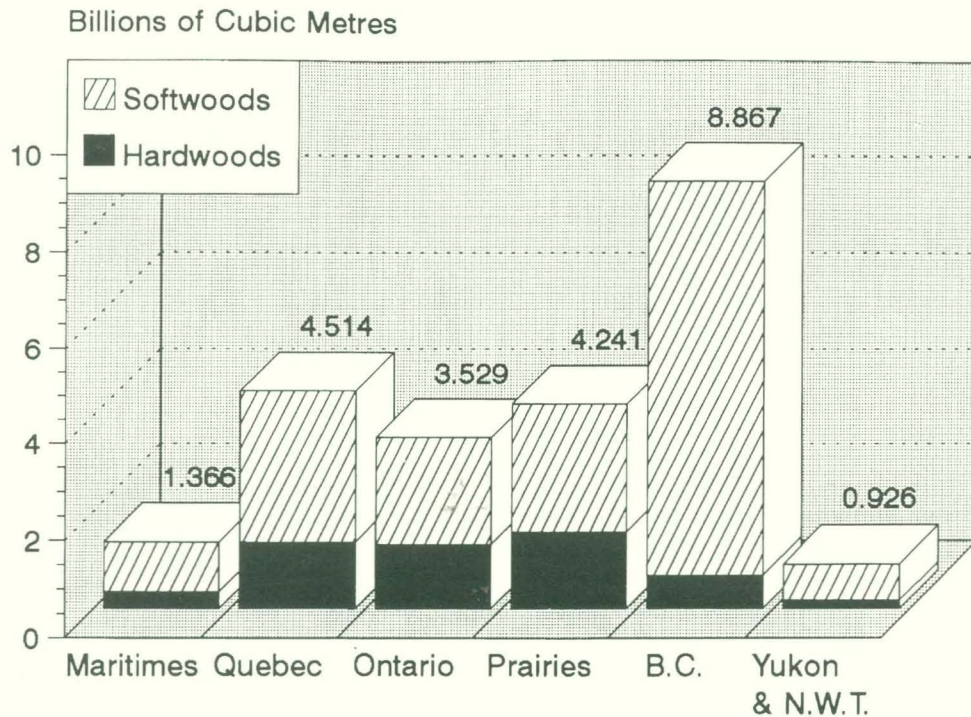




# Principal economic indicators for the Quebec forestry sector - Presentation and analysis

Sylvie Massicotte and Gilles Carpentier  
Quebec Region • Information Report LAU-X-104E



Gross merchantable volume on accessible productive forest land



Forestry Canada Forêts Canada

Canada

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**THE LAURENTIAN FORESTRY CENTRE** is one of six regional establishments of Forestry Canada. The Centre cooperates with other government agencies, educational institutions, and the forest industry to promote through research and development the most efficient and rational management and use of Quebec's forests.

In Quebec, Forestry Canada's program consists of forest resource and protection research and forest development. Most research is undertaken in response to the needs of the various forest management agencies. The results of this research are distributed in the form of scientific and technical reports, conferences, and other publications.

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Sylvie Massicotte  
Gilles Carpentier

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1993

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## PREFACE

Until now, this report was intended for internal distribution only. Its purpose was to present a brief commentary on historical data series of principal economic indicators for the Quebec forestry sector. The goal of this year's report is not only to discuss the series, but also to analyze the various components of the forestry sector.

Several additional historical series have been included in this year's report. Moreover, to further the analysis and comprehension of the information, the series have been grouped by industry: the logging, wood, and paper and allied products industries. These groups correspond to Statistics Canada's Standard Industrial Classification.

Our analyses have been limited to wood production, harvesting and primary processing sectors for which a sufficient amount of high quality statistical data was available. The industries and sub-industries covered in this report are the logging, sawmill and planing mill, veneer and plywood, shingle, pulp and paper, and paper and allied products industries.

Collecting statistical data often proves to be a difficult task, especially when it is necessary to look back over time. A number of statistical series have been compiled using the Survey of Manufacturers. One of the advantages of this survey is that several of the variables of interest to us are discussed in this same publication, thereby ensuring consistency in the time series.

It is our hope that "Principal Economic Indicators for the Quebec Forestry Sector - Presentation and Analysis" will help meet your needs. We would be grateful for any comments or suggestions you might care to make to help us improve this report.

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## NOTE

The points below are designed to make the text and graphs easier to understand.

1. Unless otherwise indicated, the data are for Quebec only.
2. The analysis was undertaken in constant dollars. Unless otherwise indicated, the data are, therefore, expressed in constant dollars. The price indices used to convert data series into constant dollars are as follows:
  - a) Wages (in all industries): consumer price index (1986 = 100)
  - b) Value of shipments, value added, value of fixed assets, and repairs, exports, production, etc.:
    - Logging industry: gross domestic product index (1986 = 100);
    - Sawmill industry: wood industry price index (1986 = 100);
    - Veneer and plywood industry: veneer and plywood industry price index (1986 = 100);
    - Shingles industry: shingles and shakes industry price index (1986 = 100);
    - Paper and allied products industry: paper and related products industry price index (1986 = 100);
    - Pulp and paper industry: pulp and paper industry price index (1986 = 100).

## ABSTRACT

**Principal economic indicators for the Quebec forestry sector** provides a brief analysis of the main components of the Quebec forestry sector and illustrates them through graphs. The document reviews the economic and forestry aspects of the sector and, in some cases, compares it with the rest of Canada.

The "forestry" indicators refer to aspects such as inventory, harvest and forest management of Quebec's public and private forests. These indicators are presented at the regional and provincial levels.

The "economic" indicators deal with the number of establishments, value of shipments, value added, number of jobs and payroll. These indicators are described for each industrial sector, namely logging, the sawmill and planing mill industry, the veneer and plywood industry and the paper and allied products industry.

In addition, the document presents general financial indicators affecting the forestry sector, such as price indices, interest rates and exchange rates.

## RÉSUMÉ

**Les principaux indicateurs économiques du secteur forestier québécois** donne une présentation graphique et une analyse sommaire des principales composantes du secteur forestier québécois. Le document passe en revue les dimensions économiques et forestières du secteur en le comparant, à l'occasion, à l'ensemble du Canada.

Les indicateurs «forestiers» se rapportent à des questions telles que l'inventaire, la récolte et l'aménagement forestier des forêts publiques et privées du Québec. Ces indicateurs sont présentés aux niveaux régional et provincial.

Les indicateurs «économiques» traitent pour leur part de questions telles que le nombre d'établissements, la valeur des livraisons, la valeur ajoutée, les emplois et la masse salariale. Ces indicateurs sont décrits pour chaque secteur industriel, soit l'exploitation forestière, l'industrie du sciage et du rabotage, l'industrie du placage et des contreplaqués et l'industrie des papiers et produits connexes.

Le document présente enfin des indicateurs financiers généraux affectant le secteur forestier, tels que les indices de prix, les taux d'intérêt et les taux de change.

## **FOREST INVENTORY**

**(Text pertaining to Figures 1 to 13)**

### **Forest Land Area**

A large part of the Quebec territory is covered in forest. Inventoried forest land in Quebec amounts to 122.8 million ha out of a total land area of 149.6 million ha. Hence, almost 82 per cent of the Quebec territory consists of forest land.

Quebec has the most productive forest land in Canada, with 73.4 million ha, followed by British Columbia and Ontario, with 51.1 and 38.3 million ha respectively.

More than 90% of productive forest land in Quebec currently falls under provincial jurisdiction. Private forests account for about 10 per cent of total productive forest land in Quebec, whereas forests under federal jurisdiction constitute less than 1 per cent of productive Quebec forests. In Quebec, public forests cover 66 million ha, private forests 6.68 million ha and forests under federal jurisdiction less than 200,000 ha.

### **Gross Merchantable Volume**

Quebec ranks second among the provinces in terms of standing timber, with a gross merchantable volume of 4.5 billion m<sup>3</sup>, or 19% of the total Canadian volume. Although it has a much smaller forest area, British Columbia has a much higher gross merchantable volume at 8.9 billion m<sup>3</sup>. This is due to the large stems that grow on the Pacific Coast.

Like Canadian forests, Quebec forests have a relative abundance of mature and overmature trees. More than 60 per cent of wood stocks are ready for harvesting, and less than 40 per cent constitute young forests or forests under regeneration. This obviously poses major forest management problems, particularly in Quebec where many of the mature forests are inaccessible because they are located in regions of the north where road systems have not yet been established.

### **Annual Harvest**

In the past ten years or so, the total harvest in Quebec has amounted to about 30 million m<sup>3</sup> annually, or roughly 15 per cent of the total Canadian harvest. Although the level of wood harvested in private forests has remained relatively stable at around 5 million m<sup>3</sup> annually, the wood harvested on public land has varied considerably. Public land harvesting is largely tied to economic cycles, increasing on the upswings and falling off dramatically during recessions.

The main species harvested in both public and private forests are balsam fir (*Abies balsamea* [L.] Mill), black spruce (*Picea mariana* [Mill.] B. S. P.), white spruce (*Picea glauca* [Moench] Voss) and jack pine (*Pinus banksiana* Lamb.). Hardwoods, in fact, make up only 10 to 12 per cent of the total harvest. The predominance of the pulp and paper industry in Quebec, whose raw material is softwood fibre, is the main reason for this situation. It should also be noted that the poor quality of hardwood and mixed forests in Quebec, which have been subject to inadequate cutting in the past, would make it fairly difficult to develop major industries based on these species.

Harvesting operations in public forests are concentrated in the Northern Quebec, Mauricie—Bois-Francs, Saguenay—Lac-Saint-Jean and Abitibi—Temiscamingue administrative regions. In fact, 73 per cent of the wood harvested in public forests comes from these regions. It should be noted that loggers have to go farther and farther north in these regions for the harvest, with the result that the distance to the mill and hence transportation costs are constantly rising.

Of the timber from private forests, 71 per cent is harvested in the Mauricie-Bois Francs, Lower St. Lawrence, Eastern Townships, Ottawa Valley and Quebec administrative regions. These regions generally correspond to the corridor of inhabited areas in Quebec dominated by mixed and hardwood forests.

## **Forest Management**

The breakdown of management expenditures among the provinces compares favourably with the breakdown of wood harvested, but in no way resembles the breakdown of accessible productive forest land. Quebec, which has 28 per cent of the accessible productive forest land and 20 per cent of total wood harvested in Canada, accounts for 19 per cent of Canadian forest management expenditures.

Forest management expenditures increased substantially in Quebec in the 1980s. Increased government expenditures in the early 1980s were tied to the implementation of a reforestation program that involved planting some 300 million trees annually to renew Quebec forests. Moreover, since the new forest regime was implemented in 1987, the government has been responsible for dealing with the backlog, and it has been indirectly financing forest management work carried out by logging companies through stumpage fee rebates. The drop in industrial expenditures in the early 1980s was mainly due to the recession because the uncertainty surrounding the development and implementation of the new forest regime only became obvious in the late 1980s.



Management expenditure trends are highly indicative of changing forest-related concerns. In the 1980s, silvicultural expenditures, as well as research costs, gradually rose, showing an increasing interest in forest renewal and management plans. Expenditures associated with road construction (i.e. access roads) declined considerably between 1979 and 1985, but subsequently began to rise. One cannot help but notice how the decline in road construction expenditures coincided with the drop in the industry's management expenditures discussed in the previous paragraph. In conclusion, forest protection and other expenditures have remained relatively stable. It should be noted that resource management, forest inventory and other administrative expenditures are included in the "other expenditures" column.

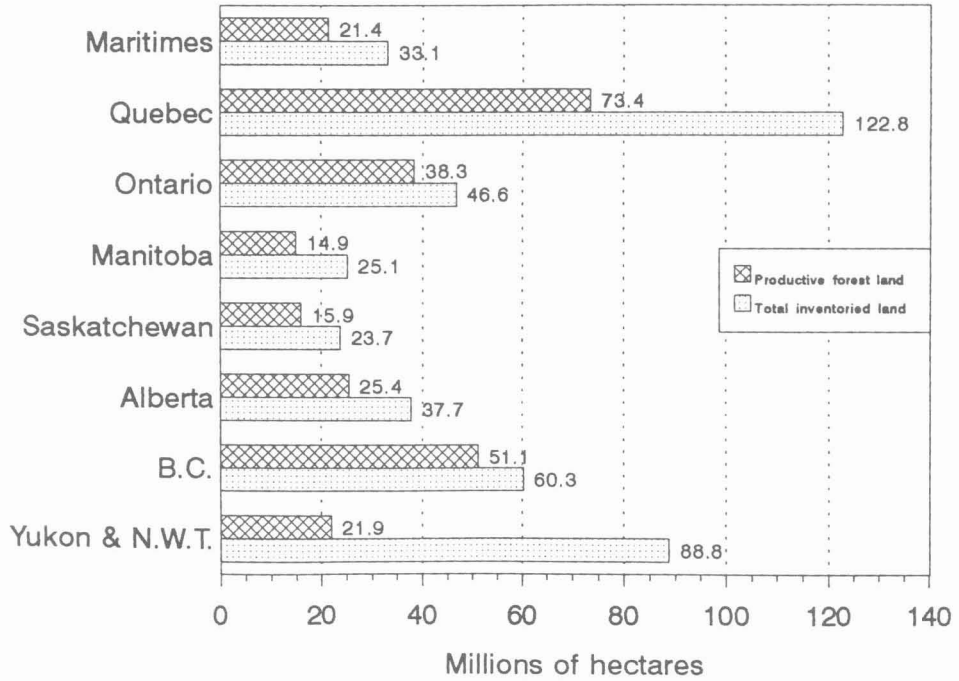


Figure 1. Inventoried forest land area and accessible productive forest land.

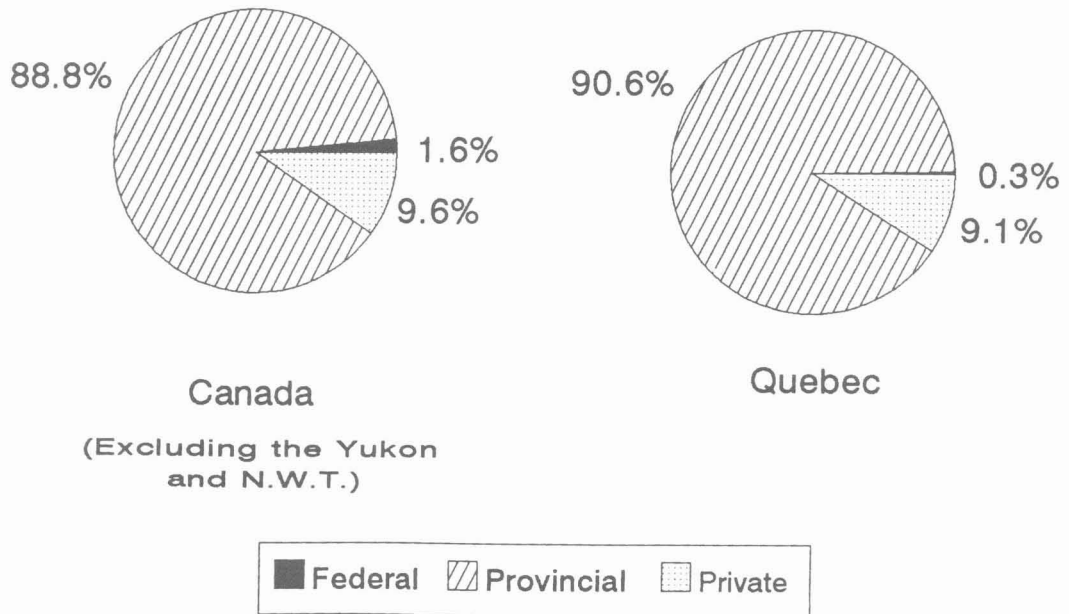


Figure 2. Accessible productive forest land tenure.

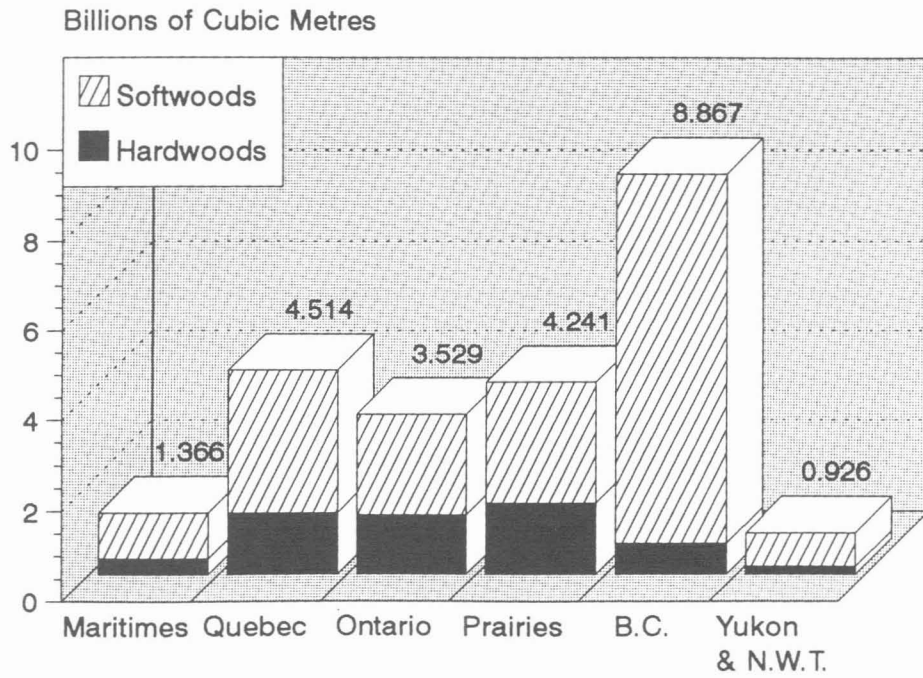


Figure 3. Gross merchantable volume on accessible productive forest land.

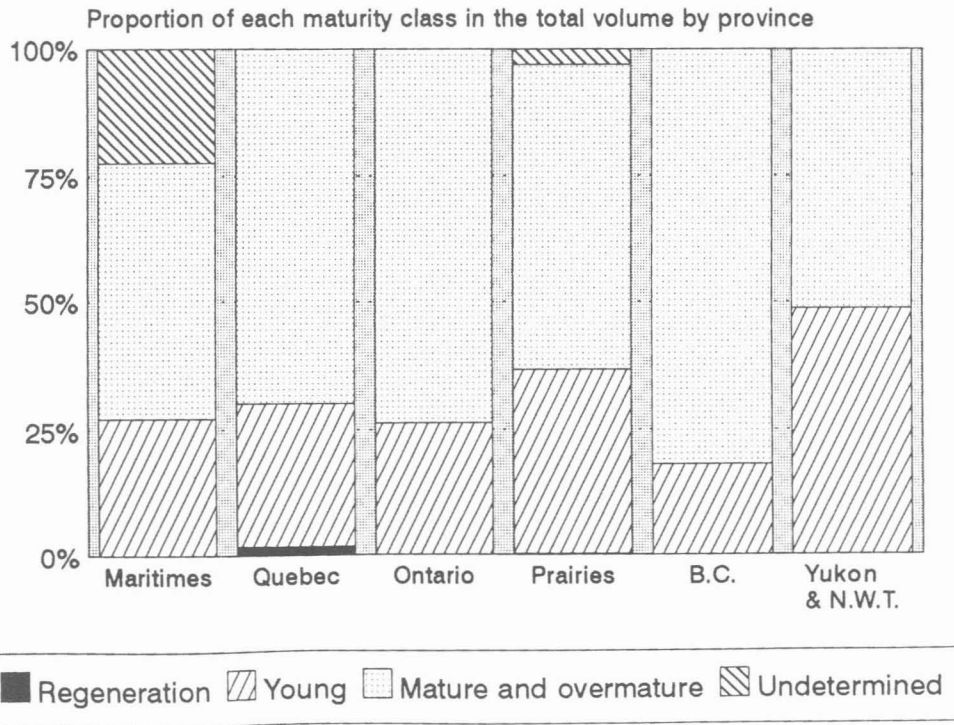


Figure 4. Gross merchantable volume by maturity class. Proportion of each maturity class in the total volume by province.

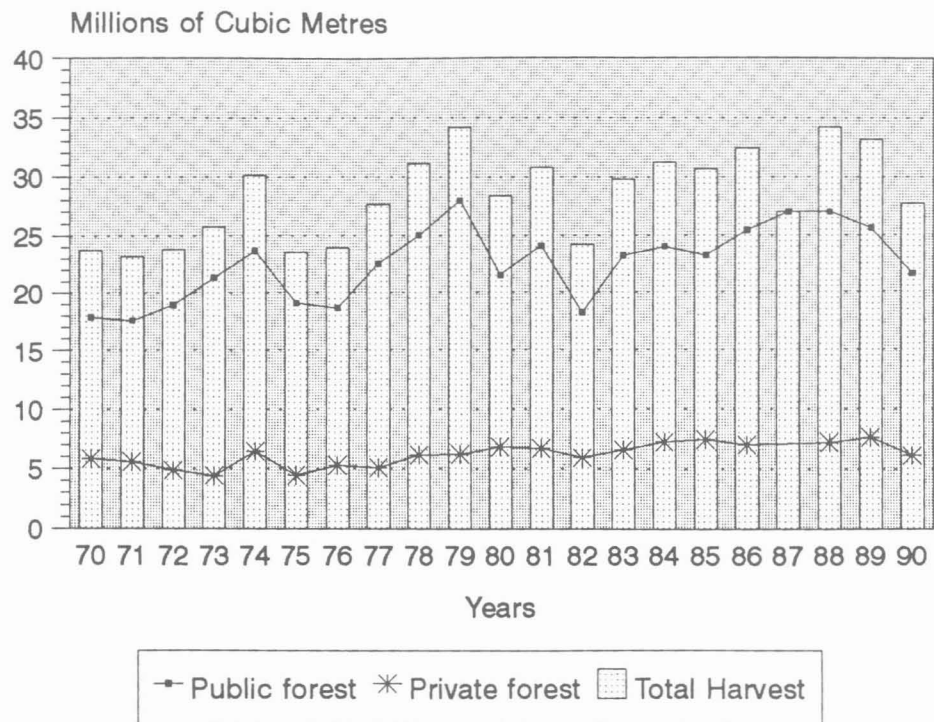


Figure 5. Quebec harvest by origin of wood.

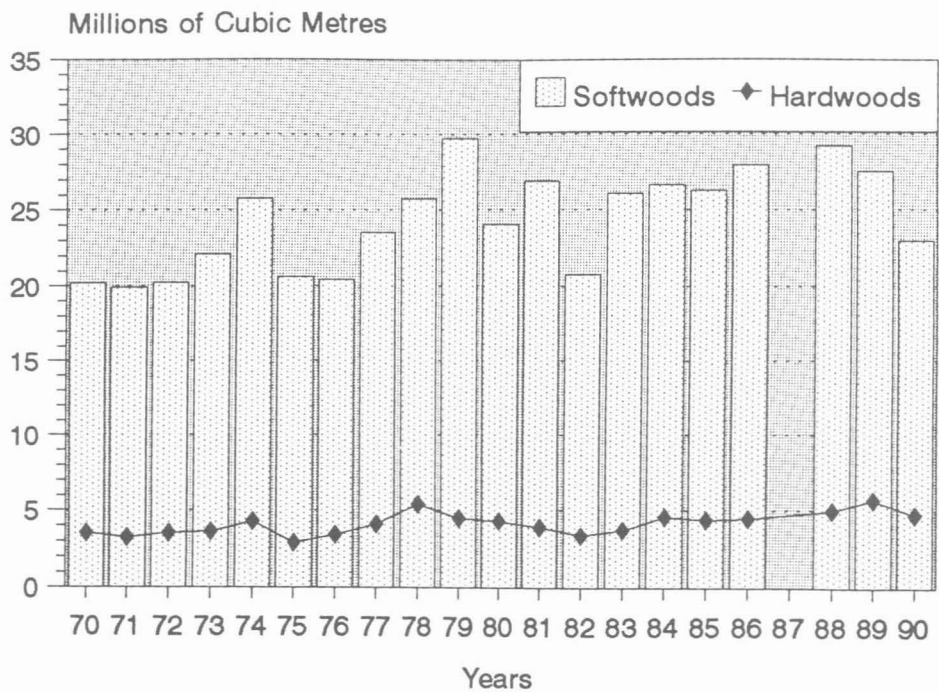


Figure 6. Quebec harvest by species harvested.

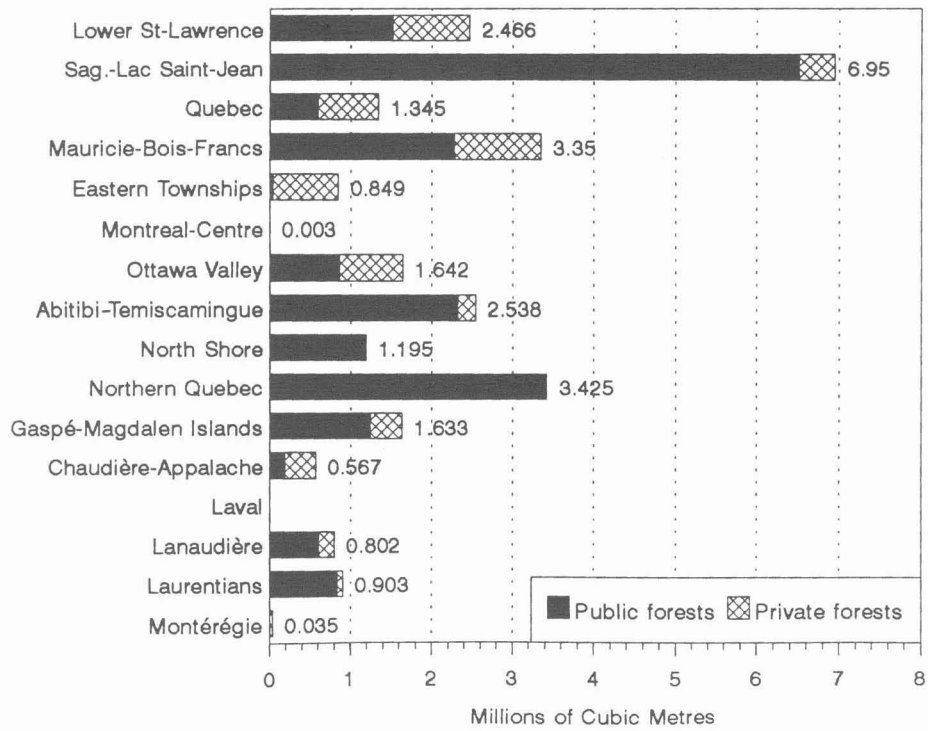


Figure 7. Gross merchantable volume harvested in Quebec by administrative region in 1990-1991.

VOLUME HARVESTED IN PUBLIC FORESTS  
SOFTWOODS AND HARDWOODS

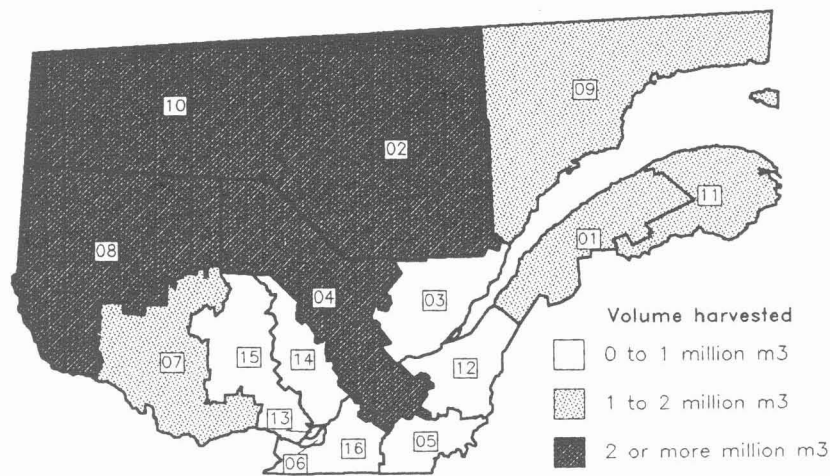
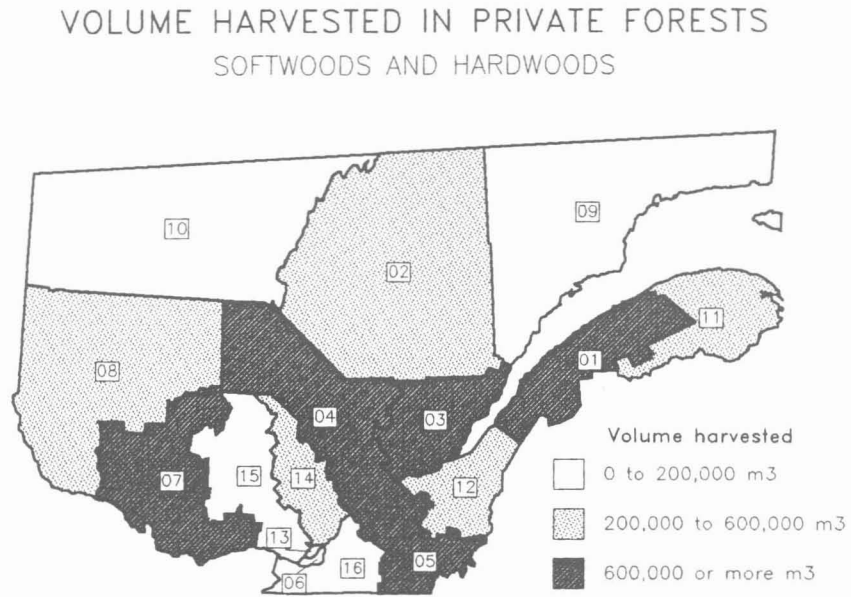
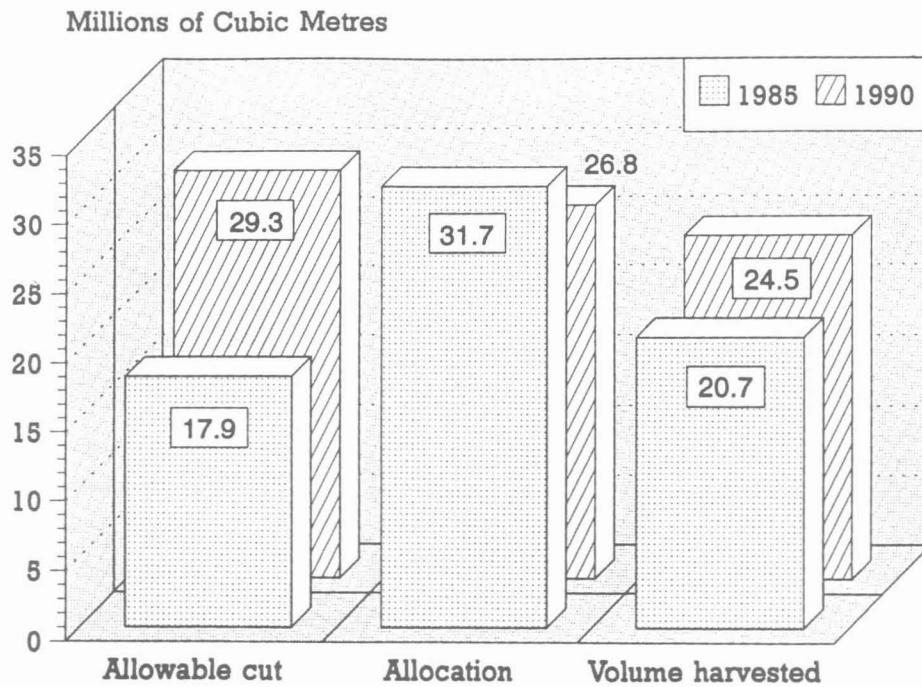


Figure 8. Volume of softwoods and hardwoods harvested in public forests by administrative region in 1990-1991.



**Figure 9.** Volume of softwoods and hardwoods harvested in private forests by administrative region in 1990-1991.



**Figure 10.** Allowable cut, allocation and volume harvested in Quebec.

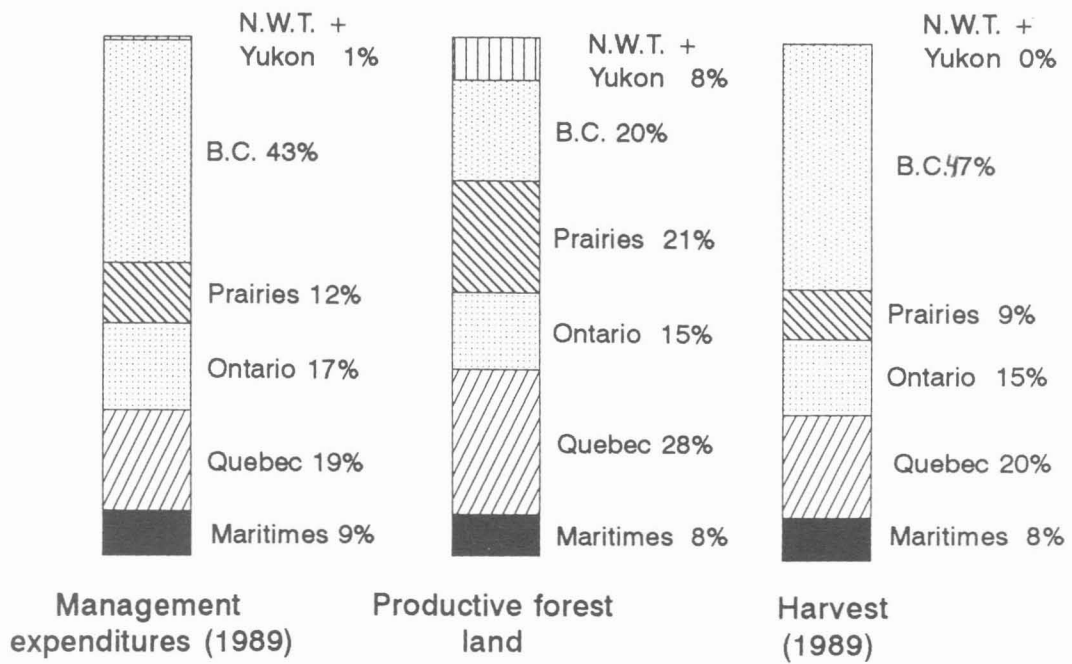


Figure 11. Forest management expenditures, accessible productive forest land and Canadian harvest, provincial proportion of Canadian totals in 1989.

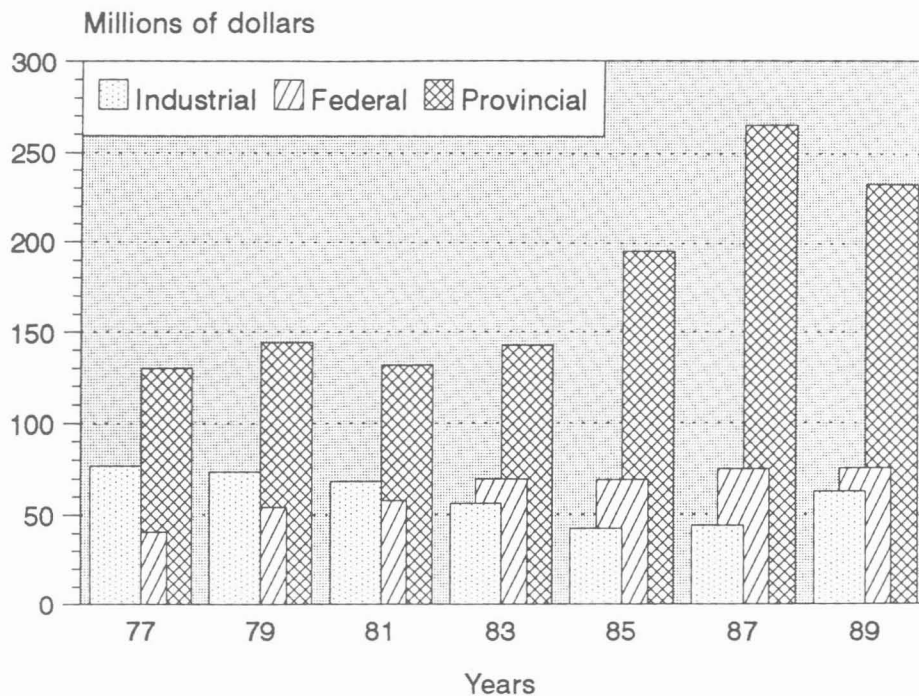


Figure 12. Forest management expenditures in public and private sectors.

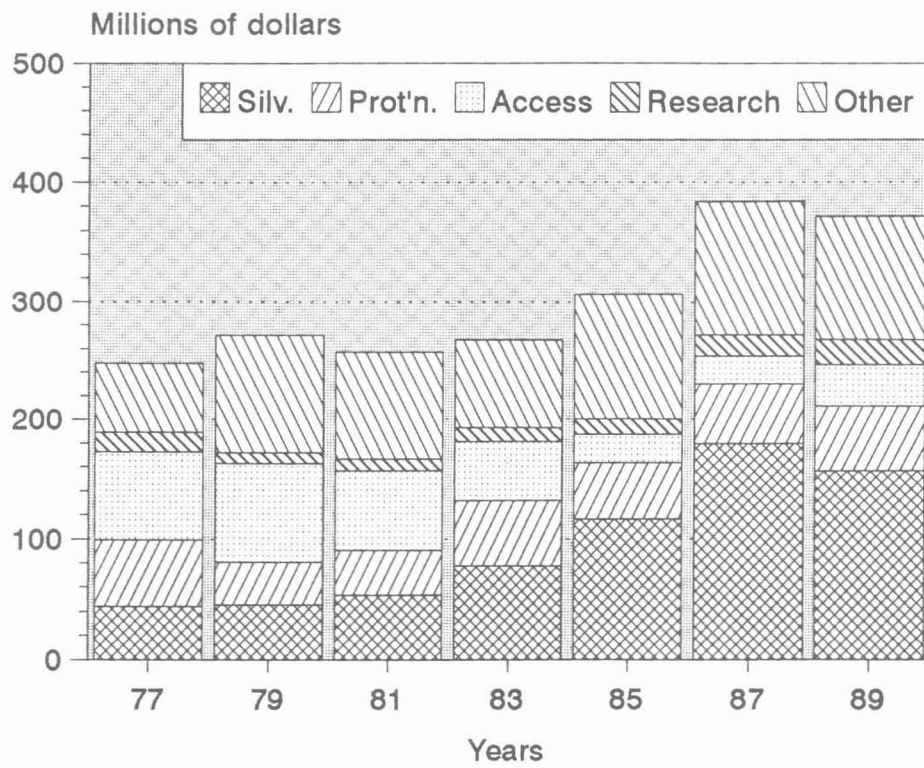


Figure 13. Forest management expenditures in Quebec by activity.



## LOGGING INDUSTRY

(Text pertaining to Figures 14 to 28)

The logging industry encompasses wood production and harvesting activities. The industry consists essentially of logging contractors engaged primarily in harvesting wood.

The curve showing the change in the number of establishments reveals a slight upward trend starting in the mid-1970s. The increase in harvesting levels and the industry trend to use contractors for harvesting operations in part account for this situation.

It should be noted that the substantial increase in the number of establishments between 1986 and 1987 is due to the fact that Statistics Canada changed its data compilation method to include contractors with few or no employees. This change had a major impact on value added statistics, and a lesser impact on the value of shipments, employment, payroll and average salary per employee data.

The destination of the wood harvested in public forests has changed considerably over the past twenty years. In the early 1970s, 67 per cent was shipped to pulp and paper mills and 33 per cent to sawmills. Today the situation is completely reversed, with 70 per cent of the wood harvested destined for sawmills. The desire to optimize the use of the wood harvested in public forests accounts in part for this radical change in the approach to harvesting.

As for wood harvested in private forests, the volume of pulpwood has remained practically unchanged since the 1970s at around 4 million m<sup>3</sup> per annum, whereas the volumes destined for sawmills have increased slightly. With the considerable decrease in the pulpwood harvested in public forests over the past 20 years, wood from private forests is increasingly being used as a source of round wood for pulpmills.

The value of shipments plummeted in the early 1980s, and its current level is roughly the same as the average level in the 1970s. The paradox is that at the same time harvest levels were on the rise. This seems to indicate that the value of the wood decreased considerably during this period, despite the relative scarcity of wood.

Although there is no easy explanation, in the early 1980s:

1. the pulp and paper industry started using contractors for harvesting operations, a situation that would become more prevalent;
2. investments in the logging industry began to decrease;
3. the average salary per employee began to decrease in the logging industry, creating a gap between logging salaries and pulp and paper mill salaries, which had previously risen in tandem.

It seems that pulp companies used to pay more for harvesting than they are now willing to pay logging contractors for the same work. It should, however, be noted that decreased investments might point to a decrease in revenues from capital, causing a drop in wood prices, and consequently in the value of shipments.

There is, however, another possible explanation. A marked decrease in the size of the stems harvested has been observed for some time; in 1980, the average volume per stem harvested was 153 cubic decimeters, as opposed to 136 cubic decimeters in 1991. However, it is hard to make a link between this information and the price of wood sent to sawmills because of the above-mentioned problem of awarding harvesting contracts and the increased mechanization of wood harvesting.

The total number of jobs and payroll have very similar curves. From 1975 to 1982, there was a gradual decline, then a slight swing upward to the pre-recessionary average level. This was due to technological developments that gradually made it possible to replace loggers with far more productive forest machinery.

The average salary per employee has been decreasing since 1980, although it had increased in the 1970s. The current salary level has barely reached 1975 levels, despite a 9.1% increase in productivity since 1981. Because of 20 to 30 per cent unemployment rates in some periods and the large number of small forest contractors, there is stiff competition for jobs in the logging sector. This may partially explain why the average salary has dropped since 1980.

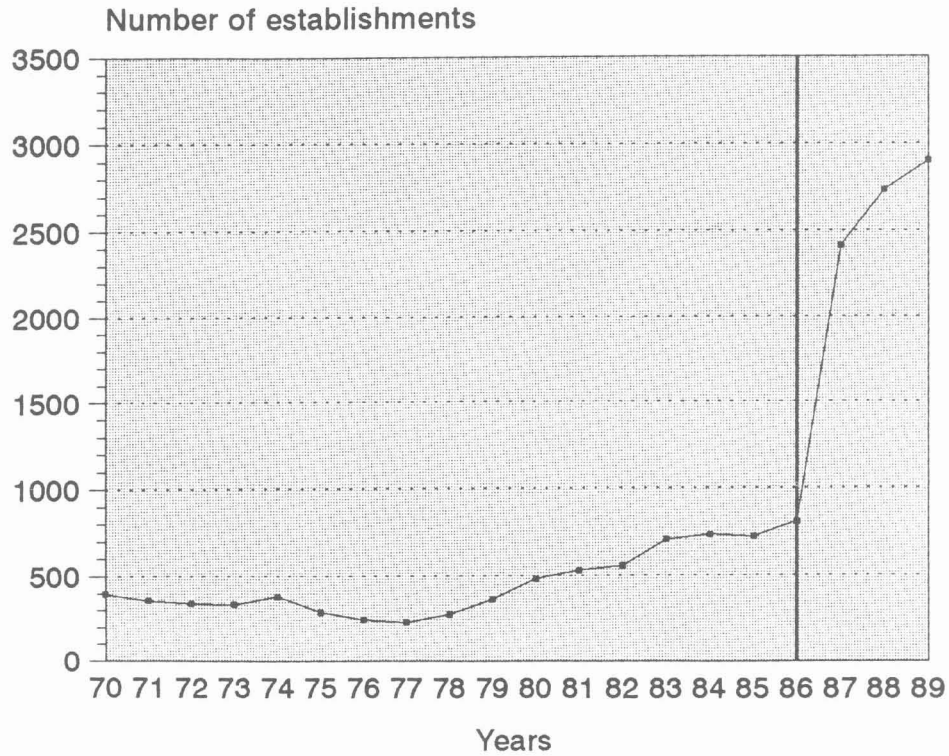


Figure 14. Number of establishments.

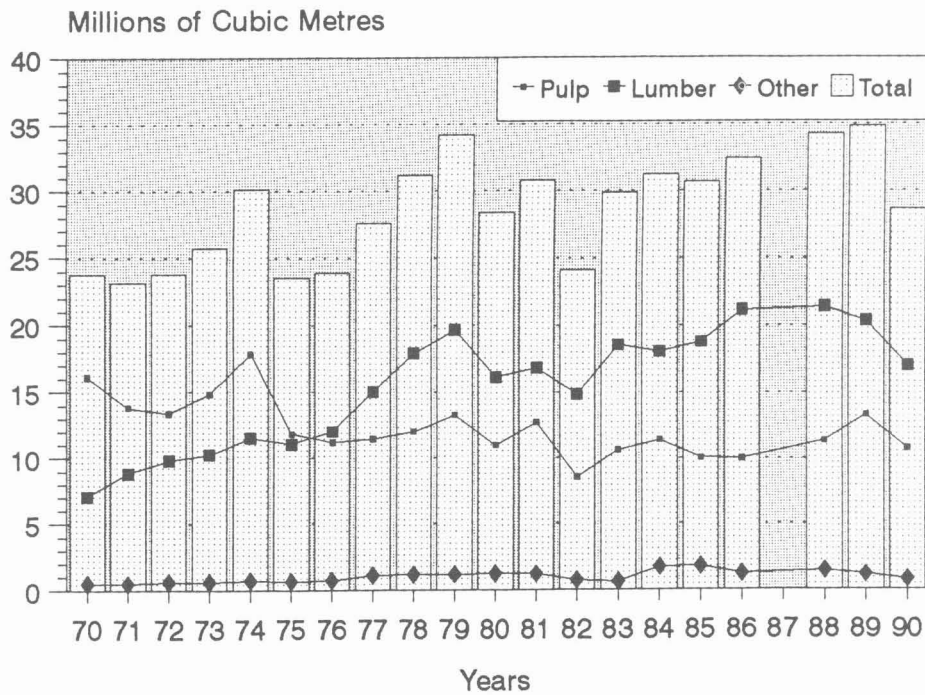


Figure 15. Volume harvested by product.

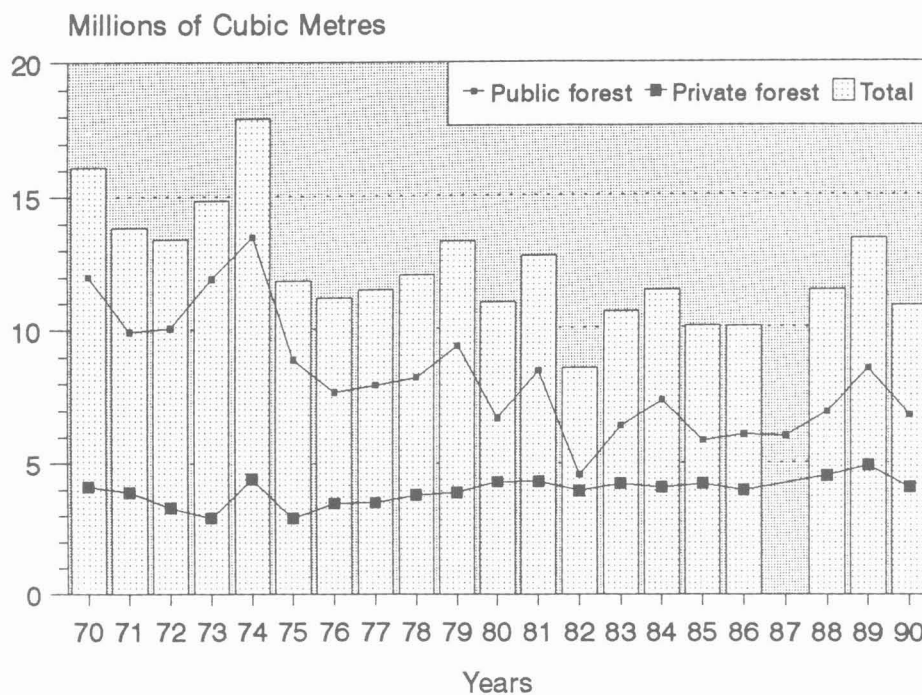


Figure 16. Pulpwood harvest by origin.

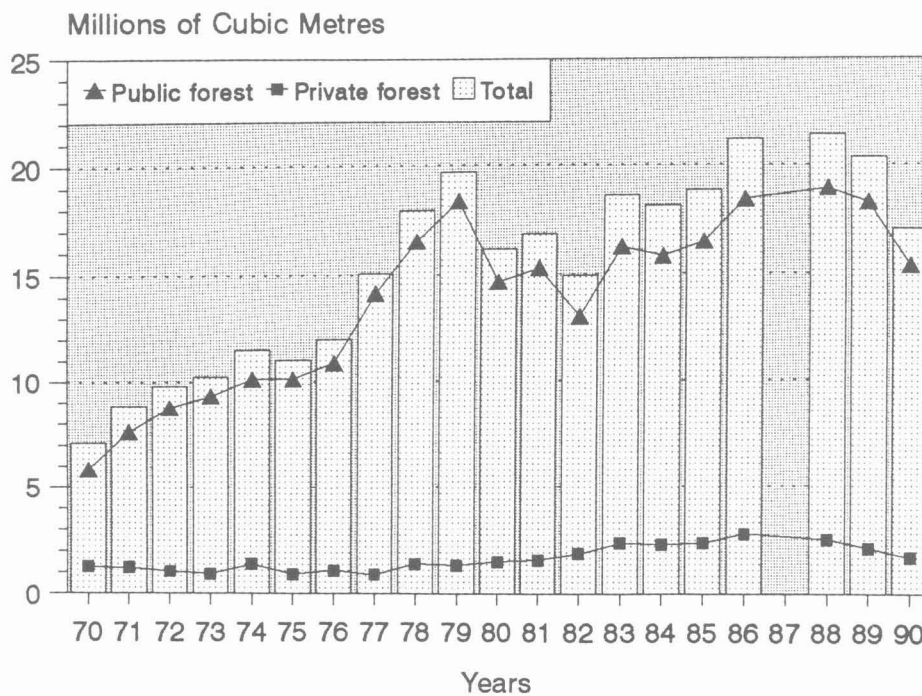


Figure 17. Lumber harvest by origin

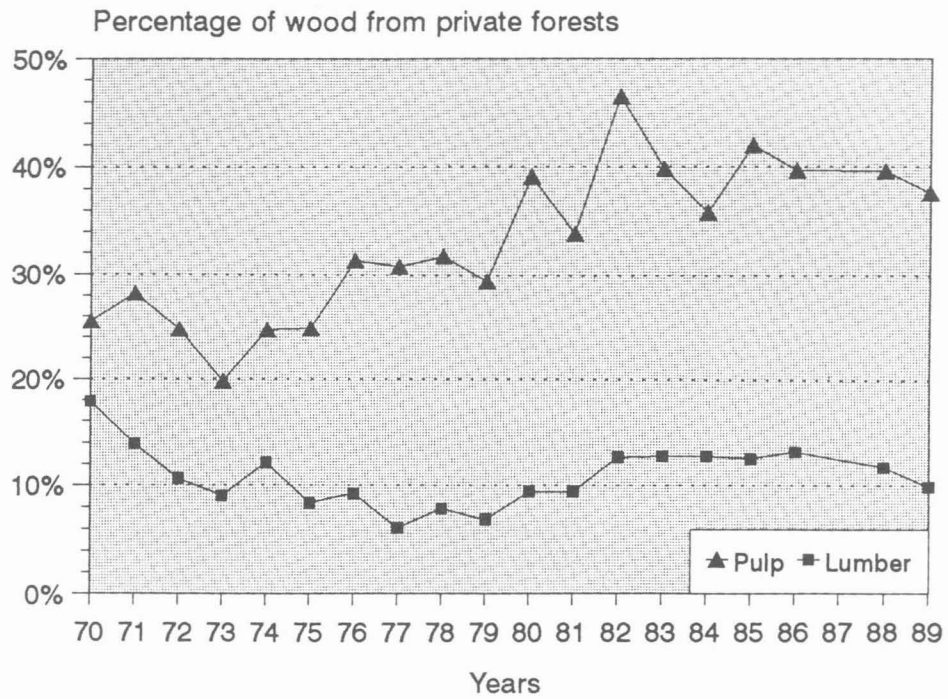


Figure 18. Origin of pulpwood and lumber.

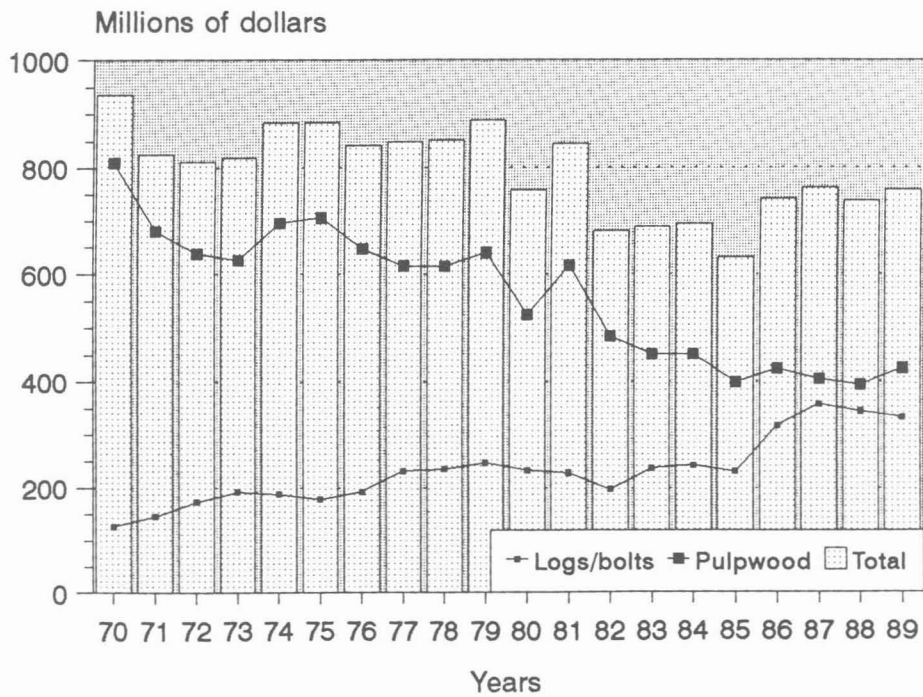


Figure 19. Value of shipments of round wood.

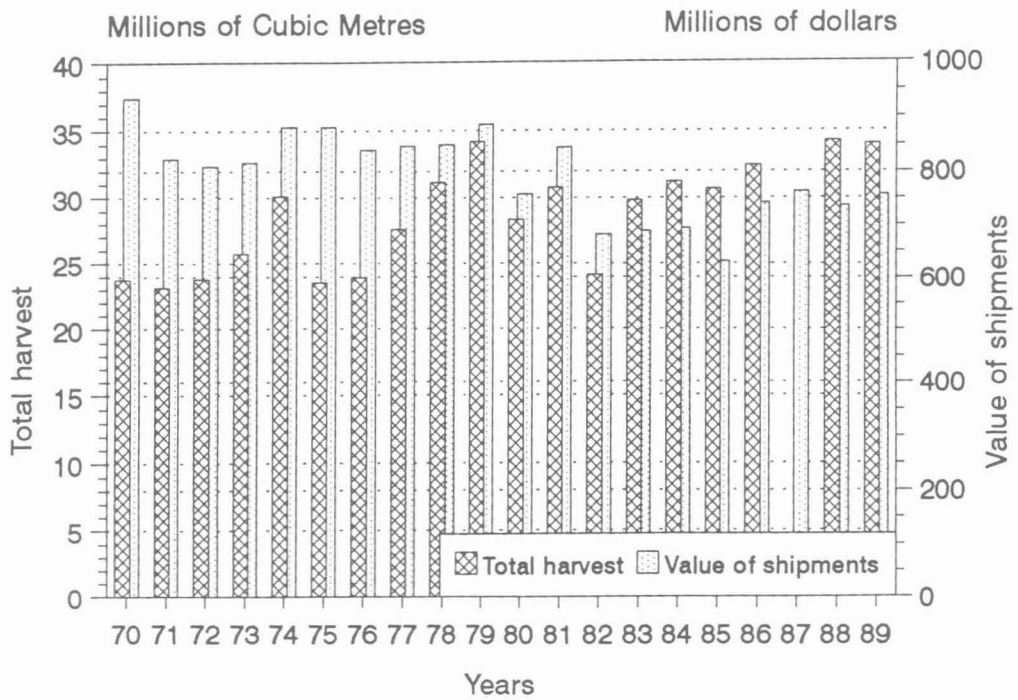


Figure 20. Total harvest and value of shipments.

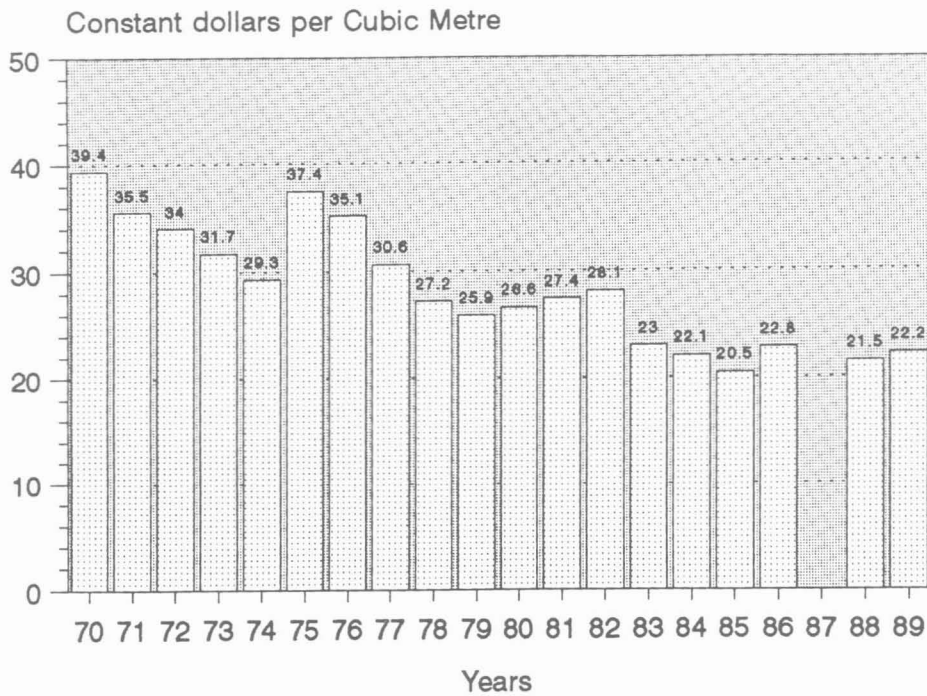


Figure 21. Calculated value of wood (value of shipments/total harvest).

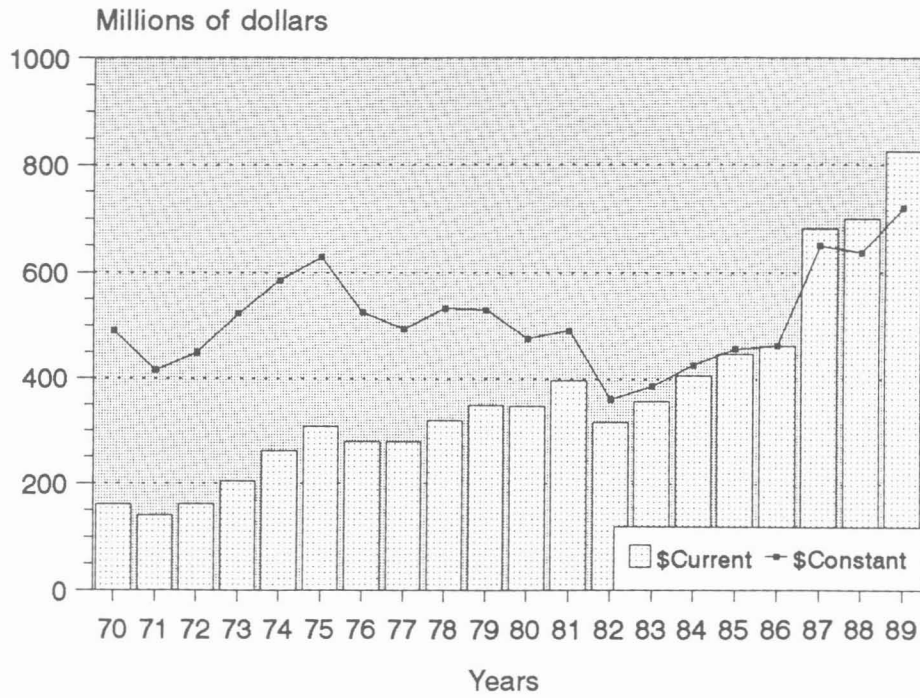


Figure 22. Value added.

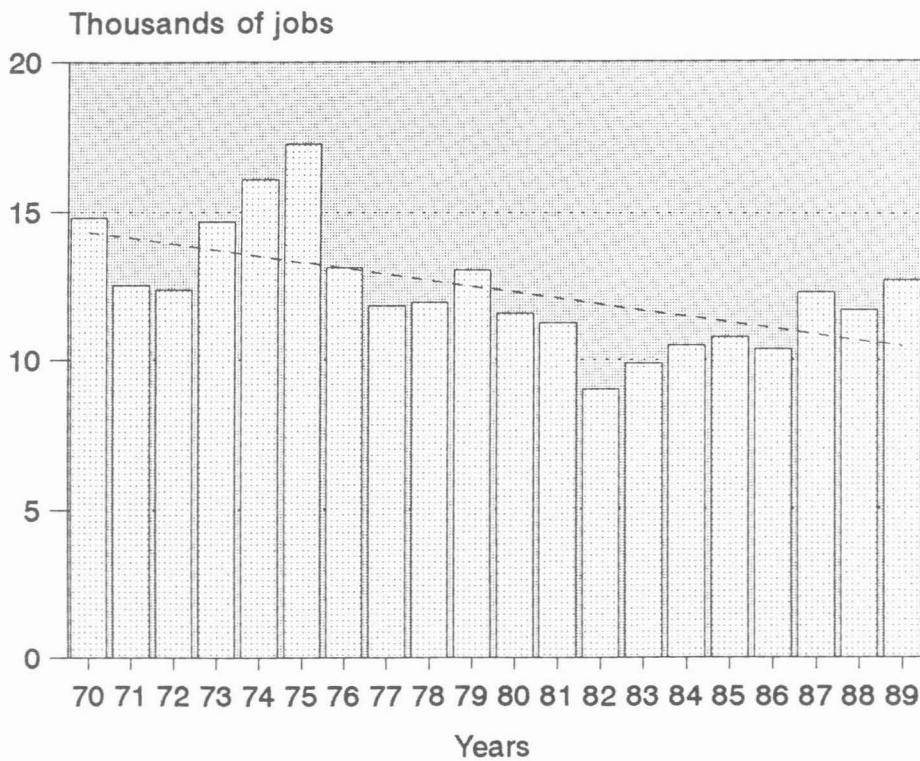


Figure 23. Total number of jobs.

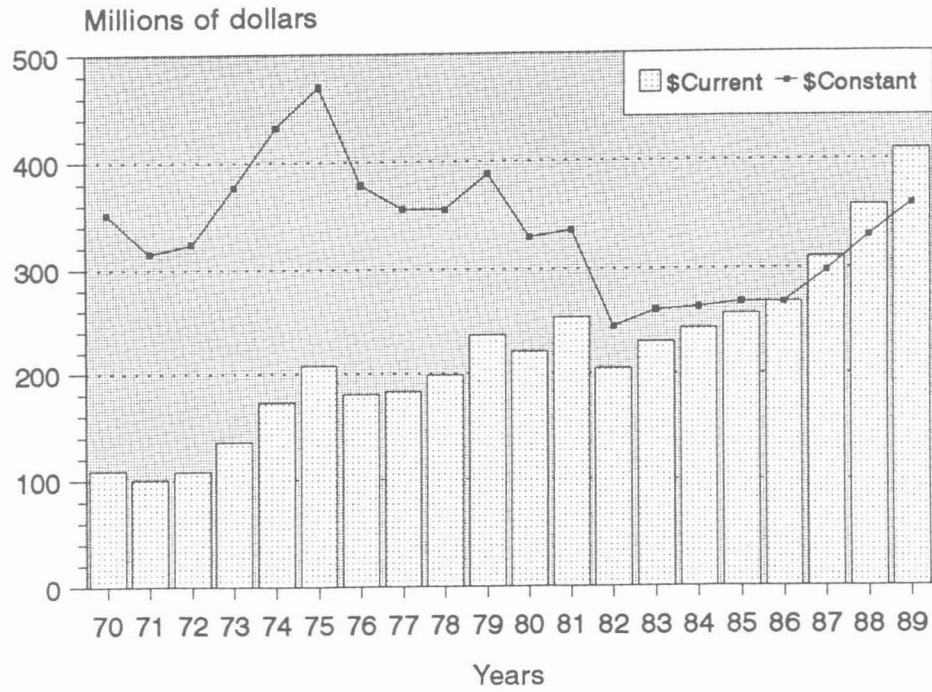


Figure 24. Payroll.

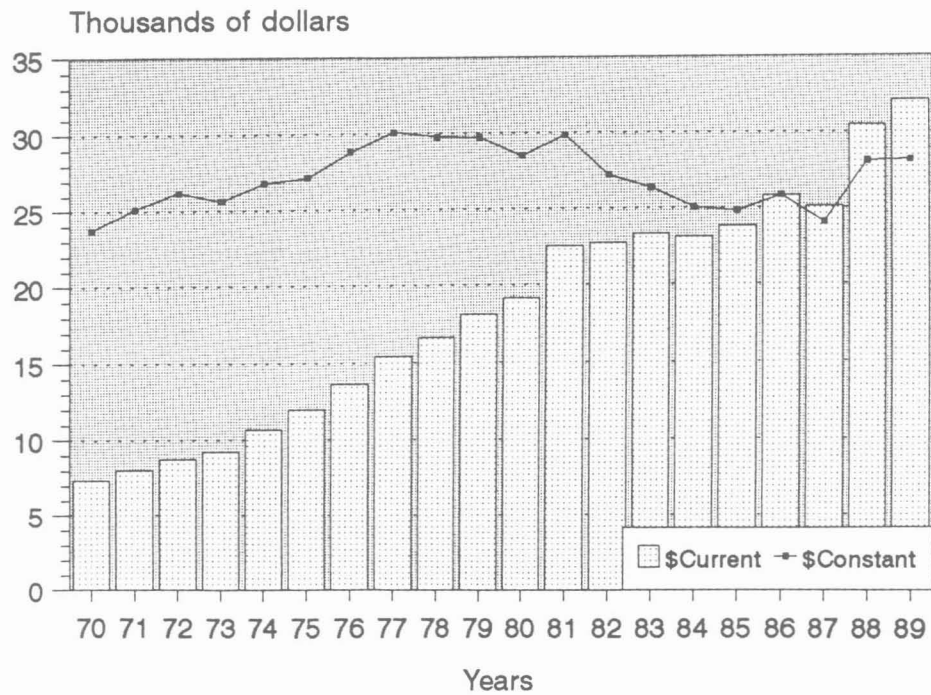


Figure 25. Average annual real salary.



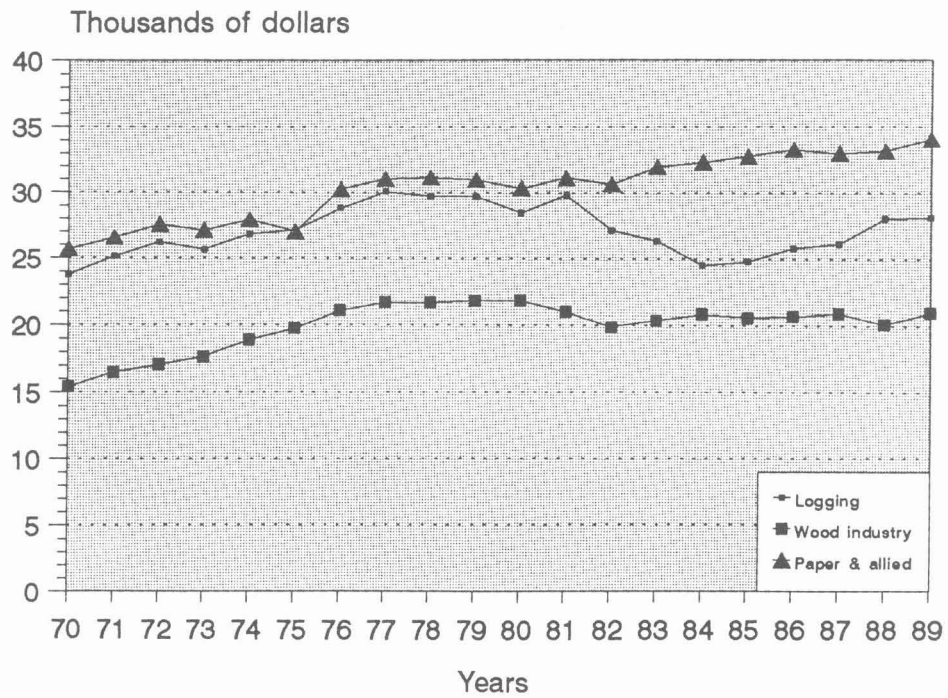


Figure 26. Comparison of average annual real salaries in forestry sector.



Figure 27. Unemployment rate in Quebec.

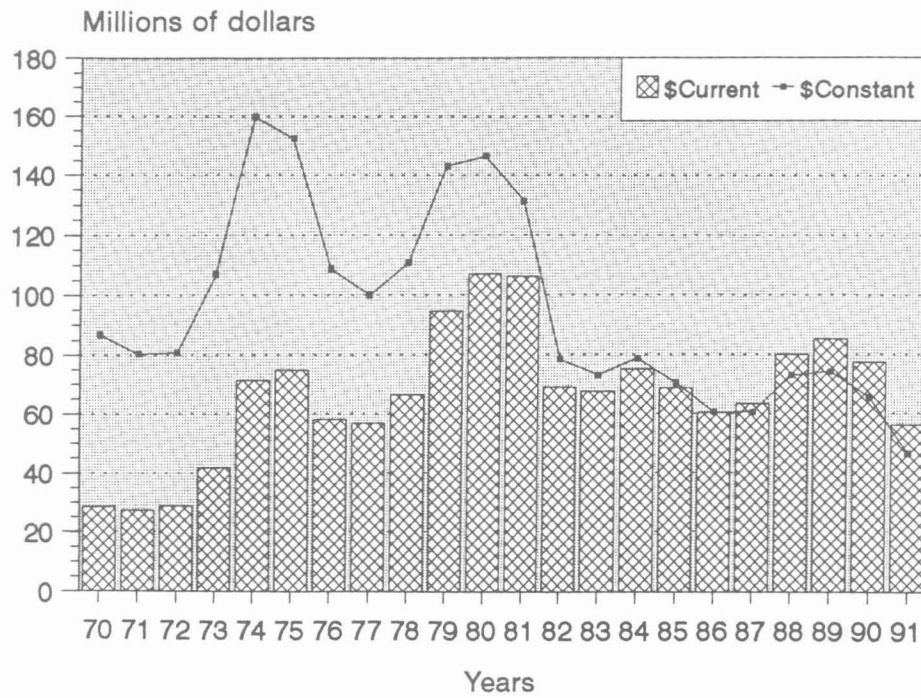


Figure 28. Capital expenditures and repairs.

## SAWMILL AND PLANING MILL INDUSTRY

(Text pertaining to Figures 29 to 42)

The sawmill and planing mill industry has grown at an extremely rapid pace over the past 20 years. Long term guaranteed supply contracts obtained in the 1960s and 1970s, as well as the development and application of a technology capable of handling small-diameter stems, have contributed to the rapid expansion of this industry.

The 1973 oil crisis had a major impact on the sawmill industry and helped trigger the 1975 slump. A sharp drop in housing starts, combined with a strike in the pulp and paper industry, resulted in a major decrease in wood chip and lumber sales. Several companies went bankrupt. Between 1973 and 1977, 150 establishments disappeared, representing a 30 per cent drop in the number of establishments.

In the months and years following the slump, the industry underwent considerable change, going from numerous small-scale operations to relatively concentrated industrial production in major production units. Several mergers and buy outs occurred, and investments were made to concentrate production, modernize mills and increase production capacity. Several industrial sawmill groups were formed during this time and the government corporation REXFOR became the industry's major partner. It was also during this period that paper mills started to slowly buy sawmills.

While these major changes were taking place between 1975 and 1980, production increased from 3.5 million m<sup>3</sup> to 8.0 million m<sup>3</sup>, a clear indication of how dynamic the industry was during this period. However, the industry's sensitivity to economic cycles caused a rapid and significant drop in production of about 2 million m<sup>3</sup> during the 1982 recession, which is comparable to the drop in volume the industry is experiencing in the current economic slowdown. But if the industry's 1983 recovery is any indication, it seems that the sawmill and planing mill industry will rapidly recover from the current recession.

The total value of shipments has been on the rise since 1970, with major drops during recessionary periods. The value of wood chip shipments amounts to roughly 25 per cent of the total value of shipments and these shipments do not appear to be very sensitive to cyclical effects in the economy. In fact, it seems paper mills will decrease their round wood supplies from public forest, before decreasing wood chip or round wood supplies from private forests. Wood chips represent a major source of revenue for sawmills particularly during difficult economic times.

Following a countervailing enquiry undertaken by the U.S. Department of Commerce in 1986, the American government imposed a 15% *ad valorem* tax on the export of Canadian lumber to the American market. When the new Quebec forestry policy came into effect in 1987, this countervailing duty was reduced to 6%. The effects of these problems were felt by the Quebec industry. Exports to the U.S. decreased by nearly 1 million m<sup>3</sup> the following year, and the value of shipments also declined. We should, however, be cautious in analyzing decreased shipments in 1987, because Statistics Canada changed its product code system that same year, which may have affected the data. One thing is certain. The industry was motivated to diversify its export markets, by expanding to the United Kingdom and the European Economic Community (EEC).

Employment and payroll figures have increased considerably owing to the upgrading of mills and the concentration of operations. Since the 1980s, however, they have remained relatively stable at around 15,000 jobs and \$350 million in payroll. The average salary per employee rose dramatically between 1970 and 1980, decreased in 1982 and has since risen slightly.

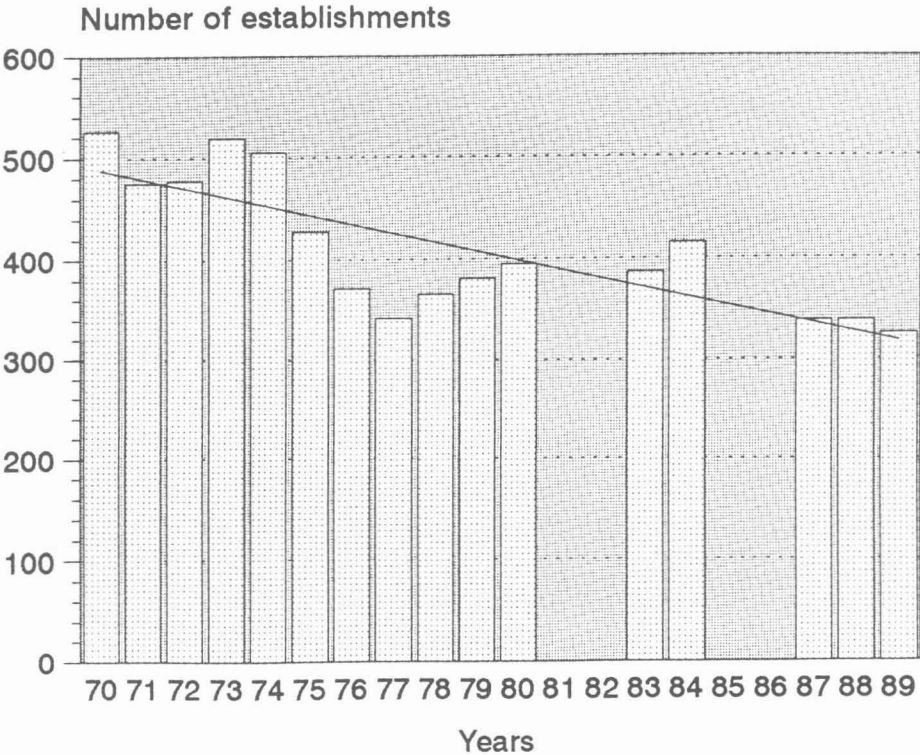


Figure 29. Number of establishments.

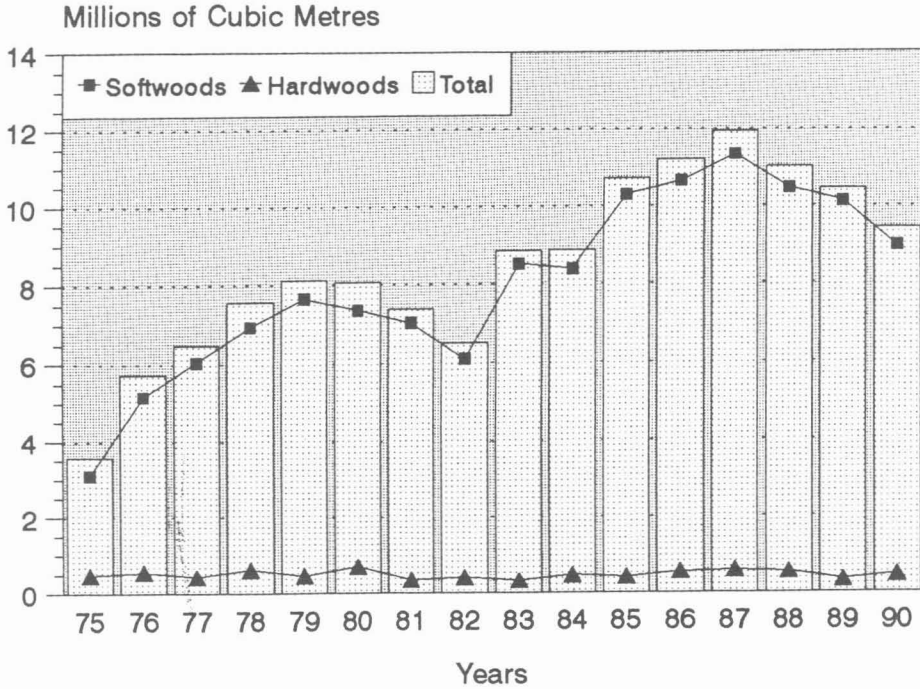


Figure 30. Lumber production.

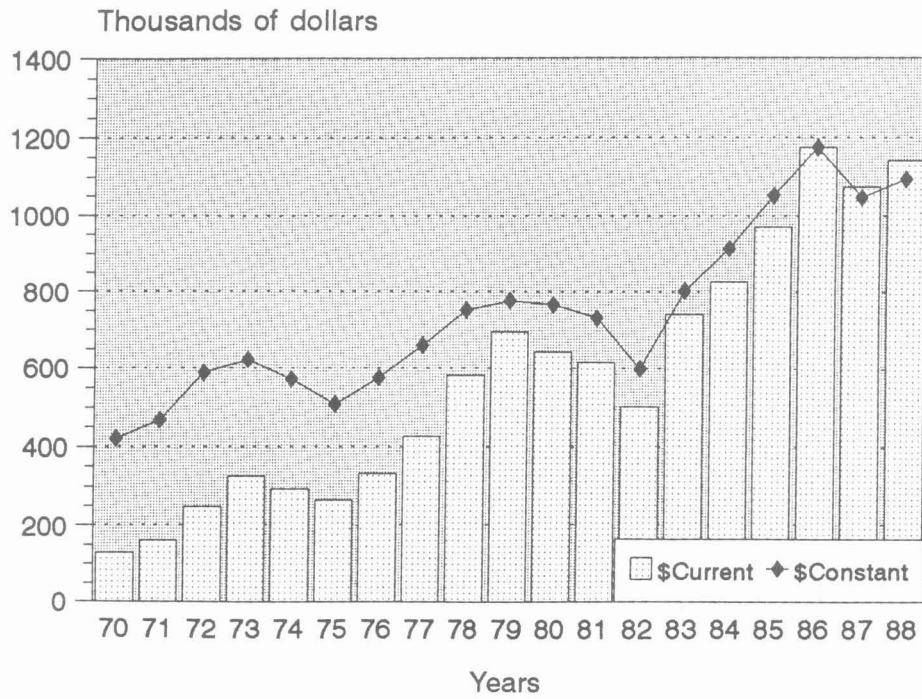


Figure 31. Value of shipments of lumber.

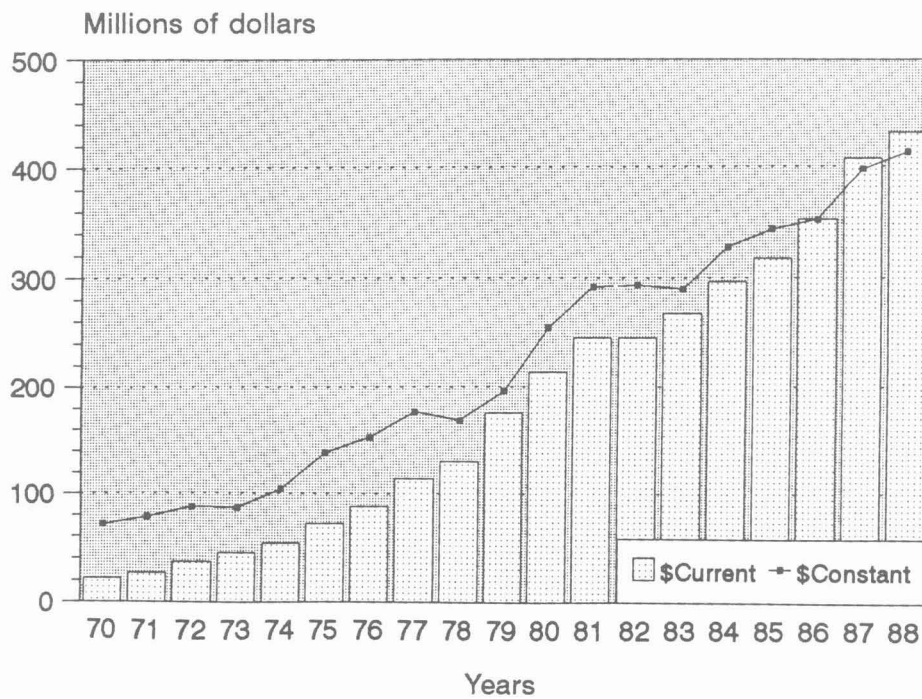


Figure 32. Value of shipments of wood chips.

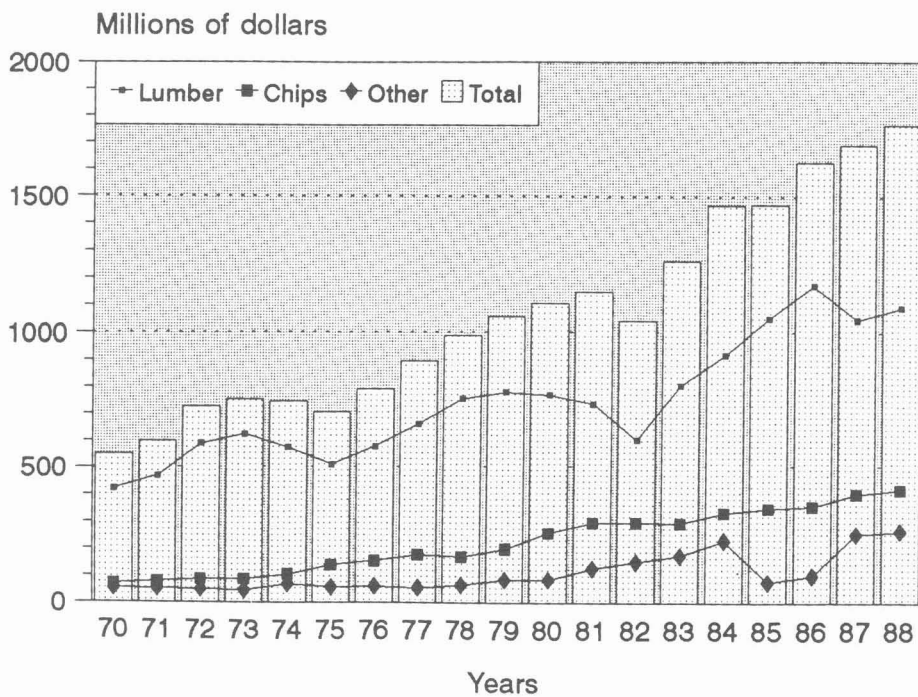


Figure 33. Value of shipments for sawmill and planing mill industry.

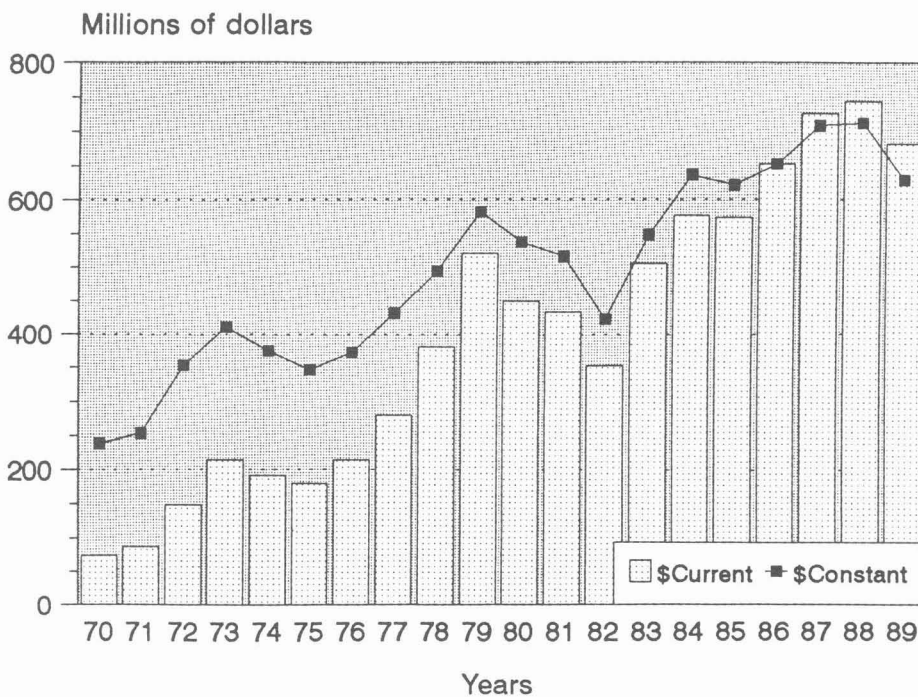


Figure 34. Value added.

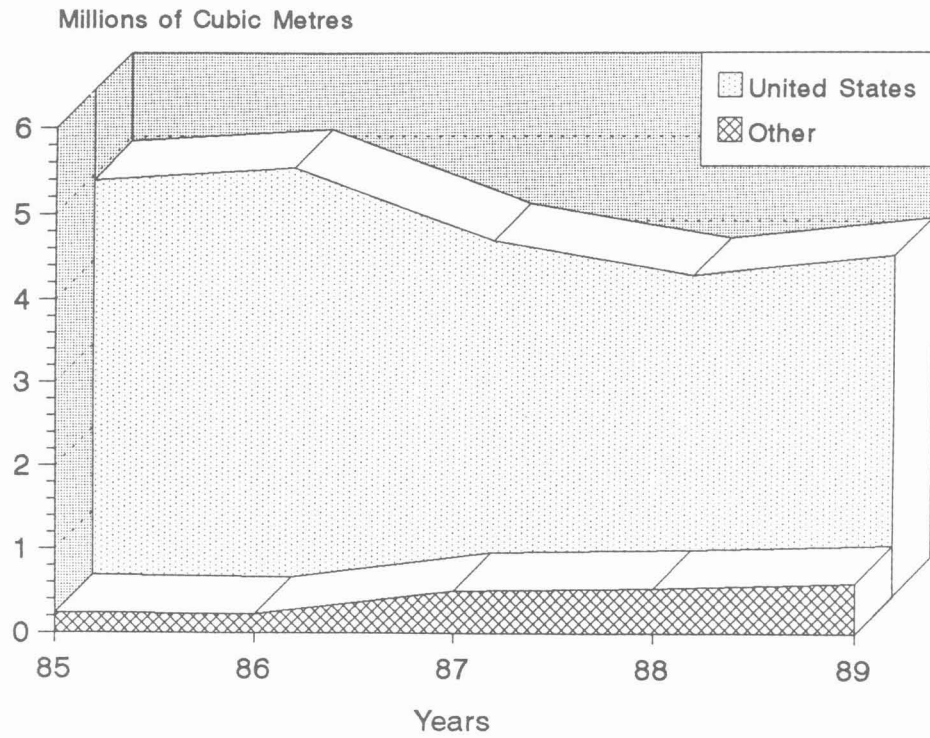


Figure 35. Export markets for softwood lumber - U.S.

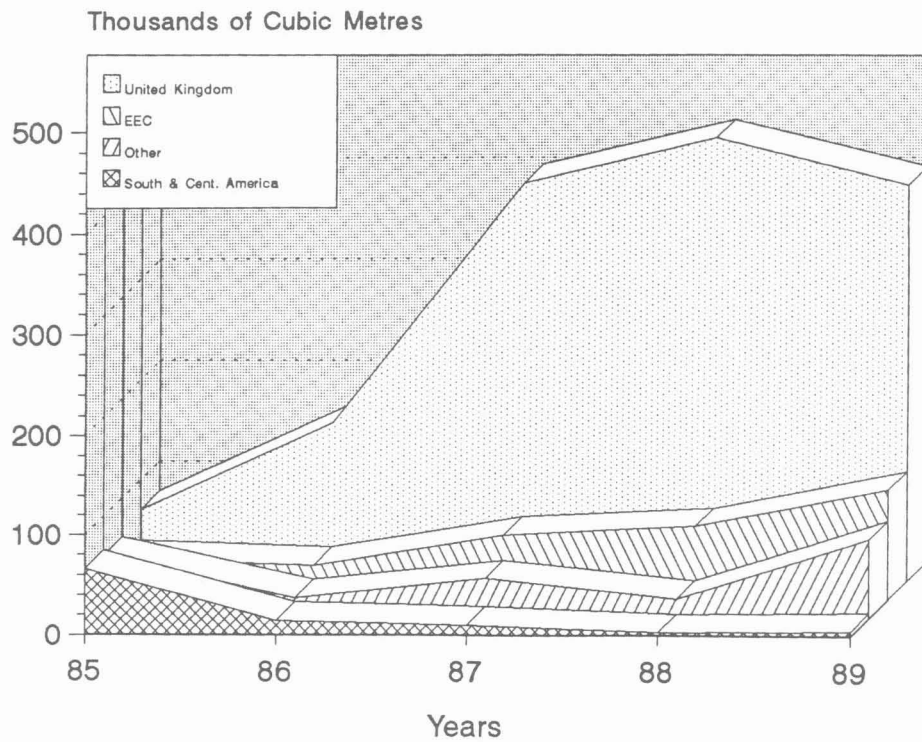


Figure 36. Export markets for softwood lumber - other countries.



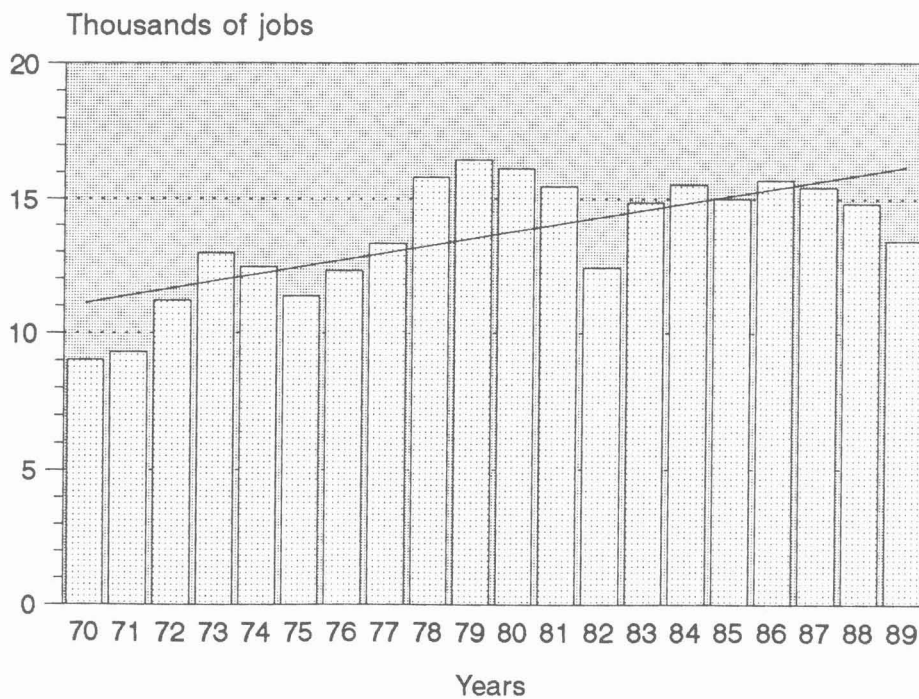


Figure 37. Total number of jobs.

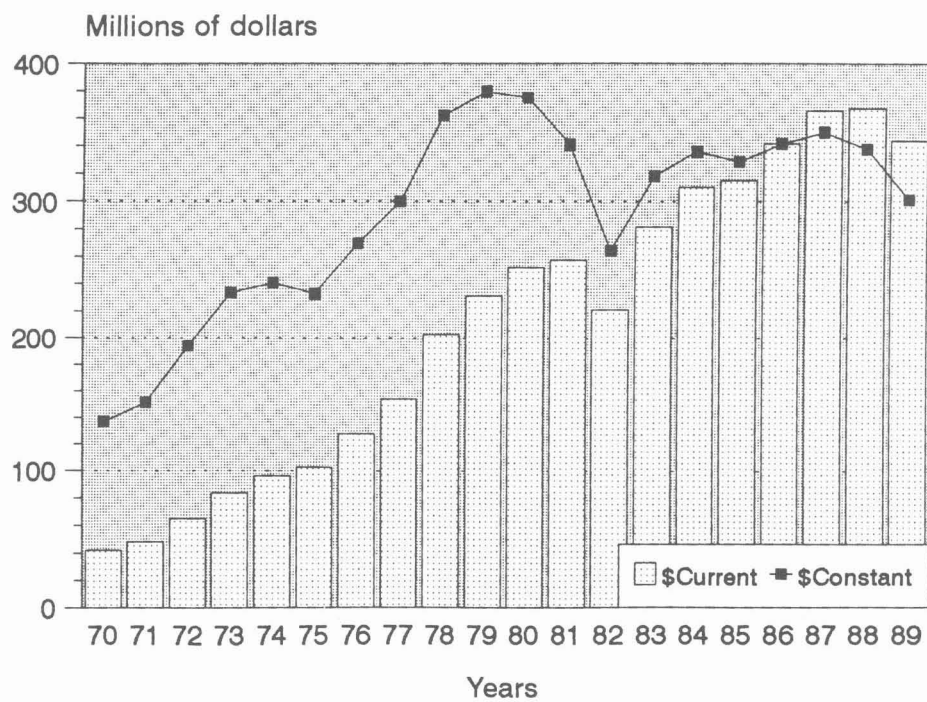


Figure 38. Payroll.

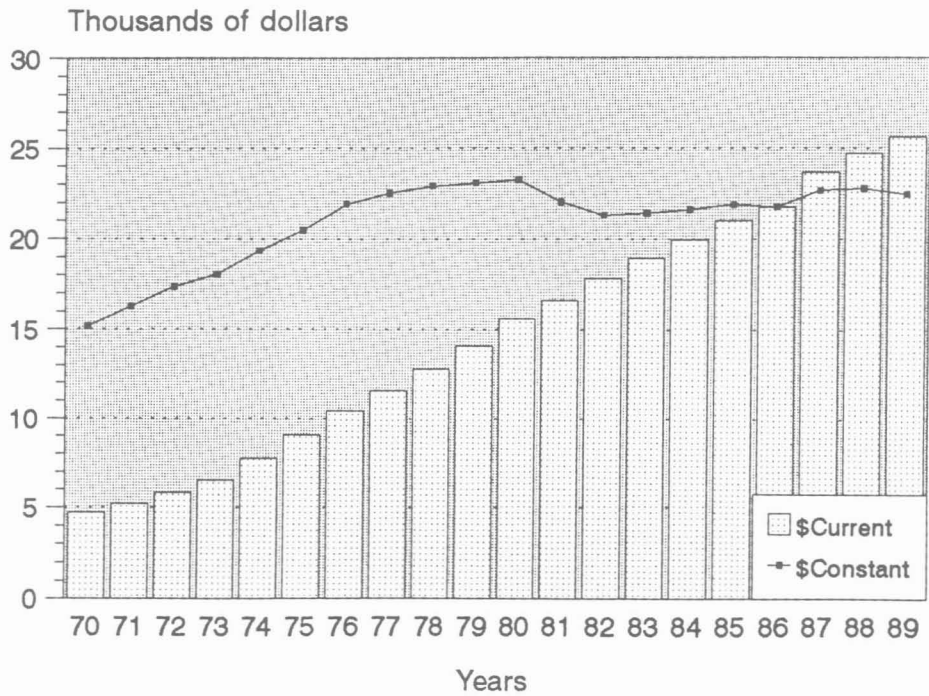


Figure 39. Average annual real salary.

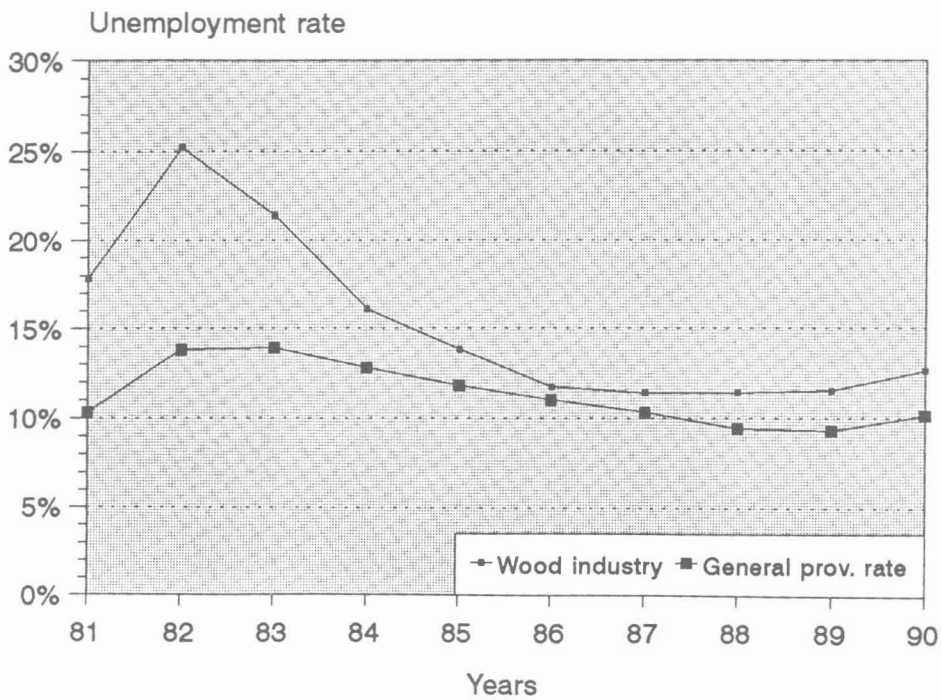


Figure 40. Unemployment rate in wood industry.

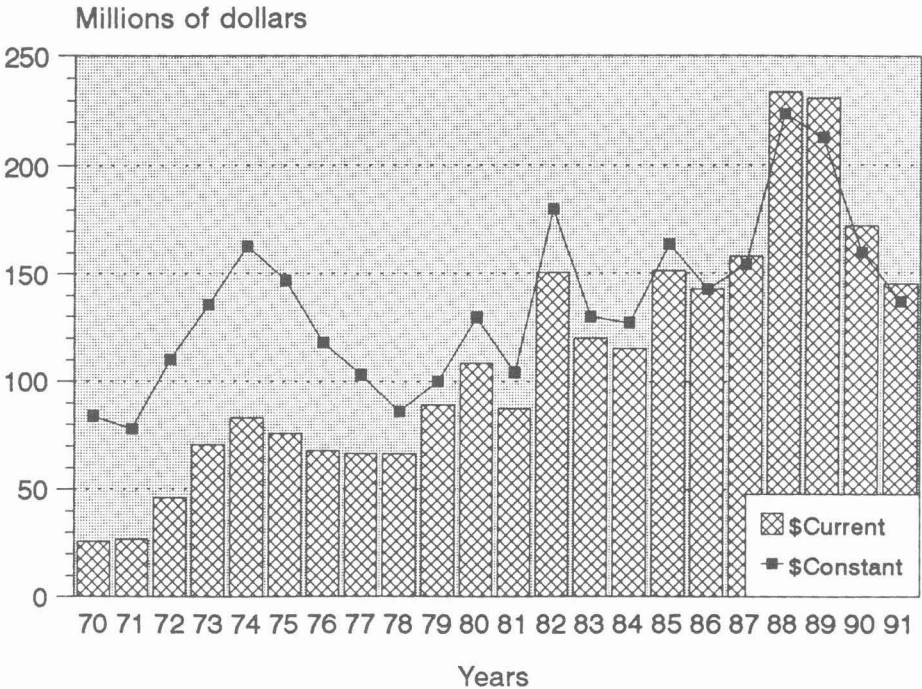


Figure 41. Capital expenditures and repair costs in wood industry.

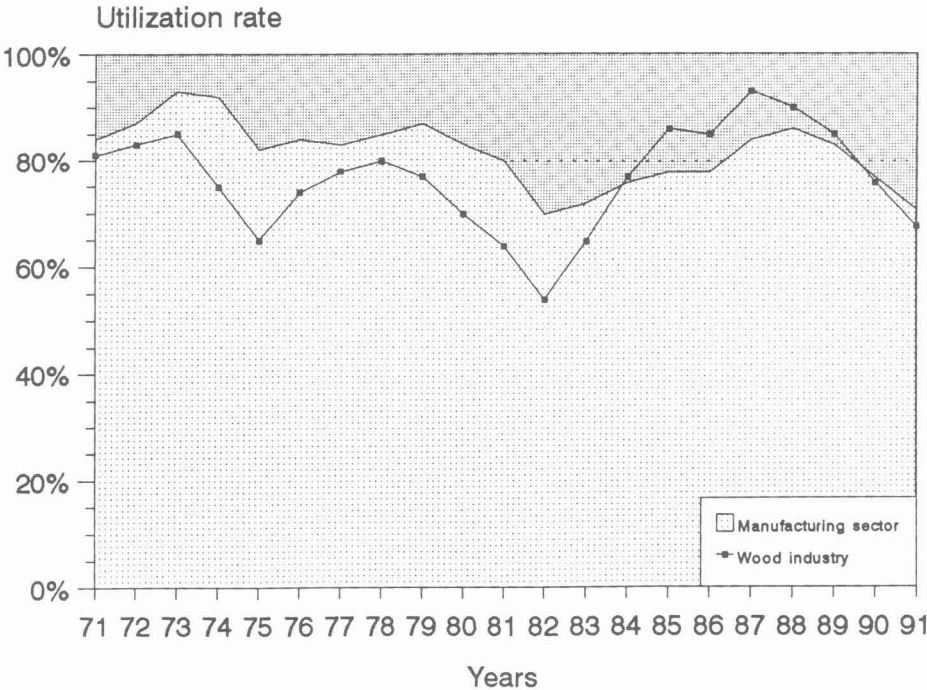


Figure 42. Capacity utilization rate for wood industry.

## **VENEER AND PLYWOOD INDUSTRY** **(Text pertaining to Figures 43 to 48)**

Following changes to the way the data are presented in the Survey of Manufacturers, it is impossible to trace supply and production trends in the veneer and plywood industry. This makes it much more difficult to analyze the sector.

As already observed, the number of establishments dropped significantly between 1978 and 1981. It subsequently increased, peaking at 32 establishments in 1985, and then stabilized at 28 establishments which was the level observed in the early 1970s.

From 1983 to 1989, the average value of shipments was much higher than in the previous period. The increasing scarcity of yellow birch probably had the effect of increasing plywood and some veneer prices. Moreover, it seems likely that mills underwent modernization during this period because a considerable decrease in the number of jobs was observed, and the number of mills remained about the same as in the 1970s. Also, increased production in the modernized mills would increase the value of shipments.

Despite a major increase in the value of shipments, value added figures remained fairly stable during the entire period. It is therefore likely that the cost of raw materials increased substantially in the 1980s (e.g. glues, wood, etc.), whereas factor return remained practically unchanged.

The scarcity of supplies and the cost of raw materials, according to some sources, probably had the effect of transforming production within this industry. Whereas in the past a large volume of plywood was produced, today it seems mainly veneers are produced. However, since it is difficult to obtain production data, it has not been possible to confirm this observation in figures.

Like employment, payroll dropped considerably in the 1980s. The average salary per employee declined during the 1982 recession. It subsequently increased but then started to drop again in 1985. This last downward trend coincided with the opening of five mills. It seems the hiring of a large number of new employees resulted in an industry-wide decrease in average salary.

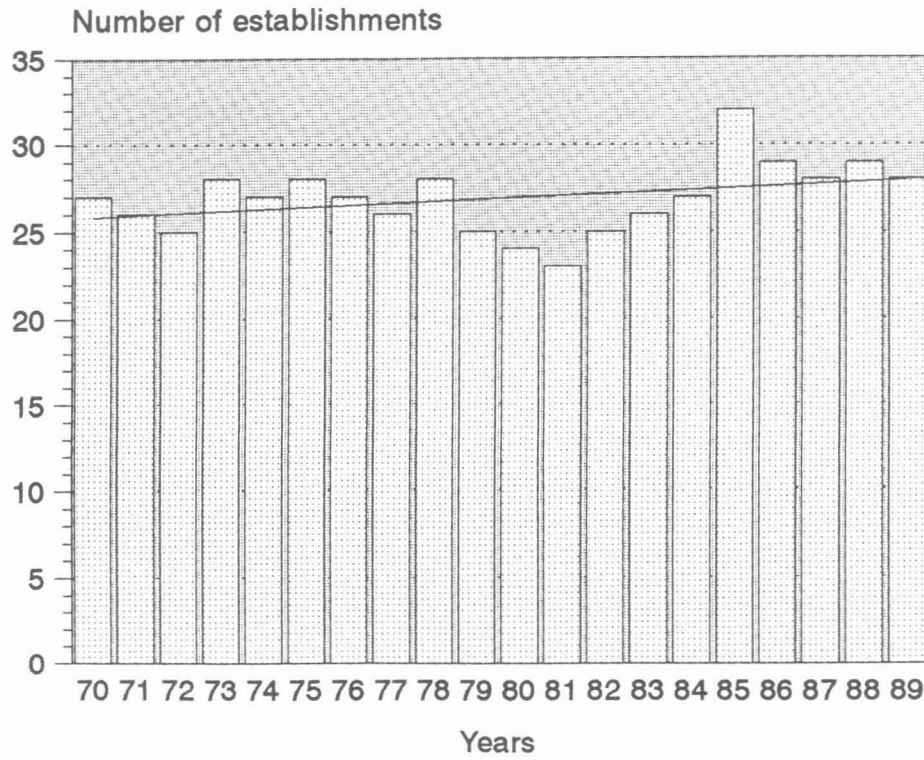


Figure 43. Number of establishments.

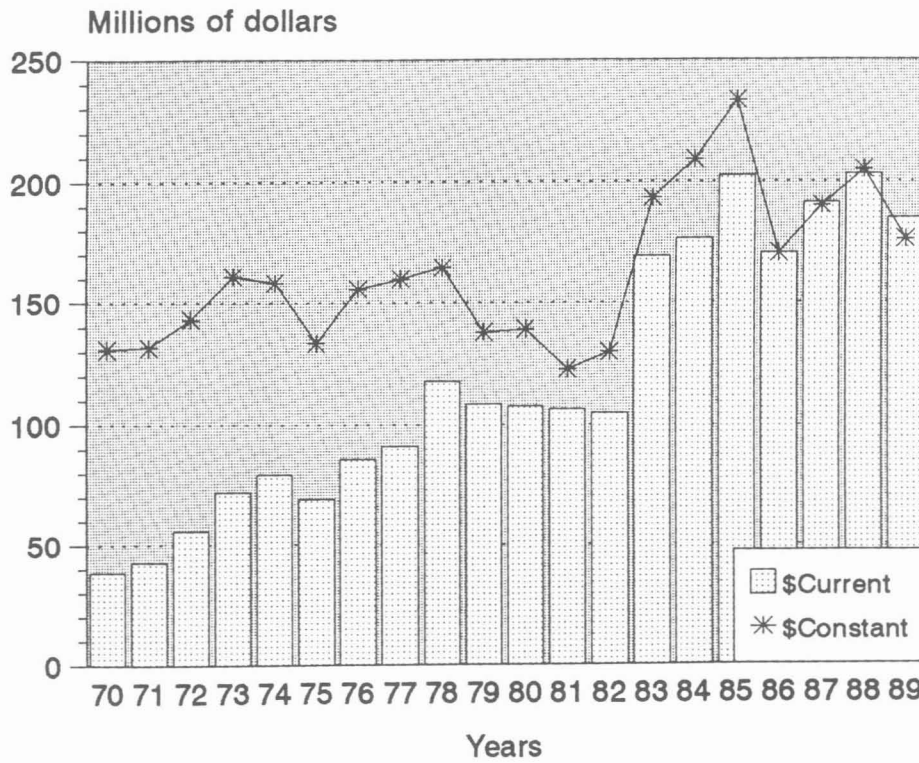


Figure 44. Value of shipments.

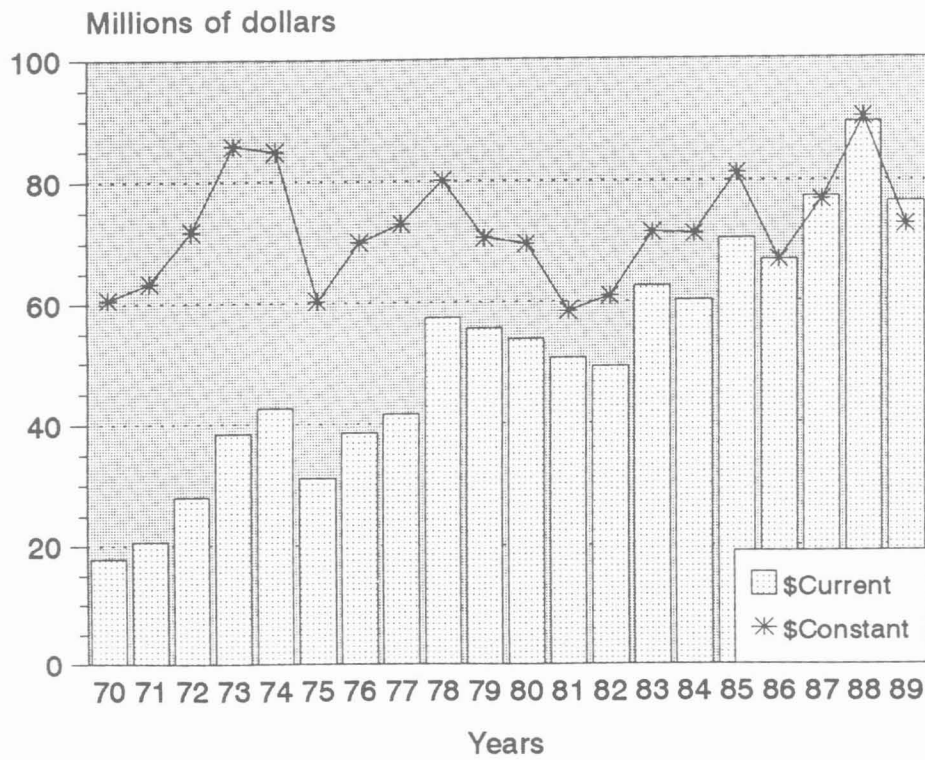


Figure 45. Value added.

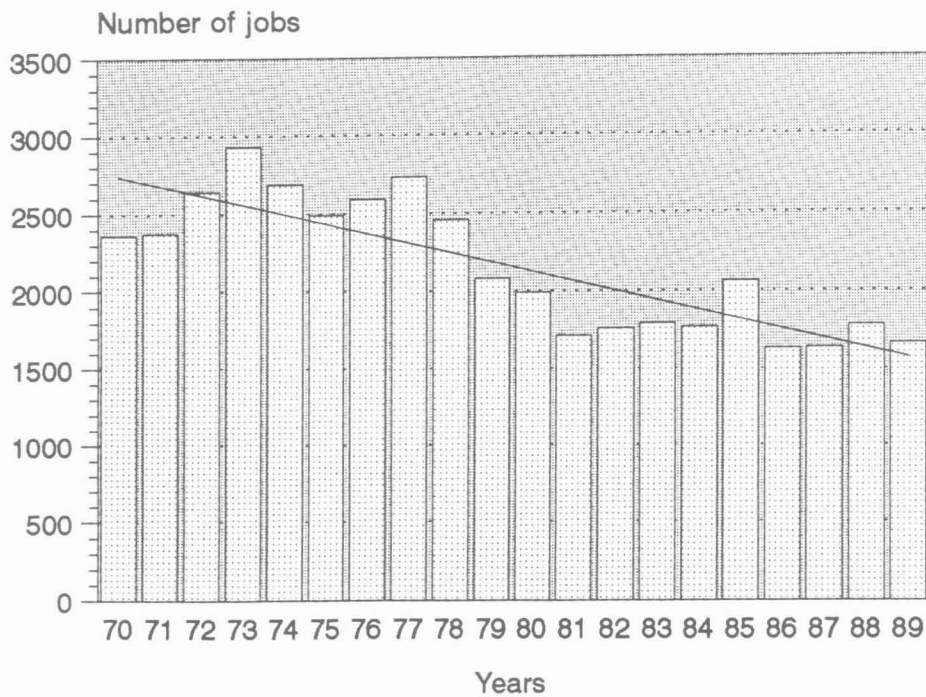


Figure 46. Total number of jobs.

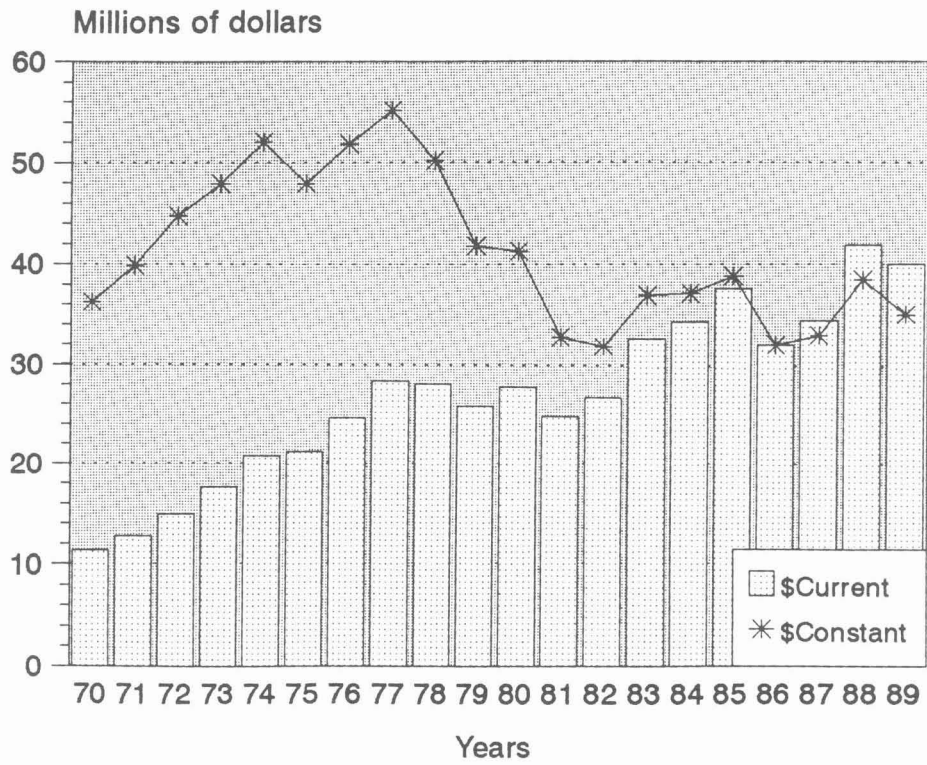


Figure 47. Payroll.

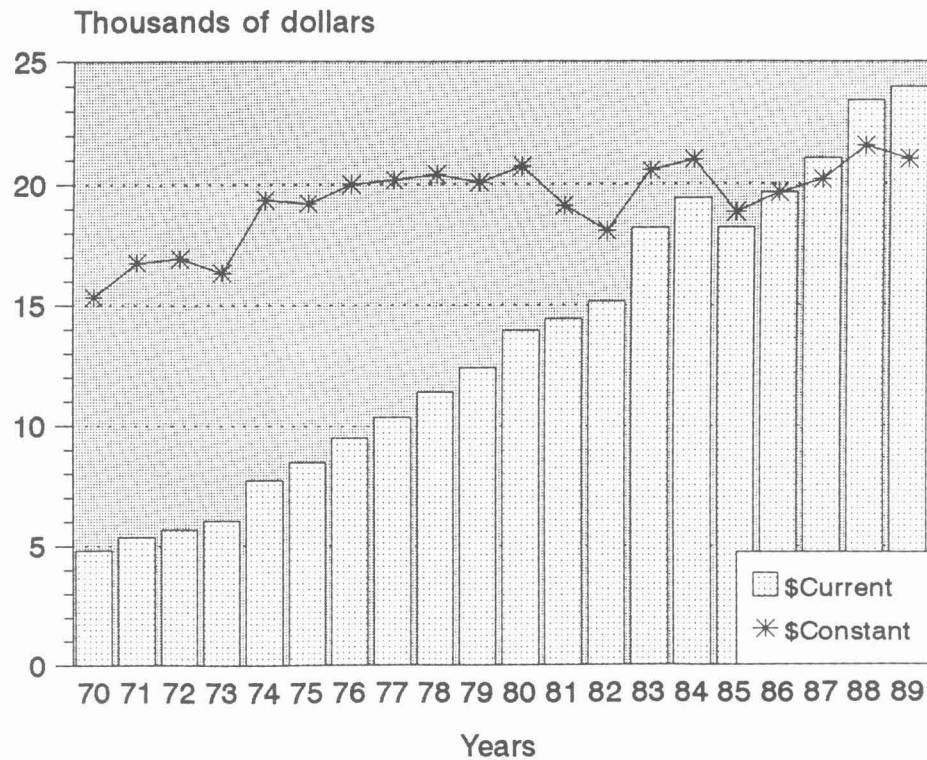


Figure 48. Average annual real salary.

## WHITE CEDAR SHINGLE INDUSTRY (Text pertaining to Figures 49 to 54)

Although the shingle industry is a relatively minor industry in Quebec (amounting to less than 1 per cent of the value of shipments for the entire wood industry), it is still of particular importance to specific regions. The technique used to produce shingles has remained largely the same since it was developed around the turn of the century. Shingles are still produced in small-scale operations in which the skill of the worker is essential to obtaining a high-quality product.

Since a limited investment is required to set up a mill, there is an ongoing flow of producers entering and leaving the market, as shown in annual fluctuations in the number of establishments. A general upward trend, however, observed in the number of establishments is attributed to increased demand for the product in the northeastern states, a traditional market for the product.

As a result of the development of the shingle industry in New Brunswick in the 1970s, Statistics Canada data for the Quebec shingle market ceased to be considered confidential in 1978. This is why value of shipments, value added, employment, payroll and wage data are available only as of 1978.

The phenomenal increase in the value of shipments, which tripled from 1984 to 1987 to \$30 million, is essentially due to increased demand in the U.S. for white cedar shingles, and the marketing of shingle mill residues for use as mulch. It seems, however, that there was slight overproduction during this period. A drop in market prices occurred, and as of 1988, the level of the value of shipments seemed to stabilize around \$21 million.

Value added and value of shipments trends closely resembled one another. This leads one to believe that the cost of raw materials has remained fairly stable since 1978. It is important to bear in mind that high quality supplies are essential to the quality of the final product. In view of the relative scarcity of this species in Quebec, several establishments obtained all or some supplies from the forests of Maine and New Brunswick. As well, the implementation of the new forest regime in 1987 placed definite constraints on supplies, which in part explains the drop in the number of establishments, value of shipments, value added and employment levels in 1988.

Employment and payroll followed the same trend as the value of shipments. The average wage per employee has risen slightly since 1978, despite a sudden drop during the 1982 recession. The current level of wages is close to that of 1981, i.e. around \$20,000.



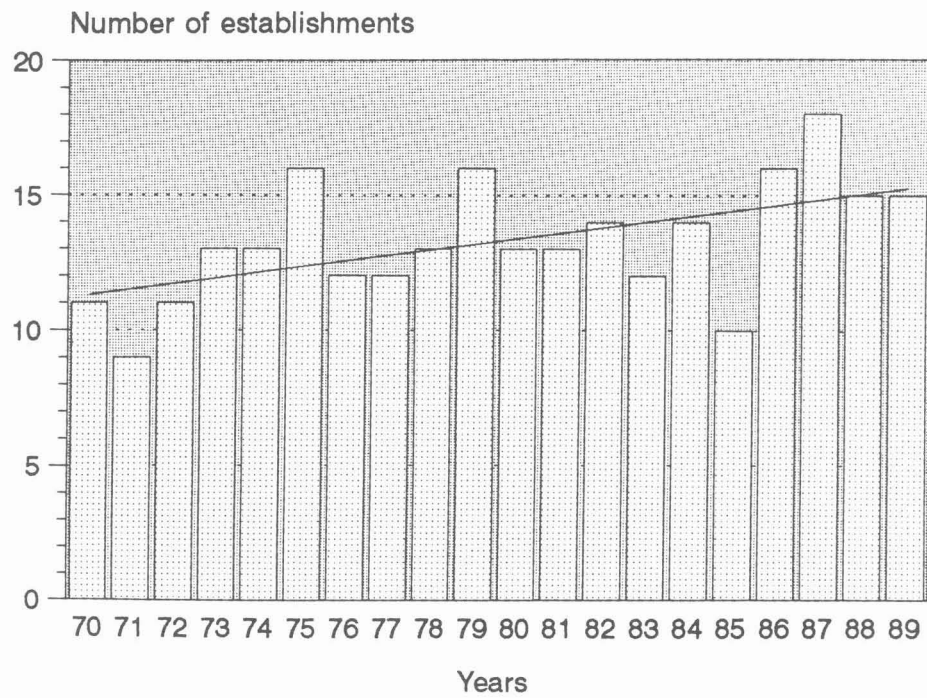


Figure 49. Number of establishments.

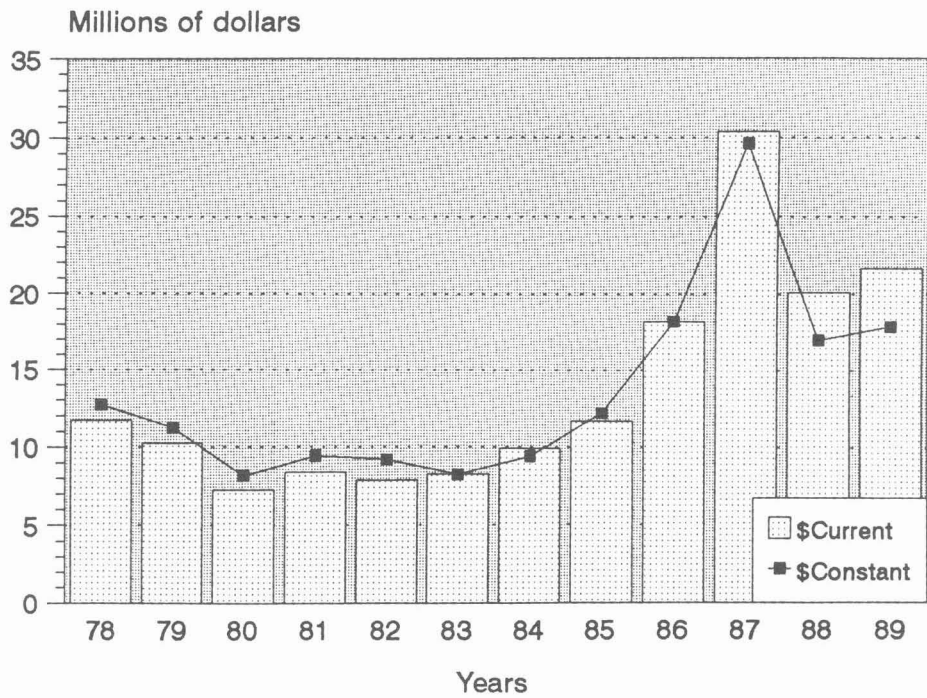


Figure 50. Value of shipments.

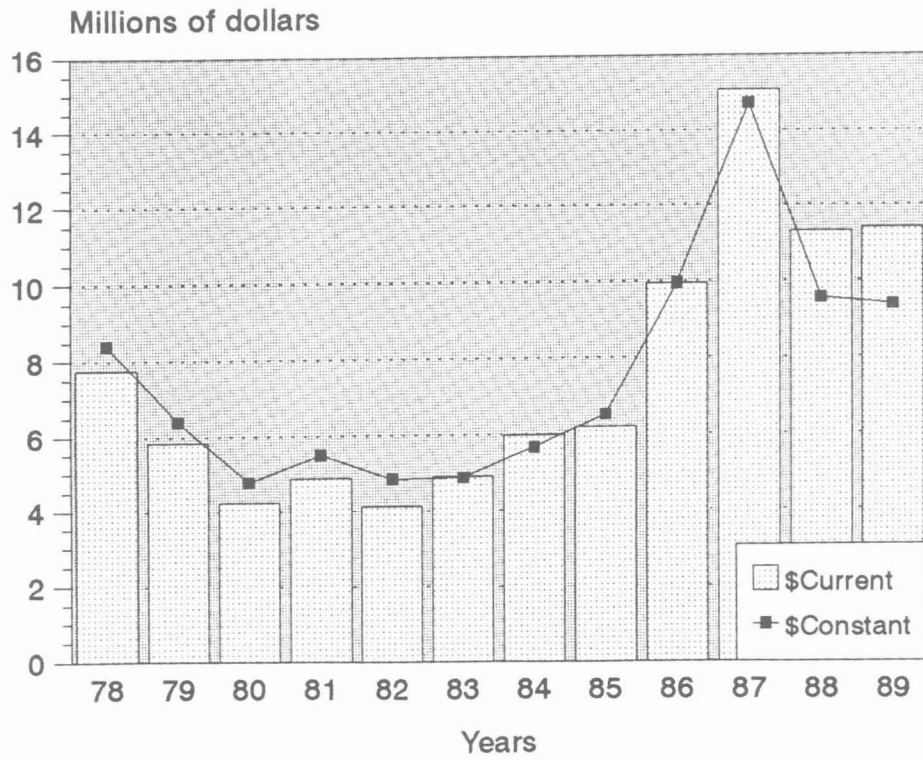


Figure 51. Value added.

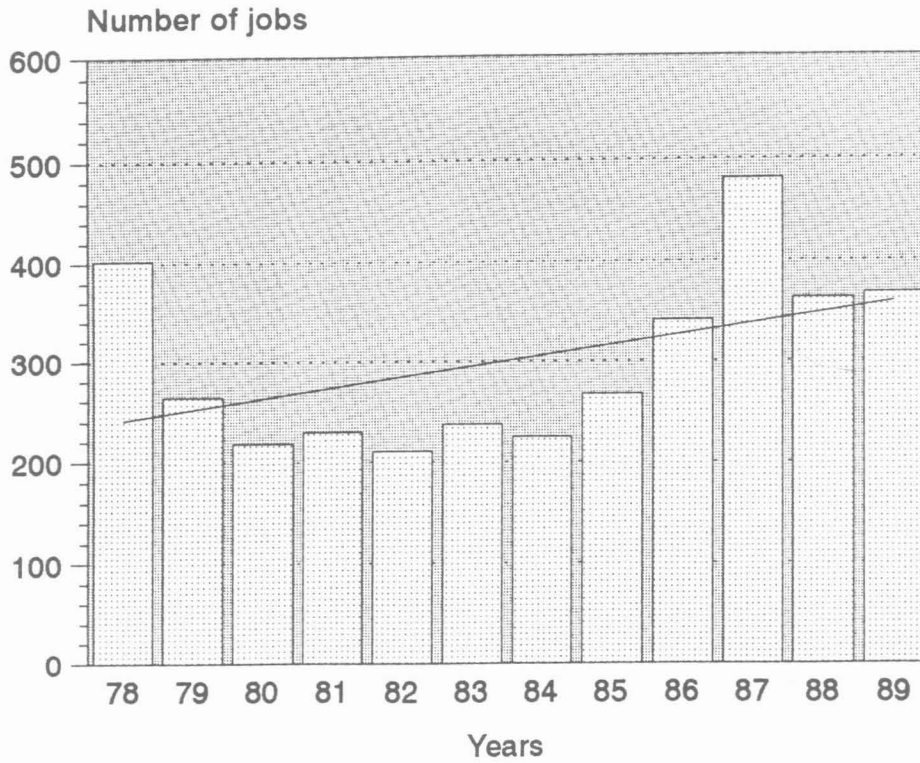


Figure 52. Total number of jobs.

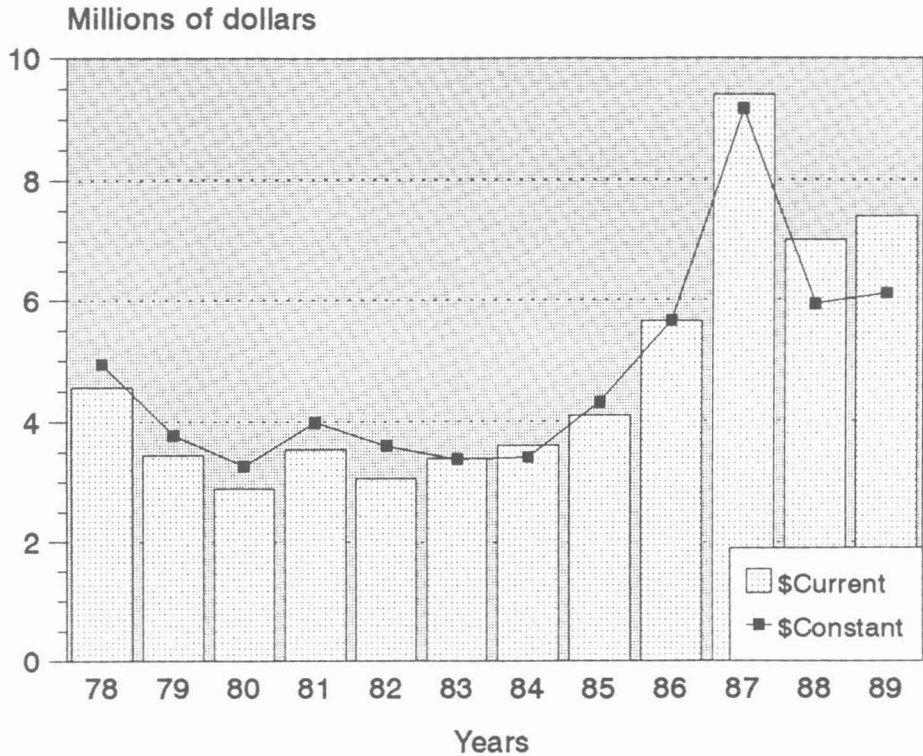


Figure 53. Payroll.

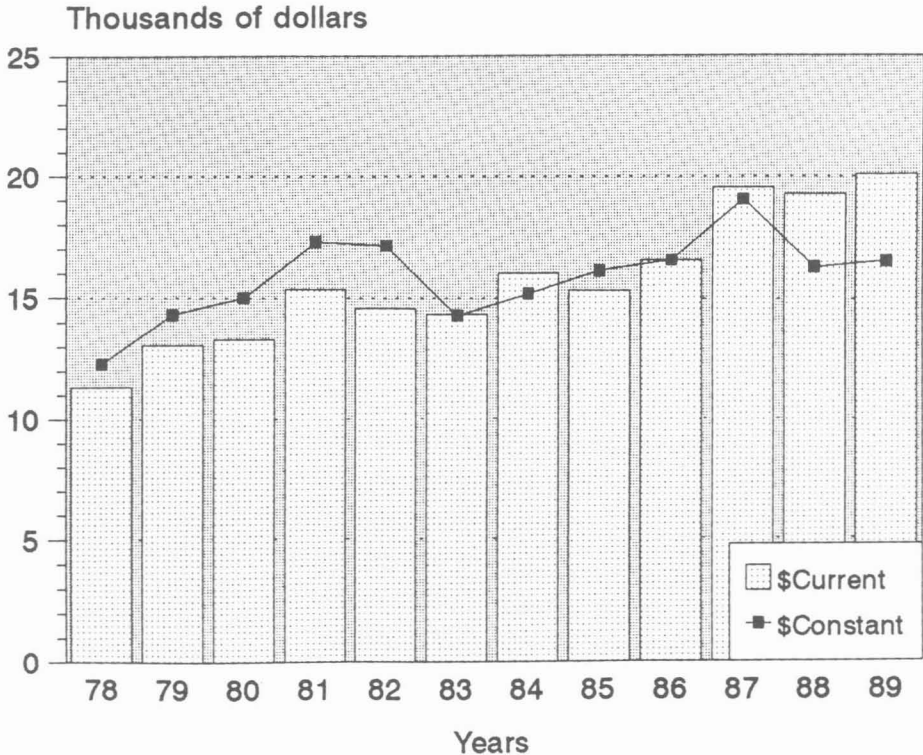


Figure 54. Average annual real salary.

## PAPER AND ALLIED PRODUCTS INDUSTRY

(Text pertaining to Figures 55 to 82)

The paper and allied products industry encompasses not only the pulp and paper industry, but also the asphalt roofing, paper box and paper bag industries, in addition to other converted paper products industries. Pulp and paper is nonetheless by far the most important industry in this group. Since 28 per cent of the establishments in the paper and allied products industry are pulp and paper operations, pulp and paper monopolizes 79 per cent of the value of shipments and 81 per cent of value added.

Despite a far greater number of establishments, the production level of industries other than pulp and paper in the paper and allied products industry is clearly lower than that of the pulp and paper industry. Although newsprint production barely increased during the period under study, the production of other products has been on the rise since 1976. Pulp production has clearly risen since 1982, although there have been peaks and valleys in the production curve.

These results, however, should be seen in the context of increased world production capacity. Growth in Quebec newsprint production is the lowest among producing countries, with an increase of 4 per cent from 1970 to 1980, and 10 per cent from 1980 to 1989. Production growth in other producing regions fluctuated between 9 and 79 per cent between 1970 and 1980, and between 11 and 102 per cent between 1980 and 1989. Quebec's pulpwood production was slightly above average between 1980 and 1989 (excluding Latin American countries), but clearly below average from 1970 to 1980.

Maintaining Quebec's share of world markets is mainly contingent upon two different factors, i.e. an adequate supply of resinous fibers and keeping the paper industry at the cutting edge of technology. On one hand, during the 1980s, the Quebec forestry sector experienced a shortage of resinous wood stocks and expressed the need for extensive reforestation, which made it difficult to implement an aggressive policy for breaking into the world market. On the other hand, investments in Quebec's paper and allied products industry began to increase only in 1986, prior to which they remained relatively stable (except between 1979 and 1984 when mills took advantage of a subsidized modernization program). According to a Price Waterhouse study published in 1991, eastern Canada ranked last in terms of the funds invested per tonne produced in the previous ten years. A comparative table from the Price Waterhouse study follows.

<b>Regions</b>	<b>Investment per tonne produced</b>
British Columbia (coastal area)	\$541 / t
Finland	\$502 / t
Western United States	\$305 / t
British Columbia (interior)	\$217 / t
Southern United States	\$212 / t
Sweden	\$186 / t
Eastern Canada	\$72 / t

Whereas our competitors have clearly invested in highly productive machinery, 40 per cent of Quebec's production capacity dates back to 1935, if not before.

The value of shipments rose slightly with production. Value added also increased with the value of shipments, whereas the cost of raw materials remained relatively stable. Nonetheless, costs associated with maintaining inventories have decreased substantially since 1975, the year when closing inventories of pulp and paper mills started to decline. This is due to the increased use of wood chips, which have a much shorter shelf-life than logs stored in mill yards, making it necessary to turn inventories over.

The pulp and paper industry exports the greater part of its production. The U.S. market was historically the industry's best customer for pulp and paper and newsprint. Since 1989, however, pulp exports to other countries have slightly exceeded exports to the U.S., owing to a spectacular increase in exports to the EEC.

Newsprint is still exported primarily to the U.S. Close to 3 million tonnes were exported in 1989, amounting to roughly 75 per cent of total Quebec shipments. Exports increased slightly in 1986, 1987 and 1988, but declined in 1989, which resulted in a drop in the value of shipments and value added, as discussed earlier.

Newsprint exports to the U.S. have increased steadily in the past twenty years. A disquieting factor, however, is that the proportion of U.S. demand for Canadian newsprint has been on the decline since 1978. This is due to the marked increase in U.S. production capacity during the 1970s and 1980s, and the problems we have competing with prices of paper produced in the southeastern states.

As for the evolution of other export markets for newsprint, sales to South America, Central America and Asia are decreasing, whereas those to European markets are increasing.

Total job levels in the paper and allied products industry have been fairly stable for the entire period under study, and the unemployment rate is much lower than Quebec's average unemployment rate. The average wage per employee is not only the highest in the pulp and paper industry, but also the highest in the entire Quebec forest industry.

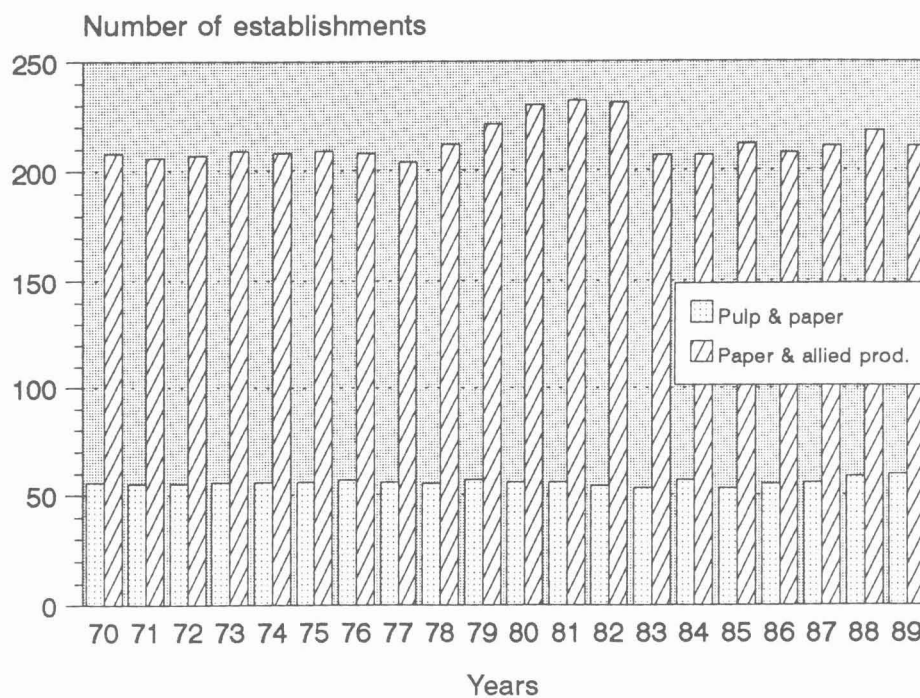


Figure 55. Number of establishments.

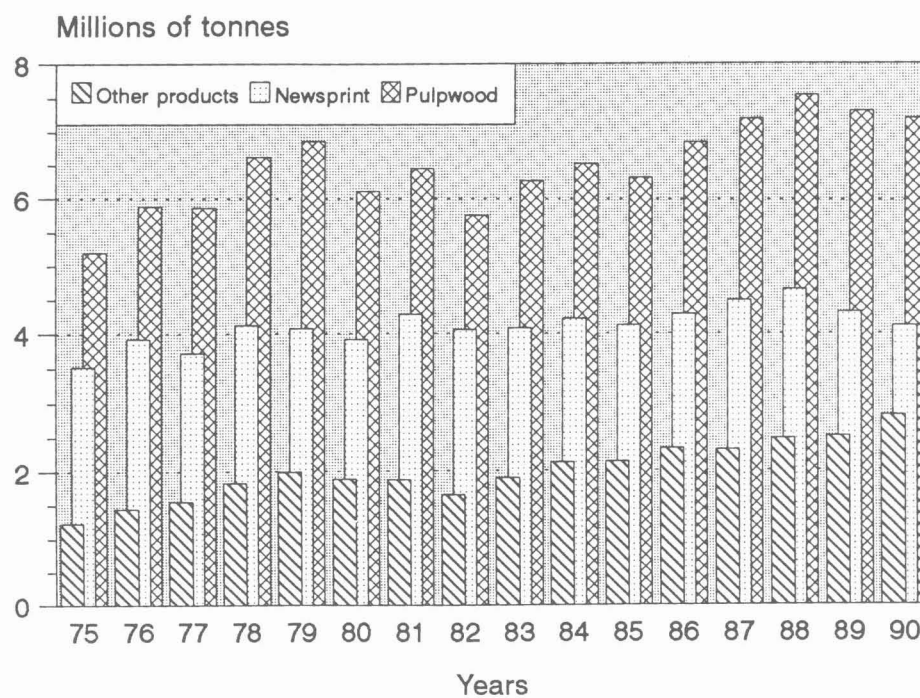


Figure 56. Production.

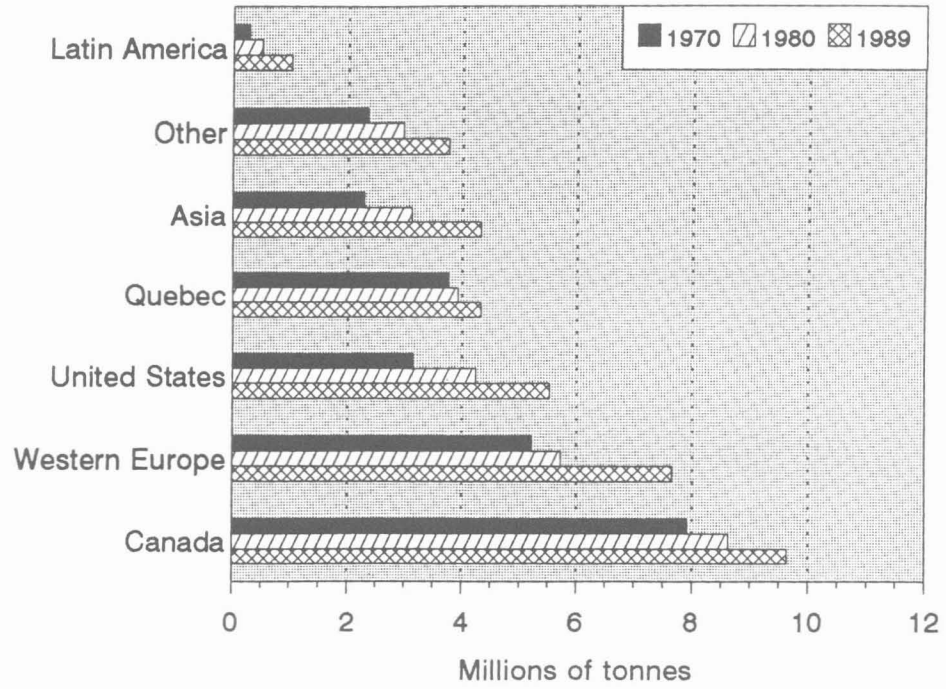


Figure 57. World newsprint production.

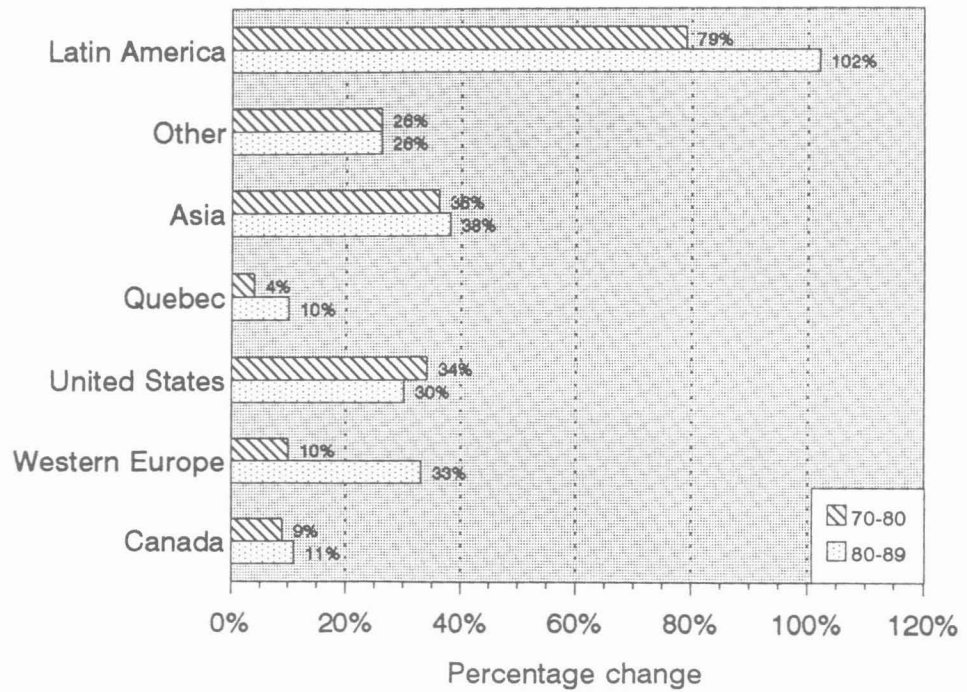


Figure 58. Percentage change in world newsprint production.



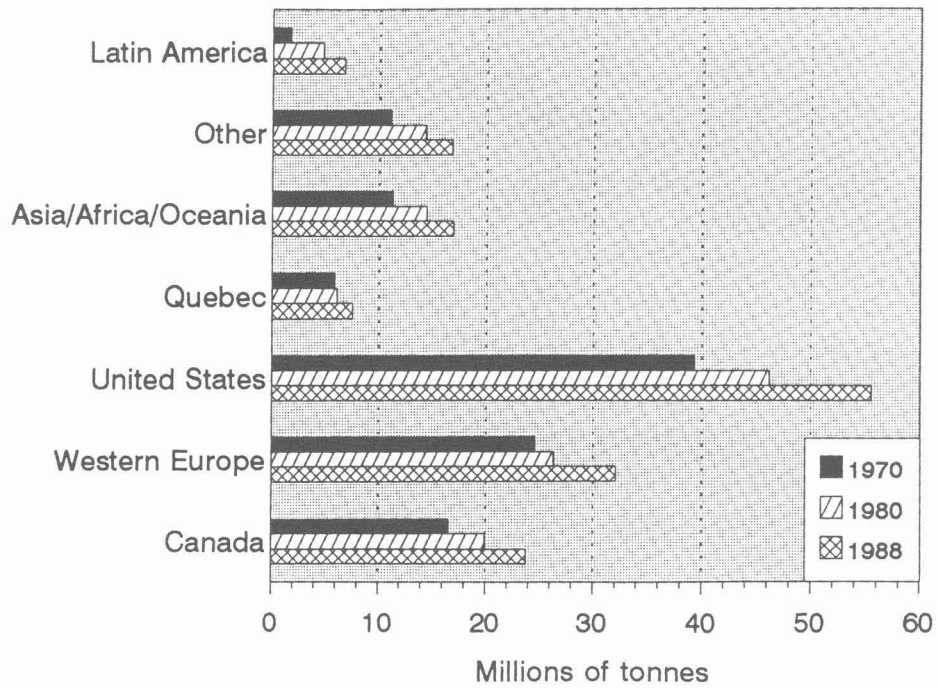


Figure 59. World pulpwood production.

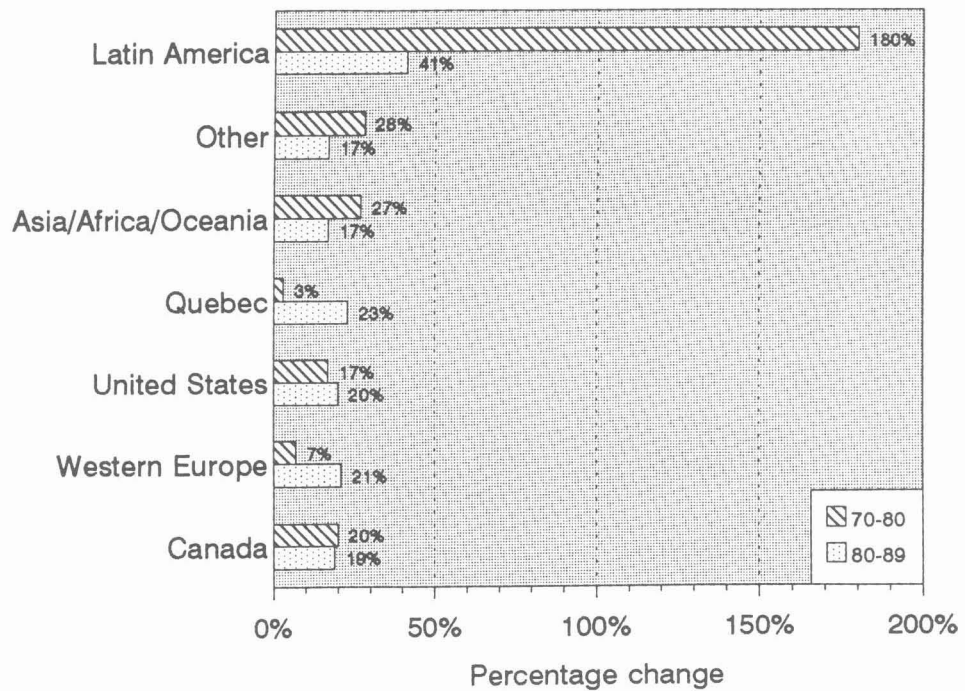


Figure 60. Percentage change in world pulpwood production.

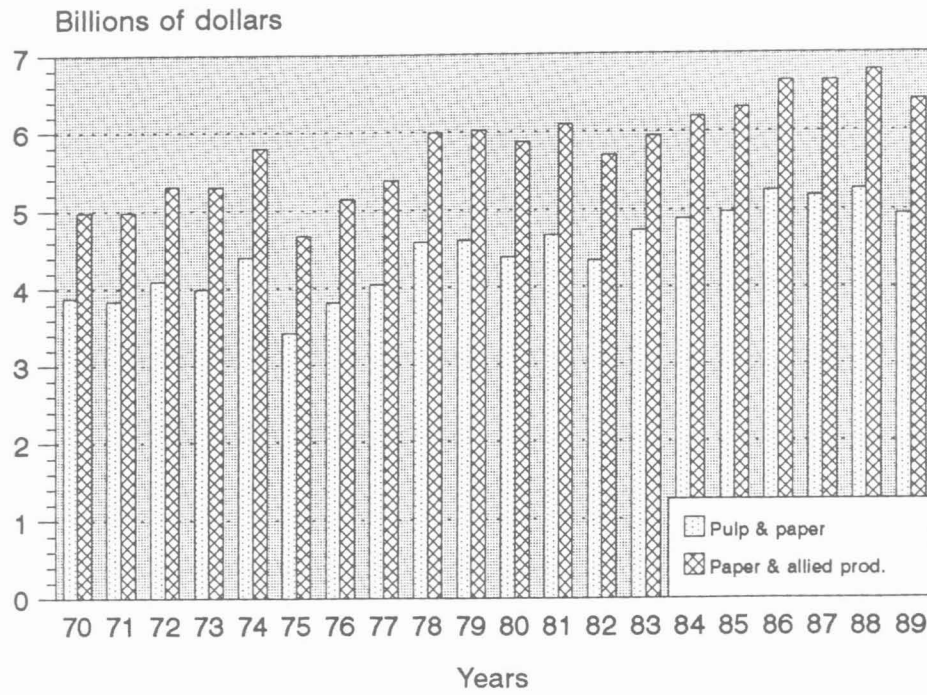


Figure 61. Comparison of value of shipment trends.

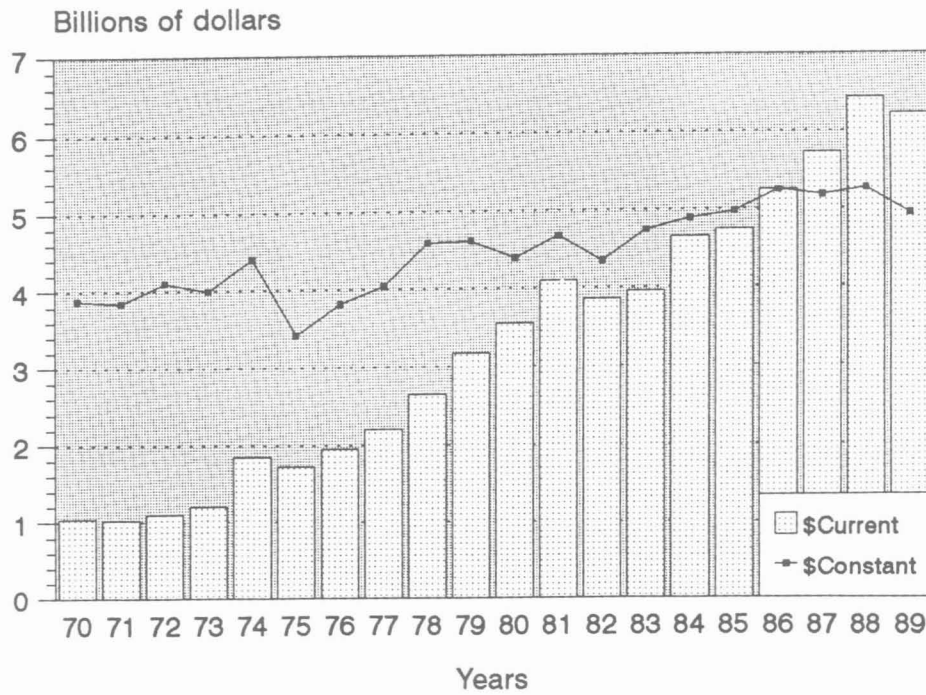


Figure 62. Value of shipments in the pulp and paper industry.

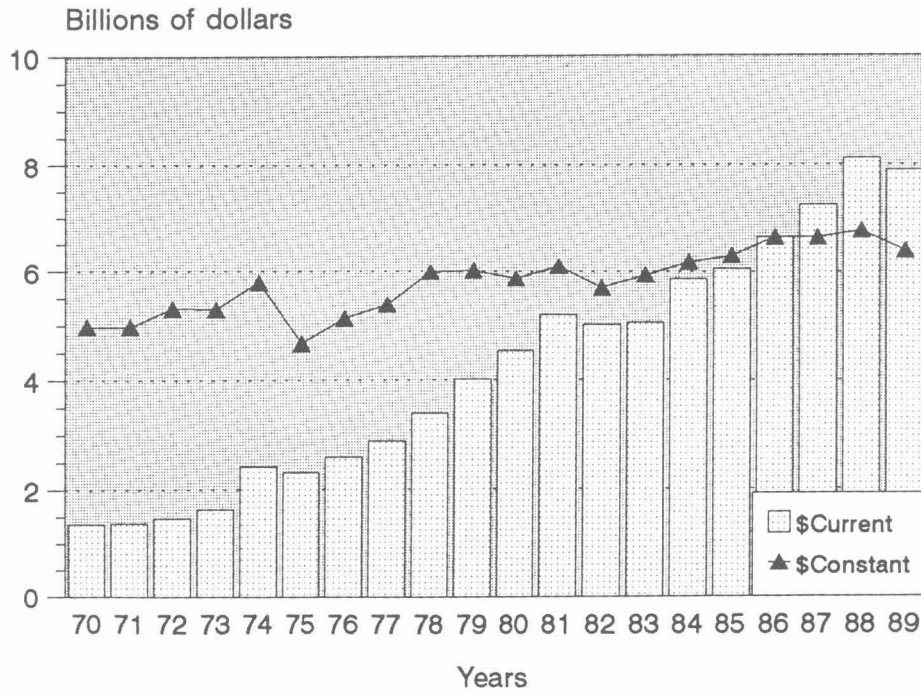


Figure 63. Value of shipments in paper and allied products industry.

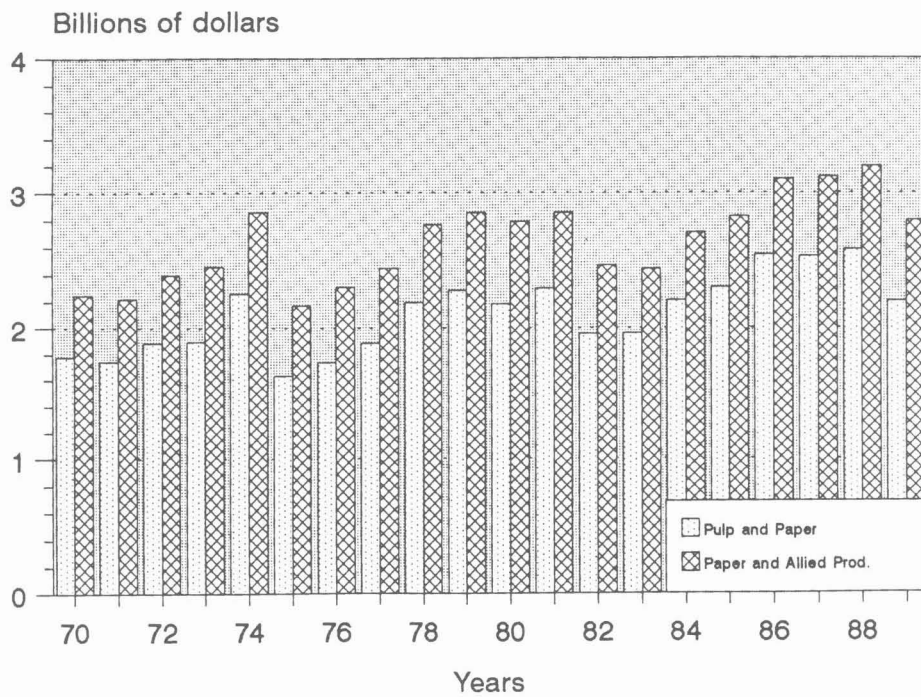


Figure 64. Comparison of value added trends.

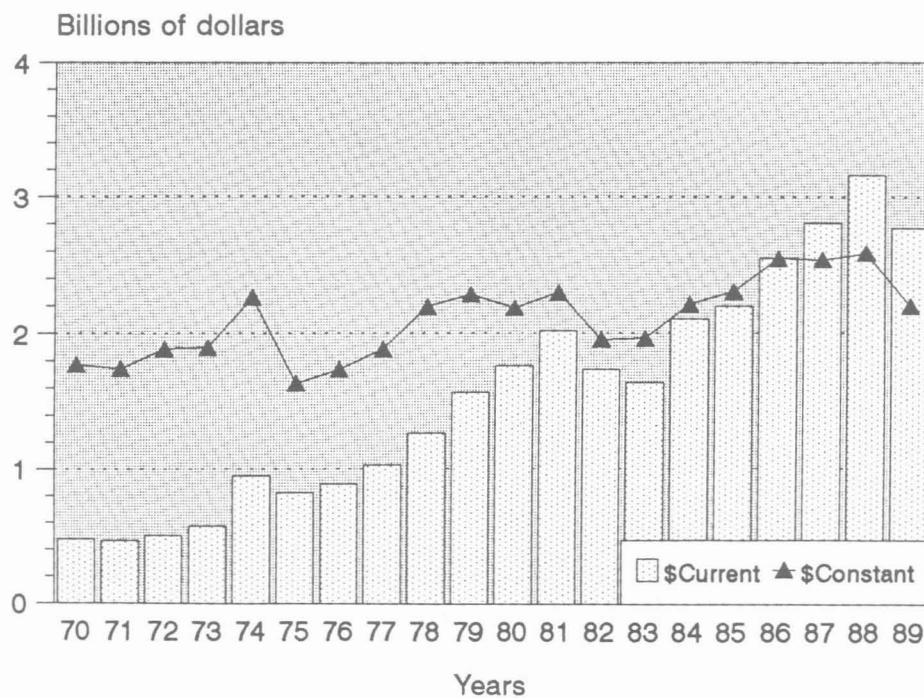


Figure 65. Value added in pulp and paper industry.

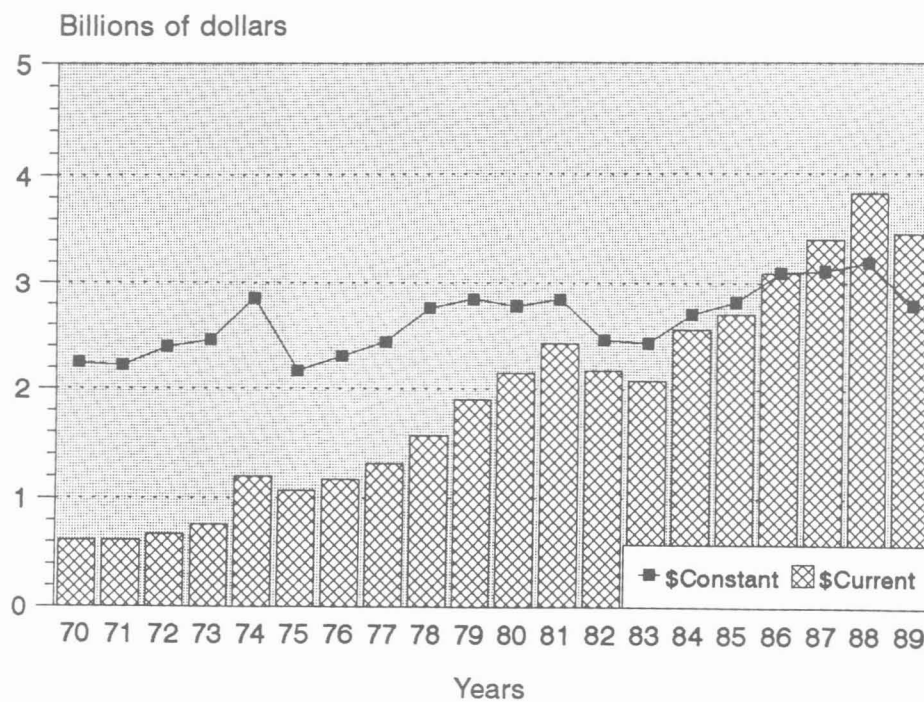


Figure 66. Value added in paper and allied products industry.

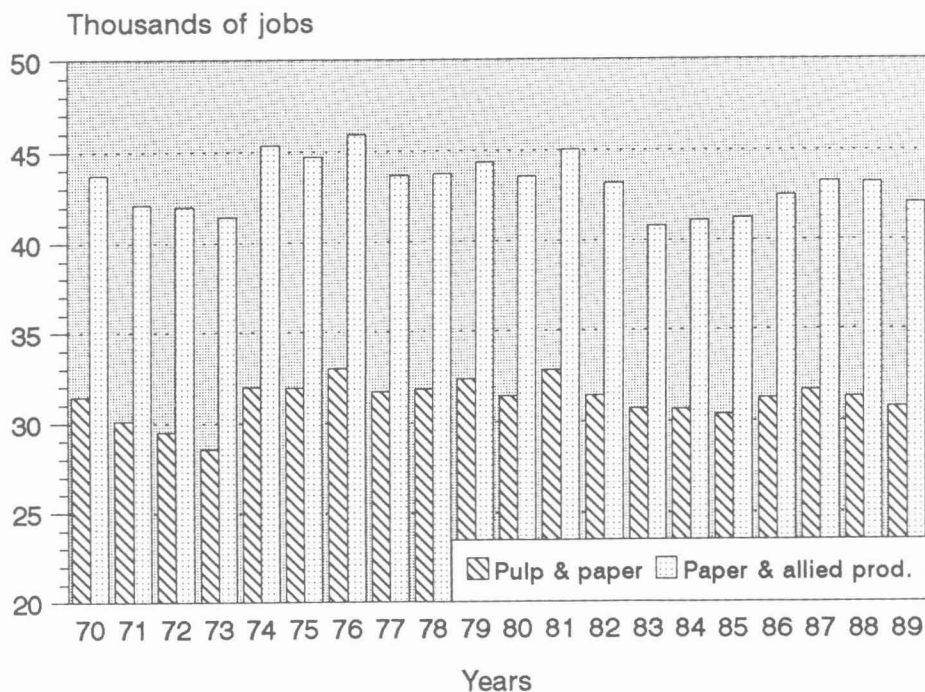


Figure 67. Comparison of total number of jobs.

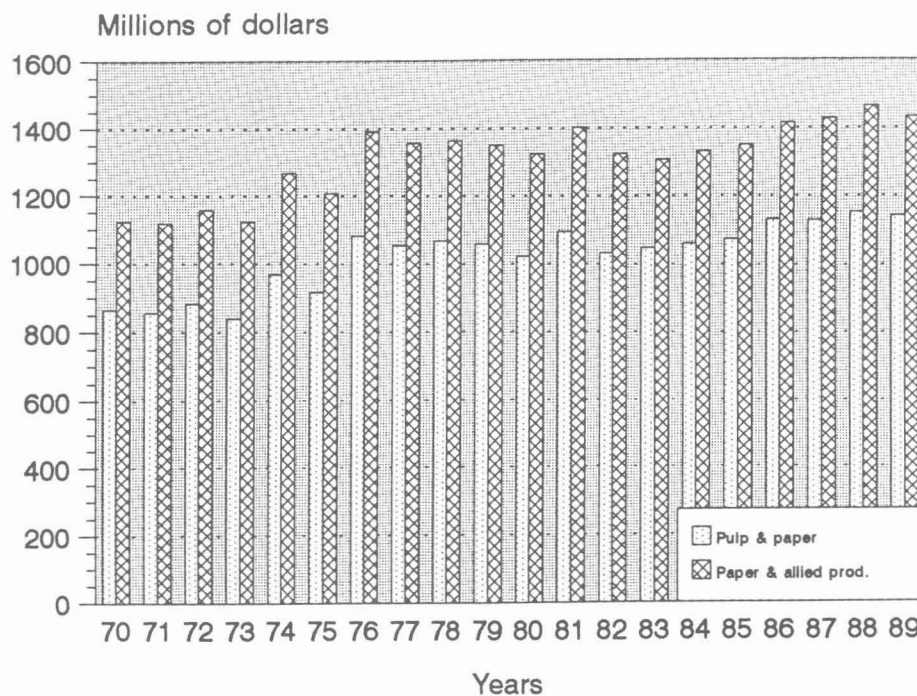


Figure 68. Comparison of payrolls.

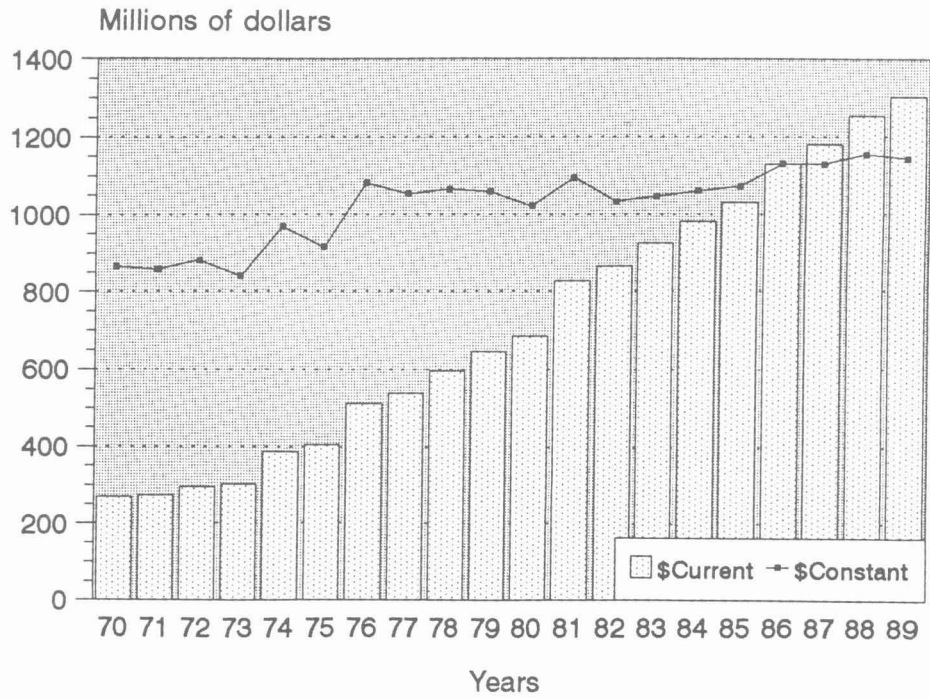


Figure 69. Payroll in pulp and paper industry.

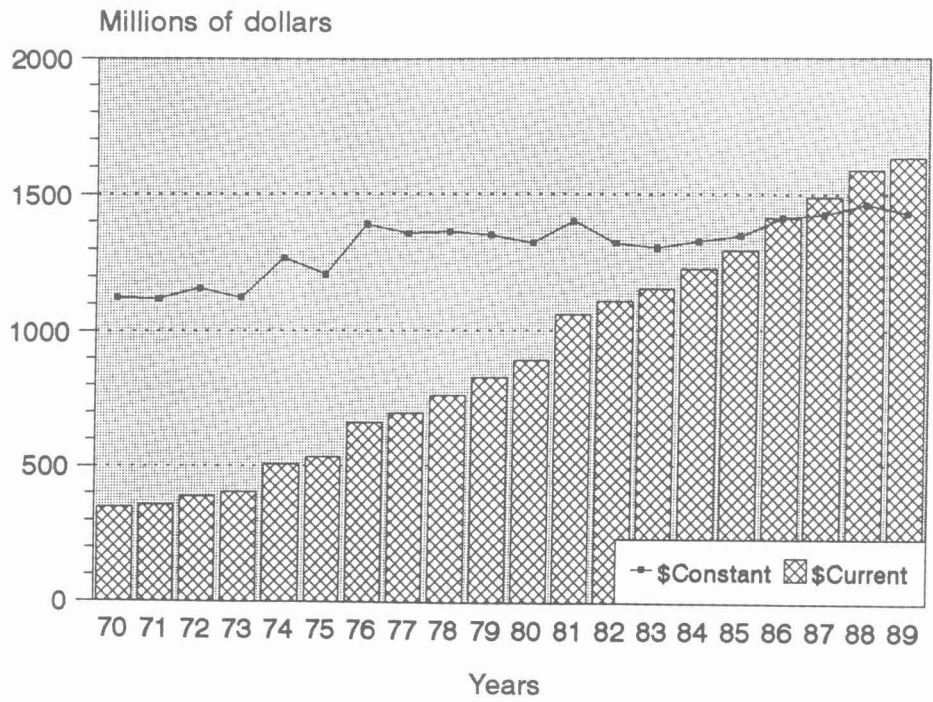


Figure 70. Payroll in paper and allied products industry.

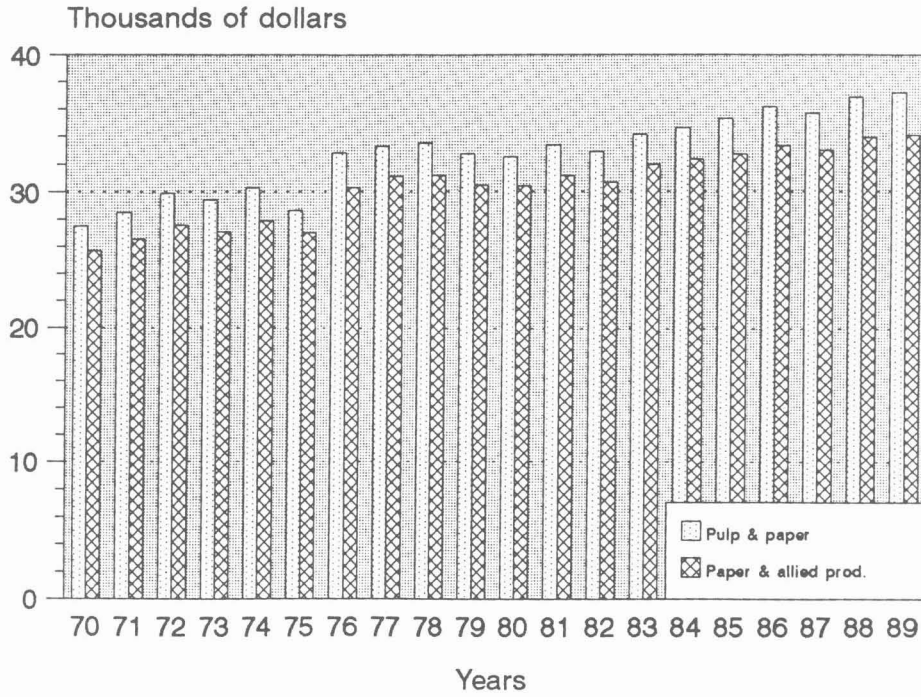


Figure 71. Comparison of average annual real salaries.

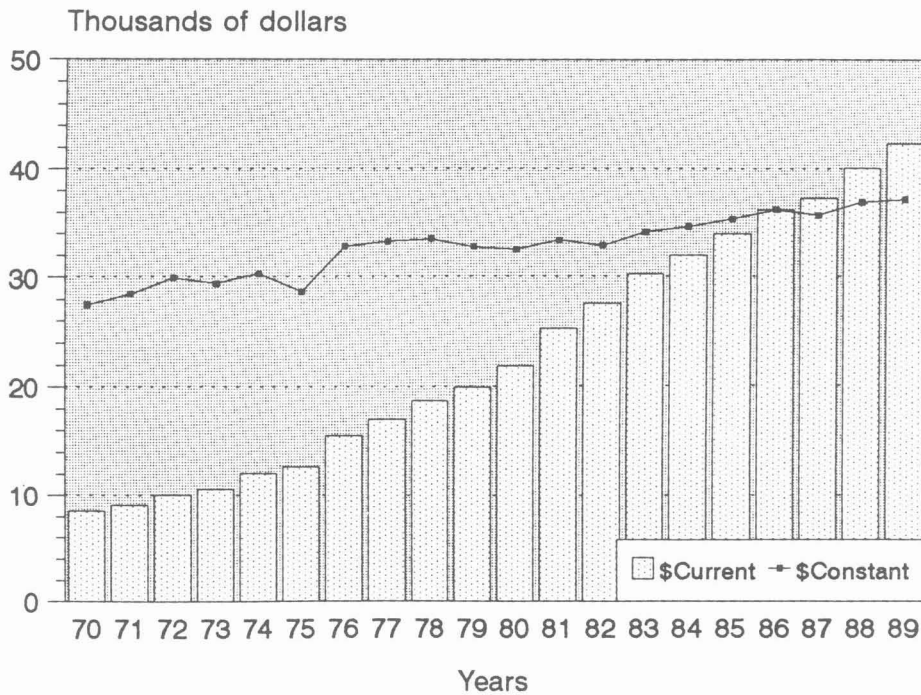


Figure 72. Average annual real salary in the pulp and paper industry.

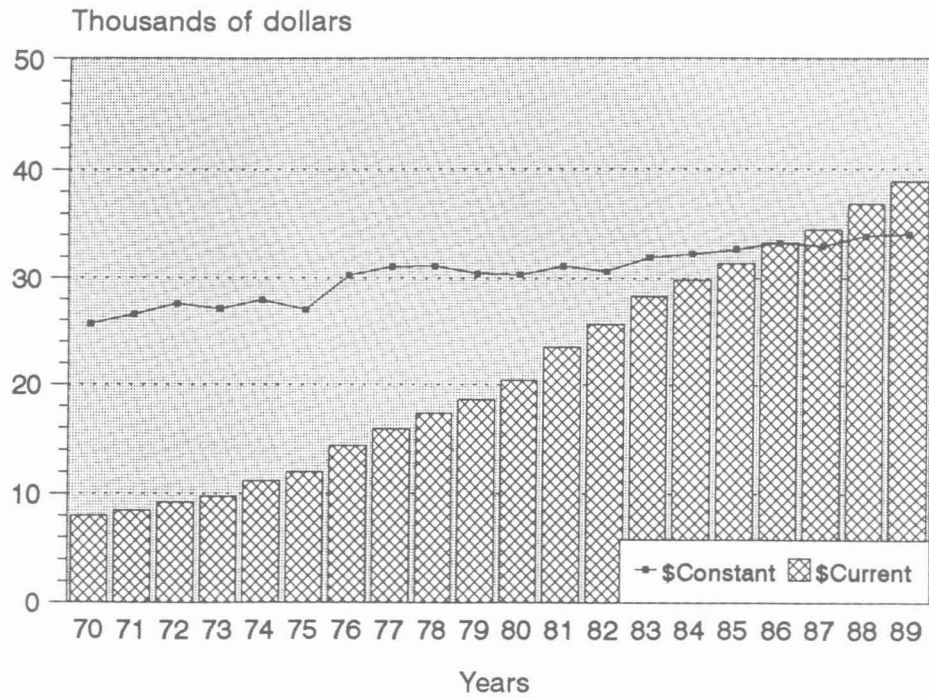


Figure 73. Average annual real salary in the paper and allied products industry.

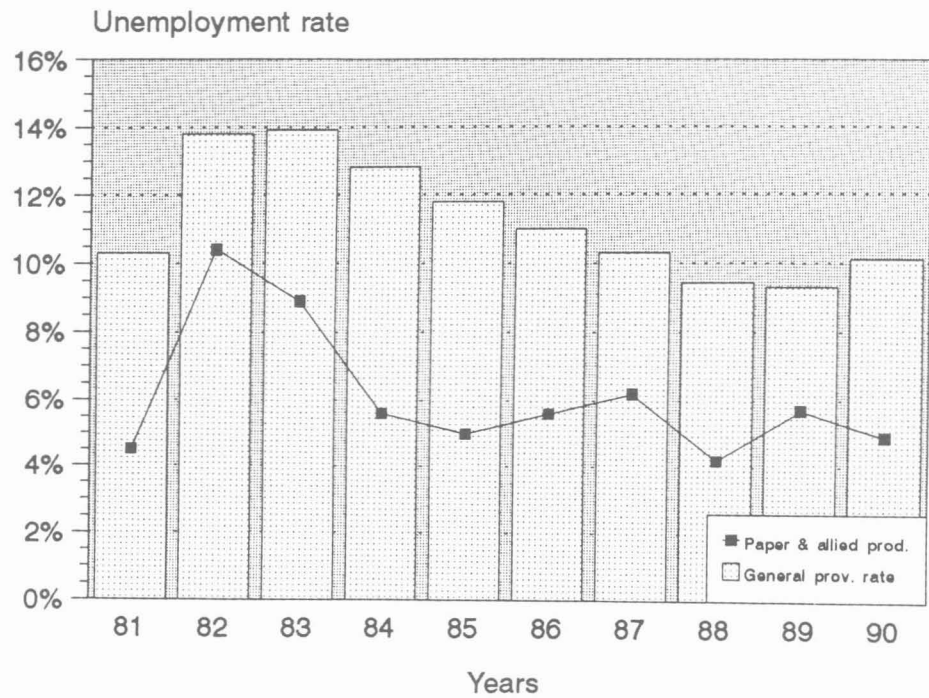


Figure 74. Unemployment rate in the paper and allied products industry.



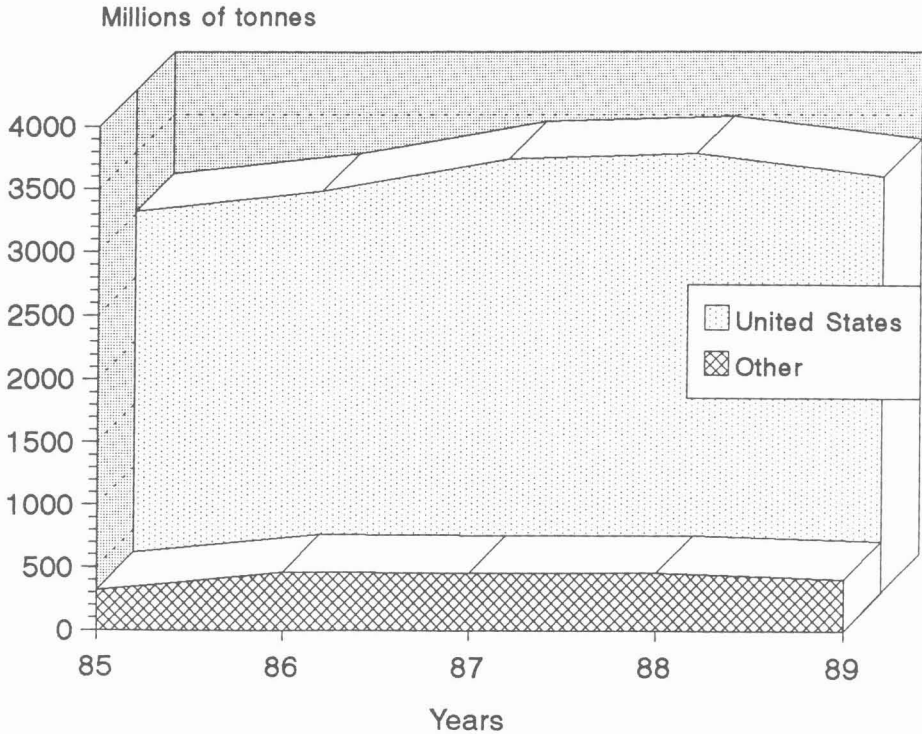


Figure 75. Newsprint export markets - U.S.

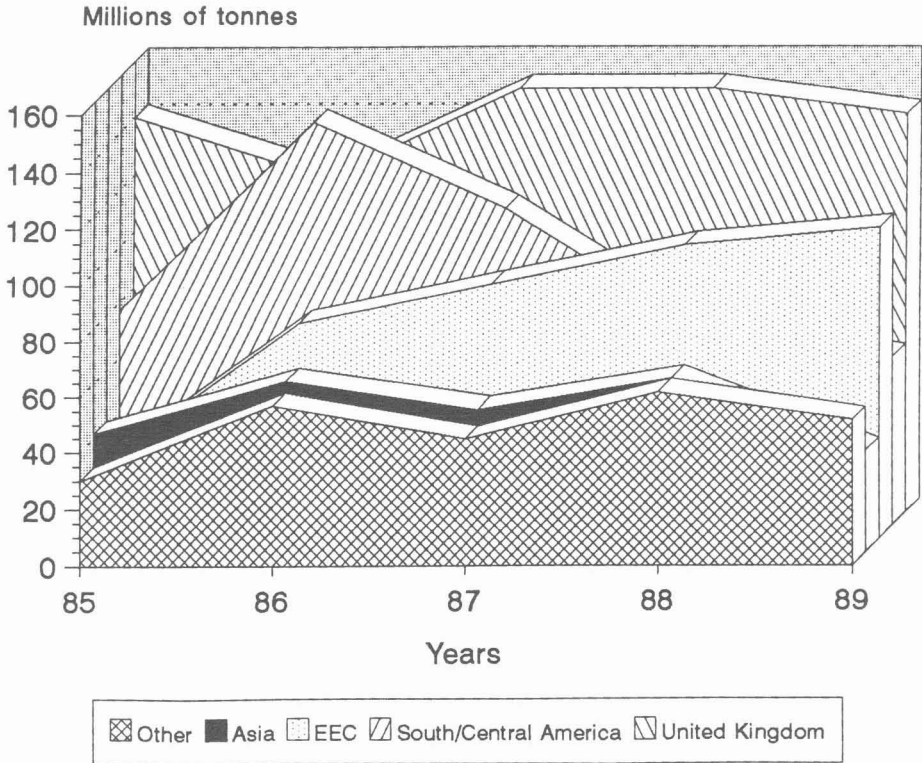


Figure 76. Newsprint export markets - other countries.

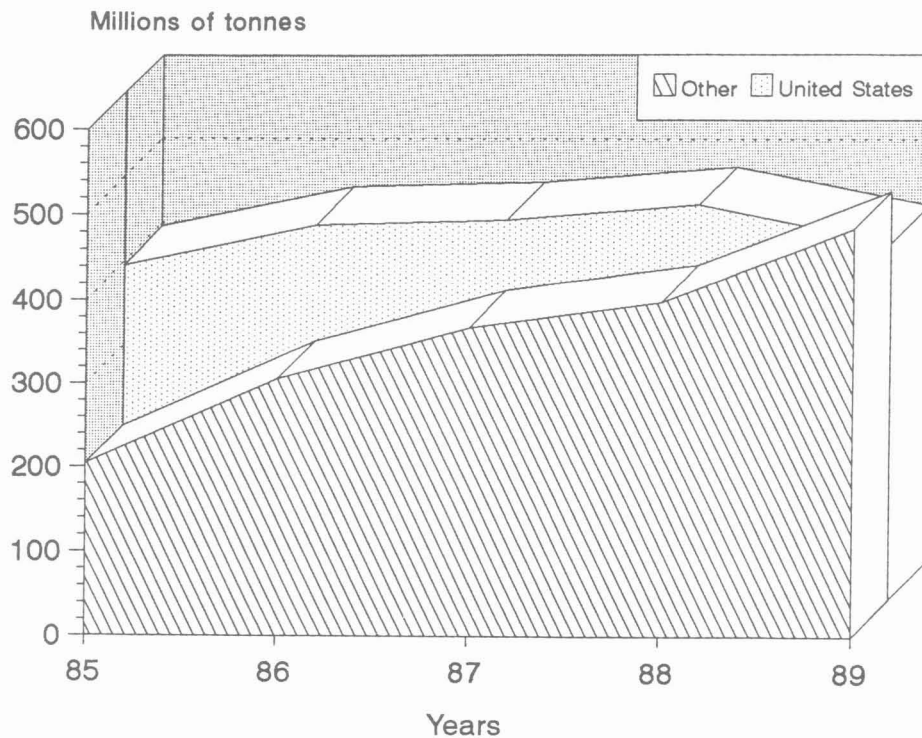


Figure 77. Pulpwood export markets - U.S.

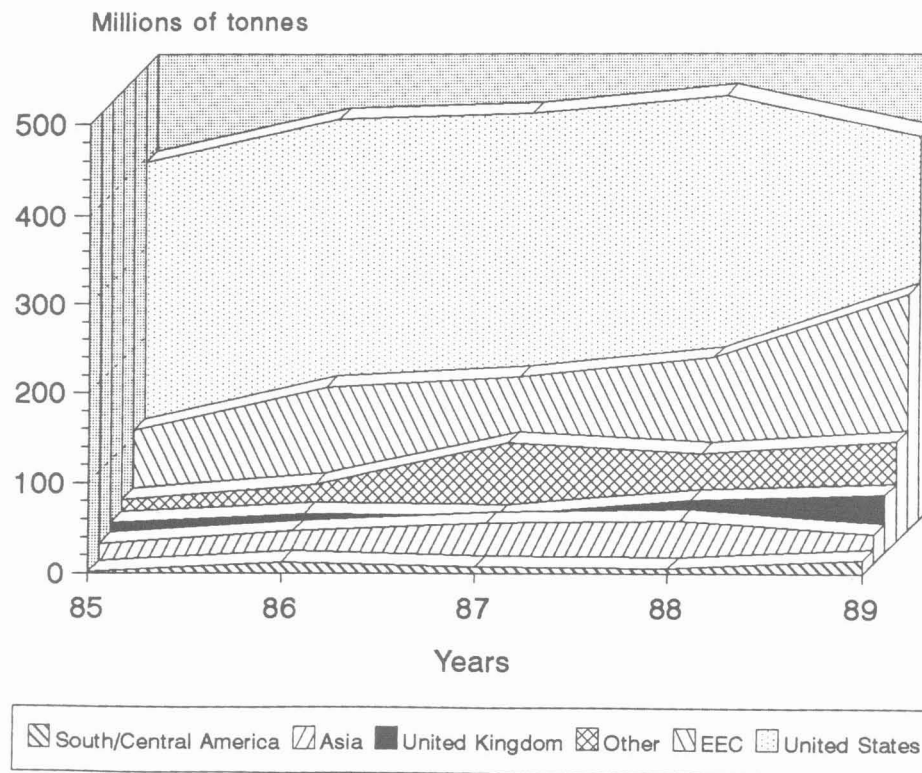


Figure 78. Pulpwood export markets - other countries.

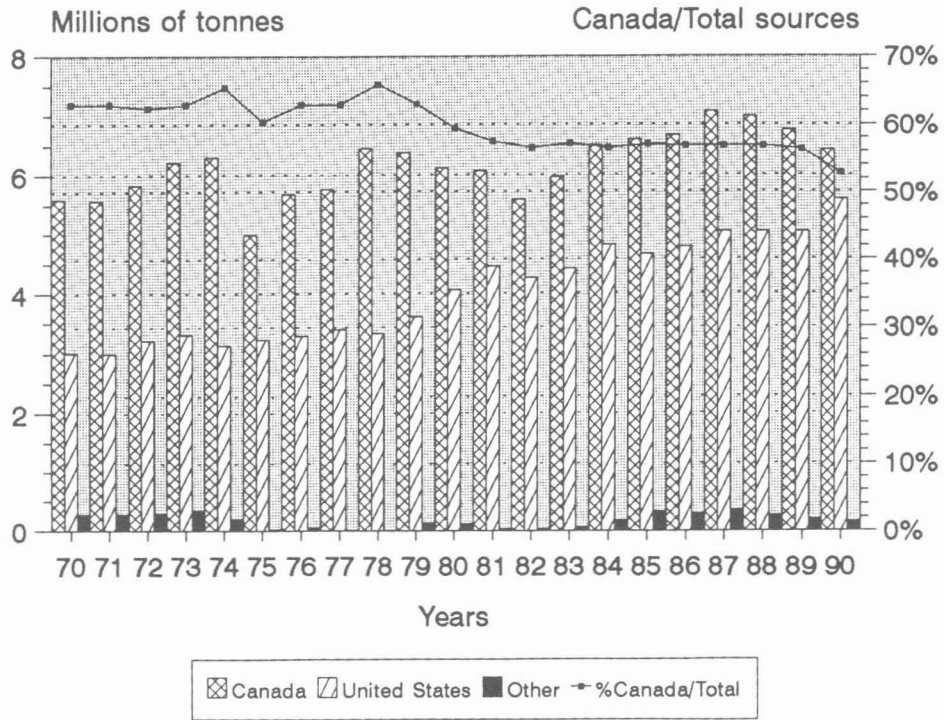


Figure 79. U.S. sources of newsprint.

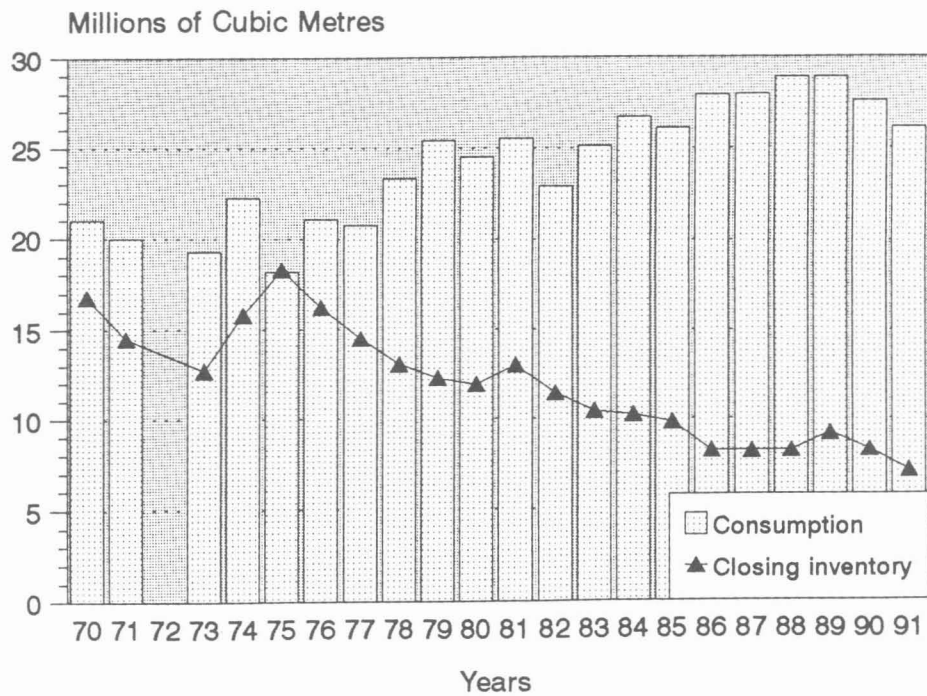


Figure 80. Consumption and closing inventories in the pulp and paper industry.

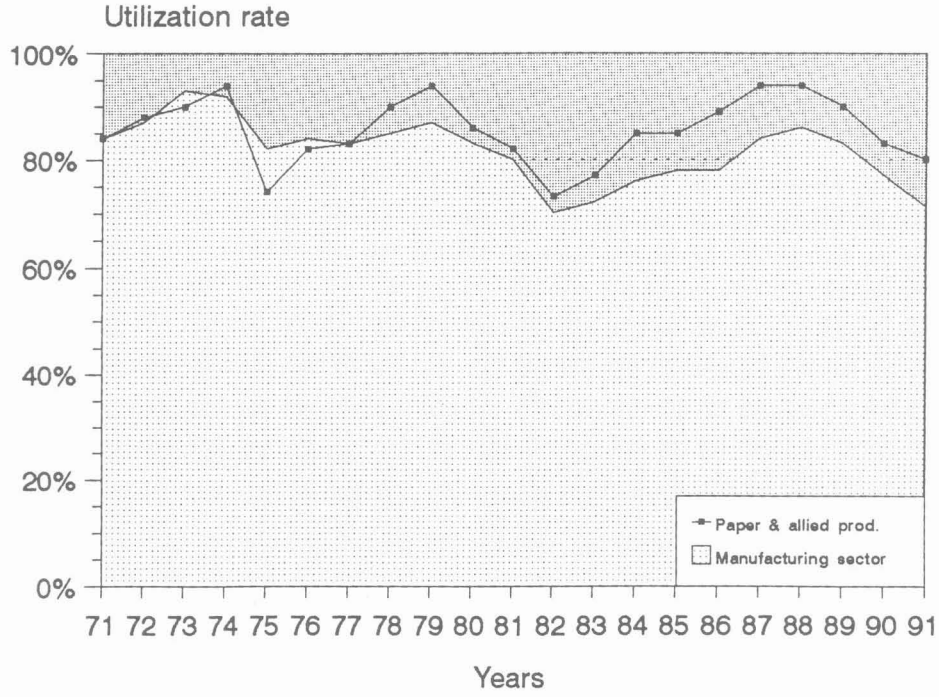


Figure 81. Capacity utilization rate.

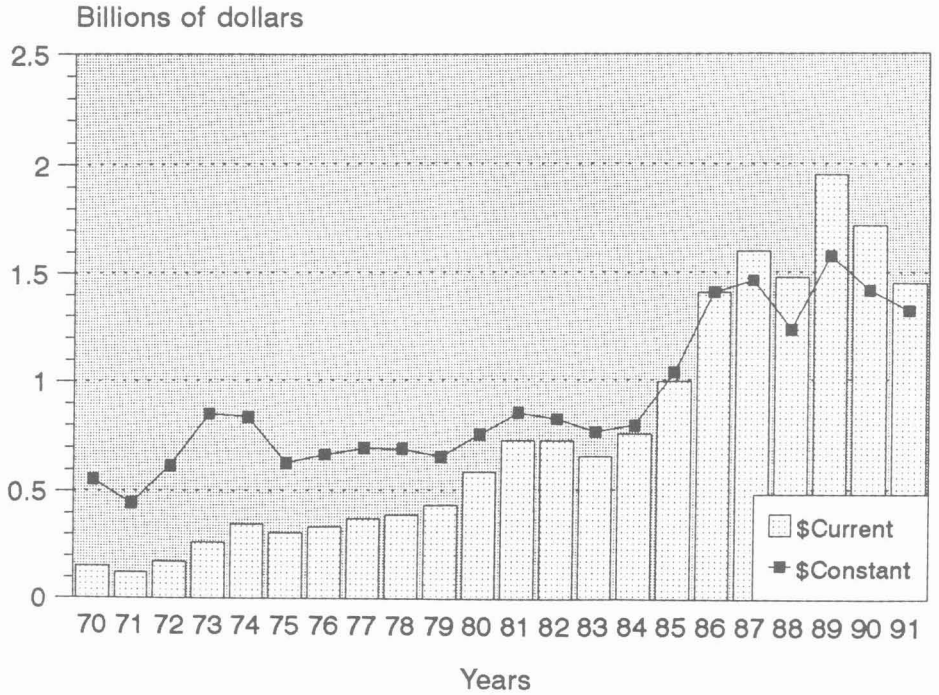


Figure 82. Capital expenditures and repair costs.

**ECONOMIC INDICATORS**  
**(Text pertaining to Figures 83 to 88)**

This section presents a series of economic indicators essential to a general understanding of the forestry sector. Note that the graph of the stock market indices presents annual data up to 1986, and quarterly data thereafter.

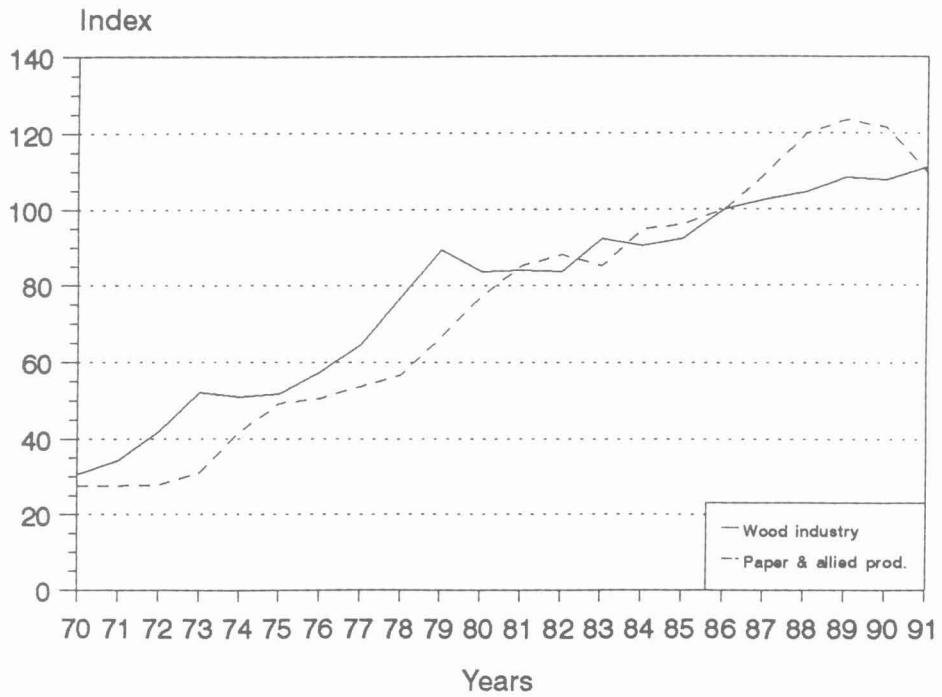


Figure 83. Price indices for various forest industries (1986 = 100).

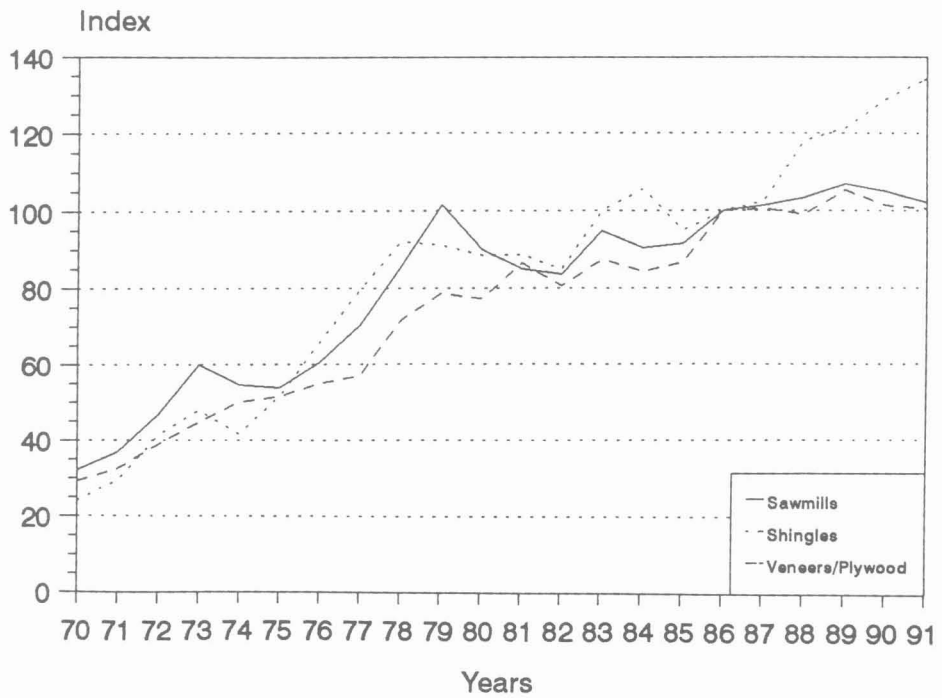


Figure 84. Price indices in wood industry (1986 = 100).

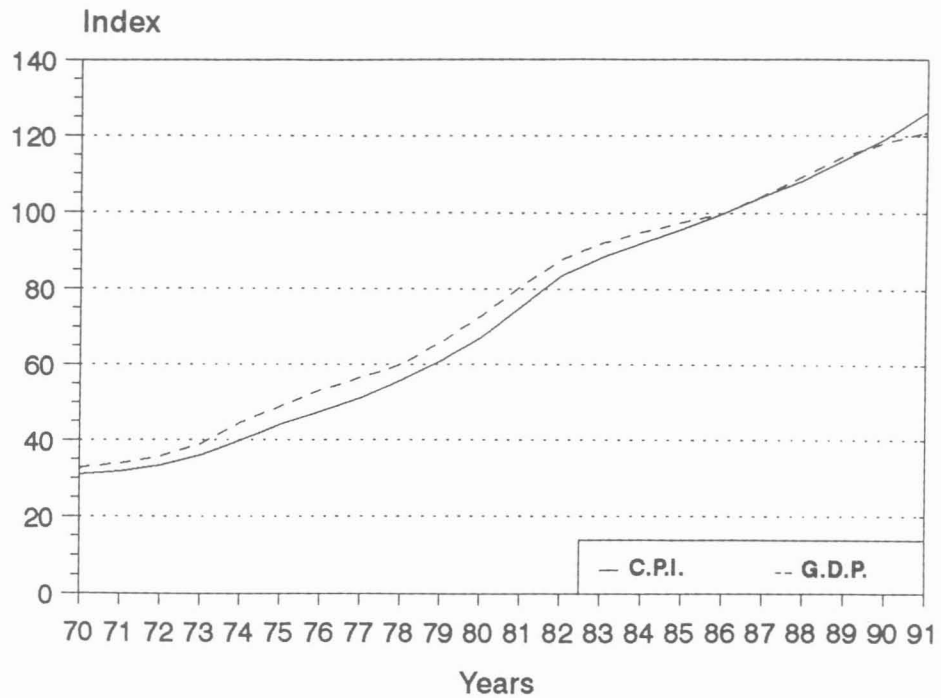


Figure 85. Consumer price index and gross domestic product index (1986 = 100).

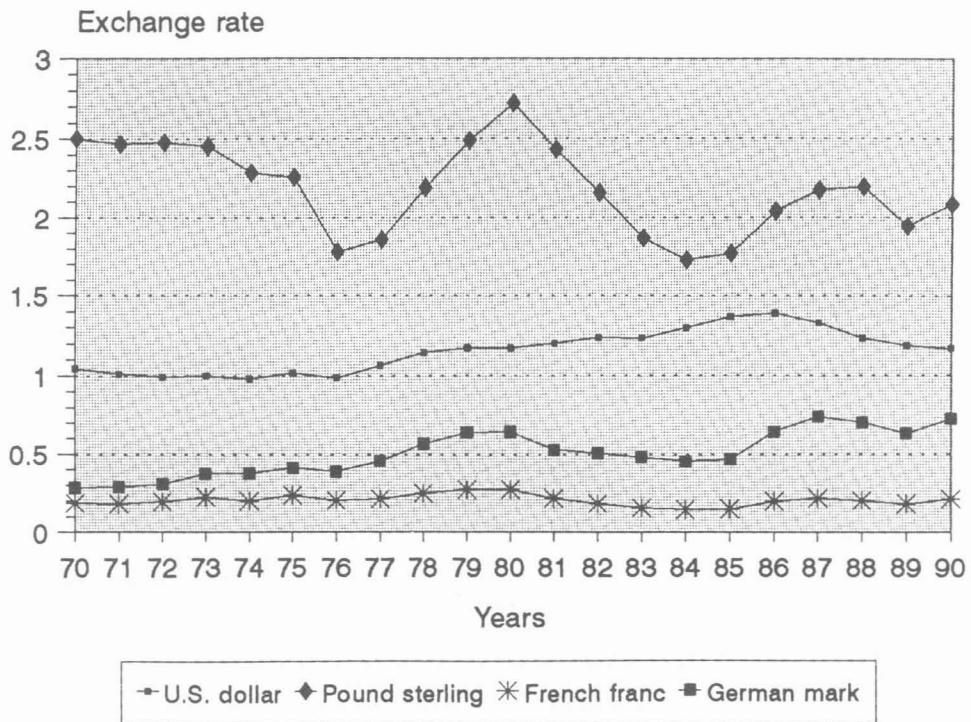


Figure 86. Unemployment rate.

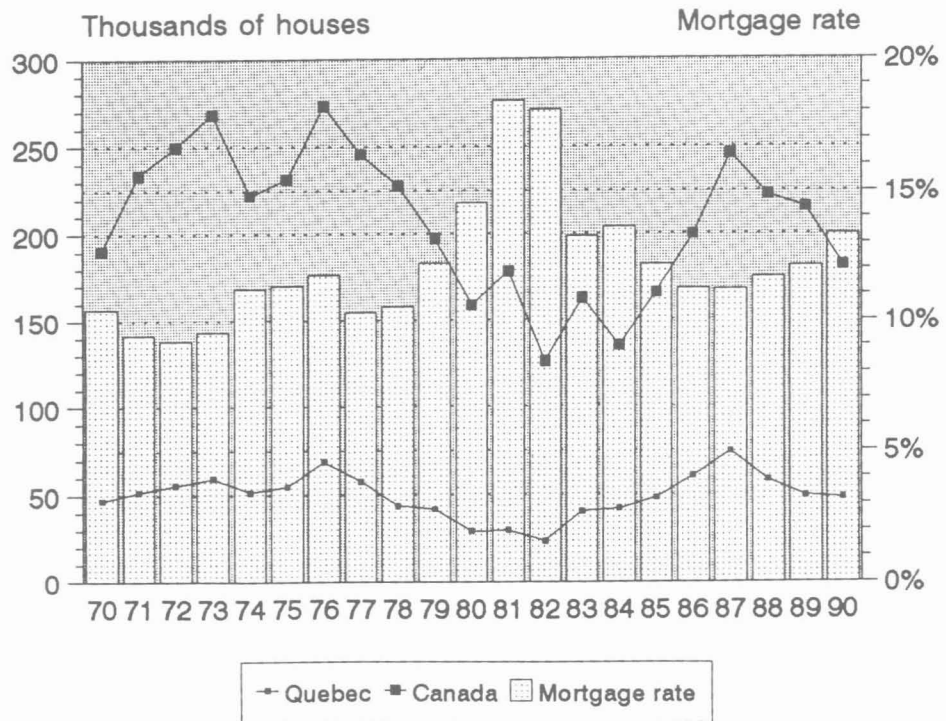


Figure 87. Housing starts and mortgage rates.

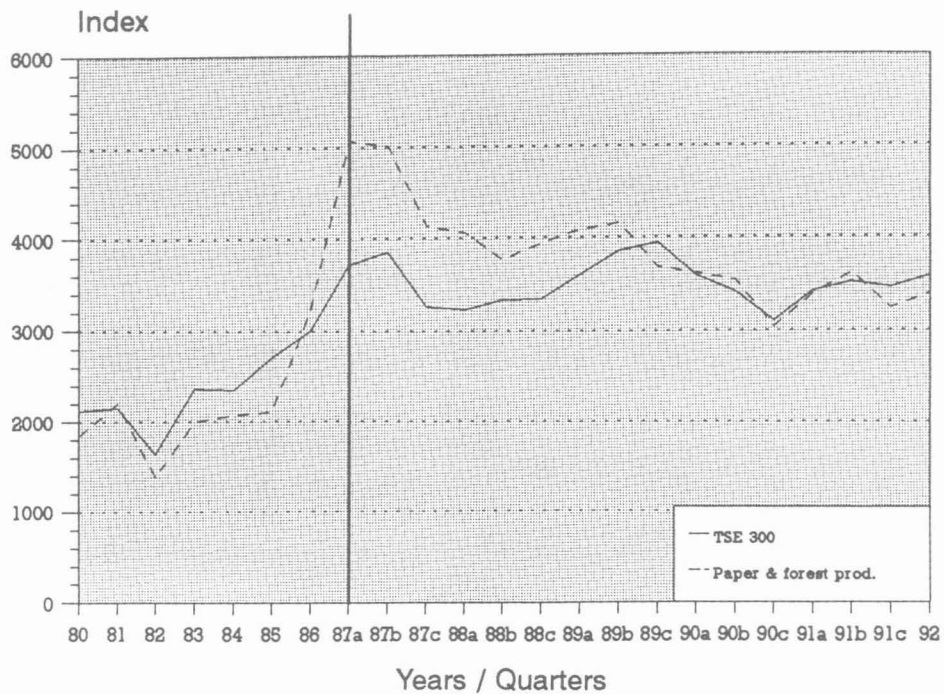


Figure 88. Stock exchange index.



## DEFINITIONS

### The definitions below are from:

- Statistics Canada, Standard Industrial Classification, Catalogue N° 12-501
- Statistics Canada, Concepts and Definitions from the Census of Manufacturers, Catalogue N° 31-528

### Standard Industrial Classification

#### Logging Industry

Establishments primarily engaged in producing round wood on an own-account basis, or on a fee or contract basis. Included are establishments primarily engaged in driving, booming, sorting, rafting and towing of logs as well as barking mills.

#### Wood Industries

The following industries are included in this group:

- sawmill, planing and shingle mill industries;
- veneer and plywood industries;
- sash, door and other millwork industries;
- wooden box and pallet industry;
- coffin and casket industry.

#### Sawmill and Planing Mill Product Industries

Establishments primarily engaged in sawing and planing lumber from round wood. Establishments primarily engaged in drying lumber are included in this group. By-products of establishments in this industry are wood chips, hogged fuel, sawdust shavings and slabs.

#### Shingle and Shake Industry

Establishments primarily engaged in manufacturing wooden shingles and shakes including those that are hand-split and resawn, tapered and straight split.

#### Veneer and Plywood Industries

Establishments primarily engaged in manufacturing hardwood and softwood veneer and plywood.

**Paper and Allied Products Industries**

Included in this group are:

- pulp and paper industries;
- asphalt roofing industry;
- paper box and bag industries;
- other converted paper products industries.

**Pulp and Paper Industries**

Establishments primarily engaged in manufacturing pulp, paper, paperboard, and building and insulation board.

**Concepts and Definitions from the Census of Manufacturers****Number of Establishments**

An establishment is defined as follows: "The smallest unit which is a separate operating entity capable of reporting the following principal statistics:

- materials and supplies used;
- goods purchased for resale as such;
- fuel and power consumed;
- number of employees and salaries and wages;
- inventories;
- shipments or sales."

In actual practice, a manufacturing establishment is the same as a factory, plant or mill.

**Salaries and Wages**

Salaries and wages refer to gross earnings of employees before deductions of any kind. They include all bonuses, profits shared with employees, value of room and board where provided, as well as any other taxable benefits and allowances forming part of the employees' earnings. Excluded are employer contributions for worker's compensation and employee welfare and benefits plans.

### **Shipments of Goods of Own Manufacture**

This manufacturing activity figure represents the net selling value of shipments of goods produced by the establishment on its own account or made under contract for it from its materials, together with revenue from repair work and from custom manufacturing done for others. Shipments on consignment to other countries are included in this value, but shipments on consignment to Canadian destinations are included in inventories until they are sold.

### **Value Added**

Represents the value of net production calculated as the value of shipments of goods of own manufacture plus the net variation in inventories of products in process and finished goods, and less the cost of raw materials, supplies, fuel and power purchased and consumed. It includes production subsidies and excludes indirect taxes.

### **Employees (total number of jobs)**

Consists of the average number of employees hired during the year. In the case of manufacturing activities, production and allied workers include those involved in processing, assembling, storage, inspection, handling, packaging, maintenance, repair, caretaking and security activities. Non-production administrative, office and other employees include all head office, sales office and auxiliary unit employees, in addition to canteen workers, research staff, truck drivers, and so forth.

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