its pre-oil crisis level. Thus in the mid seventies, the overall share of developed regions' exports of Builders' woodwork *increased* but in the late seventies dropped again to just over 85%. The main developing regions to double their export share of Builders' Woodwork after 1974/75 were ASEAN and Latin America.

It is very noticeable for all products except Coniferous Sawnwood, that of the developing regions, ASEAN has played an increasingly major role in the export market. In the case of Non-coniferous Sawnwood, ASEAN has steadily tripled its share (to 43%), but taken together with Africa, whose share has been decreasing, and Latin America, we can see that the developing regions' share of exports has remained around 60%. In the case of Panels, both ASEAN and the Rest of Asia have more than tripled their shares, so that the overall export share of developing regions has steadly increased to over 40% (more than double its 1962 level). Neither export markets seem to have been particularly affected by the energy crisis.

Considering overall patterns of trade flows between developed and developing regions (see Table 1 in the next section); it is firstly noticeable how little the level of trade *between developing regions* has changed, apart from trade in Panels, which has increased substantially to around 12%. For all other products, this trade has generally been much less than 7% of the world total.

Developing regions export a large amount of Panels and Non-Coniferous Sawnwood to developed regions; for Panels this level has nearly doubled between 1962 and 1981 to 32%; for Non-Coniferous Sawnwood, this has remained around 56%. Very little Coniferous Sawnwood is exported by developing regions, but for both Furniture and Builders' Woodwork the share of developing regions exports to developed regions' increased during the early seventies (to 10% and 14% respectively). This share dropped by half after 1974 for Builders' Woodwork, but later started to pick up.

For some products there has been an interesting change in the destination of exports from developed regions. For Builders' Woodwork there has been a complete switch since 1974; developed regions now export nearly three times as much (65% of world trade) to developing regions than to other developed regions, rather than vice-versa as in 1974. For all other products, trade between developed regions has been decreasing (this is only after 1974 in the case of Furniture).

Two further points are worth noticing; firstly looking at the maps of major trade flows in 1981 and changes to them (see Appendix B) it seems that many new trade flows have developed, particularly since the early seventies and the energy crisis at that time. These are most commonly exports from Scandinavia and North America to the Rest of Asia in the case of the primary products considered, and exports of Furniture from the Rest of Asia to Western Europe and Japan. In the case of Builders' Woodwork, the Rest of Asia now imports a small amount from Scandinavia and Eastern Europe, and even exports to Africa. Some flows between two regions also appear to have increased very sharply for more than one of the products considered, noticiably ASEAN and North American exports of Non-coniferous Sawnwood and Panels to Western Europe; also Western Europe exports of secondary products — i.e., Furniture and Builders' Woodwork (this also includes prefabricated buildings) — to the Rest of Asia, which occurred after the energy crisis.

Finally it should be noted that there is some degree of "cross hauling", i.e., trade between two regions in both directions particularly between North and Latin America, between North America and Western Europe, and between the Rest of Asia and North America in the case of secondary products.

III. SHARE STRUCTURE ANALYSIS OF FIVE FOREST PRODUCTS

Sawnwood(c) (243.2)

Figures 1 and 2 (Appendix A) show the *cumulative import shares* of Coniferous Sawnwood for developed regions (USA + Canada, Japan, Nordic countries, Western Europe, Eastern Europe + USSR, Oceania, and South Africa — denoted U,J,N,W,E,O,S, respectively) and developing regions (Africa excluding South Africa, Latin America, ASEAN and the Rest of Asia — denoted F,L,A,R). Note that the cumulative share is calculated by adding the shares of the regions in the order listed above. Thus for developed regions, the lowest line (labelled U) shows the import share of USA + Canada, i.e. North America, while the next highest line (labelled J) is the cumulative share of North America plus Japan, and so on. In fact in Figure 1, the Nordic countries have an almost zero import share (<1%), so the line labelled N (i.e. the cumulative share of U + J + N) coincides with line J.

We can see that Western Europe is by far the largest importer of Coniferous Sawnwood, always accounting for over 60% of world imports. Its share however has decreased over the last two decades by about one third. Figure 1 shows that the second major importer in the developed world is Japan, with a quadrupling of its share from around 3% to 12%. The only other developed region with a noticeable share is Oceania (3%). Regarding the developing regions; Figure 2 shows that Africa is the most important, and has increased its share in a similar way to Japan, reaching around 12% in 1981. The Rest of Asia is the next major developing region to import Coniferous Sawnwood (with an increase from 2% to 6% between 1962 and 1981) followed by Latin America which has more than doubled its share to 3% between 1978 and 1981. This figure also shows the overall quadrupling of imports of developing regions since 1962, reaching about 20% in 1981. However, if we compare the trends of the major importers apart from Western Europe (see Figure 3), we can see that Japan is still the second largest. It is also interesting to note the cycles of peaks in imports, and comparing Japan and Africa; the peaks for the latter appear to occur around 3 or 4 years after the former. Thus if this trend continues, Japan will continue to be the second major importer of Coniferous Sawnwood.

From the *exporters* point of view, Figures 4 and 5 show that the major developed regions exporting are North America, the Nordic countries, and Eastern Europe; the second of these having the largest share throughout the period, and remaining fairly constant (around 42%). Developed regions have very slightly increased their overall share of the export market, remaining over 95% throughout. The major developing exporter is Latin America, but its share has halved to about 2% in 1981, and since 1973, the Rest of Asia has begun to export a small amount (less than 1.5%). The five major exporters' shares are plotted in Figure 6. Note the switch in position of Eastern Europe and USA + Canada; the 1962 share levels were around 20% and 28% respectively, but in 1981 the position was reversed. It is also clear from Figure 6 that there are really only three major exporters.

Table 1 below shows the aggregated trade shares between developed and developing regions for each product, in six specific years. It confirms the dominance of the Coniferous Sawnwood import and export market by developed regions, since trade between them always accounts for over 75% of the world market, but this share is decreasing. By far the largest change is occurring in the share of imports of developing regions from developed regions.

We have so far given a general picture of import and export structures, but it is also interesting to consider which individual flows are changing. Table B1 (Appendix B) shows all flows greater than 1% in the same six years as Table 1 (ordered according to their size in 1981). The information in Table B1 is summarised in the accompanying map which concentrates on showing the major flows at the end of the period, with an indication of where major changes have occurred. As expected, the largest flow of Coniferous Sawnwood is from the Nordic region to Western Europe. This has slightly decreased but the Nordic countries have, since the mid-seventies, begun exporting to Africa and the Rest of Asia, so they have maintained their 42% export share. It is clear from table B1 also that the main source of Japan's increased imports is North America. This flow is the main component of North America's increased export share, but also new flows have developed from North America to Africa, Latin America and the Rest of Asia. The other developed countries to export to Africa and the Rest of Asia, are Eastern and Western Europe (only to Africa).

Sawnwood (NC) (243.3 + 243.1)

Figure 7 shows the major developed importer of Non-Coniferous Sawnwood to be Western Europe, accounting for over 50% of world imports throughout the period. The shares of North America the Nordic countries and Oceania have all decreased by more than half (to 7%, 2%, and 3% respectively), while Japan has been increasing its imports since 1966, to a share of around 5% in 1981. Developing regions have increased their import share; this is a result of higher imports by Africa and the Rest of Asia (see Figure 8). The former more than doubled its share after 1975 to a peak of 14% in 1980 but dropping sharply to 3% in 1981. The latter has tripled its import share to 12% in 1981. Figure 9 shows that the major importers apart from Western Europe are currently Rest of Asia and North America: Note also how the main increase in the former's imports comes after 1974, when it takes over from North America as the second largest importer.

As expected, Figures 10 and 11 show that developing regions play a major role in the export of Non-Coniferous Sawnwood, accounting for over 55% of exports over the last two decades. ASEAN is the largest exporter, having more than tripled its share to 43% in 1981, followed by North America which after a slight decrease in exports during the early seventies has now increased its share to 17% and become a net exporter. The third largest exporters (Figure 12) are Eastern Europe and Latin America, the former having halved its share since the early seventies to 10% in 1981. Latin America's share has remained fairly constant. An interesting point to note from Figure 12, is that ASEAN's increased exports have been complemented by a sharp decrease from the Rest of Asia, and steady decrease in Africa's share from 19% to 8%; thus developing exports have remained constant overall.

Considering the *flows* of trade; Table 1 shows that the proportion of *developing* regions exports to developed and to developing regions has remained around 10:1, while the trade from *developed* to developing regions has been increasing. As with Coniferous Sawnwood, the smallest share of trade occurs between developing regions, but in this case it is not negligible — in fact it has been about 6% in average. Table B2 shows that imports by Western Europe have been increasingly from ASEAN, North America, and Latin America, rather than from Africa, Eastern Europe, or the Rest of Asia. In fact the Western Europe decrease in imports from Africa and the Rest of Asia is the main component of the reduced export share for both of these regions. Actually, both regions have become net *importers* of Non-Coniferous Sawnwood, (apart from Africa in 1981) this mainly coming from Eastern Europe, the Nordic region also partly North and Latin America, and Western Europe in the case of the Rest of Asia.

ASEAN has also started to export more to Oceania and Japan apart from Western Europe and has maintained its exports to North America. North America now also exports a small amount to Latin America and Japan, but these flows appear to be only greater than 1% of world trade after 1978, and in fact North America is a net importer from Latin America. The main flows at the end of the period are shown in Map B2 with an indication of changes in size since 1962.

Panels (631.1 + 631.2 + 631.42 + 641.6)

Western Europe and North America have dominated the Panels import market until recently. Figure 13 shows that the former has had a fairly constant share of about 45 to 50% of the market over the last 20 years, but the latter's import share has halved to about 7% in 1981. In fact the Rest of Asia in 1980 overtook North America as the world's second largest importer of Panels, having increased its imports six-fold since 1973, and reaching a share of 19% in 1981 (see Figures 14 and 15). Figure 14 shows that although the main component of the increased imports by developing countries is the Rest of Asia, Africa has also doubled its import share to a 1981 level of 5%, and is thus the fourth largest importer. Oceania, Japan, Eastern Europe and the Nordic countries have had fairly constant import shares under 5%, apart from peak shares around 1973/74 for Japan and Eastern Europe nearer 7% (Figure 15).

The Panels export market has experienced a steady decrease in the share of exports from developed regions from over 80% to 55%, mostly due to the drop in Japan's share from 22% in 1962 to 3% in 1981, and the fact that the Nordic countries share has nearly halved during that period to a level of 19\% (Figure 16). Western and Eastern Europe have both kept their shares of about 10\%, while North America has gradually exported more up to a level of 20\%. In 1981, one third of the world's Panels exports originated from ASEAN and the Rest of Asia (both of which have more than tripled their shares) as opposed to only 9% in 1962 (Figure 17). Figure 18 shows that in 1981 the world's largest exporter of Panels is the ASEAN region, followed by the Nordic countries and North America, together accounting for over 70\% of all exports.

An interesting feature of the changing pattern of flows of Panels can be seen in Table 1 showing aggregated trade between developed and developing regions for six years. Unlike Sawnwood, some of the increased exports by developing regions have been going to other developing regions, this share being only 1% in 1961 and over 12% in 1982. It is also apparent that trade between developed regions has decreased from 65%to 41% over the two decades, since developed regions are also importing more from developing countries.

The major trade flows in the same six years are shown in Table 3B. We can see that the main importer, Western Europe has been decreasing its imports from Scandinavia and Eastern Europe, in favour of North America and ASEAN. North America over this period has become a net exporter, with the bulk of its Panels exports going to Western Europe, but also a small percentage to Latin America and the Rest of Asia. The decreased flow from Japan to North America is the main component of both the latter's reduced imports (although imports from Scandinavia also decreased) and Japan's reduced exports.

During this period, the Rest of Asia started as a net importer, and from 1964 to 1980 became a net exporter. The main destination for its exports was North America, but by 1981, this flow had been halved, and the Rest of Asia once again became a net importer, mainly from ASEAN, but also from Scandinavia, Western Europe and North America. Thus we can see that ASEAN's increased export share is mainly due to its higher exports to Western Europe and the Rest of Asia.

The main sources of Africa's imports of Panels is Western Europe. The main flows of Panels in 1981 and their trends are summarised in Map B3 (in Appendix B).

Furniture (821.0)

Of the developed regions, Western Europe and North America are the major importers of furniture, each with a 20-25% share of the market throughout the last twenty years, although the share of both has been decreasing slightly since the mid-seventies (Figure 19). The Nordic countries have maintained an import share of around 10%, and since the early seventies, Japan's share has increased to about 4%. It is particularly noticeable from both Figures 19 and 20 how the share of imports by developing countries, having started at nearly 50% in 1962, and decreased to its lowest level of 20% in 1973, has now picked up to its original level. The main components of this change are as follows: firstly, the halving of both Africa and Latin America's imports during the 60's contributed to the decline in the developing regions market share; subsequently the Rest of Asia more than tripled its import share between 1973 and 1981, to a level of 26%. Thus in 1981, the major importing regions were the Rest of Asia, followed by Western Europe and North America (Figure 21).

The main sources of furniture exports in the developed world are Western and Eastern Europe, whose shares have remained around 45%and 20\% respectively. The Nordic countries have maintained a share of around 14\% followed by North America with 10% on average (Figure 22). The main changes in these average levels occurred during the early seventies, with both Western Europe and North America's share dropping for about four or five years, while Scandinavia and Eastern Europe temporarily increased their export share. Figure 23 shows a gradual increase in the overall exports of developing regions, to a share of 12% in 1981, composed mainly of exports from the Rest of Asia (approximately 5% share throughout the period) and from ASEAN, which sharply increased its share after 1972 from less than 1% to more than 5%. But, considering the relative importance of the major exporters at the end of the period, we see that the same four developed countries still dominate the market —see Figure 24 which shows major exporters apart from Western Europe.

It is apparent from Table 1 that the increased developing regions exports of Furniture since the early seventies, are mainly to *developed* regions; trade *between developing regions* has remained at 1% throughout the period, whereas the former has more than doubled, to a 1981 level of 11%. Also since trade between developing regions has remained constant, the low level of *imports* by developing regions in 1973 (Figure 20) is in fact a lower than average level of imports from *developed* regions. Trade *between* developed regions has remained over 40% throughout the period and was at its highest level in the early seventies..

If we look more specifically at individual flows; table B4 in Appendix B summarises the flows of Furniture greater than 1% of the world total in six specific years. The main trends in this table are also summarised in Map B4. While Western Europe has remained the major exporter, it has tended to export more Furniture to the Rest of Asia and less to North America (after 1974) and Latin America and Japan. It is interesting to note here though that North America has been a net *importer* of Furniture throughout the last two decades, composed of declining imports from, both Eastern and Western Europe, also Japan and Scandinavia, but increased imports from ASEAN. In fact ASEAN'S exports mainly go to North America, but this flow seems to have developed only after the early 1970's.

We noted earlier the decline of developing regions' furniture imports from developed regions around 1973; the main components of this can be seen as Africa's reduced imports from Western Europe and Latin America's reduced imports from North America and Western Europe, the first two of which picked up again during the late seventies.

We have already mentioned imports by the Rest of Asia, and although it has always been a net importer between 1962 and 1981, it does also export to North America, and Japan (this flow being greater than 1% only after 1970).

Builders' Woodwork (632.4)

The two major importers of Builders' woodwork in the sixties and seventies have been Western Europe and the Rest of Asia. It is very clear from Figures 25 and 26 that after 1973 the former region sharply decreased its import share from a peak level of over 60% to is lowest level of less than 20% in 1977 and at the same time the Rest of Asia sharply increased its imports from a level of 2% to over 55% - in other words, nearly all of the decrease in Western Europe's share is accounted for by the increase in the Rest of Asia's share. The opposite pattern occurs in 1966 and 1979; a higher import share for the former is accompanied by a lower import share for the latter. The other major importer, which also accounts for a decreased Western Europe share is Africa. In fact Figure 27 shows that after 1980 it appears to have doubled its imports to a current level of 36%, thereby becoming the largest importer, followed by Rest of Asia (27%) and Western Europe (19%). Latin America also had a sizeable import share of around 12% in the late sixties, but this has since decreased to only 5%.

Concerning *exports* of Builders' woodwork, changes in major exporters also appear to have occurred after 1974. Figure 28 shows that of the developed regions, the Nordic countries' share appears to have halved after this year to a level of around 20%, while Western Europe and North America have both more than doubled their share to approximately 30% and 25% respectively in 1980. 1981 saw a further increase in Western Europe's share, but a sharp drop in North America's share back to its pre '74 level.

In the developing world, exports by ASEAN and Latin America were both relatively high — at around 5% — between 1966 and 1974. However, as Figure 29 shows, after 1974 both experienced a sharp decrease and only started to increase their exports again after a couple of years, to 1981 levels of 6% and 3% respectively. The overall level of developing exports therefore fell during the years after the oil crisis, but has now picked up to about 12% (Figure 29). The graph of major exporters shares (Figure 30) shows however that Western Europe, North America, and the Nordic countries still dominate the market, but if the Nordic countries continue to decrease their share, ASEAN will soon be the third largest exporter.

Considering the overall pattern of trade between developed and developing regions (see Table 1); when the imports of developed regions dropped sharply after 1973, this was mainly due to their decreased imports from other developed regions (note the drop from 51% to 24%). Their imports from developing regions were also more than halved (14% in 1974 to 6% in 1978). As with many other products, trade between developing regions has changed very little with a slight decrease during the seventies, picking up again, but still being less than 4% in 1981. It is quite noticeable that while trade between developed regions has decreased, developed regions began to export more to developing regions).

Looking at the pattern of individual flows of Builders' Woodwork (Table B5 and Map B5), we see that at the end of the period, over 40% of trade is from Western Europe to Africa and the Rest of Asia alone. In fact Western Europe has changed from being a major net importer to a major net exporter. Its imports from the Nordic countries, Eastern Europe and North America all declined, especially after the energy crisis. At the same time the Rest of Asia became the major importing region, most of its imports coming from Western Europe, but there are also flows from the Nordic countries, Eastern Europe and the Rest of Asia. Until the late seventies Africa also imported an increasing amount from North America, but this now decreased sharply to less than 1% by 1981. North America's overall export share also dropped at the end of the period due to a sharp drop in exports to the Rest of Asia.

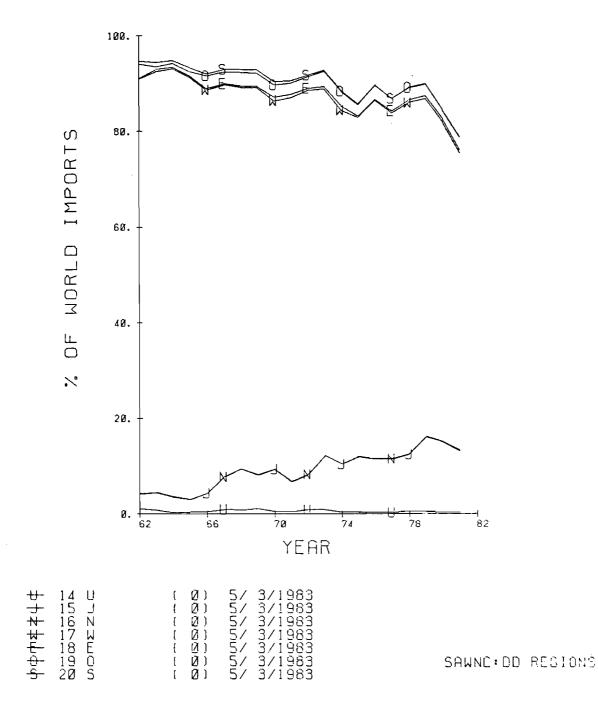
APPENDIX A: TRADE SHARES

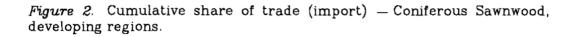
Figures 1 to 30: Graphs of trade shares in some forestry products between 1962 and 1981, excluding intra-regional trade.

Key

- U USA + Canada
- J _Japan
- N Nordic countries (Finland, Sweden and Norway)
- W Western Europe
- E Eastern Europe (incl. Yugoslavia) + USSR
- 0 Oceania
- S —South Africa
- F Africa (excl. S. Africa)
- L Latin America
- A ASEAN
- R __Rest of Asia
- DD -developed regions
- DG -developing regions

Figure 1. Cumulative share of trade (import) — Coniferous Sawnwood, developed regions.





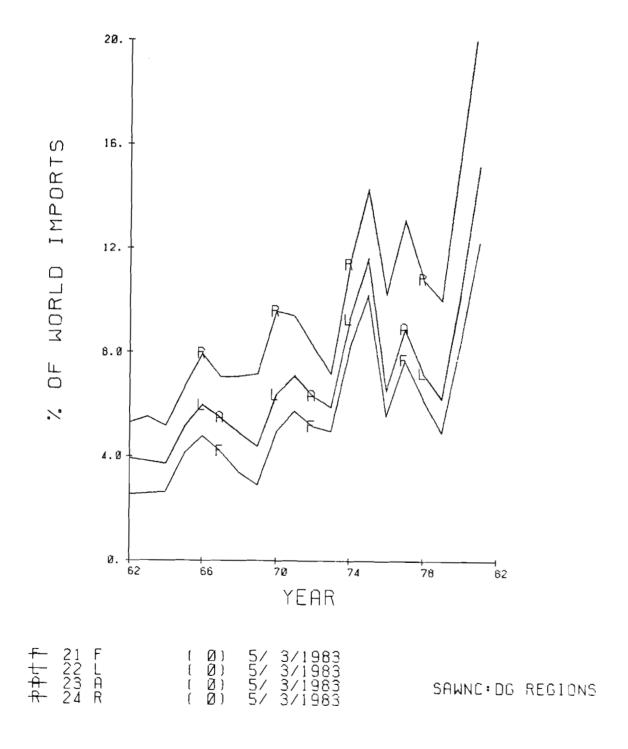
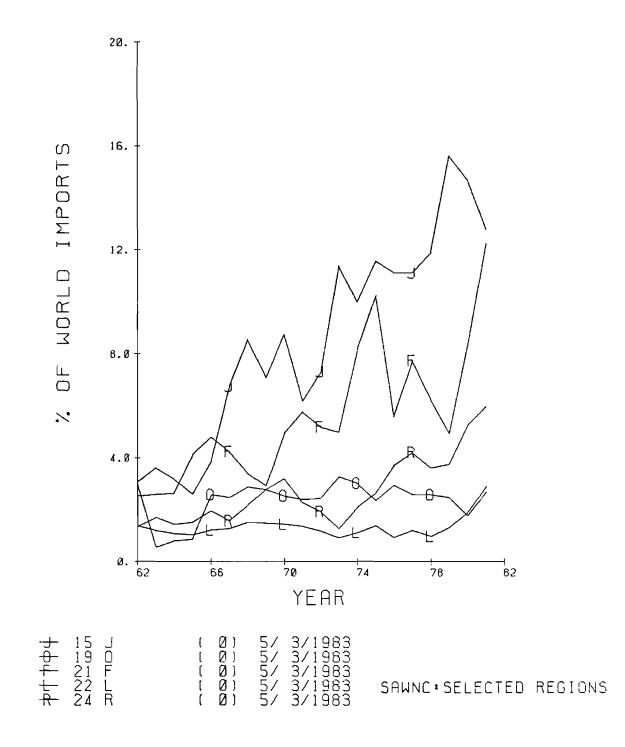


Figure 3. Share of trade (import) — Coniferous Sawnwood, selected regions.



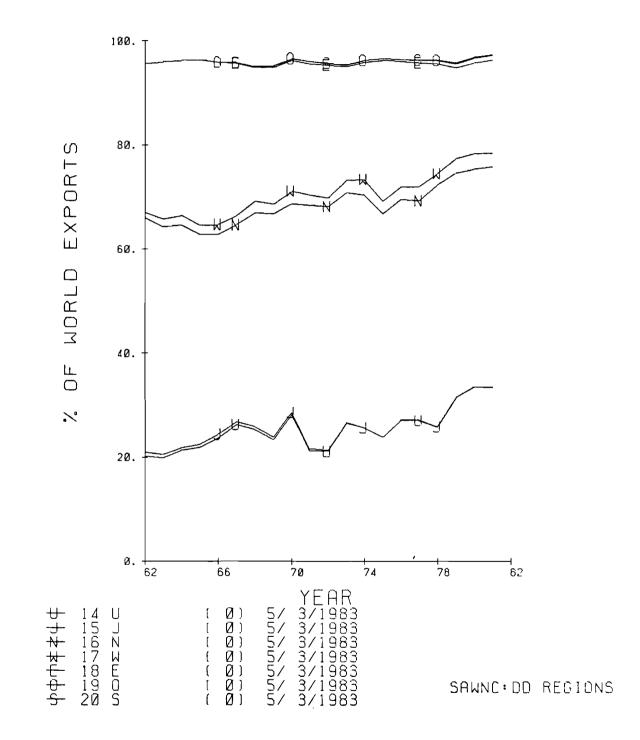


Figure 4. Cumulative share of trade (export) — Coniferous Sawnwood, developed regions.

Figure 5. Cumulative share of trade (export) — Coniferous Sawnwood, developing regions.

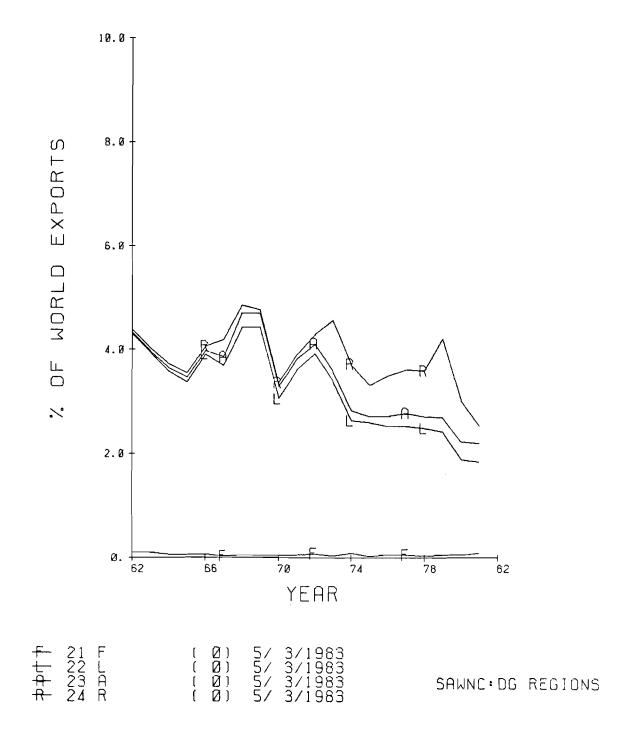
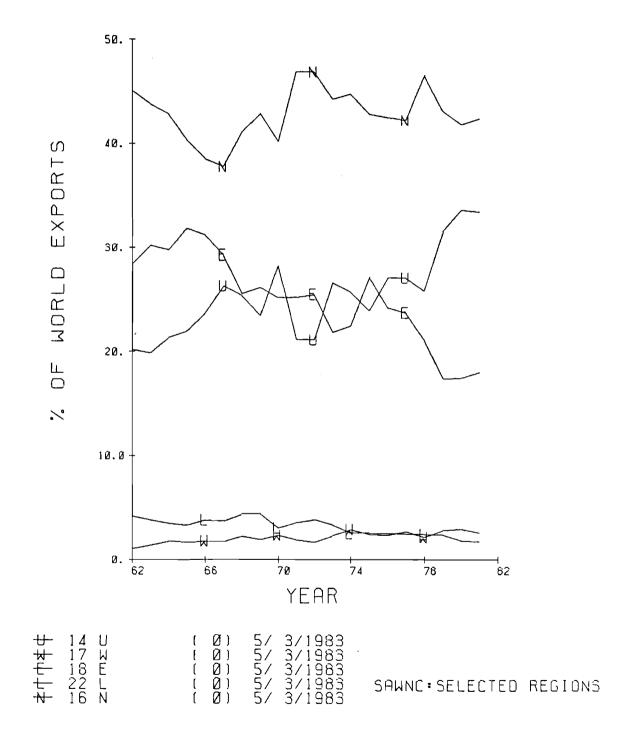


Figure 6. Share of trade (export) — Coniferous Sawnwood, selected regions.



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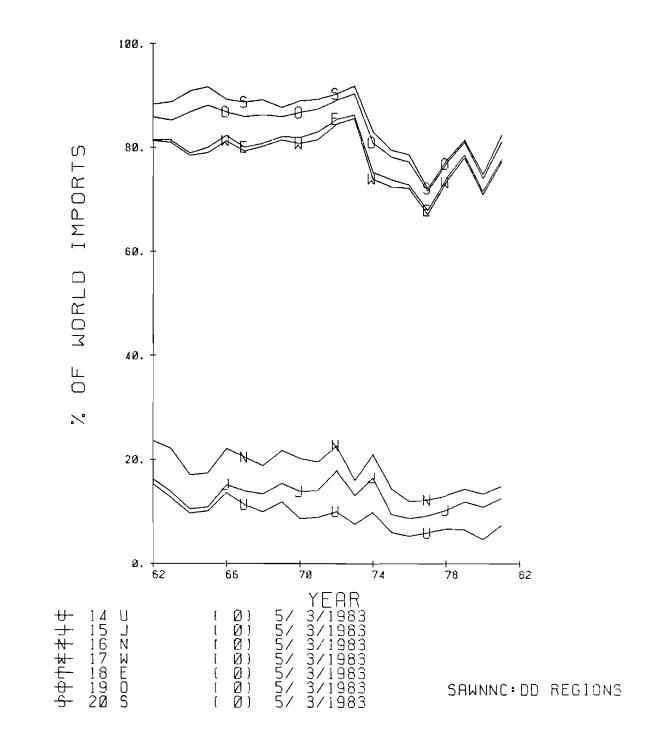


Figure 7. Cumulative share of trade (import) — Non-coniferous Sawnwood, developed regions.

Figure 8. Cumulative share of trade (import) - Non-coniferous Sawnwood, developing regions.

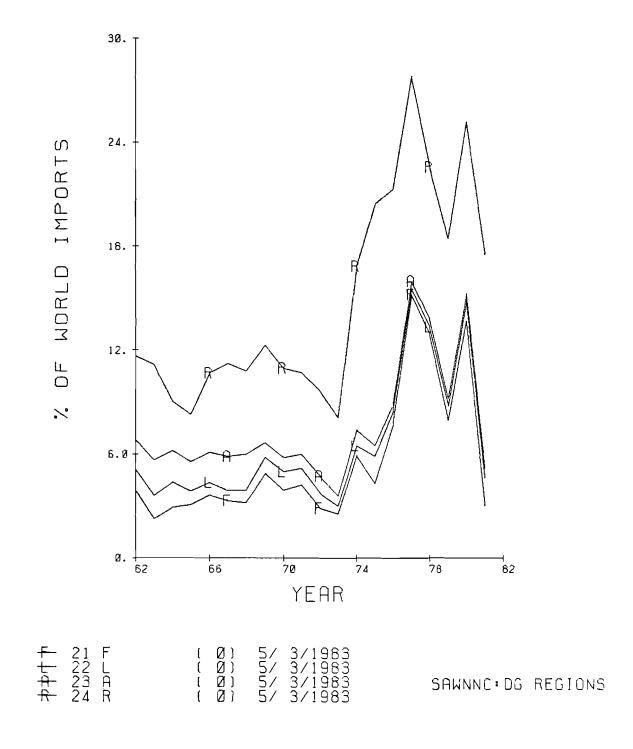


Figure 9. Share of trade (import) — Non-coniferous Sawnwood, selected regions.

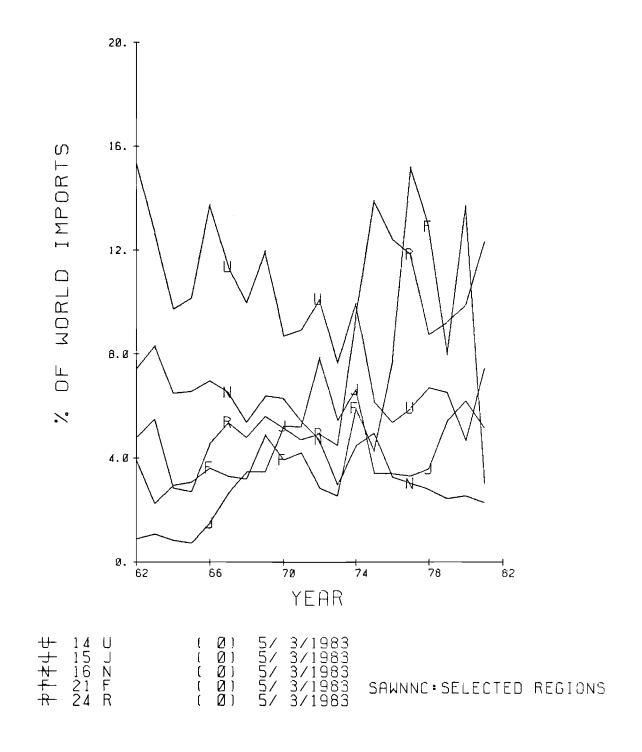
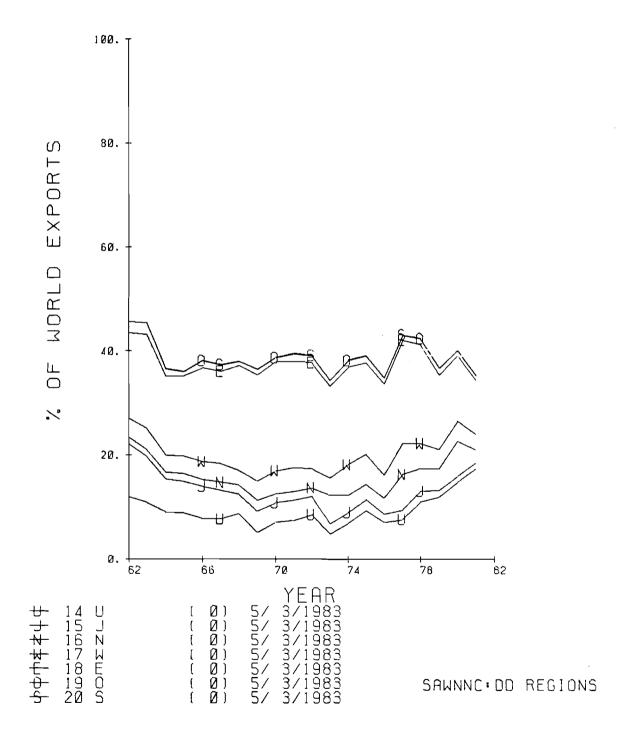
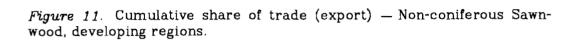
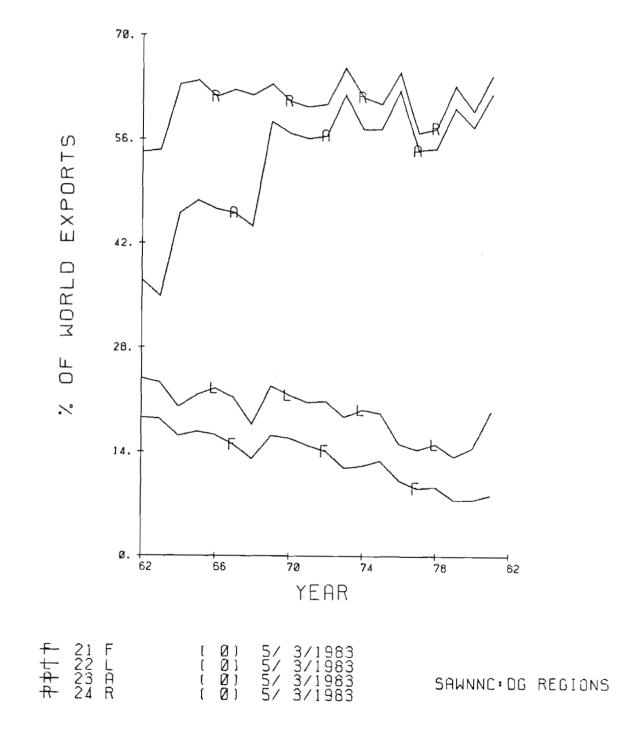


Figure 10. Cumulative share of trade (export) - Non-coniferous Sawnwood, developed regions.

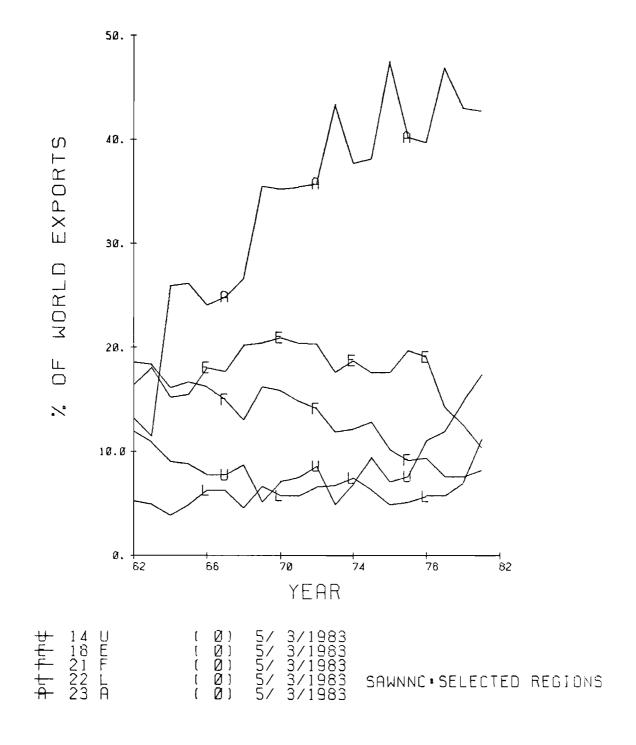






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Figure 12. Share of trade (export) - Non-coniferous Sawnwood, selected regions.



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Figure 13. Cumulative share of trade (import) — Panels, developed regions.

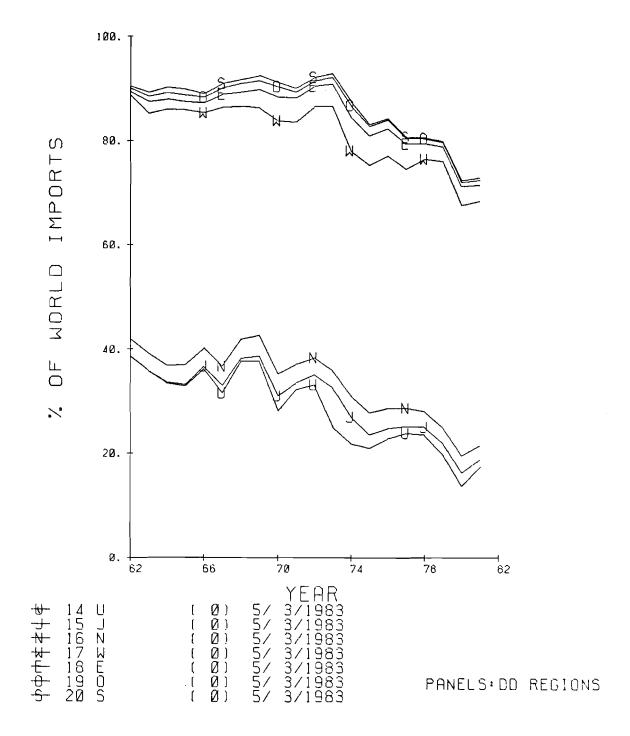


Figure 14. Cumulative share of trade (import) — Panels, developing regions.

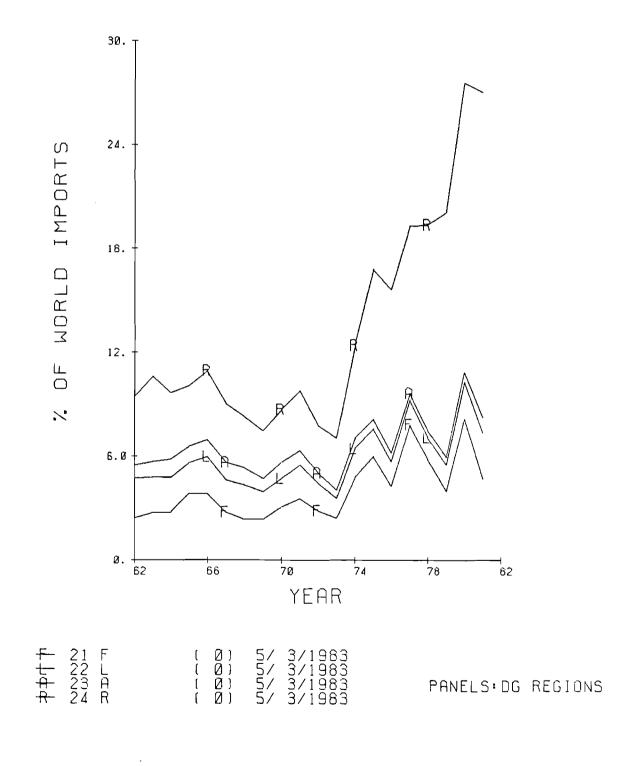


Figure 15. Share of trade (import) - Panels, selected regions.

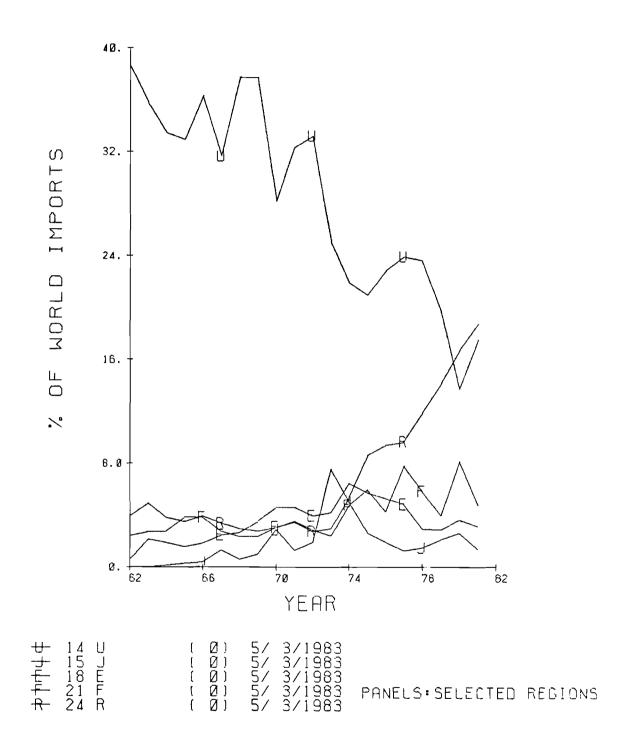


Figure 16. Cumulative share of trade (export) — Panels, developed regions.

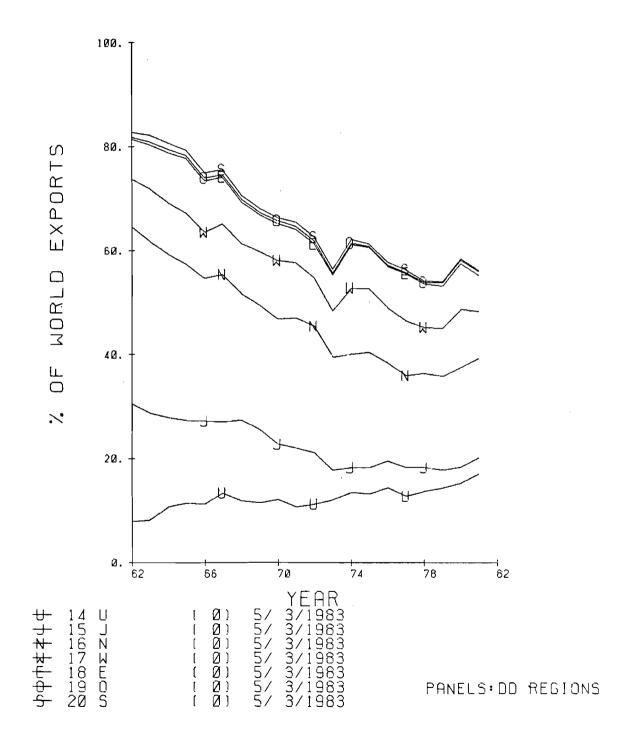
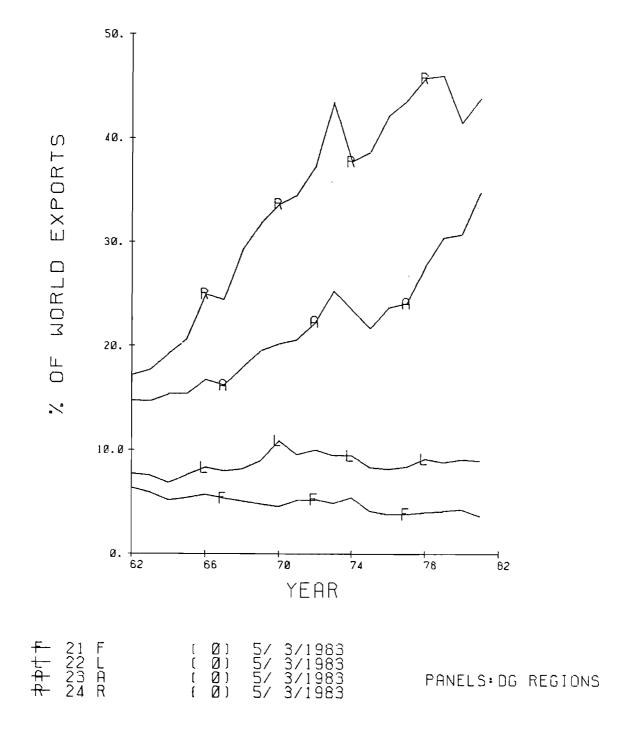
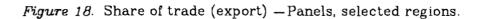


Figure 17. Cumulative share of trade (export) - Panels, developing regions.



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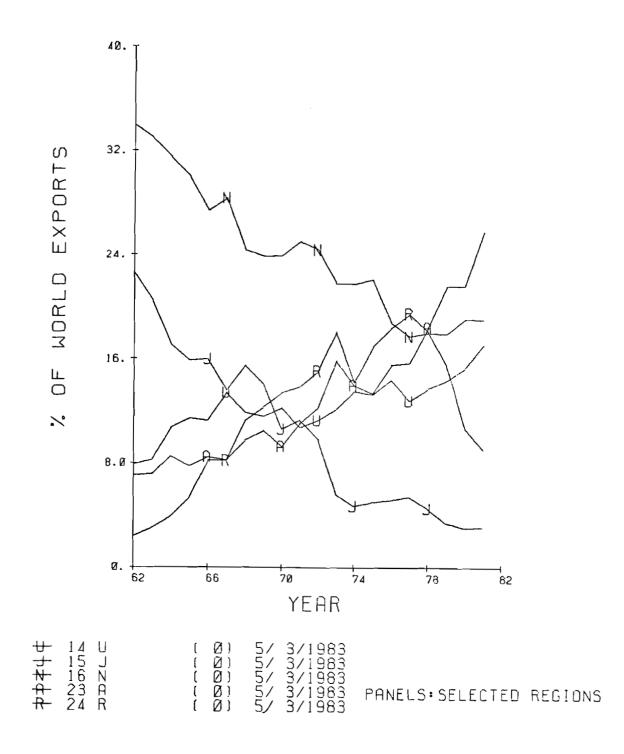


Figure 19. Cumulative share of trade (import) — Furniture, developed regions.

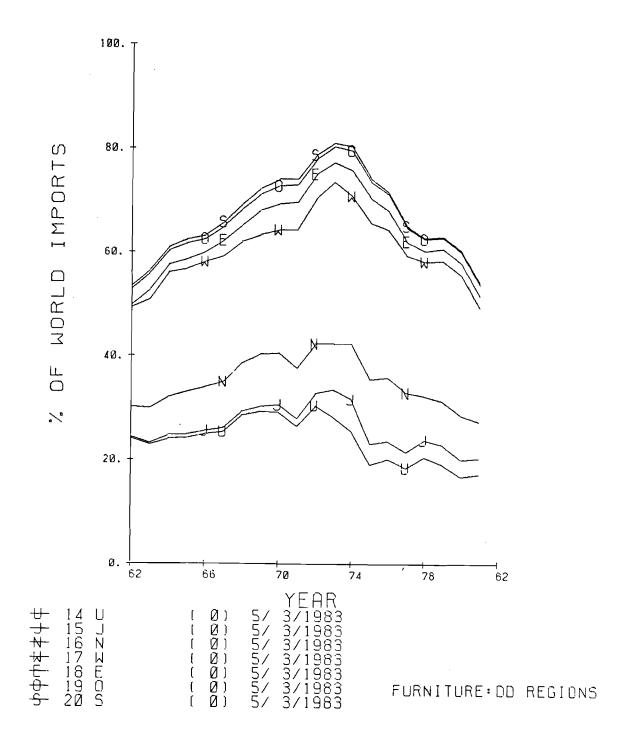


Figure 20. Cumulative share of trade (import) — Furniture, developing regions.

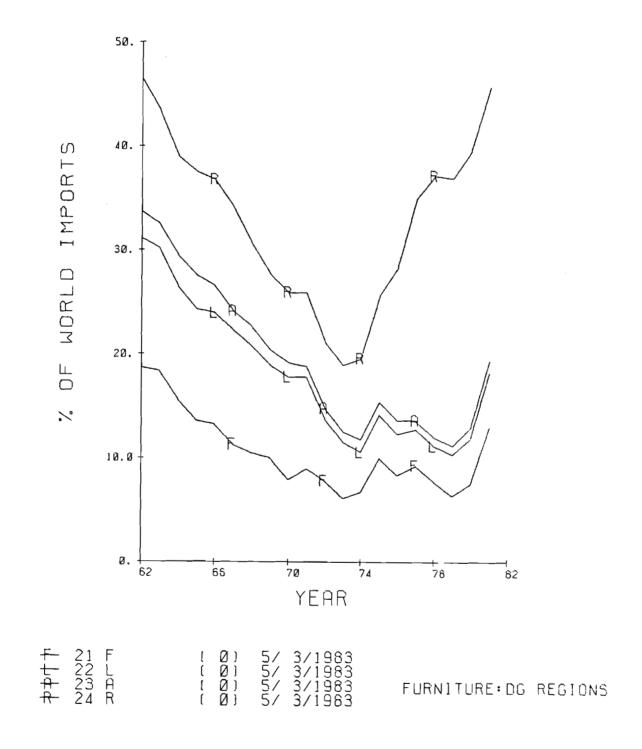


Figure 21. Share of trade (import) - Furniture, selected regions.

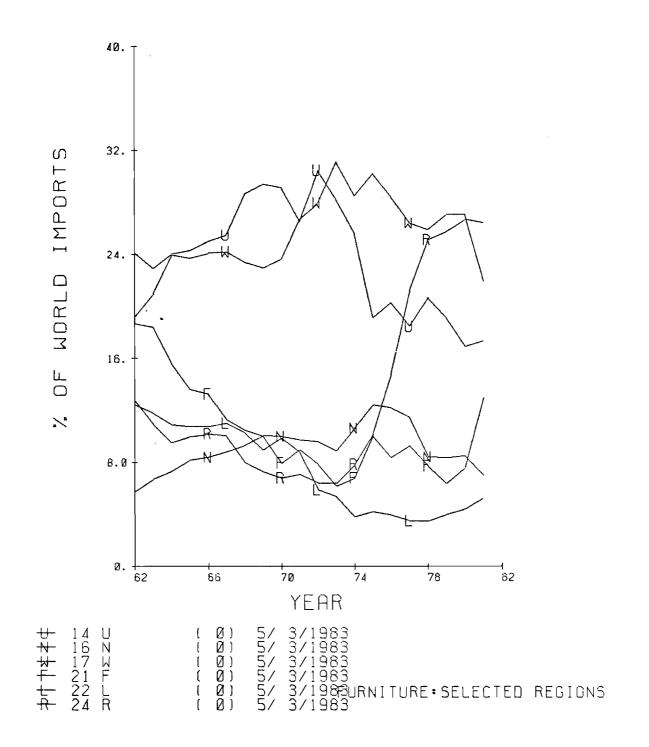
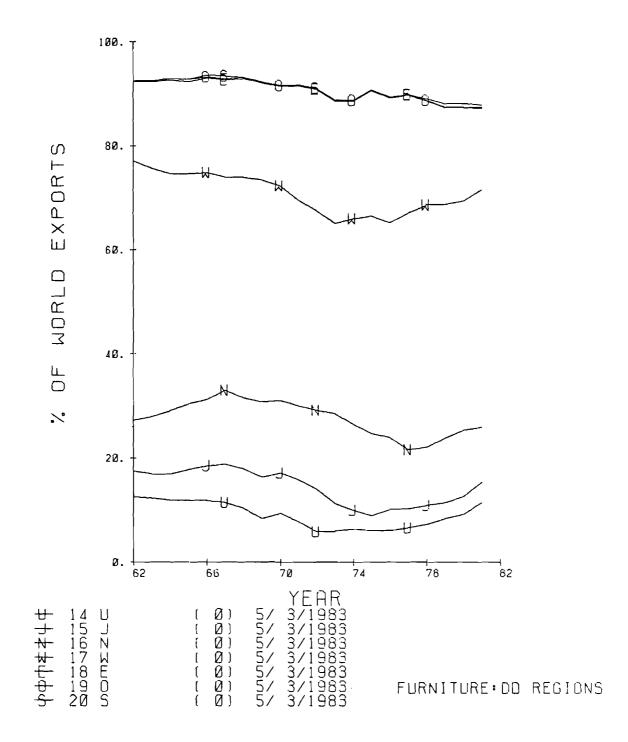


Figure 22. Cumulative share of trade (export) — Furniture, developed regions.



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Figure 23. Cumulative share of trade (export) — Furniture, developing regions.

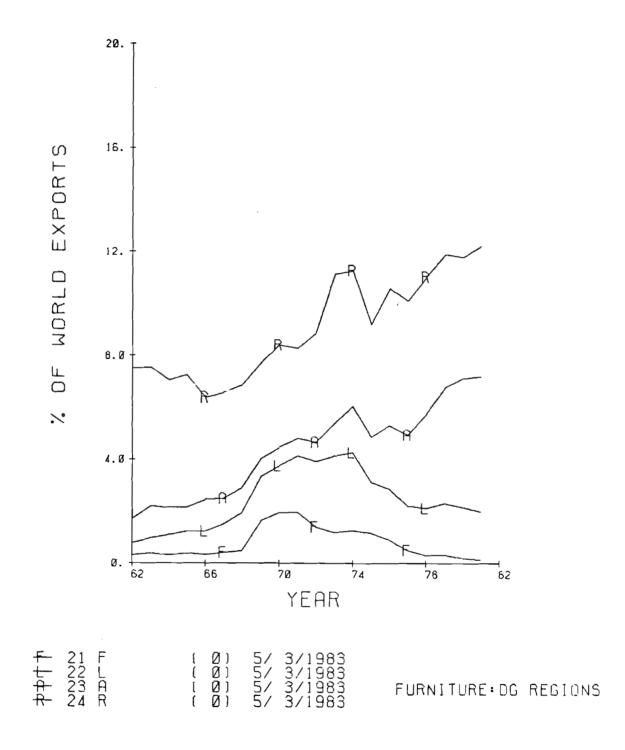


Figure 24. Share of trade (export) - Furniture, selected regions.

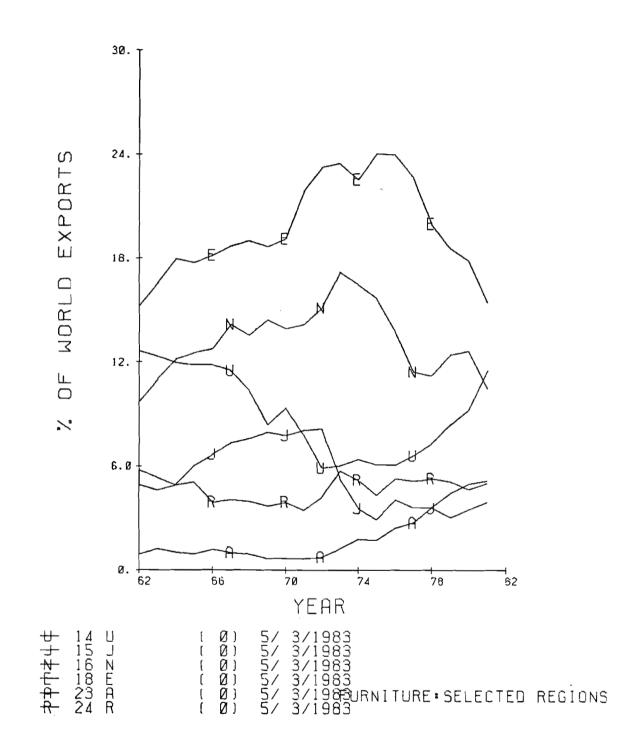


Figure 25. Cumulative share of trade (import) — Builders' Woodwork, developed regions.

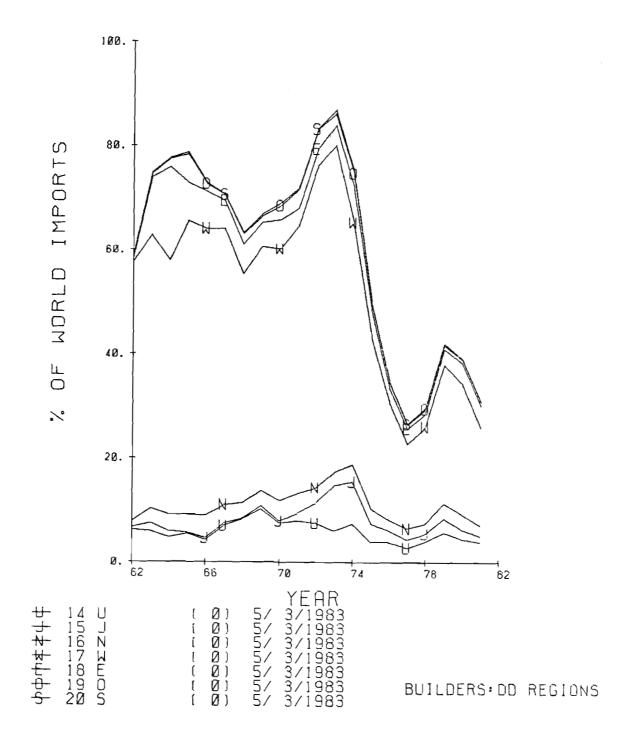


Figure 26. Cumulative share of trade (import) — Builders' Woodwork, developing regions.

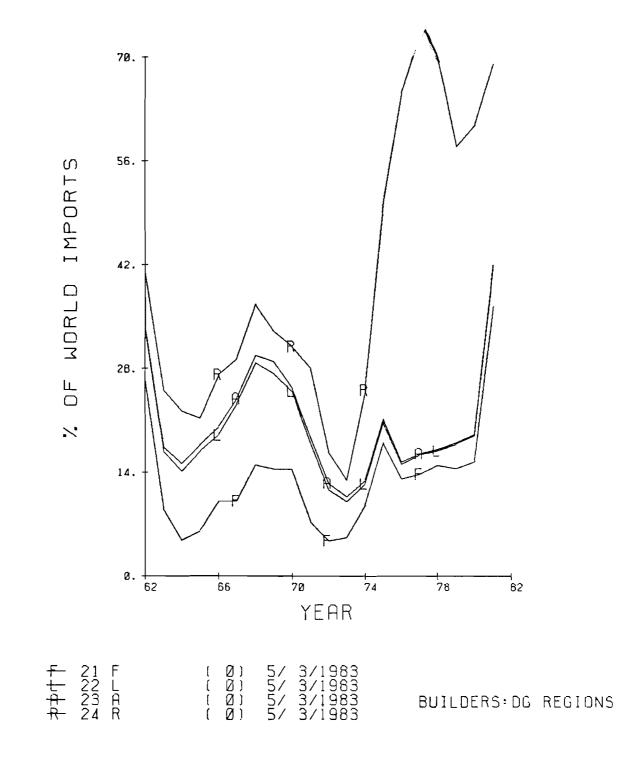
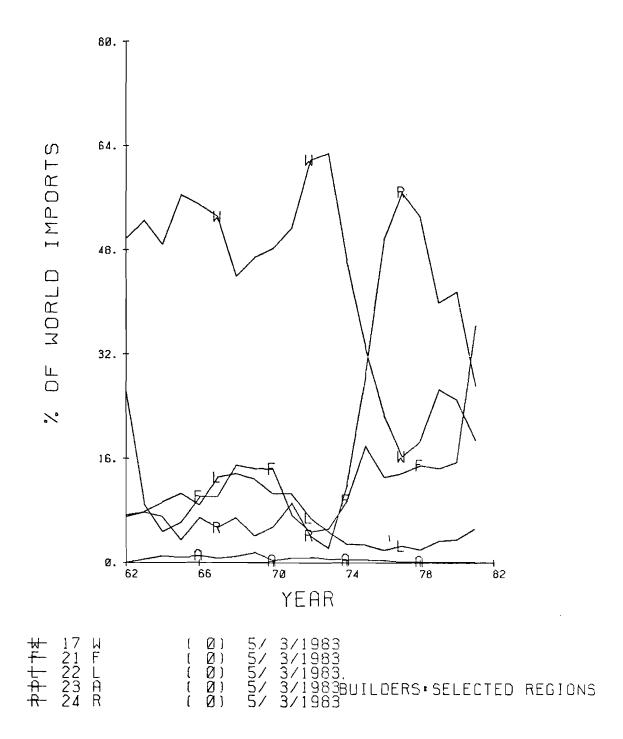


Figure 27. Share of trade (import) - Builders' Woodwork, selected regions.



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Figure 28. Cumulative share of trade (export) — Builders' Woodwork, developed regions.

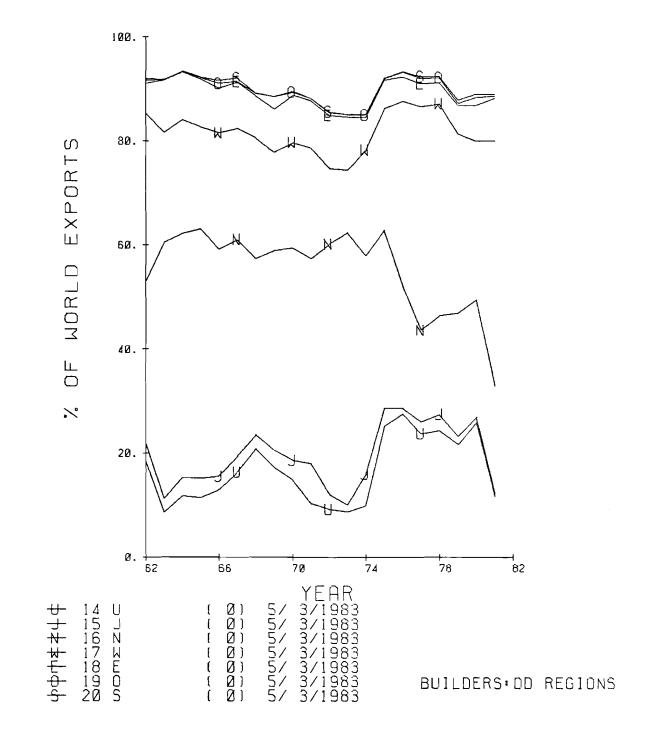


Figure 29. Cumulative share of trade (export) — Builders' Woodwork, developing regions.

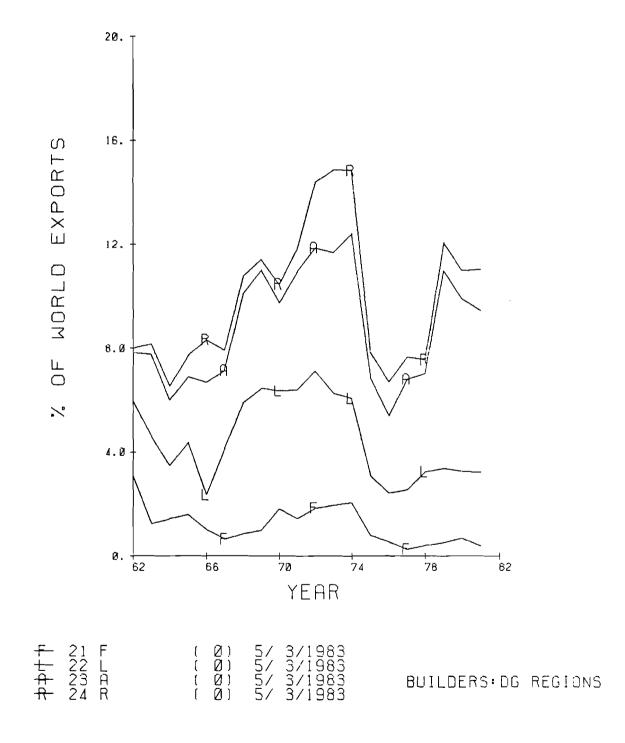
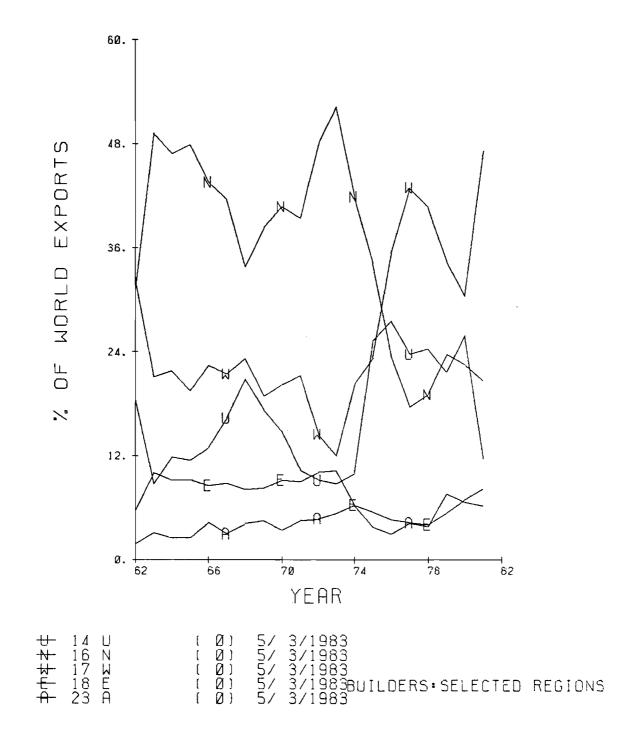


Figure 30. Share of trade (export) — Builders' Woodwork, selected regions.



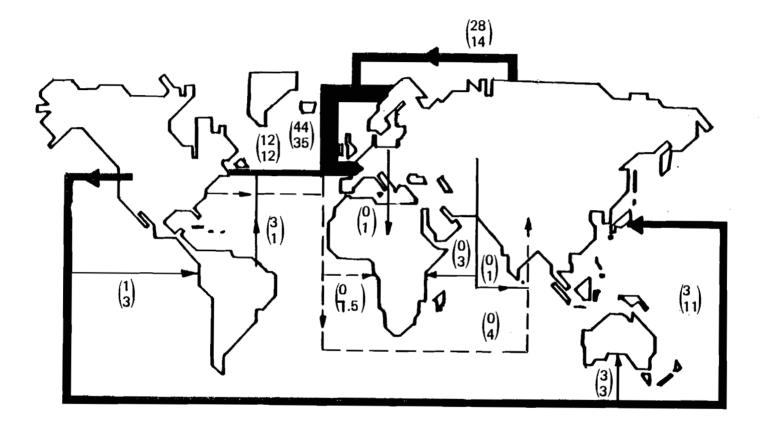
APPENDIX B: TRADE FLOWS

Tables B1 to B5:Trade flows greater than 1% of world total, for years
1962, 1966, 1970, 1974, 1978, 1981, for each productMaps B1 to B5:Map of major trade flows for each product

N.B. "AFRIDING" = Africa (excl. S. Africa) "ASIADING" = Asia (excl. ASEAN)

| FROM | TO | 1962 | 1966 | 1970 | 1974 | 1978 | 1981 |
|----------|----------|--------------|-------|---------------|-------|-------|---------------|
| FS+S+NOR | EUR WEST | 43.97 | 37.51 | 38.6 4 | 42.90 | 42.32 | 35.12 |
| EUR EAST | ERU WEST | 27.78 | 27.61 | 20.75 | 17.38 | 17.98 | 13.52 |
| USA CAND | EUR WEST | 11.94 | 15.70 | 14.87 | 11.94 | 11.03 | 12. 16 |
| USA CAND | JAPAN | 3.03 | 3.66 | 8.27 | 8.65 | 10.15 | 11.44 |
| SF+S+NOR | AFRIDING | | • | | 1.31 | 2.52 | 4.69 |
| EUR EAST | AFRIDING | • | 3.08 | 2.34 | 4.00 | 1.94 | 3.18 |
| USA CAND | AFRIDING | • | • | | | • | 2.85 |
| USA CAND | LAT AMER | 1.25 | 1.09 | 1.27 | 1.01 | • | 2.78 |
| USA CAND | OCEANIA | 2.78 | 2.43 | 2.45 | 2.95 | 2.53 | 2.63 |
| SF+S+NOR | ASIADING | | • | • | • | 1.35 | 2.37 |
| USA CAND | ASIADING | | | | • | • | 1.40 |
| EUR WEST | AFRIDING | • | 1.20 | 1.02 | 1.40 | 1.05 | 1.27 |
| LAT AMER | ERU WEST | 2.95 | 3.35 | 2.47 | 1.54 | 1.83 | 1.24 |
| EUR EAST | ASIADING | | | 1.82 | | • | 1.05 |
| LAT AMER | USA CAND | 1.1 2 | • | • | • | • | • |

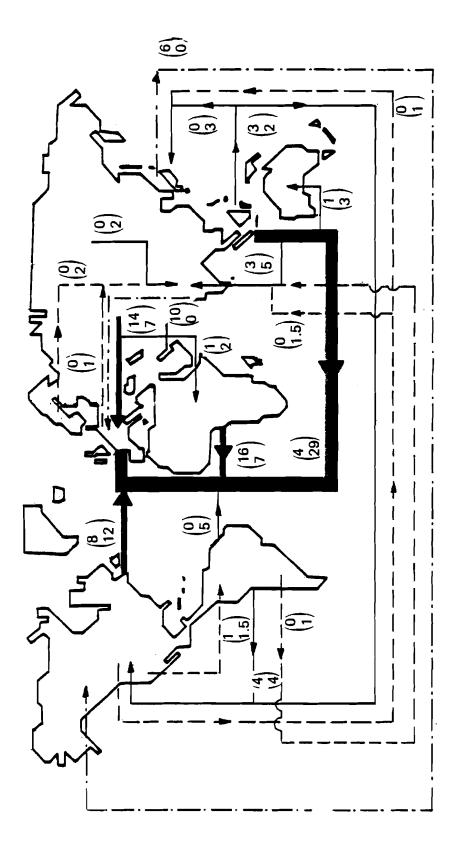
Table B1. Coniferous Sawnwood: trade flows greater than 1%.

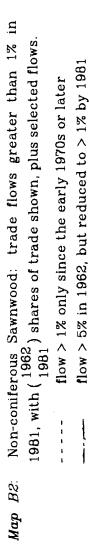


- Map B1: Coniferous Sawnwood: trade flows greater than 1% in 1981, with $\binom{1962}{1981}$ shares of world trade shown
 - ---- flow > 1% only since the early 1970s or later

| FROM | TO | 19 6 2 | 1966 | 1970 | 1974 | 1978 | 1981 |
|----------|----------|---------------|-------|--------------|---------------|-------|---------------|
| ASEAN | EUR WEST | 3.86 | 12.99 | 20.01 | 18.83 | 26.50 | 28.50 |
| USA CAND | EUR WEST | 8.08 | 5.09 | 3.65 | 4.11 | 9.12 | 12.16 |
| AFRIDING | EUR WEST | 15.50 | 12.99 | 13.33 | 10.09 | 8.42 | 7.25 |
| EUR EAST | EUR WEST | 13.94 | 14.85 | 16.23 | 10.99 | 9.95 | 6.61 |
| ASEAN | ASIADING | 2.81 | 2.82 | 1.80 | 2.07 | 3.62 | 4.80 |
| LAT AMER | EUR WEST | • | 1.70 | 1.47 | 2.28 | 2.19 | 4.80 |
| LAT AMER | USA CAND | 3.90 | 4.19 | 3.50 | 3.86 | 2.83 | 4.07 |
| ASEAN | OCEANIA | 1.14 | 2.29 | 3.99 | 4.87 | 2.64 | 3.07 |
| ASEAN | JAPAN | • | | 3.09 | 4.57 | 2.04 | 3.07 |
| ASEAN | USA CAND | 3.24 | 3.62 | 3.02 | 4.77 | 3.07 | 2.48 |
| EUR EAST | ASIADING | | | 2.46 | 3. 6 8 | 1.74 | 1.77 |
| SF+S+NOR | ASIADING | | | | • | | 1.63 |
| EUR EAST | AFRIDING | 1.21 | 1.73 | 1.11 | 3.03 | 6.78 | 1. 6 0 |
| USA CAND | LAT AMER | 1.04 | • | | | | 1.52 |
| USA CAND | ASIADING | • | • | | | | 1.47 |
| USA CAND | JAPAN | | | 1.48 | | | 1.11 |
| LAT AMER | ASIADING | • | | • | | | 1.11 |
| EUR WEST | ASIADING | | | • | 2.26 | 1.76 | 1.10 |
| JAPAN | USA CAND | 5. 6 0 | 2.13 | • | | • | |
| JAPAN | SF+S+NOR | 1.24 | 1.28 | | | • | |
| JAPAN | EUR WEST | 2.97 | 2.22 | 2.10 | 1.53 | 1.73 | |
| SF+S+NOR | EUR WEST | 1.19 | 1.14 | 1.31 | 2.57 | • | |
| EUR WEST | SF+S+NOR | 1.69 | 1.45 | 1.22 | 1.20 | | |
| EUR WEST | AFRIDING | 1.39 | • | 1.07 | | 1.24 | |
| EUR EAST | SF+S+NOR | 1.03 | 1.16 | 1.09 | 1.00 | | |
| OCEANIA | EUR WEST | 1.59 | | • | 1.00 | • | |
| AFRIDING | USA CAND | 1.59 | 1.88 | 1.03 | • | • | |
| ASIADING | SF+S+NOR | 1.32 | 1.17 | 1.04 | • | • | |
| ASIADING | EUR WEST | 9.55 | 7.76 | 1.84 | 1.39 | | |
| ASIADING | OCEANIA | 2.82 | 1.81 | | | | |
| ASIADING | ASEAN | 1. 6 9 | 1.74 | | | | |
| ASIADING | USA CAND | • | 1.70 | | | | • |
| EUR WEST | EUR EAST | | | 1. 12 | 1.12 | | |
| ASEAN | SOUTAFRI | | | 1.17 | 1.01 | | |
| ASEAN | AFRIDING | | | 1.36 | 1.05 | 1.37 | |
| ASIADING | JAPAN | | | | 1.10 | | • |
| SF+S+NOR | AFRIDING | | | | | 2.32 | |

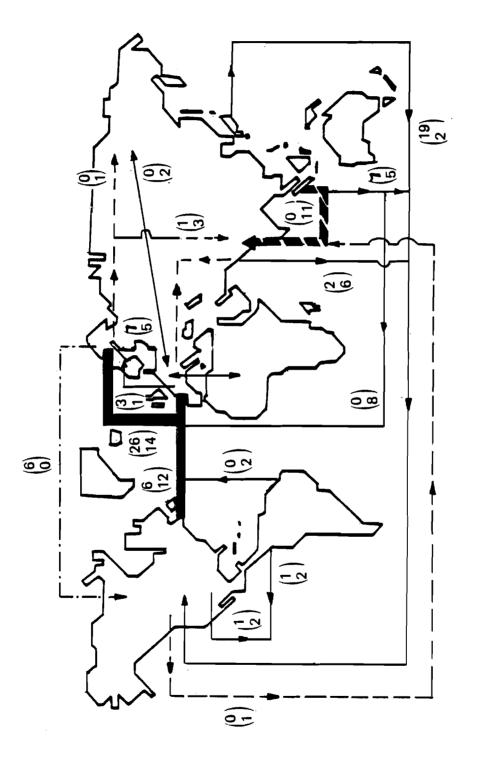
Table B2. Non-coniferous Sawnwood: trade flows greater than 1%.





| FROM | ТО | 1 962 | 1966 | 1970 | 1974 | 1978 | 1981 |
|----------|----------|--------------|-------|-----------------------|----------------|--------------|---------------|
| SF+S+NOR | EUR WEST | 25.68 | 20.14 | 18.97 | 16.93 | 13.63 | 13.59 |
| USA CAND | EUR WEST | 6.22 | 9.25 | 10.51 | 10. 6 4 | 11.57 | 12.44 |
| ASEAN | ASIADING | | • | • | 2.11 | 5.85 | 10.82 |
| ASEAN | EUR WEST | • | • | 2.49 | 4.78 | 7.32 | 7.54 |
| ASIADING | USA CAND | 1.84 | 6.94 | 10.12 | 8.94 | 11.66 | 5. 6 9 |
| ASEAN | USA CAND | 6.68 | 7.79 | 4.87 | 4.47 | 3.60 | 5.45 |
| EUR EAST | EUR WEST | 7.37 | 7.45 | 5.89 | 5.79 | 5.05 | 4.67 |
| AFRIDING | EUR WEST | 4.28 | 4.34 | 3.73 | 4.83 | 3.68 | 3.36 |
| SF+S+NOR | ASIADING | 1.21 | | • | • | 1.45 | 2.70 |
| ASIADING | EUR WEST | • | | • | • | 4.52 | 2.49 |
| LAT AMER | USA CAND | 1.06 | 1.51 | 1.23 | 1.51 | 2.43 | 2.43 |
| LAT AMER | EUR WEST | • | | 4.69 | 2.06 | 2.18 | 2.35 |
| EUR WEST | ASIADING | • | • | • | 1.18 | 2.21 | 2.08 |
| JAPAN | USA CAND | 19.18 | 13.01 | | 7.48 | 3.5 6 | 3.58 |
| EUR WEST | AFRIDING | 1.51 | 1.33 | 1.58 | 2.20 | 2.07 | 1.05 |
| EUR WEST | EUR EAST | • | 1.49 | 3.53 | 4.53 | 1.74 | 1.78 |
| USA CAND | LAT AMER | 1.09 | 1.12 | • | | • | 1.71 |
| USA CAND | ASIADING | ٠ | • | • | • | • | 1.33 |
| SF+S+NOR | EUR EAST | • | • | • | 1.72 | 1.07 | 1.22 |
| EUR WEST | SF+S+NOR | 3.11 | 3.13 | 3 . 1 6 | 2. 6 3 | 1.52 | 1.21 |
| JAPAN | EUR WEST | 1.69 | 1.41 | 1.68 | • | • | • |
| JAPAN | ASIADING | 1.27 | 1.01 | • | • | • | • |
| SF+S+NOR | USA CAND | 5.5 2 | 4.84 | 2.65 | 1.58 | · • | • |
| EUR WEST | USA CAND | 2.21 | 1.02 | • | | • | • |
| AFRIDING | USA CAND | 1.85 | • | • | • | • | • |
| EUR WEST | AFRIDING | • | 1.48 | • | • | 1.25 | |
| ASIADING | JAPAN | • | • | 2.14 | 3.93 | • | • |
| EUR EAST | ASIADING | | • | | • | 1.04 | • |

Table B3: Panels: trade flows greater than 1%.

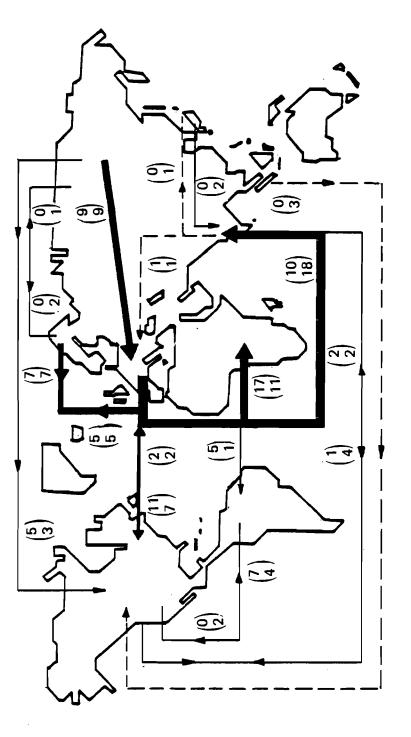


Map B3: Panels: trade flows greater than 1% in 1981, with (1962) shares of world trade shown, plus other selected flows. ---- flow > 1% only since the early 1970s or later ---- flow > 5% in 1962, but reduced to > 1% by 1981

| FROM | ТО | 1962 | 1966 | 1970 | 1974 | 1978 | 1981 |
|----------|----------|---------------|-------|---------------|---------------|----------|-------|
| EUR WEST | ASIADING | 9.58 | 6.64 | 3.88 | 4.60 | 18.98 | 18.46 |
| EUR WEST | AFRIDING | 18. 66 | 11.07 | 6.71 | 5.66 | 6.61 | 11.00 |
| EUR EAST | EUR WEST | 8.73 | 11.11 | 10.70 | 13. 66 | 13.44 | 9.38 |
| SF+S+NOR | EUR WEST | 6.98 | 8.94 | 9.64 | 10.99 | 8.49 | 6.90 |
| EUR WEST | USA CAND | 11.09 | 12.83 | 14.00 | 12.93 | 9.62 | 6.89 |
| EUR WEST | SF+S+NOR | 4.78 | 5.43 | 6.77 | 6.80 | 6.13 | 4.97 |
| USA CAND | ASIADING | 1.58 | 1.05 | | 1.24 | 2.93 | 4.16 |
| USA CAND | LAT AMER | 7.38 | 6.21 | 5. 6 4 | 1.66 | 1.67 | 3.56 |
| EUR ÉAST | USA CAND | 5.31 | 4.08 | 4.83 | 4.11 | 3.48 | 2.78 |
| ASEAN | USA CAND | | | • | • | 1.78 | 2.75 |
| USA CAND | EUR WEST | 1.77 | 2.36 | 1.55 | 1.80 | 1.56 | 2.42 |
| JAPAN | ASIADING | | 1.16 | 1.45 | 1.06 | 1.52 | 1.83 |
| LAT AMER | USA CAND | • | • | 1.50 | 2.31 | 1.57 | 1.69 |
| ASIADING | USA CAND | 1.97 | 1.46 | 1.83 | 1.73 | 2.27 | 1.67 |
| EUR EAST | SF+S+NOR | • | 2.47 | 2.94 | 3.65 | 2.01 | 1.60 |
| EUR WEST | LAT AMER | 4.5 6 | 4.01 | 3.76 | 1.91 | 157 | 1.47 |
| SF+S+NOR | EUR EAST | | 1.29 | 1.56 | 1.79 | • | 1.46 |
| ASIADING | JAPAN | • | • | | 1.69 | 1.28 | 1.34 |
| ASIADING | EUR WEST | 1.14 | | • | | 1.00 | 1.09 |
| ASIADING | AFRIDING | 1.01 | | | • | • | • |
| JAPAN | USA CAND | 3.05 | 3.59 | 4.44 | 1.48 | 1.04 | • |
| SF+S+NOR | USA CAND | 2.07 | 2.03 | 2,26 | 2.34 | | • |
| EUR WEST | OCEANIA | 1.69 | 1.48 | 1.97 | 2.15 | 1.16 | • |
| ASIADING | ASÉAN | 1.07 | | • | • | • | • |
| EUR WEST | EUR EAST | | | 2.00 | 2.11 | • | • |
| AFRIDING | EUR EAST | • | | 1.49 | | • | |
| EUR WEST | JAPAN | • | • | • | 2.26 | <u> </u> | • |

Table B4: Furniture: trade flows greater than 1%.

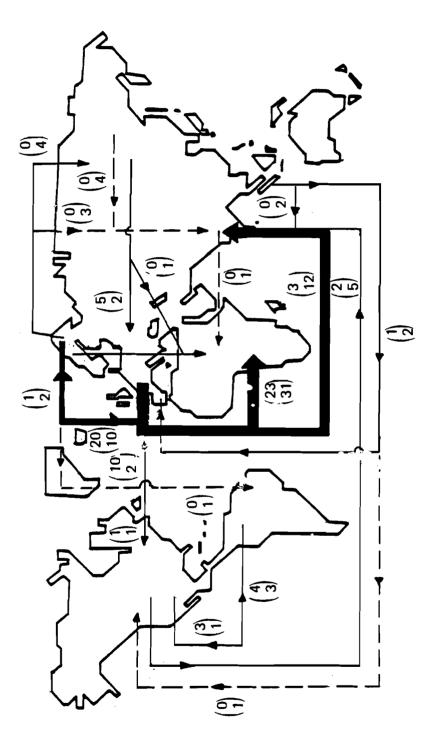
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Map B4: Furniture: trade flows greater than 1% in 1981, with (1962) shares of world trade shown, plus other selected flows.
----- flow > 1% only since the early 1970s or later

| FROM | ТО | 1962 | 1966 | 1970 | 1974 | 1978 | 1981 |
|----------|----------|-------|-------|---------------|-------|----------------|-------|
| EUR WEST | AFRIDING | 23.27 | 7.07 | 7.23 | 6.97 | 7.44 | 30.78 |
| EUR WEST | ASIADING | 3.18 | 2.12 | 2.36 | 3.02 | 28.92 | 11.98 |
| SF+S+NOR | EUR WEST | 28.77 | 40.34 | 35.3 2 | 34.17 | 13.97 | 9.99 |
| USA CAND | ASIADING | 2.28 | 1.81 | • | 1.44 | 15. 6 4 | 5.03 |
| EUR EAST | ASIADING | • | • | | • | 1.30 | 4.21 |
| SF+S+NOR | EUR EAST | • | 2.21 | 3.49 | 3.66 | 1.57 | 3.70 |
| SF+S+NOR | ASIADING | • | | • | 1.16 | 2.44 | 3.12 |
| USA CAND | LAT AMER | 4.17 | 6.79 | 8.10 | 1.73 | 1.08 | 2.97 |
| EUR EAST | EUR WEST | 5.34 | 8.01 | 7.63 | 5.82 | 2.12 | 2.45 |
| USA CAND | EUR WEST | 9.90 | 2.45 | 1.51 | 1.69 | • | 2.28 |
| ASEAN | EUR WEST | 1.22 | 1.37 | 1.49 | 1.55 | • | 2.24 |
| SF+S+NOR | AFRIDING | 1.52 | • | 1.21 | • | • | 2.21 |
| ASEAN | ASIADING | | 2.04 | • | | • | 1.96 |
| EUR WEST | SF+S+NOR | 1.15 | 3.68 | 3.37 | 2.70 | 1.37 | 1.63 |
| LAT AMER | USA CAND | 2.35 | • | 4.22 | 2.98 | 1.57 | 1.46 |
| EUR EAST | AFRIDING | • | | 1.35 | • | • | 1.36 |
| SF+S+NOR | LAT AMER | | | • | | | 1.34 |
| ASEAN | USA CAND | | | • | 1.30 | 1.21 | 1.18 |
| ASIADING | AFRIDING | | • | • | • | • | 1.13 |
| EUR WEST | USA CAND | 1.08 | 1.20 | 1.36 | 2.44 | • | 1.07 |
| EUR WEST | LAT AMER | 2.85 | 2.06 | 2.02 | 1.09 | • | 1.00 |
| USA CAND | AFRIDING | 1.91 | 1.14 | 3.95 | 1.17 | 6.19 | • |
| JAPAN | USA CAND | 1.95 | | 1.00 | | | |
| AFRIDING | EUR WEST | 3.06 | | 1.63 | 1.81 | | |
| EUR WEST | EUR EAST | | 4.93 | 2.03 | 2.77 | • | |
| JAPAN | ASIADING | • | • | 2.14 | 5.76 | 2.86 | |
| EUR WEST | OCEANIA | | | 1.31 | | | |
| USA CAND | JAPAN | | | • | 2.26 | | • |
| SF+S+NOR | JAPAN | • | | | 1.27 | | |
| ASEAN | JAPAN | • | • | • | 1.92 | • | • |
| ASIADING | JAPAN | | | | 1.30 | | |

Table B5: Builders' Woodword: trade flows greater than 1%.



Map B5: Builders' Woodwork: trade flows greater than 1% in 1981, with (1962) shares of world trade shown, plus other selected flows.
---- flow > 1% only since the early 1970s or later

APPENDIX C: PRODUCTS CLASSIFICATION:

| llASA pro number | oduct | SITC Rev I | | |
|---------------------|--|-----------------------------------|--|--|
| 5. | Coniferous Sawnwood | 243.2 | | |
| 6. | Non-coniferous Sawnwood plus sleepers | 243.3 + 243 .1 | | |
| 7. | Panels (Veneer sheets, Plywood, Particle boards, and Fibreboards + other building boards) | 631.1 + 631.2 + 631.42 + 641.6 | | |
| 1 3 . | Furniture | 821.0 | | |
| 14. | Builders' woodwork | 632.4 | | |

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