Canada

Review of the Canadian Wood Window and Door Industry

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REVIEW OF THE CANADIAN WOOD WINDOW AND DOOR INDUSTRY

Converted Wood and Paper Products Division

Forest Products Directorate

Resource Processing Industries Branch

Department of Regional Industrial Expansion

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FOREWORD

I am pleased to be able to provide this review of the wood window and door sector to members of the industry. It is one of several reports which have been prepared on the major sectors of the converted wood and paper products industry in Canada. The others include kitchen cabinets, manufactured housing, converted papers, and the paperboard packaging industry. These reports were prepared by the Converted Wood and Paper Products and the Pulp and Paper Divisions of the Department of Regional Industrial Expansion.

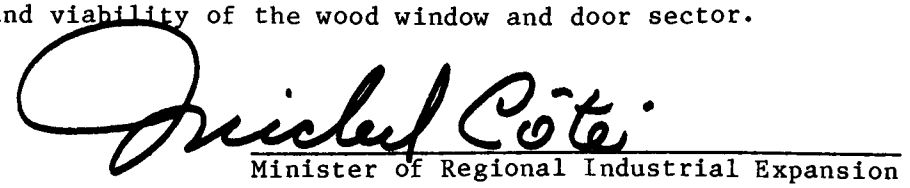
The Subcommittee on Converted Wood and Paper Products, under the aegis of the Forest Sector Advisory Council (FSAC), has reviewed and advised on the reports. The FSAC, comprising executives of forest industry companies and labour unions along with some university representation, was established to provide the Minister of State for Forestry and myself with advice on the full range of resource, industrial and trade issues affecting Canada's forest industry.

These reviews are, I believe, the most comprehensive descriptions and analyses of the sectors published to date. In addition to providing a detailed examination of the characteristics of each sector, they also identify a number of key issues currently affecting their well-being, as well as a number that are looming on the horizon. As wood fibre resources become increasingly scarce on both the domestic and international fronts and unemployment continues as a major concern, the potential contribution of these value-added sectors to regional development and employment will become more significant.

The primary intent of the reviews is to encourage companies and industry associations to focus on the pertinent issues, be they company-specific or industry-wide. It is my hope that the reviews will stimulate companies to assess their performance and future opportunities and focus their attention on continuing improvement to productivity and marketing. The key objective, one that has been emphasized by the advisory Subcommittee, is the improvement in international cost competitiveness which is required not only to maintain domestic market share, but also to expand exports. The competitive position of the Canadian industry will be particularly important if further trade liberalization takes place.

The Department would be pleased to hear the views of the industries and associations concerned. I believe it is essential that we have strong communication links between management, labour and government to address industrial issues whether they be productivity improvement, adjustment to changing economic forces, export market development or questions of trade access.

In summary, I welcome an open dialogue on all matters affecting the future performance and viability of the wood window and door sector.



Minister of Regional Industrial Expansion

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Description of Range of Products

References to the window and door industry normally include the manufacture of windows and doors from wood, metals and plastics. However, for the purpose of this report, any mention of the window and door industry will be in reference to the manufacture of window and door products that are constructed mainly of wood. Included in the overall product range are wood windows clad with vinyl or aluminum, wood-framed windows containing vinyl or aluminum sash systems, wood patio doors, exterior door frames and entrance systems complete with steel or wood doors installed at the factory and all wood doors regardless of type and finish including bifold, louvre and garage and overhead doors. While some of these products could be used in high-rise and light commercial construction, their application for the most part is generally intended for single and multiple residential construction.

The product range in windows and doors in terms of construction, type, size and finish is extremely diverse. The basic types of windows are the fixed light, double-hung, horizontal slider (which can be sashless, semi-sash or full sash), casement, awning and hopper. In addition, certain of these basic types can be combined to form specials such as bay, bow and panoramic. Further variation in window manufacture stems from a broad range of sizes in any one type, the type of finish (clad, unclad or painted) and glazing (double or triple). As an example of the number of possible combinations that can be derived from these variable factors, one manufacturer is known to offer 178 variations of the same type of window.

Doors are divided into two principal categories -- flush doors and rail and stile doors. Flush doors are composite and made by sandwiching a hollow wood frame, solid edge-glued wood, particle board or other material between two sheets of door skins or facings which may be made of plywood, hardboard, particle board or plastic (arborite). Within this door grouping are the interior and exterior residential doors, industrial and institutional (architectural) doors and interior bifold doors. Rail and stile (panel) doors are constructed of solid machined wood containing recessed panels and/or lights (glazing) of various shapes. These doors are usually for exterior use either alone or as part of an entrance system. With the exception of architectural doors, which are made according to a specification, rail and stile doors are usually made in two sizes and two thicknesses. A particular type of rail and stile door is the louvre door, which is of smaller face dimension and thickness and is generally intended for interior use on closets, cupboards, etc.

Contrary to what could be popular belief, patio doors are not a product of door manufacturers. Probably because of the glazing characteristic, patio doors are made by window manufacturers. Similarly, entrance systems which consist of a frame containing a purchased, pre-hung door of any construction, a possible sidelight or a fixed door-sized panel, are generally the product of window manufacturers or other millwork establishments such as pre-hangers.

In addition to the nominal standard sizes of windows manufactured by any one company, almost every company will manufacture windows of any specified size and shape.

Basic Industry Characteristics

The Canadian window and door industry, but more particularly the window industry, is severely fragmented. Of the estimated 450 to 500 companies it comprises, ten window and three door manufacturers dominate with sales of over $10 million each. Shipments for the industry in 1983 are estimated at between $600 million and $650 million, of which about 50 to 60 per cent were made by the dominant companies. Of the 13 dominant companies, one window and one door manufacturer had sales in 1983 in excess of $60 million. The approximate contribution to total shipments by the window and door segments is about 55 and 45 per cent respectively.

In 1981, the most recent near-normal year for which statistics are available, the value of shipments for windows and doors was $495 million as recorded by Statistics Canada. This figure is considered to represent only between 80 and 90 per cent of the actual, which is about 6.5 per cent of the value of all wood manufacturing in Canada ($8.4 billion) excluding pulp and paper. At this level of production, the industry employed an estimated 5 000 to 6 000 workers.

Exports in 1983 were $18 million, and most of these were doors. Imports of $34 million, as recorded in Table I for 1983, represent a volume of business that would require about 400 to 600 workers to produce. These imports, 75 per cent of which were windows, represented a sizable market loss to Canadian producers.

Of the 15 or more largest companies, three or four window manufacturers and two or three door manufacturers are national in scope with plants or distribution facilities across Canada. Of the remaining nine companies, only one other window company has more than one plant, and all except the two remaining door companies limit their market area to either western or eastern Canada, the lakehead being the dividing line. All other manufacturers sell their products in a local market such as a city, town or region. As many as 25 or 30 companies with sales under $10 million market their products on a province-wide basis.

There are window and/or door manufacturing facilities in every province of Canada ranging in number from only a few in Newfoundland and Prince Edward Island to 233 (about 50 per cent of the total) in Quebec. A breakdown of the number of companies according to size (number of employees) is given in Table II.

Of the total of 450 window and door companies in Canada, there are only about three large-volume producers of doors, most of which are the flush door type. Two of these companies, as well as a number of smaller door companies across Canada, produce rail and stile doors from solid wood. The processes for the manufacture of these two door types are totally different. Production of the rail and stile door relies significantly on craftsmanship, while the flush door is readily adaptable to mechanization and automation. In total, there is a manufacturing capacity in Canada of around seven million doors of all types. While current capacity utilization is running around 50 per cent because of

the low level of domestic housing activity, the door industry has achieved considerable success in export markets, and there are indications that export opportunities are on the increase, not only to the U.S., but to other countries in Europe, the Middle East and the Far East, including Australia.

Window manufacturers are almost totally dependent on the domestic home construction industry as well as renovation and do-it-yourself (DIY) activity for their markets. Best estimates within the industry put the renovation and DIY markets combined at about 25 to 30 per cent of that for new housing. While all of the major companies have separate facilities in the form of a department or a subsidiary company to service the renovation and DIY markets, they can only estimate the size of the market because they have no way of knowing how many of their standard windows are found to be suitable for replacement purposes. However, it is clearly a growing market primarily because of energy considerations and past and present construction practices under which original windows are expected to be replaced. A major factor in the future of the renovation and retrofit markets is the level of interest rates which not only affect decisions to refinance for major renovation projects, but also the spending patterns of the do-it-yourselfer.

Of all the major window companies, only one is known to export regularly to the U.S. That firm intends to increase its export sales from a current six per cent of sales to 15 per cent within the next two to three years. Some of the other major companies are now pursuing strategies for exporting to the U.S., while a number of the smaller companies export sporadically.

Some of the larger Canadian window manufacturers have working relationships with the better known window manufacturers in the U.S. regarding technology transfer in return for distribution agreements. One of the largest Canadian companies, which is also the Canadian distributor of a brand of U.S.-made windows, sold more U.S.-made windows in 1983 than those of its own manufacture.

The following tables illustrate the historical pattern of Canadian production, exports, imports and consumption.

TABLE I

Canadian Window and Door Shipment Statistics

($000)

Year	Shipments	Imports	Exports	Apparent Domestic Consumption
1970	96 761	2 321	739	98 343
1971	126 768	3 835	796	129 807
1972	166 092	5 218	1 441	169 869
1973	197 983	9 468	1 754	205 697
1974	234 103	13 711	1 396	246 418
1975	268 008	14 605	867	281 746
1976	315 046	23 000	1 496	336 550
1977	326 937	28 616	1 889	353 664
1978	380 086	27 849	5 250	402 685
1979	426 450	32 100	3 806	453 472
1980	433 514	23 667	5 078	452 103
1981	495 330	39 136	9 439	525 027
1982	N/A	21 934	10 238	N/A
1983	N/A	33 628	17 480	N/A

Source: Statistics Canada

The value of shipments for 1981, $495 million, appears to be approximately 50 per cent of industry potential at full production levels. If the industry were producing at near full capacity, the potential employment level is estimated to be close to 10 000, as set out in Table III.

CONTRIBUTION TO ECONOMY

Regional Distribution Considerations

The following table, extracted from Statistics Canada Catalogue 35-205, entitled Sash, Door and other Millwork Plants, provides the regional distribution by province of some of the key characteristics of the industry expressed as a percentage of the Canadian total, as well as the average number of employees and shipments per company. While Statistics Canada includes sash and door data in an all-inclusive miscellany of other millwork in its statistics, the figures as presented are considered approximately representative because of the predominance of sash and door in this product classification statistic (SIC 2541).

TABLE II

Regional Distribution (by Province)

Window and Door Manufacturing Data

Province	No. of Establishments % of Total	Production Workers % of Total	Value of Shipments % of Total	Total Employment % of Total	Value Added % of Total	Average per Company	
						No. of Employees per Company	Shipments ($000)
Newfoundland	.7	N/A	N/A	N/A	N/A	N/A	N/A
P.E.I.	.5	N/A	N/A	N/A	N/A	N/A	N/A
Nova Scotia	2.6	2.0	1.8	2.0	1.0	14.7	887
N.B.	2.6	2.5	2.5	2.8	2.6	20.9	1 237
Quebec	39.4	31.2	26.8	31.0	26.9	15.6	893
Ontario	24.6	32.3	30.2	31.3	31.8	25.2	1 617
Manitoba	3.7	N/A	N/A	N/A	N/A	N/A	N/A
Saskatchewan	2.3	2.0	1.9	2.5	2.0	21.5	1 096
Alberta	7.8	6.5	8.6	6.9	9.5	17.6	1 460
B.C.	15.8	15.7	20.5	15.4	18.0	19.4	1 710

Source: Statistics Canada

With the exception of Quebec, the 450 or so window and door manufacturing plants are distributed roughly in proportion to the population of the province. Quebec, which has about 233 or more than 50 per cent of the window and door manufacturers in Canada, is a perfect illustration of the degree of fragmentation of the industry.

The following table shows an estimation from Dun and Bradstreet data, which are not all inclusive, of the distribution of companies across Canada according to employment level, province of location, as well as an estimate of approximate employment levels at capacity production.

TABLE III

Distribution of Window and Door Manufacturers Across Canada

	Number of Companies								
Employment Level	**0-4**	**5-9**	**10-19**	**20-49**	**50-99**	**100-199**	**200 & Over**	**Total Co.'s**	**Approx. Employment at Full Production**
Province									
Newfoundland	1	-	-	-	-	-	-	1	2
Prince Edward Island	-	-	-	-	-	1	-	1	150
Nova Scotia	6	2	2	4	-	-	-	14	196
New Brunswick	12	6	1	1	-	-	1	21	341
Quebec	119	41	40	22	5	5	1	233	3 170
Ontario	28	11	12	10	7	1	4	73	3 337
Manitoba	6	3	1	1	-	1	1	13	663
Saskatchewan	3	2	-	2	1	-	-	8	170
Alberta	11	8	5	4	1	-	-	29	370
B.C.	16	14	11	5	5	1	1	53	1 245
TOTAL	202	87	72	49	19	9	8	446	9 614

Source: Dun and Bradstreet

As shown in the table, more than 400 companies, 90 per cent of the total, have fewer than 50 employees. According to calculations, these companies share approximately 40 per cent of the total Canadian market.

While 70 per cent of manufacturers are located in Ontario and Quebec, most plants are situated between London, Ontario, and Quebec City, the heaviest concentrations being between London and Toronto, in Ontario, and between Montreal and Quebec City, in the eastern townships of Quebec. In Alberta, window and door manufacturing plants lie generally in a north/south line between Lethbridge and Edmonton, while in British Columbia, the area of

concentration is Vancouver and the Fraser Valley. While there is a pocket of manufacturing activity in Winnipeg, the remainder of the industry is scattered throughout the country.

The Canadian window industry, in particular, is almost totally dependent on the domestic market, and, accordingly, most manufacturers have generally located close to their markets, which are represented by those regions of higher population density as summarized in the preceding paragraph.

This tendency of the industry to cluster in regions of higher population density would appear to provide opportunities for manufacturers or other organizations to organize convenient central sources of supply for a broad range of raw materials.

While there are exceptions to the above general pattern of location, the following table summarizes, according to observation and accumulated data, the most common location, the principal market area and marketing method used by manufacturers of various sizes based on the number of employees. These are general observations and are not necessarily applicable to every company.

TABLE IV

Company Size, Location, Marketing Relationships

Windows and Doors

Number of Employees	General Location	Principal Market	Marketing Method
0 - 9	Rural Centres	Rural Towns	Direct, Dealers
10 - 49	Cities	City of Location	Contractors, Dealers, Direct, Distributors
50 - 99	Cities, Suburbs	City and Region	Contractors, Dealers, Direct, Distributors
100 - 199	City, Suburb, Rural	Prov. of Location Neighbouring Prov.	Contractors, Dealers
200 and OVER	City, Suburb, Rural	National, Semi-National	Distributors, Dealers, Direct, Contractors

Source: Department of Regional Industrial Expansion

Regional Impact on Employment

It would appear from Table IV that the small companies (0-9 employees) with their very local market thrust, do not represent a serious challenge to the larger companies for major markets in the larger towns, cities and metropolitan areas. However, the larger companies, with their more sophisticated but less personal marketing practices, face formidable competition in the rural markets from the small, rurally located producers. Almost every province has small window and/or door companies, which are characterized not only by rural location, but also by their local market coverage, custom manufacturing, minimal equipment, and recognition by local inhabitants as respected craftspeople providing a personal service and employing skilled and semi-skilled workers who are often in short supply.

There are about 300 producers of this type across Canada sharing about 10 per cent or $60 million to $70 million of the total Canadian market. As a result, the impact of the contribution of any one of these 300 establishments on the economy of its respective community is considered minimal, particularly when compared to the larger resource industry sectors. Generally, the remainder of the small and medium portions of the industry, with their strong metropolitan centre orientation, cannot be considered suitable for the support of rural single industry communities, due principally to market factors. However, certain larger companies with national or semi-national market networks do provide for the support of smaller communities where appropriate human resources, transportation and other services exist. For these companies with broad market networks of distributorships and dealerships, plant-to-market proximity becomes less significant while other factors, such as transportation, raw material supply, labour availability and cost, efficiencies are dominant considerations.

Value Added

The labour-intensive nature of the window and door industry serves to enhance the degree of value added to its products. While a precise value-added figure is not provided by Statistics Canada for the window and door sector, value added for the millwork sector as a group approximates 50 per cent of the total value of shipments. With this base and considering the additional complexity of the assembly process and number of components involved, compared to the other millwork products included in the classification such as panelling, moulding, and flooring, the value added related to window and door manufacturing is considered significantly higher than 50 per cent, perhaps in the vicinity of 60 to 65 per cent of total dollar shipments. As a result, value added per dollar of raw material wood cost is estimated to have been $1.88 in 1982 compared to $0.61 in sawmilling and $0.97 in pulp and paper. These figures suggest a higher level of economic benefit from increased levels of export from the sector.

In conclusion, the sector is labour-intensive and a significant employer in relation to its size. While the creation of new employment is limited by modest growth forecasts and the trend to job-reducing modernization projects, particularly in some of the larger companies, window and door renovation

products, a major growth area, should help to maintain traditional levels of employment.

Other Economic Considerations

In addition to being a significant employer and contributor to regional economies, the sector exerts an influence on several other aspects of the Canadian economy:

(1) It provides a potential market for primary lumber producers, particularly in British Columbia. The British Columbia lumber industry is endeavouring to channel its hemlock/fir and lodgepole pine, which have been going into construction grades, into window and door stock to replace Ponderosa pine, redwood and other species imported from the U.S. This trend is now under way and should improve the critical situation in the British Columbia lumber industry.

(2) The energy-conserving design of Canadian window and door products, essential to the efficient performance of housing, contributes to the quality of Canadian living.

(3) The export of Canadian windows and doors reached about $20 million in 1983 with significant increases anticipated for 1984. The industry is just beginning to realize its export potential, and export sales should quadruple by 1995, provided currency levels remain favourable.

COMPETITIVE SITUATION

The competitive environment in the Canadian window and door industry can best be described as intense. This situation is the result of several factors such as small market size, overcapacity and a very competitive U.S. industry that is both a threat in the Canadian market and a limiting factor in Canadian export opportunities, particularly in the window industry. Since some differences exist between window and door capacities, markets and export opportunities, the two general product lines will be treated separately.

The Canadian window industry, consisting of 450 producers capable of supplying 400 000 housing starts, is almost totally dependent on a domestic market in which there are currently 130 000 housing starts plus the equivalent of 40 000 housing starts in retrofit and renovation activity. The total figure of 170 000 housing starts or equivalent is considerably less than the CMHC-projected average annual housing requirement of 220 000 starts for the five-year period from 1979 to 1984, a figure that does not include renovation activity. This is far below the industry's capacity to supply. CMHC-projected housing requirements show a continuous decline from 220 000 for the current period (from 1979 to 1984), to 99 000 for the five-year period from 1996 to 2001.

While housing starts are projected to decline sharply until the end of the century, there are brigher prospects for the renovation and retrofit market which, currently equal to about 30 per cent of the new housing market, is

expected to equal and surpass the new housing market by the mid-1990s. In spite of this encouraging prospect for renovation and retrofit, excess capacity will continue to plague the industry.

The competitive situation created by the heavily imbalanced capacity/market ratio of at least 2.3:1 is compounded by the presence in the Canadian market of several U.S.-made window products. The many large U.S. manufacturers, operating in markets large enough to allow long production runs and resulting economies of scale, represent formidable competition in spite of a significantly unfavourable currency exchange. Long production runs also permit higher levels of mechanization and automation, whereas Canadian manufacturers must maintain a high labour content to preserve flexibility in manufacturing, a characteristic that is required to service a relatively small and varied market demand.

The competitive ability of the U.S. manufacturer was demonstrated in an article published in the May 1, 1984, issue of The Financial Post Magazine. That article contained a table comparing window characteristics and including prices for windows of roughly the same size, type and structure. An abbreviated version of that table is provided below.

TABLE V

Price Comparisons (U.S.-Canada)

Windows

	Description	R Ractor	Air Infiltration	Size, Inches	Price
Pella (U.S.)	Pine	R-2.43	0.03	59¾ x 50½	$374
Dashwood (CDN)	Pine	R-2.3	0.63	55 5/8x47 7/8	$547
Mason (CDN)	Pine	R-2	0.042	57 x 47¼	$591
Pella (U.S.)	Pine, aluminum-clad on exterior	R-2.3	0.03	59¼ x 50½	$476
Dashwood (CDN)	Pine, vinyl-clad on exterior	R-2.3	0.63	47 7/8x47 7/8	$651
Mason (CDN)	Pine, bonded polyurea coating	R-2	0.042	57 x 47¼	$684

Source: Financial Post Magazine, May 1, 1984. (An editorial item in a later issue adjusted the Pella figures upward by about $100.00, reducing the price differential between U.S.- and Canadian-made windows.)

The windows selected for comparison are double-casement, double-glazed and the prices shown are claimed to be approximate retail prices in Canadian dollars before installation, as quoted by the manufacturers. Based on the data given in the above table, the accuracy of which has not been verified, it would seem that the U.S.-made Pella, a high-quality window, can undersell Canadian-made windows by a comfortable margin. While the basis and accuracy of the data given in Table V may be open to question, there should be no doubt concerning the import figures, compiled by Statistics Canada, appearing in Table I. The latter provides evidence that U.S.-made windows are competing in the Canadian window market, whether because of price or other competitive factors, against unfavourable tariff and exchange rates. The extent of the U.S. penetration of the Canadian window market is significant and is approximately equivalent to the sales volume of a medium to large Canadian window manufacturer.

While some Canadian companies can meet and surpass the quality of some U.S.-made windows, cost competitiveness would probably inhibit any large-scale breakthrough in exports. It is unlikely that the advantage of currency exchange would sufficiently offset such factors as marketing costs, transportation and the production efficiencies of the major U.S. window manufacturers to gain a significant price advantage. However, the U.S. window industry is similar to its Canadian counterpart in that it is dominated by a number of large, efficient manufacturers that supply the lion's share (probably about 65 to 70 per cent) of the available market. The remainder (30 to 35 per cent) is served by the smaller ($10 million to $20 million) companies whose methods of production should be no more efficient than Canadian companies of similar size. It is considered that a well-conceived marketing effort on the part of the upper end of Canada's manufacturers could result in a significantly increased share of this portion of the U.S. market that, in total, could be as much as twice the size of the total Canadian market. This portion of the market tends to require smaller orders of standard and/or non-standard units, a type of market in which flexibility of production, as characterized by Canadian producers, is an advantage.

Efforts to obtain reliable production costs on an industry-wide basis are thwarted by the fact that all window and door companies are privately owned, and these companies guard their financial information closely. Further, the considerable range in types and quality of product makes detailed cost comparisons not particularly meaningful. However, several financial statements have come to hand through Industrial and Regional Development Program (IRDP) applications from which accurate manufacturing cost data can be obtained. During interviews with company executives, estimates of production cost percentages were given without referring to financial statements. From these sources, the following table lists some of the approximations for the major components of manufacturing costs, i.e., raw materials, labour and factory overhead in the window and door industry.

TABLE VI

Production Cost Examples

Windows and Doors

Company	Material %	Labour %	Factory Overhead* %
(1) Est.	65	15	17
(2) Est.	50 - 60	15 - 20	20 - 35
(3) Est.	65	20	15
(4) Est.	65	25	10
(5) Est.	45	25	30
(6) Est.	45	25	30
(7) Est.	60	25	15
(8) Est.	60	25	15
(9) Actual	67	18	14
(10) Actual	78	12.5	8.5
(11) Actual	65	12.5	18.3

* Depreciation component averages about 2.5 per cent of total manufacturing costs and is included in Factory Overhead.

Source: Department of Regional Industrial Expansion.

The above table identifies raw material costs as the largest single contributor to overall production costs in both the window and door sectors. As a result, companies should give particular attention to this cost element in their cost reduction programs and also consider joint undertakings to address this opportunity.

Similar costs are unattainable for U.S. companies since, like Canadian companies, nearly all are privately owned. The only known U.S. manufacturer that is publicly owned operates as a division of a larger corporation. It is known that material costs in the U.S. are, as in Canada, the predominant cost factor. However, U.S. wood costs, particularly those of lumber, are generally lower than those of Canadian production materials, particularly lumber, that are imported from the U.S. Labour cost is also reportedly lower because of lower hourly rates and more mechanized operations.

During recent interviews with company executives, it was apparent that the export market is under consideration by a number of Canadian manufacturers. Several of the largest companies are developing strategies for export market development. These companies are either more technologically advanced or are in the planning stage of technological advancement to reduce costs and improve efficiency with a view to becoming competitive in the U.S. market. Should

these strategies and plans materialize, these companies will become even more competitive in the domestic market.

The current and projected capacity/market imbalance in Canada could form the basis for several scenarios of a number of events, the most important of which are: (1) a concerted effort by the top 15 to 20 companies to penetrate the U.S. market; and (2) a decision by major producers, with the financial ability, to fully mechanize and modernize as appropriate to virtually dominate the domestic market and have capacity available for export purposes.

Although Canadian window manufacturers have demonstrated an indifference to the export market in the past, experience with depressed domestic market conditions of the past three or four years, coupled with an outlook to the end of the century that is not encouraging, seem to be creating an interest in export markets. Some of the medium and large companies are developing marketing strategies that include the U.S. While these companies have manufacturing capacities to service both domestic and some foreign market demand, they are pursuing means to attain higher productivity and efficiency for competitive purposes in both market areas.

With or without significant export market breakthrough, those major Canadian producers which have superior technology, marketing skills and distribution networks in relation to the smaller companies, appear to be poised for further domination of the domestic market. This could result in a gradual rationalization of the industry through elimination and takeover.

To become price competitive, the industry should direct its efforts to a number of factors: (1) better utilization of capacity in which development of export markets would assist; (2) automation where appropriate such as in the breakout and component production areas of the process; (3) development and more consistent application throughout the sector of improved labour/management initiatives; and (4) reduction of raw material costs through waste utilization, investigation of the use of new materials and improved recovery in the process. The reduction of raw material costs could be particularly beneficial because of the magnitude of such costs in relation to other cost elements.

The wood window industry is essentially unconcerned about competition from windows made of other materials such as aluminum or plastic. Following a degree of popularity of aluminum constructed windows, wood windows have regained their popularity, partly because of energy considerations but more because of appearance. The most notable example of the trend to revert to the use of wood is in Vancouver, where aluminum once had its biggest successes because climate conditions do not require energy-efficient windows.

Windows made from plastic extrusions are relatively new products, and efforts are being made, particularly in western Canada, to break into the market. These windows, too, are not considered by wood window manufacturers to be serious competitors at this time. However, in the November 1984 issue of the British publication, House Builder, it was estimated that PVC-constructed windows held a 15 to 18 per cent share of the replacement window market in the

U.K. Recent studies in the U.S. indicate a growing preference for PVC replacement windows ranging from nine per cent in Texas to 40 per cent in New England.

Although windows constructed with aluminum or PVC as the principal framing material currently hold a Canadian market share of less than five per cent, these materials have made their way into wood window construction as exterior coverings to protect the wood from the weather and to reduce maintenance. This type of window construction has become very popular, particularly in the retrofit and renovation markets.

Similar to the window industry, the door manufacturing industry has considerable overcapacity. Based on figures obtained from company executives, it is estimated that Canadian capacity for the manufacture of flush doors is about 22 000 to 25 000 per day on a one-shift basis, nearly seven million doors per year. The current domestic requirement, based on an average of 12 to 14 doors per dwelling and housing starts of 130 000, is close to 2 000 000 doors plus an estimated 30 per cent for retrofit and renovation, for a total of 2 600 000. The apparent capacity/market ratio is 2.3:1.

Unlike the window industry, however, the door manufacturers are active in the export market. The major door manufacturers in Canada are heavily dependent on exports. As an example, one company used considerable government support to promote export sales through participation in major trade shows, the maintenance of foreign representatives, and timely use of the Program for Export Market Development (PEMD). As a result, it currently exports 25 per cent of its sales, 90 per cent of which are to the U.S. Another company claims that 50 per cent of its sales are exports to the U.S. without which it would be forced to cease operations. Yet another exports 10 per cent of its sales to various parts of the world without a major export program.

While world or even U.S. demand has not been thoroughly investigated, it is apparent that a significant market does exist and that some Canadian producers are competitive, particularly in the U.S. under existing currency exchange rates. Although a few companies are making a worthwhile effort to expand export sales, other more mechanized and more efficient manufacturers are not realizing their export potential. It is considered that, with a concerted effort to produce export sales, much more could be accomplished.

Door manufacturers appear to be more reluctant to discuss production costs than the window manufacturers. The largest companies expressed approximations of material/labour cost percentages in the range of 50/25 and 65/20. It is interesting to note that the 50/25 material/labour ratio identifies with labour-intensive companies, while the 65/20 ratio identifes with companies that have automated because of high labour rates and general labour problems. According to information given, labour-intensive companies have labour rates that are about half the rates paid by automated companies.

An additional and noteworthy comparison exists between respective outputs. Comparisons indicate that the output of a labour-intensive operation is about 27 doors per employee per shift. In mechanized operations, production is

known to be as much as 5 000 doors per day or 91 doors per employee per shift, a production/employee rate 3.5 times greater than in a labour-intensive operation.

While some door plants are more mechanized than any of the window plants visited, other door plants, and several window plants, are beginning to add varying degrees of mechanization. Although most plants are organized into some form of orderly production sequence, others are seriously outdated and little more than woodworking shops with industrial-size equipment. While the window industry is predominately labour oriented, it produces a good quality window product which should be able to compete on a quality basis in most markets, including the U.S., where a portion of that market is considered suitable for Canadian products.

In the door industry, the situation is considerably different than in the window industry where a number of U.S. plants are larger than leading Canadian companies. U.S. door plants are reputed to be smaller and generally specialize in the manufacture of a particular type of door. Canadian manufacturers, on the other hand, tend to be bigger and more diversified. Consequently, Canadian manufacturers use their diversified product range as a marketing tool to promote one-stop shopping. This appears to have been successful in the past and at least one Canadian manufacturer intends to continue to promote the one-stop shopping concept to assist in the further exploitation of export opportunities. The company claims that, while it is accomplishing significant export sales through aggressive marketing, profits are limited but sufficiently worthwhile to enable it to maintain a reasonable volume of production and employment.

The smaller companies in the window and door industries, many of which are deficient in management skills and operating with outdated technology, will suffer from decreasing market shares and profitability and will eventually be eliminated as participants in the industry. Studies, such as the 1982 Interfirm Comparison, show small companies to be the least productive, have the lowest volume of sales per production employee and to be the least profitable of companies grouped in the small, medium and large classifications. Consequently, in tight market situations when competition is most severe, these companies may not be able to withstand the competitive pressures of the marketplace.

MEDIUM-TERM OUTLOOK

Declining new housing starts, an expanding retrofit and renovation market and expected growth in export trade should combine to form the following outlook to 1996.

TABLE VII

Medium-Term Projections (Annual Rates)

Window and Door Sector

1981 to 1996

(Constant 1981 $)

Market Component	Projected Factory Shipments			
	Actual 1981	1986	1991	1996
	$000 000	$000 000	$000 000	$000 000
Domestic Market				
New Housing	354.4*	338.7	323.8	309.5
Renovation and DIY	121.5*	209.3	288.0	359.1
Exports	9.4	20.0	40.2	80.4
Total	495.3	568.0	652.0	749.0

* New Housing/Renovation estimated from industry company interviews 75 per cent new, 25 per cent renovation and DIY (retrofit).

Source: Department of Regional Industrial Expansion.

The rationale for the above projections is as follows:

(1) New Housing

New housing has traditionally provided the largest market for windows and doors. Projected growth of windows and doors that relate to new housing is based on the latest CMHC forecast that new housing starts will decline by 0.9 per cent/year to 1996. This forecast recognizes the following factors:

- two of the basic factors most affecting the decline in new housing starts over the period from 1985 to 1996 are: (a) a significant slowing in population growth and (b) decreasing net new family formation;

- continued strong upward inflationary trend in new housing costs;

- the emergence of the 35-to-44 age group as the most rapidly expanding age component of the population. For the most part, those in this group have already upgraded to their preferred housing accommodation and will not require new housing units.

(2) Renovation and Retrofit (DIY)

These estimates are based on U.S. studies, considered in a Canadian context in reports by consultants and housing specialists, and interviews with the trade. Some of the considerations are:

- continued escalation in energy costs and recurring energy shortages in conventional fuels;

- continued aging of the existing housing inventory;

- trend in replacement by new homeowners of originally installed, inefficient, low-cost windows and doors.

(3) Exports

Exports are forecast to increase in constant dollars at 16 per cent to 1996, which compares to about 14 per cent in constant dollars for the period from 1971 to 1981. This forecast is considered possible under the following conditions:

- an underdeveloped export potential to the U.S. for new housing and for renovation and retrofit applications of product, with the exchange rate as it now exists, presenting a competitive opportunity. Experience and success in this market would lead to development of other foreign markets;

- leading Canadian companies, firmly established in the domestic market with excess capacity, being prepared to make the required commitment for export market development, recognizing the importance of flexibility of production which exists in Canadian industry to supply small orders, particularly in the renovation market.

In summary, these projections, if realized, would result in an overall growth rate of 2.8 per cent in constant dollars. This compares with annual growth in the last decade of 2.6 per cent in constant dollars. The slightly higher growth rate is due to opportunities in renovation and retrofit and exports.

MAJOR ISSUES

Capacity Utilization

The industry, both window and door, is in general agreement that an excess of production capacity exists for the small Canadian domestic market. However, manufacturers appear to be uncertain concerning the degree of overcapacity.

Based on information gathered from the manufacturers, assuming a full single shift plus a considerable degree of double-shifting as appropriate, the window industry has an annual production capacity of about 4 800 000 units or 400 000 housing starts based on an average of 12 windows per dwelling unit. At the time of writing this review in 1984 and based on the 1984 equivalent of 170 000 housing starts, which allows for renovation activity, utilization of capacity was about 42 per cent.

Considering that the industry was capable of supplying 273 000 housing starts in 1976 at close to full capacity, and considering that, since 1976, there has been increasing capacity through a net increase in new establishments, expanded production facilities and increased capacity through enhanced productivity, the calculated industry capacity of 400 000 housing starts is not considered to be overstated. In fact, when confronted with this calculated capacity, industry executives considered it to be conservative.

An additional but unknown capacity is also available for servicing the retrofit and renovation markets. The majority of the medium-to-large firms have established a separate department or, in some cases, a subsidiary company for manufacturing custom or off-standard windows for retrofit and renovation. The uncertainty in the size of this market derives from the fact that an unknown quantity of standard production is accommodated by retrofit and renovation projects. While the number of custom-produced windows is known, all of which are assumed to be destined for retrofit or renovation projects, there is no way of determining the proportion of standard production that goes to these markets. In total, however, manufacturers estimate that the retrofit and renovation markets are growing and, combined, currently stand at about 30 per cent of the new housing market. On balance, these markets should help improve capacity utilization particularly in the face of declining housing starts, recognizing that a share of this market cannot be supplied by existing production capacity.

Door production, based on production figures obtained from manufacturers, is estimated to be from 22 000 to 25 000 per day, or about seven million annually. Based on a requirement of 12 to 14 doors per dwelling unit, annual production is sufficient to accommodate about 400 000 housing starts. On this basis and assuming one shift, utilization rates, at the time of writing this review in 1984, were in the range of 48 per cent. This compares to near full capacity utilization in 1976 during peak housing demand.

Based on best estimates of future activity as set out in the mid-term projections, the production forecast for both the window and door industries, considering new housing, renovation and retrofit and exports, will not be sufficient to use full manufacturing capability till the mid-1990s. However, there are extreme cyclical variations in the demand areas, particularly new housing starts, that result in certain periods of higher operating ratios for both the window and door sectors. For example, should interest rates stabilize at a consumer-acceptable level, dramatic increases in housing activity could result to the extent that actual starts reach the projected CMHC requirement levels of 210 200 units for the current five-year projection period.

The retrofit and renovation market could respond in a similar manner, creating a total demand equivalent that could reach 1976 levels, and industry operating rates would be at acceptable levels of 70 per cent but for short periods only.

Steadily increasing demand from export and renovation, combined with new housing requirements, should be sufficient to maintain most companies in at

least a break-even situation over the next five to eight years. Smaller companies claim to be able to break even at 50 per cent or less of capacity, while the larger companies' break-even points range from 60 to 70 per cent.

Most manufacturers, under ordinary circumstances, view single-shift operation as a fully satisfactory operating level. It should be recognized that, with sufficient demand, extra shifting is possible under which circumstances potential capacity would be higher and operating costs reduced.

The changing market situation, as it relates to existing production facilities, could well force a much-needed rationalization and consolidation of the industry. The larger companies appear to be fully aware of the changing scene and seem to be formulating plans and strategies to meet the situation. It is expected that, because of their heavy investment in plant and machinery, they will have no alternative but to continue to dominate the traditional markets and to pursue export opportunities aggressively.

Since retrofit and possibly renovation windows are of custom manufacture, their production is a one-off process with low production rates. In time, as the market grows, manufacturers should find themselves pressed for capacity to supply the custom-made demand. Since by the mid-1990s the retrofit and renovation markets are predicted to equal or exceed the demand from new housing, the industry could soon be required to make some hard decisions on appropriate production facilities.

The door side of the industry is not faced with the same problems regarding standard versus custom production. With the exception of architectural doors, which are generally fabricated according to specification, door sizes are essentially standardized in flush and rail and stile door manufacture. Whether for new housing or for retrofit and renovation, door sizes remain the same even though the interior structure or facings may change with changing technology. The manufacturing process for flush doors in particular is well suited to mechanization.

Capacity utilization of door manufacturing will be governed largely by new housing and renovation, but aggressive pursuit of export markets should help achieve a reasonably healthy situation. Indeed, over the next several years, as the economic cycle strengthens both in Canada and the U.S., there is a strong possibility that Canadian manufacturers of windows and doors could experience significant improvements in capacity utilization rates, in the vicinity of 70 per cent.

Investment

The degree of present and future capacity utilization and uncertain market expectations of this industry, particularly the window sector, are not conducive to widespread investment in plant and equipment.

Based on information supplied by industry executives, the industry's annual investment budgets are, in comparative terms, at around one per cent of sales for medium and large companies. Almost without exception, small to medium-

sized companies do not provide for capital expenditure in their annual budgets on a regular basis and make improvements periodically as required. The above estimate relates generally to modernization projects. From time to time, companies throughout the industry will carry out major capital programs several times the size of their normal annual capital expenditure.

The conservative approach to capital expenditure in the industry probably relates not only to the relatively low capital requirements for fixed assets, but also to a dependency on the domestic market whereby individual companies have attempted to maintain a balance between market share and manufacturing capability. It is difficult to find economic justification for investment in new assets for exports and modernization when existing capacity is severely underutilized.

The following table reveals the best estimates provided by company executives on the replacement cost for plant and equipment, and annual capital expenditures for window and door companies of various sales levels.

TABLE VIII

Plant Replacement Costs and Typical Working Capital Levels

Windows and Doors

Company Sales Level ($000 000)	Principal Product	Plant and Equipment Replacement Cost ($000 000)	Annual Capital Expenditures ($000)	Estimated Level of Working Capital ($000 000)
70	Doors	27	300 - 750	6.5
50	Windows	23	400 - 500	5.5
60	Windows	20 plus	400 - 500	6.0
30	Doors	10 - 12	-	3.5
22	Windows	15 - 18	300 - 400	3.0
18	Windows	10 plus	50 - 70	2.5
12 - 15	Doors	10 - 12	100 - 200	2.3
8	Windows	3 - 4	As Req'd	1.4
4	Doors	2	-	0.5
3	Windows	2	-	0.3
1.3	Windows	1	-	0.1

Source: Department of Regional Industrial Expansion.

Annual capital expenditures are generally for modernization projects. Larger periodic capital expenditures usually relate to plant expansion.

Modernization

While many companies implement major modernization and/or expansion programs from time to time, most modernization is carried out as required. Larger

companies with sales volumes of $15 million or more provide for modernization in annual budgets to the extent of about one per cent of sales. Smaller companies average about the same level of expenditures, but theirs tend to be more sporadic. On this basis, total modernization expenditures would average about $5 million to $7 million per year. However, during the periods of depressed economic activity, expenditures could be significantly less. Conversely, a series of particularly large modernization projects undertaken in any one year could increase this amount.

As with budgeted capital funds in any manufacturing operation, projects are selected on the basis of economic return, whether in the form of cost reduction or productivity improvement. In view of present and future market prospects, major modernizations may well be difficult to justify. This is exacerbated by the fact that most modernization projects cannot be economically separated from expansion of production capacity, which is particularly difficult to justify when a plant is seriously underutilized.

Canadian companies, fully aware of limited markets, the fragmented and overcapacity condition of the industry and the threat of increasingly competitive products from the U.S., have been hesitant to invest in advanced technology equipment and systems for the manufacture of their products. The limited market size has been the predominant factor in limiting mechanization because of its effect on payback and because mechanization is most efficient when long production runs, with associated economies of scale, are possible. Consequently, the industry's reluctance to mechanize on a large scale maintains a degree of flexibility of output with a heavier dependence on labour, for the small, short-run market demands being served.

In the right economic conditions, probably every window and door manufacturer, even the largest, could require some form of modernization to bring its operation to state-of-the-art efficiency levels. While different elements of the entire gamut of millwork equipment could be used to advantage in most plants, there appears to be a general requirement for materials-handling equipment through the whole production process, including the stacking, storage and retrieval of components for assembly. Associated with this area of operation, and one that deserves recognition for being well maintained generally, is the tooling for component manufacture, the key ingredient for quality manufacturing.

It is doubtful whether robotics have yet been applied to the window industry anywhere in the world although it is rumoured that one U.S. company has introduced a degree of that technology. Apart from robotics, increased levels of mechanization would include items such as multiple-head routers, high-speed electronic single-pass profilers, stackers and electronically-controlled break-out systems, the cost of which could range from about $200 000 for stacking systems to about $0.5 million to $0.7 million for profilers.

It has been estimated that to fully mechanize the largest Canadian window plants with the most advanced of available technology would require an additional investment of $2 million. To reach a similar level of mechanization, companies in the $15 million to $25 million category with lower

levels of production capabililty and automation would likely require an investment of $3.5 million to $4 million.

Several of Canada's largest door manufacturers, located on the west coast, have installed significant levels of mechanization and automation principally to alleviate the high cost of labour. Without specifying the nature of more advanced additional automation, it has been indicated that an additional cost of $1.5 million would be required to modernize completely.

One of the largest door companies, although operating with some advanced equipment, still operates on a very labour-intensive basis in the break-out, lay-up, gluing, drying and trimming areas. While this company could modernize considerably with an expenditure of $3 million to $4 million, it seems content with a large work force whose labour rates are about half those paid in other parts of the country.

In past market conditions, the window industry geared itself to the production of standard products intended for the new housing market, a market which is now in fairly rapid decline and is being replaced by a growing retrofit and renovation market which could require custom production. This changeover in market requirements could almost simultaneously require a factory changeover from standard to custom production throughout much of the window industry. It is possible that some companies will elect to pursue export markets to maintain their commitment to standard production, in which case higher efficiencies and hence further investment will be required to accomplish and maintain a competitive position. On balance, adjustments and realignments will be made in this industry sector, mostly by those companies with more than $5 million sales, to enable them to maintain market position and to protect an investment which has accumulated over a period of years.

In both the window and door sectors, the larger, more mechanized companies are poised to embark on modernization projects which could yield satisfactory returns from the domestic and export markets. A few of the larger companies are establishing and strengthening process-engineering expertise ultimately to improve cost competitiveness for export markets. Smaller companies often have a custom orientation and a much narrower market area.

In summary, it would be unrealistic to expect the whole industry as it is currently constituted to provide economic justification for modernization programs that would bring them to internationally competitive levels of efficiency. In the entire Canadian window and door industry, there are at most about 20 companies that could be considered within reach of state-of-the-art modernization levels. Disregarding economic feasibility as a criterion, it would require an investment of the order of $70 million to $80 million (1984 dollars) for these companies in the aggregate to attain appropriate levels of modernization. This estimate would include some expansion of facilities to accommodate additional mechanization. Based on the more realistic economic considerations outlined above, the likely level of modernization expenditure over the next few years would be in the vicinity of $25 million. Much depends on the assessments and strategies of companies in this industry with respect to exports, renovation and shifting demand factors.

Technology and Innovation

Innovation in the Canadian window and door sector is primarily of an ongoing nature, involving mostly a series of small projects to improve process flow, machine efficiency and, particularly, the design and quality of product. Some of this innovation relates to the modification and adoption of product and process technology developed in other countries. Developments in this industry seldom, if ever, originate at a laboratory bench, but rather come from any level in the industry including the production worker. While there are few single, major R&D projects in the Canadian industry, the type of innovation that does take place is essential to its market development and productivity.

Little, if any, fundamental research has been conducted in Canada in product, process or process equipment. As an example, technology in the use of aluminum or vinyl or other cladding has either been adopted or purchased by Canadian companies, or sometimes obtained through an exchange of technology for marketing effort. Virtually all of Canada's manufacturing technology has been imported from the U.S., Germany and the U.K. where woodworking equipment is produced. Given the costs and risks of fundamental R&D, it is unlikely that Canadian companies will undertake major projects in this area. Moreover, it should be realized that there are not likely to be many revolutionary developments within the window and door industry anywhere with the same mystique that surrounds some of the so called high-tech developments.

It should be noted, however, that many companies throughout the industry have effectively applied advanced technology to their products and operations. Companies have modified purchased technology as appropriate to their product and process requirements. As a result, many products are competitive in quality and style and a portion of the industry operates with state-of-the-art equipment.

Nevertheless, if the industry is to improve its level of international competitiveness, particularly with respect to changing market requirements, the leading companies will be required to increase their emphasis on innovation, particularly in the area of product design. For example, windows will have to incorporate those features that meet consumer preferences and requirements to compete in the U.S. market and against U.S. producers in the Canadian markets. These requirements relate to energy efficiency, trouble-free maintenance and housing renovation requirements.

In summary, the prospect for fundamental research in the Canadian window and door industry is considered minimal, but industry will continue to rely on the implementation of new technology and ongoing innovation to improve process, equipment efficiency and product quality and design. Increased emphasis in this area will benefit competitiveness and export growth.

Financial Situation

The industry is financially sound and, by the end of 1983, had fully recovered from the recessionary effects of 1982, a year in which many companies

experienced reasonable profit levels despite low operating ratios. This would appear to verify the low break-even points claimed by many manufacturers in the industry and would also appear to reflect good financial, inventory and production control.

Most companies are not burdened by a heavy debt load, and most do not have debt/equity ratios in excess of 1:1. A number of companies are free of long-term debt preferring instead to finance capital expenditure for plant and equipment from working capital where current ratios generally run from around 1.5:1 to 2.5:1.

Most of the top 30 or so companies consider themselves sufficiently financially secure to endure extended recessionary periods. With this degree of security, companies foresee no problem in acquiring the necessary funds should they be required. However, unless market prospects improve significantly, there will be a limited requirement for funds as fewer expansions, modernizations and other capital projects could be economically justified.

Recent studies comparing the financial performance of companies in this industry have concluded that:

(1) small companies, with under $3 million in sales, are the least profitable;
(2) there is not much difference in the profitability of companies that have more than $3 million in sales, although medium-sized companies with lower manufacturing overhead and other expenses tended to perform slightly better on average for the particular year under study;
(3) comparing Ontario and Quebec where 70 per cent of the industry is located, Ontario companies are substantially larger on average, more profitable, invest more heavily in equipment, but have higher labour costs;
(4) there is no apparent correlation between productivity and profitability.

Export Opportunities

Total window and door exports for 1984 are estimated to be between $25 million and $30 million, the door sector accounting for more than 90 per cent. This represents only about five per cent of total industry shipments but is 30 times the 1970 level of exports in current dollars. As indicated in the section of this report on competitiveness, the U.S. window and door industry is generally cost-competitive vis-à-vis the Canadian industry. Notwithstanding this overall situation, there are niches of U.S. market oportunity available to the leading companies in the Canadian industry.

U.S. shipments of wood windows and doors in 1982 amounted to about $3 billion (Canadian). Of that amount, about 40 per cent or $1.2 billion (Canadian) was supplied by smaller U.S. companies. It is in this latter portion of the U.S. market that Canadian producers, comparable to smaller U.S. producers, could conceivably compete. If the Canadian manufacturers could realize up to five per cent of this part of the U.S. market, the increased revenue would be

as much as $60 million, which is equivalent to roughly 10 per cent of current Canadian production. While the window and door industries are grouped together to form one industry sector, these two industries must be considered separately in respect of exports and export opportunity.

In the window industry, a small number of manufacturers are exporting consistently to the U.S. These companies' principal market areas are New England, Ohio, and California with export sales representing six to 12 per cent of their total volume. Some of the smaller companies, which have applied for assistance under the Industrial and Regional Development Program (IRDP), claim to have made export sales to the U.S. as well. These few successes would indicate that, given the effort, the U.S. market can be penetrated.

Large, efficient and modern U.S. manufacturers are estimated to supply anywhere from 50 to 65 per cent of the U.S. window market. The remaining 35 to 50 per cent is available to the smaller U.S. companies that operate with a similar level of mechanization and efficiency as Canadian companies. With a favourable and significant currency exchange rate and considerable idle capacity, there appears to be opportunity for Canadian manufacturers to compete in and service that market, given the will and the effort to do so. While the U.S. renovation market, excluding retrofit, could prove promising for Canadian manufacturers, no market segment, including new housing, should be dismissed as impenetrable where wood windows are appropriate or required for energy considerations.

In addition to a favourable exchange rate and idle capacity, other factors could work in favour of the Canadian producer in attempting to develop the U.S. market. Among these factors are the flexibility of a labour-intensive industry that can respond readily to the small order renovation market, acceptable product quality and U.S. deregulation of the transportation industry, which could assist in reducing transportation costs.

Based on discussions with the few successful Canadian window exporters, there appear to be, in addition to quality and price, several other important factors for successful marketing in the U.S. These are: (1) availability of the type and style of product that sells in that market; (2) complete knowledge of product properties; (3) ability to quote prices in U.S. dollars at point of destination; and (4) aggressiveness and readiness to ask for orders.

Geographical considerations could be limiting factors in certain instances. The U.S. wood window manufacturing industry is heavily concentrated in the upper mid-west states where there is likely to be intense competition. In the more moderate climate areas of the U.S., where energy considerations are of lesser concern, aluminum-based products reportedly provide intense price competition.

Door manufacturers do not face the same problems as window manufacturers in the export market and, as a result, significant quantities of door products are exported, such as flush, bifold and louvre doors. One of the underlying reasons for export success in door products, in addition to currency exchange

advantage and good bulk/density ratios for economical shipping, is that individual Canadian manufacturers generally can offer a complete range of door types and styles through their highly diversified manufacturing capability, a feature that appeals to potential buyers for its one-stop shopping characteristic. This Canadian characteristic does not appear possible for U.S. companies, which tend to specialize in a narrower range of door types and styles. While $10.5 million of all Canadian door exports in 1983 went to the U.S., an additional $5.5 million in doors was shipped to 20 other countries around the world of which the U.K., France and Saudi Arabia were the next largest buyers.

Canadian door manufacturers continue to be active in and conscious of the export market and its importance in achieving and maintaining a reasonable and profitable level of capacity utilization. While some door manufacturers are exporting quantities of doors that represent up to 50 per cent of their production, they are continuing their efforts to increase export sales. For example, Canadian exports of wood doors amounted to $8.2 million in 1982, $16 million in 1983 and are anticipated to be $24 million in 1984.

In summary, given the favourable considerations of currency exchange, available capacity, possible transportation benefits and a large, accessible market with few constraints, there would appear to be opportunities for Canadian window and door producers to develop much-needed export markets despite some cost advantages of U.S. producers. While the Canadian door industry is in a stronger competitive position vis-à-vis the U.S. than the window sector, the flexibility of production of the window sector would be suited to the growing requirements in the U.S. renovation market. The current overcapacity of supply can tolerate considerably further expanded export markets.

Raw Material Supplies

Most of the major window manufacturers and some door manufacturers purchase their lumber supplies in Oregon and California from sources which the industry claims have afforded reasonable prices and stable and secure supply. Some companies have cited quality as an additional factor in their decision to buy lumber from the U.S., but price differential and security of supply appear to be the major factors. It is claimed that insecurity of supply from Canadian lumber dealers and suppliers stems from their preference to export lumber when export markets are strong rather than supply the domestic market.

While west coast door companies purchase their lumber for doors in British Columbia, all door companies import a major portion (in the 90 per cent range) of their doorskins for flush doors, such as luaun, from southeast Asia and moulded hardboard from the U.S. It appears that the only doorskin of Canadian manufacture is the plain hardboard doorskin manufactured in Nova Scotia, although it is understood that moulded hardboard doorskins similar to those now being imported are beginning to be manufactured in Canada.

The importation of lumber from the U.S. places Canadian manufacturers at an immediate disadvantage regarding their ability to compete in the window

market, particularly in that country, because of currency and transportation considerations. Part of this disadvantage could be reduced should west coast lumber suppliers be successful in a new strategy to produce and market a significantly higher percentage of millwork grade lumber from hemlock and lodgepole pine.

The suppliers claim that these species offer window and door manufacturers certain advantages including better recovery and lower price. Manufacturers that have begun to purchase west coast millwork stock have had some success, although they note that there are some modifications required in machinery and worker skill level.

Reductions in lumber and other material costs could produce significant benefits for Canadian window and door manufacturers, since the materials component, in some cases, runs as high as 65 to 75 per cent of production cost.

Labour/Management Relations

Recent interviews with company executives provided opportunities to discuss labour/management relations in all companies visited, about half of which operated without organized labour. The other half operated with organized labour of various affiliations.

While interviews with company executives provide only management's views on the state of labour/management relations, there were some interesting indications of differences between union and non-union plants. Executives of companies employing organized labour stressed difficulties with some aspects of labour/management relations, citing wage and benefit demands, productivity, work stoppages and conduct that detracted seriously from cost competitiveness, particularly in an international context.

In contrast to the prevailing attitudes of management in unionized plants, the management of non-unionized plants were generally satisfied with their relationship with the production worker. In most cases, there existed either a bonus system, profit-sharing plan or a company policy to equal or exceed union rates. These remuneration schemes were usually combined with other employee participation activities such as plant councils and committees through which employees have an opportunity to provide input to the manufacturing operation. Company executives claim, and recent studies would seem to verify, that labour/management relations of this nature assist in improving productivity and profitability.

Whether or not the findings uncovered in the executive interviews can be construed as indications of the route to lasting labour/management harmony, they do indicate, from a management point of view, that a difference in attitude and possibly in plant performance does exist between the two types of labour/management relationships. However, further investigation, including discussions and interviews with production workers, would be required to determine the validity of this indication.

Regardless of the actual labour/management situation, it would seem logical that the window and door industry, which will continue to be heavily dependent on labour input, could benefit from greater consistency in the application of proven labour/management initiatives to reduce or eliminate management/labour polarization and instill a high degree of common purpose in the ranks of both labour and management.

Training Requirements

There appears to be a need for increased levels of capability at management, supervisory and worker levels throughout the sector. Accordingly, training has been identified as a means by which all levels could improve their skills. The improvements to productivity and profitability that could accrue to the company when the appropriate training is applied would perhaps be of even greater benefit.

The capability and knowledge of management varied significantly from company to company. While some companies tend to rely on consultants to advise on corporate direction, the lack of management skills would be better addressed in the longer term by management training programs in all facets of management such as finance, marketing, planning, controlling, motivating.

Increased levels of training for factory workers would give a better understanding of a company's operations, would improve their job mobility, thereby relieving monotony, boredom and fatigue, and would produce opportunities for the employee. Emphasis on training would have to be on an industry-wide basis to be workable and effective. This would require consultation within the industry.

Without exception, the lack of supervisory skills has been cited by company executives as the principal constraint to the practice of double-shifting when it could have been applied in the past in preference to expansion projects that have contributed to the current level of manufacturing capacity in the industry.

While there does not appear to be any immediate need for double-shifting, economic fluctuations, accompanied by an extended surge of housing activity, could put pressure on single-shift capacity in some companies. Under these circumstances, a readiness to double-shift would be an appropriate adjustment as opposed to plant expansion.

In the longer term, opportunities in renovation and retrofit and during cyclical periods of high housing demand would appear to create some substantial opportunities for double-shifting. Restoration of confidence in the economy and a return to more favourable interest rates could be the motivation required to release a pent-up demand for window and doors for new housing as well as for renovation and retrofit.

In the past, manufacturers, particularly in windows, appeared reluctant to gear up for a double-shift operation for a number of reasons including:

(1) insufficient volume to maintain a continuing two-shift operation; (2) seasonal nature of industry and its fluctuations in production requirements; (3) lack of trained supervisory staff; and (4) perceived reduced efficiency on both shifts.

Reasons 1 and 2 above, both of which relate to volume considerations, can be offset by growth, but are not likely to change because of the size of the Canadian market in relation to manufacturing capacity. Reasons 3 and 4 relate to the manufacturer's concern about inefficiency which can be overcome considerably by a greater availability of trained supervisory staff.

Whether or not future expansion, modernization or mechanization becomes a reality, an upgrading in management, marketing and supervisory skills is considered a requirement to cope in a competitive market and to respond to changing marketing and manufacturing practices that will likely result from the growth of the renovation and retrofit market as well as development of markets in the U.S.

FEDERAL/PROVINCIAL GOVERNMENT CONSIDERATIONS

Governments should be aware of a number of the major issues identified in this report with respect not only to their industrial and market development programming, but also to policy and legislation affecting the evolution of the window and door industry.

(1) **Capacity Utilization** is principally a function of the degree of new plant establishment and expansion in relation to market demand. Further proliferation of manufacturing capacity would be counterproductive in times of low product demand and serious overcapacity and would be contrary to normal market and business forces which act to stabilize the industry.

(2) **Modernization** applied by the industry would assist in improving overall levels of productivity and international cost competitiveness which are essential if it hopes to penetrate export markets in a substantial way and to prevent increased levels of import penetration. Where modernization significantly increases production, the adverse effects on capacity utilization should be recognized and viewed in the same light as new capacity.

(3) **Technology and Innovation.** Opportunities exist throughout this sector for innovative development in product and selective processing areas and in the modification and application of new technology. Existing definitions of R&D generally do not include much of the innovation taking place in this industry because of its ongoing nature and because it is so closely entwined with the manufacturing process and product development.

(4) **Export Opportunity.** There are considered to be significant niches of export opportunity to the U.S., particularly for leading Canadian firms which have competitive advantages provided that they aggressively pursue export markets. Companies in this sector have found government programs

that support their export marketing initiatives useful in helping them to achieve export growth. During company interviews, there were indications that companies did not know how to start the process of export marketing. While there is plenty of written material available on this subject, seminars and similar exchanges would be appropriate.

(5) **Raw Material.** Much of the lumber that goes into the manufacture of windows and doors is imported from the U.S. Raw material, which includes lumber, represents as much as 70 per cent of production costs. Domestically-produced materials, particularly millwork grade lumber such as that now produced in British Columbia, could result in higher recovery, reduced cost and improved Canadian competitiveness.

(6) **Labour/Management Relations.** Improved productivity could result from better labour/management relations, particularly where production employees are given an incentive through some form of recognition to produce and contribute to the overall operation of a company.

The potential contribution to industry efficiency from such practices as incentive bonuses, profit sharing, plant councils and other efforts to facilitate better exchanges between labour and management should be recognized by all interested parties.

(7) **Training.** Advanced technology, shifting market requirements and production capability will require knowledgeable and capable human resources throughout the workforce to assist in attaining and maintaining international competitiveness. Training programs would assist in this regard and could probably be best addressed by a co-operative effort between management, labour and government.

CONCLUSIONS

The Canadian window and door industry, with 1983 shipments in the vicinity of $650 million, comprises about 450 companies in total across Canada, the heaviest concentration of companies being in Quebec, Ontario and British Columbia. Seven per cent of these companies share about 75 per cent of production requirements. Fewer than 30 companies in the industry have sales in excess of $10 million and the largest company sells about $60 million worth of products each year. The window and door industry is currently providing around 5 000 jobs, about half of what it would employ at full capacity.

In 1984, new housing starts and the equivalents in retrofit and renovation were at about 170 000. Conservatively estimated capacity for the industry in terms of new housing starts and equivalents is about 400 000. While actual housing starts are currently running behind housing requirements, CMHC projects a declining trend for housing requirements to the year 2000. Except for some expected periodic spurts, new housing trends are decidedly downward. However, this downward trend should be at least partially offset by a growth trend in renovation and retrofit and potential opportunity for exports to the U.S. for windows and particularly doors, which are now being shipped to a number of offshore markets as well as the U.S.

While the industry in general is in sound financial condition at present, there are a number of issues and opportunities facing the industry that could erode or enhance that position. On the downside, capacity utilization rates are currently (1984) below 50 per cent, because of depressed housing activity, although there are signs that this may improve over the next few years as the business cycle continues to strengthen. The renovation and retrofit markets, running at around 30 per cent of new housing starts, are serving to keep companies above the break-even level. Because of chronic overcapacity in the industry and a limited domestic market, companies have been cautious in investing in new plant to modernize equipment and improve processing. As a result, productivity and competitiveness have suffered in relation to neighbouring U.S. producers, a situation that inhibits competitiveness in U.S. markets and provides opportunities for U.S. producers to compete in the Canadian market. Canadian manufacturers of windows and doors have lagged behind foreign producers in basic research, but have been innovative in product and process.

In a positive sense, Canadian producers can improve their position by taking advantage of opportunities in specific areas. Continued reliance on labour provides the industry with a degree of manufacturing flexibility that is required and advantageous for servicing the renovation and retrofit markets of other countries, particularly the U.S. In addition, initiatives currently under way in Canada by the lumber industry could provide the window and door industry with a more competitive, stable and secure supply of Canadian produced millwork grade lumber to replace a reliance on imported grades from the U.S.

Irrespective of the positive and negative factors facing the Canadian window and door industry, it appears destined to undergo a period of general evolution as it faces the challenges of a shifting of markets among new housing, renovation and exports over the next 10 to 15 years. If the impending market scenario were to continue uninterrupted without cyclical variations, the anticipated evolution would probably proceed more rapidly.

Individual companies will be required to make some hard decisions on market development, particularly the export and renovation components, and on related equipment requirements over the next few years. However, the past conservative practices of the leading companies, as well as their financial stability, have positioned them relatively well to meet the challenges of the future.

Given the opportunities and constraints facing the Canadian wood window and door industry, its longer-term development should be based on the following objectives:

(1) <u>Sector Rationalization and Consolidation</u>

The industry would benefit significantly in productivity improvement by consolidation of operations and plant rationalization. A number of the many small companies are unable to compete effectively or to remain technologically current in a market situation which is undergoing some

major changes. Studies show that very small companies have lower levels of profitability and return on investment and higher vulnerability to depressed markets than mid-sized or large companies. A less fragmented sector with a greater number of medium-to-large internationally-competitive companies would be in a better position to capitalize on export opportunities and to resist import penetration.

(2) Trade Development

With improvements in productivity and competitiveness and the opportunities that exist in the U.S. market, the Canadian industry should be able to achieve an export level that equates to 10 per cent of its shipments by 1995. This trend is already evident on the door side, and there are examples of successes among Canadian window manufacturers. The Canadian industry has production flexibility, which is particularly important for small order requirements for housing renovation.

The timing for such an industry initiative should be immediate for a number of reasons, including the existing favourable currency exchange rate between Canada and the U.S., the general financial stability currently enjoyed by most Canadian companies and the excess capacity that exists throughout the industry.

In view of the significant trade imbalance in the window and door sector, notably for window products, Canadian manufacturers should strive to offer competitive products that would prevent further increases in import penetration.

(3) Better Utilization of Production Capacity

The utilization rate of industry capacity at large, at the time this review was undertaken, was 50 per cent or less, a figure representing less than the break-even point for a number of companies. To assure a reasonable level of profit and production efficiency, the industry should strive to increase utilization rates to the 70 to 80 per cent range and up. This requires increasing sales volume and at the same time limiting significant increases in new capacity.

(4) Raw Material

Raw materials account for more than 50 per cent of the production cost of windows and doors. Efforts to reduce material costs would have the greatest impact on overall production cost reduction and, as an initial target, a reduced material cost of five to 10 per cent is not unreasonable. This could be accomplished in a number of ways such as through: (1) the use of different wood species; (2) less wastage; (3) the conversion of waste to energy; and (4) advantageous purchasing practices.

Initiatives taken by some British Columbia primary producers to provide a broad range of sizes of raw materials specifically for window and door

manufacturers should be recognized and considered as a possible cost reducing alternative to imported raw materials such as Ponderosa pine.

(5) Mechanization and Automation

The industry should achieve a higher level of mechanization while observing the need to maintain a reasonable balance between production capability and market expectations. The nerve centre, and what has proved to be a national bottleneck in window production, is the production, storage and retrieval of components for assembly into finished products. This phase of window manufacturing will require increased attention in mechanization and innovation if the industry hopes to cope with shifting domestic market demands as well as available export opportunities. While much of the required mechanization technology will continue to be imported, opportunities will be created for complementary in-plant development.

(6) Product Development

The shift in market demand from new housing to retrofit and renovation will put pressure on Canadian manufacturers to develop products distinctive and appropriate to the new growth market. The bread and butter products that were and continue to be suitable in decreasing numbers for new home construction must be replaced with windows, in particular, and doors of improved design incorporating energy-efficient, trouble-free and other special features that appeal to the informed buyer. Through improved product design and development, opportunities could be created to replace imports and establish export markets.

(7) Labour/Management Considerations

Improved labour/management relations, communications and co-operation are key elements in achieving higher productivity, better product quality and improved competitiveness. Accordingly, labour and management should: (a) implement on a consistent basis those labour/management initiatives which improve communications and have proved successful in some companies in the industry, recognizing potential increases in productivity; and (b) institute selective training programs at all levels within the work force, i.e., management, supervisory and production workers, to upgrade knowledge, skills, flexibility and, consequently, effectiveness.

These industrial development objectives will be achieved only if companies in this industry make a concerted effort in this direction. Moreover, governments at both federal and provincial levels should recognize these objectives in their industrial and market development programs and policies and legislation affecting the industry.

APPENDIX

CONVERTED WOOD AND PAPER PRODUCTS DIVISION

FOREST PRODUCTS DIRECTORATE

RESOURCE PROCESSING INDUSTRIES BRANCH

DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION

MANAGER

C.J. Copeland

OFFICERS AND RESPONSIBILITIES

G.D. Bird	-	Special Projects Involving All Product Sectors; Converted Paper Products: Institutional, Decorative (Wallpaper), Packaging - Coated, Laminated, Reinforced or Metallized Paper Packaging Materials and Bags
M.S. Hardie	-	Timber Frame Construction, Manufactured Buildings (Including Houses), Structural Housing Components, Mobile Homes, Log Homes, Laminated Timbers
J.T. Melnyk	-	Kitchen Cabinets, Architectural Millwork, Remanufactured Products and Specialty Items, Handles, Brush, Broom, Mop, Charcoal, Fire Logs, Fencing, Wooden Containers, Wood Flour, Cooperage, Wood Turnings, Spools, Dowels, Woodenware, Miscel.
R.J. Aubrey	-	Millwork (Windows, Doors and Mouldings, etc.), Pallets, Hardwood Flooring, Furniture Components, Dimension Stock; Converted Paper Products: Consumer Disposables and Specialty Commercial