

**PRESENT STATUS AND POSSIBLE FUTURE DEVELOPMENT
OF THE WOOD FURNITURE INDUSTRY IN VIRGINIA**

by

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**Thesis submitted to the Graduate Faculty of the
Virginia Polytechnic Institute
in candidacy for the degree of**

**MASTER OF SCIENCE
in
Forestry and Wildlife
Major
Forestry Economics**

**June 1966
Blacksburg, Virginia**

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ACKNOWLEDGMENTS

I would like to express appreciation to my committee members, Assistant Professor Emmett F. Thompson, Chairman; Dr. Lawrence S. Davis, Member; and Dr. Monte E. Juillerat, Member for their guidance and assistance of this study.

Thanks are also extended to my fellow graduate students and to Dr. John F. Hosner, Head, Forestry and Wildlife Department for their advice and encouragement.

I am also indebted to Lula F. Reynolds for the typing of this manuscript.

Special recognition must be given to my wife Moira for her patience and understanding.

INTRODUCTION

With the settlement of Jamestown in 1607, the production of furniture originated in the New World. A felled tree served as raw material for the home as well as the furnishings in the home. From this meager beginning germinated an industry that has become an integral segment of Virginia's economy. In 1963 the furniture industry accounted for approximately seven percent of the State's manufacturing employment (Federal Reserve Bank of Richmond, 1963: 20). Indirectly, the industry also provides employment and wages for furniture retailers, transportation carriers, lumber producers, and machinery manufacturers.

As the structure of the Virginia economy changes, the status of the State's wood furniture industry may be altered. Dynamics of population, transportation facilities, costs of production, consumption, technology, and the influx of new industries are among the factors that may affect the stability and development of the industry. Due to these changes, the future of Virginia's wood furniture industry is uncertain. The information contained in this study should be beneficial in bringing into clearer focus the possible future contribution of the wood furniture industry, as well as the significant factors that may influence the contribution.

Objectives

The study has a twofold objective:

1. To characterize the present role of Virginia's wood furniture industry within the State's over-all economy.
2. To consider the economic implications of some possible changes in major production factors that may influence the development of the industry during the near future.

Conclusions drawn from the study should be beneficial in making decisions concerning Virginia's wood furniture industry, and to identify areas in which further study would be profitable.

Scope

For the purpose of this project, the wood furniture industry is defined as all firms manufacturing the following groups of furniture:

1. Household furniture, not upholstered
2. Household furniture, upholstered
3. All other household furniture, such as wicker furniture
4. Office and public building furniture
5. Shelving and cabinets

To avoid any confusion about the group or groups of furniture being considered, they will be enumerated as they are discussed.

Little attention will be given to metal furniture, since there were only five plants with a total of 212 employees located in Virginia in 1958 (U.S. Bureau of the Census, 1960:25A-8). Metal furniture manufacturing has shown decreases in employment nationally from 32,400 in 1959 to 28,500 by 1962 (U.S. Department of Commerce, 1963).

Due to the broad objectives, an analysis of general trends will be undertaken rather than a detailed, definitive analysis of factors influencing the industry. Information that is presently available will be used to achieve the stated objectives.

CHARACTERISTICS OF THE WOOD FURNITURE INDUSTRY

The wood furniture industry has many characteristics that distinguish it from other industries. The competitive classification of the furniture industry, like most industries, can be placed between the two extremes of perfect competition and monopoly. The furniture industry probably resides closer to perfect competition than most industries. According to Davis (1957:75), "there exists in the furniture industry demand structure many of the aspects of a perfectly competitive market. Large numbers of the small buyers, handling a relatively homogeneous product compete in a market free from institutional restraints. Chiefly through the element of ignorance of buyers about market conditions does there arise the semblance of an imperfect market." Ignorance of retail buyers is primarily due to the large number of small buyers whose small sales volume limits the ability of the buyer to be well informed about costs, revenue, and demand for alternative furniture goods. Furniture centers such as Chicago, New York, Los Angeles, and High Point, North Carolina assist in informing buyers of style changes through furniture displays. Monopolistic elements of an imperfect market exist in the industry due to the presence of advertising, product differentiation, and price differences for similar furniture.

In general, the furniture industry is a small business industry. According to the U.S. Department of Commerce (1963), case goods, not upholstered furniture, are produced in over 2,800 plants; 96 percent of the plants have an employment force of less than 250 workers. Of the 1,700 plants that manufacture upholstered goods, 75 percent of the output is produced by the 98 percent of the plants which employ less than 250 persons.

Style Variations in Furniture Goods

There are many functional categories of wood furniture. For each group there are a number of style variations. Variations which add variety to the consumer's choice exist in the wood, design, fabric covering, quality of construction, and finish. Davis (1957:101) reported that furniture manufacturers offer more than 300,000 different items to the consumer.

Style and changes in styling have had important affects on the industry. Style changes can be made rapidly and inexpensively by merely changing the cut on a lathe. According to Hagenstein (1964), "No manufacturer can hope to capture a market for very long simply on the basis of style; successful styles can be copied and manufactured readily. One important result is that contact with other manufacturers is necessary so that a firm can keep up with the changes. This has led to spatial concentration

of the industry." The low cost and ease involved in making design changes in wood furniture provide competitive advantages over competing materials.

A characteristic that is associated with style change is that no particular mode or design is uniquely in fashion at a particular time. Furniture retailers usually provide many styles of furniture at the same time. What is presently called "modern" furniture has been produced since 1925. No particular style is associated with a particular year or decade.

Raw Material Oriented

Furniture plants are normally located near their source of raw material; that is, they are raw material oriented (Hagenstein, 1964; Thompson, 1956). In locating a furniture plant certain economic criteria must be evaluated. It shall be indicated subsequently that the availability and costs of wood in an area comprise the second most important determinant of furniture plant location.

Transactions Between Industrial Sectors

The furniture industry is only one segment of the economy. Further appreciation and insight into the relative importance of this particular sector, can be obtained from an input-output table (Table 1). Table 1 illustrates, among other things, the flow of goods from

Table 1 -- Ratios of industrial inputs (rows) to industrial outputs

	(columns)													
	Furniture and Fixtures (miscellaneous)	Household furniture	Radio, TV & equipment	Other fabricated metal products	Prim. iron & steel manufacturing	Glass & glass products	Lumber & wood prod -not containers	Rubber & miscel. plastic products	Fabrics, yarn & thread	Paint & allied products	Gas, water & electric	Transportation & warehousing	Wholesale & retail trade	
Furniture and Fixtures (miscellaneous)	19.83	7.48	0.01	1.02	-	-	-	0.38	0.15	-	-	-	-	0.14
Household furniture	28.24	14.88	23.52	1.24	0.08	2.33	-	2.33	0.07	0.02	-	-	-	0.13
Radio & TV equipment	1.34	0.30	0.17	0.35	0.01	-	-	0.66	-	-	0.19	0.53	0.67	
Other fabricated metal products	36.46	60.51	57.97	38.49	17.56	4.04	8.36	11.25	0.84	1.38	7.80	1.23	0.66	
Prim. iron & steel manufacturing	93.10	24.04	9.27	195.93	211.98	-	0.04	2.08	0.37	5.62	2.91	1.13	0.08	
Glass & glass products	37.23	14.09	4.55	0.26	0.06	49.63	1.25	6.42	2.20	-	-	0.16	1.11	
Lumber & wood prod -not containers	59.47	124.21	1.80	8.12	1.04	15.54	301.86	1.63	0.12	0.80	0.13	0.27	0.61	
Rubber & miscel. plastic products	9.10	40.45	9.87	7.10	3.23	3.91	6.72	30.29	4.05	2.99	0.42	7.73	2.49	
Fabrics, yarn & thread	1.92	56.85	0.25	0.85	-	-	-	21.19	347.29	0.21	0.09	0.20	0.10	
Paint & allied products	16.40	20.34	0.44	1.61	0.80	0.05	4.76	0.18	0.35	1.57	-	1.19	0.24	
Gas, water & electric	5.27	5.81	2.69	7.40	24.14	37.28	6.90	10.36	11.06	4.42	16689	4.42	20.12	
Transportation & warehousing	17.12	22.14	11.49	13.35	51.44	23.96	48.44	21.69	24.04	29.22	1836	63.28	4.16	
Wholesale & retail trade	53.66	55.36	35.04	34.04	35.78	36.14	43.44	34.22	30.34	41.85	1185	30.16	16.61	
Other manufact. sectors	173.49	137.55	399.89	254.86	252.64	256.58	235.64	420.48	317.92	547.85	30185	270.88	227.41	
Value added	447.37	415.99	443.04	435.38	401.24	570.54	342.59	436.84	261.20	364.07	48951	618.82	724.47	

Source: Adapted from Leontief, 1965:27

one sector of the economy to other sectors. The output of one sector in many cases will be inputs to other industrial areas of the economy.

A change in one area of the economy will usually have indirect if not direct repercussions in other economic sectors. Table 1 is included to show relationships of the furniture industry with the overall economy. The table is based on national figures, but the relationships should substantially apply on a state level since furniture producers, regardless of location, are dependent upon the same inputs.

The coefficients in Table 1 are calculated from data gathered by the Office of Business Economics in 1958. The coefficients in each cell of the matrix are ratios of the cell's input to the total output of a sector. To interpret the table, consider cells in a horizontal row as being outputs or coefficients of sales from one area to other areas of the economy. Reading vertically will provide the inputs or coefficients of costs from one sector to other industrial sectors. For example, input coefficient "lumber and wood products except containers" for the household furniture sector is 124.21. For the same sector, the input coefficient "gas, water, & electric" is only 5.81. The lumber input is 21 times as important as gas, water, and electric.

Another interpretation of the table is to consider each cell in dollar values. The summation of all cells in a column will total 1,000 dollars. In the preceding illustration, to produce 1,000 dollars of furniture would require lumber valued at 124.21 dollars and 5.81 dollars worth of gas, water, and electric.

Reading horizontally, the output of an industry can be determined. The furniture sector's output or sales to the "radio, television and communication equipment" sector reached 23.52. However, most furniture output will not be sold to other industrial areas but rather to private consumers.

Changes in cost of an input to the furniture industry can be evaluated and the expected impact of the change determined from Table 1 using the conventional input-output analysis.

PRESENT STATUS OF THE VIRGINIA WOOD FURNITURE INDUSTRY

Currently an optimistic outlook prevails for the future of the national economy. This optimism is reflected in the 11 billion dollar tax reduction in 1964 and the excise tax reductions in 1965. An upward turn in the economy has prevailed since 1961 and is expected to continue through 1965; the gross national product is expected to increase by over 37 billion dollars in 1965 (Prudential Insurance Company, 1964:8). During the past 10 years, expenditures for personal consumption increased by 125 billion dollars (Livermore, 1964:11). This same optimism can be found on the state level in Virginia. "Long run indicators such as population growth and new plant announcements show that Virginia can expect to have good or excellent growth in the years ahead (Roanoke Times, January 26, 1964:E-4)."

The furniture industry has been very successful lately and has successively bettered its sales volume record in 1962, 1963, and 1964. "Furniture volume is now expected to reach \$6.1 billion this year [1965] for a fourth consecutive record, and to raise to \$8 billion by 1970, an increase of about 40% in six years (Francis I. Dupont, Inc., 1965:13)."

Magnitude of the Industry

In 1958, the wood household furniture industry consisted of approximately 89 plants in Virginia (U.S. Bureau of the Census, 1960). This figure included 73 establishments of wood furniture, not upholstered, and 16 establishments for the production of upholstered wood furniture. The plants are generally small in size; 33 of the not upholstered plants employed less than 20 persons. Only three plants in the State had more than 1,000 employees. Many of the major furniture companies are undertaking expansion programs. Burleson (May 21, 1964:28) indicated that Bassett Furniture Industries are taking part in a 4.5 million dollar expansion program. Lane Company, recently allocated 2.2 million dollars for expansion of its plants in Virginia. Furniture plants are located throughout the State; however, there is a concentration in Henry County (Fig. 1).

Historically, the furniture industry in Virginia has consisted of many small and a few large companies. Preliminary indications are that the industry will expand with major expansion programs being fostered by the larger companies. The motivation toward increasing size is profit. The ratio of net profit after taxes to sales is two percent for furniture firms with assets less than 50,000 dollars compared to seven percent for furniture

firms with assets between 25 million dollars and 50 million dollars (U.S. Department of Commerce, 1964:148).

Employment and Wages

Employment by the furniture and fixtures industry in Virginia during February, 1964 totaled 20,700. This is an increase of 800 employees during the preceding 12 month period (Virginia Forests Inc., April, 1964). For the years 1957 through 1963 the furniture and fixtures industry increased employment by nearly 5,000, approximately a 29 percent increase, while all manufacturing in the State increased by less than 11 percent (Table 2).

Wages in Virginia's furniture industry have lagged behind many other industrial sectors of the State. In 1957, the Virginia furniture and fixtures industry had an average employee income of 3,418 dollars annually; during the same period, the average salary for all manufacturing firms in the State was 3,720 dollars. As recent as 1964 wages paid by Virginia's furniture manufacturers were appreciably lower than many other manufacturers in the State. The average weekly wage for furniture and fixtures workers was 73.59 dollars in 1964 for a 44.6 hour week; the average for all durable goods was 91.59 dollars for a 42.6 hour week; the average salary for chemical industry workers was 107.33 dollars for a 41.6 hour week (Virginia Department of Labor and Industry, 1965:86-87).

Table 2.--Estimated number of employees in Virginia's
industries (1957-1963)

Year	Furniture and Fixtures (thousands)	All manufacturing (thousands)
1957	15.6	264.6
1958	15.2	257.8
1959	16.4	269.9
1960	17.1	275.0
1961	17.0	276.0
1962	19.0	291.3
1963 ¹	20.1	292.7

¹Eleven month average

Source: Division of Industrial Development and Planning,
1963

The large number of workers employed and the total salaries paid by furniture and fixtures industry in Virginia indicate that this industry is a major contributor to the economy of Virginia. Plans for expansion programs by many of the larger furniture manufacturers suggest that the industry will be an increasingly important employer in Virginia.

Productivity of the Virginia Wood Furniture Industry

The furniture industry is characterized by wide fluctuations in productivity and growth. However, the average annual growth of the industry has been comparable to the national growth percent of approximately 3.5 percent (Table 3). The national value of furniture production exceeded the three billion dollar level in 1962. In 1958, Virginia's value of shipments of wood furniture, not upholstered, was nearly 176 million dollars, and the value added by manufacturers was nearly 74 million dollars (U.S. Bureau of the Census, 1960).

Virginia has been and remains a leader in the manufacture of wood bedroom and dining room furniture. In 1958, Virginia ranked second in value of wood bedroom furniture shipments, exceeded only by North Carolina. Virginia's value of bedroom furniture shipments equalled 97 million dollars in 1958 which was 21.3 percent of the total national value (U.S. Bureau of the Census, 1960).

Table 3.--Annual average rate of change in growth of the household furniture industry

Period	Change in value of shipments
	(Percent)
1954 - 1955	14.4
1955 - 1956	6.1
1956 - 1957	- 0.6
1957 - 1958	1.26
1958 - 1959	12.7
1959 - 1960	- 3.1
1960 - 1961	- 4.4
1961 - 1962	12.9
1954 - 1962	35.26

Source: U.S. Department of Commerce, 1963

In 1961, the value of wood bedroom furniture expanded to the 113 million dollar level (U.S. Bureau of the Census, 1963). In wood dining room and kitchen furniture, except kitchen cabinets, number two ranked Virginia compiled shipments valued at nearly 19 million dollars in 1958. This was an increase of 41.2 percent over the 1954 figure of 13 million dollars (U.S. Bureau of the Census, 1960). In 1961, Virginia again exhibited considerable growth in this category of wood furniture as the value of shipments approached 25 million dollars (U.S. Bureau of the Census, 1963).

Summary

The wood furniture industry in Virginia has been a substantial contributor to the economic growth of the State. This postulate is supported by an analysis of the magnitude, employment, wages, and productivity of Virginia's furniture industry.

Statistics report that the rising economy of the early 1960's predict an economically sound future for the nation as a whole as well as the State. Virginia's furniture industry has kept pace with this rise. In 1958, Virginia's value of bedroom furniture shipments equalled 97 million dollars; in 1961 it had expanded to 113 million dollars. Virginia's wood dining room and kitchen furniture production was valued at 19 million dollars in 1958 and 25 million dollars in 1961.

Expansion programs in some of the State's larger furniture companies should help keep the volume of output climbing. Records show an addition of 800 employees in the furniture industry of Virginia between 1963 and 1964. With plant expansions this figure should continue to rise.

Wages of furniture employees have been generally lower than salaries paid production workers in other manufacturing plants in Virginia. Coupling increased hiring with total salaries paid by the furniture industry should have a favorable effect on the State's rising economy.

ECONOMIC FACTORS INFLUENCING THE WOOD FURNITURE INDUSTRY

Virginia is presently a leader in the production of wood furniture. What the future holds for the industry in the State will be considered by studying the following four major factors of furniture production and distribution and their possible affects on the furniture industry:

1. Labor and wages
2. Wood raw material
3. Transportation
4. Furniture consumption

The methodology used in considering the factors will consist of gathering and analyzing available statistics and data relating to each factor. After analyzing the information, conclusions will be drawn indicating the probable influence of each factor on the development of the furniture industry in Virginia. The choice of the four factors as criteria to evaluate the economics of the furniture industry is based primarily on judgment, discussion, and previous literature, (Hagenstein, 1964; Thompson, 1956). Additional support for studying these factors is provided in the discussions relating to Tables 1 and 4. Other factors such as automation, taxes, and available utilities will not be considered.

Each of the factors will be considered independently, indicating its relevance to the development of the furniture industry. This will be followed by a conclusion

Table 4.--Relative importance of selected factors in the location of furniture plants

Factor	Index ^{1/} (Labor = 100)
Labor	100.0
Lumber	50.0
Transportation	35.7
Particleboard	27.8
State and local taxes	12.5
Electricity	3.2
Local and financial assistance	0.8
Industrial site	0.1

$$\frac{1}{\text{Index}} = \frac{\text{Rate of cost substitution of labor}}{\text{Rate of cost substitution of the selected factor}} \times 100$$

Source: Adapted from Hagenstein, 1964:26

section that attempts to tie all the factors together and develop some overall inferences.

Labor and Wages

Virginia's present and expected labor force is one of the most important factors influencing the locating and expansion of the State's manufacturing companies. Hagenstein (1964) compared eight factors that are important in the locating of wood-using industries in an area. Labor was found to be the most important factor in the locating of a furniture plant, followed by lumber, transportation, and particle board (Table 4).

Virginia's Present and Future Labor Force

Since 1960, Virginia has experienced a population increase that has been almost twice the national rate. The rate of increase has been greater than any other state east of the Mississippi River except Florida. Virginia's population is expected to number 4,600,000 in 1965 and reach 5,200,000 by 1970 (Division of Industrial Development and Planning, 1963). The civilian labor force^{1/} in Virginia is approaching the 1.5 million mark. During the sixties, a 23 percent increase in Virginia's labor

^{1/} Labor force refers to all persons 14 years or older who are employed, unemployed, or in the Armed forces. Members of the Armed Forces are included in the military labor force; all others are included in the civilian labor force.

force is expected, an approximate increase of 300,000, compared to 16 percent in the previous decade. By 1970, over 1.9 million are expected in the State's labor force (Knapp, 1963).

Prospects of employment are relatively good in Virginia. In 1963, unemployment averaged 3.3 percent in the State compared to the national level of 5.7 percent (Division of Industrial Development and Planning, 1963). However, decreasing employment opportunities exist in the coal mining areas concentrated in southwestern Virginia. The mining industry in the State decreased employment by 33.5 percent from 1950 to 1960 (Holm, 1962).

The State's civilian labor force can be broken down into four main categories (Table 5). During the period 1940-1962, substantial increases existed in all categories with the exception of agriculture. In general, the employment situation in Virginia is favorable to labor but may not be beneficial to the State's furniture industry due to the competition for labor in Virginia. This competition will be considered further in following sections.

Influx of Plants in Virginia

A competitive atmosphere exists between states in attempting to sway manufacturers in their plant location decision. Most states have established various divisions

Table 5.--Virginia's civilian labor force by industry

Industry	Number of employees (Thousands)		
	1940	1950	1962
Manufacturing	137.4	225.1	291.3
Wholesale and retail trade	115.8	188.6	224.1
Government	66.0	173.5	207.4
Agriculture	223.0	167.5	117.0
Total ^{1/}	905.4	1,150.2	1,340.8

^{1/}Total row is not a summation of four other rows

Sources: Federal Reserve Bank of Richmond, 1963.
U.S. Bureau of the Census, 1961.

and commissions to aid and encourage the settling of prospective manufacturers. Similar commissions have been established at the county and city level. Virginia's Division of Planning and Economic Development assists potential manufacturers who are considering the Commonwealth as a manufacturing site. From 1953 to 1957, the Division worked with 29 companies which eventually settled in the State and employed 9,325 persons (Commonwealth of Virginia, 1958:68).

Between 1950 and 1962 a total of 445 new plants, with a combined employment of 51,925 persons, located and began operations in Virginia. The apparel industry, employing 11,700 workers, was the leader in locating new plants in Virginia, followed by electrical machinery with 11,535 employees. Over 4,600 persons were employed in new chemical plants, and 4,300 workers were employed in new food processing plants. In excess of 2,500 persons were employed in new plants producing fabricated metals, furniture, and textiles (Knapp, 1963). In 1963, 77 new manufacturing plants located or planned to locate in Virginia; when maximum production is reached the plants will employ an additional 7,000 employees (Division of Industrial Development and Planning, 1963).

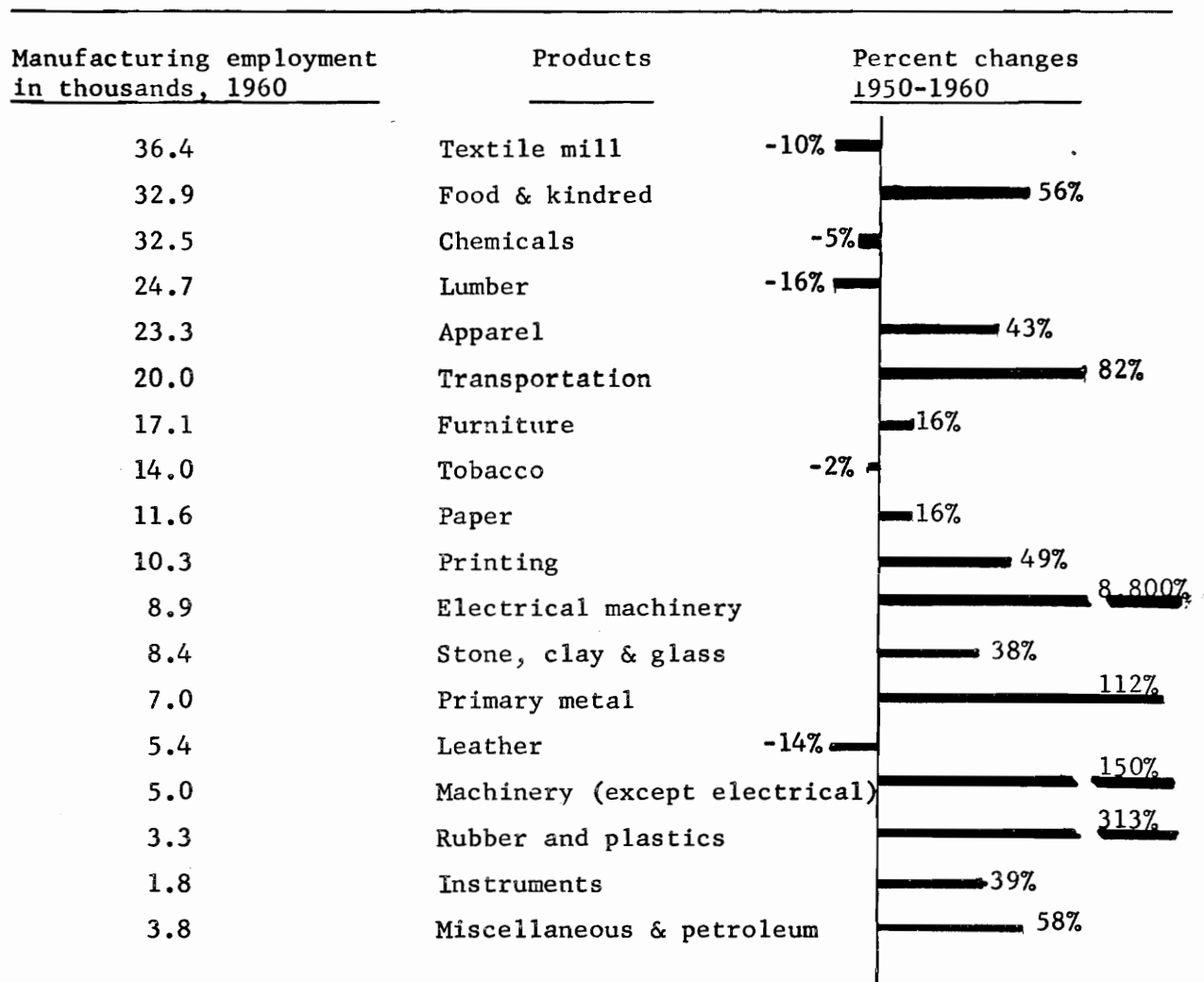
Manufacturing employment increased by 26.9 percent in Virginia during the 12 year period 1950-1962 compared

to 9.9 percent for the United States (Ware, 1963:8). The figures are significant in supporting the proposition that increased competition for labor may result if the influx of industries into the State continues. Between 1950 and 1960 many industries have shown remarkable growth as reflected in increased employment (Fig. 2). Prospects of increased settling of plants in Virginia are very good. Dunn (1962:11,12) considered some of the advantages to improve the competitive position of the South, including Virginia:

1. The South is the third largest and most concentrated market in the country following the Northeast and the West Coast. Higher incomes and improvements in accessibility aid the market structure of the area.
2. The settlement of some industries in the South has stimulated the establishment of intermediate industries in the South.
3. The South has many areas of underutilized resources.

A transition in Virginia's labor force is occurring due to the settlement of new plants and expansion of existing firms in the State. Increased labor requirements in the past have been offset by decreases in agricultural and mining employment. However, at some point these

Fig. 2.--Virginia's manufacturing employment 1960 by major groupings
and percentage changes from 1950-1960¹



¹Due to the introduction of the 1957 Standard Industrial Classification Manual data are not strictly comparable. Excluded fabricated metal class.

Source: Holm, 1962:5

sources of labor, will for all practical purposes vanish. Manufacturing employment in Virginia has been increasing rapidly, 2.7 times as fast as the nation for the period 1950-1962. Manufacturing employment has had percentage increases nearly twice the rate of increase in total labor force during the period 1950 to 1962 (Table 5). Unemployment has been consistently lower than the national average, approximately one-half the national average at present. These factors support the hypothesis that Virginia's labor force will become increasingly competitive. The civilian labor force was estimated to increase by 30 thousand to 40 thousand annually during the sixties (Division of Industrial Development and Planning, 1963:4). It is doubtful that such a goal will be realized. The first four years of the decade have resulted in an increase of only 75,000 employees, far short of the estimate.

Future expansion and location of industries in Virginia will depend, in part, on the presence of an available labor supply. On the other hand, increased employment opportunities in the State will spur a shift of potential employees to Virginia. Virginia, "has displayed a modest net inward shift in total employment (Dunn, 1962:20)." As a result of expected increases in labor employment and in order to maintain growth in the State's industrial sectors, an intensified inward shift of employees is needed. Employees must be induced to shift from one area to another and from one job

to another. The greatest inducement for such a shift is wages. If furniture manufacturers are to acquire the needed supply of labor they must be in a favorable competitive position with respect to wages and benefits. Wages have been comparatively low in the furniture industry, for example, nearly 30 dollars lower per week than the average chemical worker in Virginia. Without attempting to evaluate different skill requirements of competing industries in Virginia, the relatively low salaries paid furniture industry employees place the industry in an unfavorable position in competing for labor.

This section has thus far concentrated on factually establishing that competition for labor in Virginia will increase in the future. Such a statement is supported by past experience with a relatively low unemployment rate, influx of new industries into Virginia, continuing efforts by groups in the State to foster further industrial development in Virginia, and a manufacturing labor force that has increased nearly twice as fast as the total labor force. A countering argument can be based on the substantial increases in population and expectations of total labor force growth of approximately 35 thousand annually during the sixties. However, it has been indicated that to date the labor force has expanded at only one-half the expected rate. Population increases

have been substantial, and predictions are that between 1965 and 1970 the population and thereby the future labor force will increase by 11.5 percent. If such an increase materializes, it should aid in alleviating the competition for labor to some degree in Virginia. Another argument available for deprecators is to minimize the importance of the unemployment rate. Unemployment figures are calculated only for those individuals who have earned 450 dollars during the preceding 15 months. Therefore unemployment figures would not include new entrants and housewives. Yet this criterion indicates the available labor supply relative to the nation. In this respect, Virginia has a tighter labor force than the average for the nation.

Employment and Virginia's Wood Furniture Industry

If the trend of the past decade continues, employment in the State's furniture industry will increase by 500 annually. Expectations (see Furniture Consumption Section) are that the consumption of furniture will increase at a greater rate toward the end of this decade indicating even greater increases in employment. The quantity of labor needed is only one phase of the problem; another phase is the quality requirements of the industry.

To specify what the labor requirements are for the average furniture plant is difficult because of the

ambiguousness of what constitutes an average furniture plant. Mechanization of the plant, along with style, type, and especially quality of furniture produced will significantly alter a plant's labor requirements. As a generalization, the labor requirements for the industry are in the ratio of 1:2:1 for skilled, semiskilled, and unskilled labor respectively (Hagenstein, 1964). This ratio is very flexible, for example, skilled labor may be required for the entire labor force in a quality cabinet maker's shop.

The furniture industry is labor intensive in comparison to many other Virginia industries (Table 6). The term labor intensive refers to the quantity of labor required for a given value of output. Table 6 considers the furniture and fixtures industry as the base, 100 percent, and compares other major industrial sectors in the state to the base. Textile, apparel, and lumber and wood are the only sectors in Virginia that exceed the furniture and fixtures industry in labor intensity. The relevance of labor intensity is that an increase in wages will increase the labor cost of production in proportion to labor intensity. An example comparing the furniture and fixtures industry with the electrical machinery industry in Virginia will illustrate the importance of labor intensity. Assume that the cost of labor equals

Table 6.--Labor intensity in Virginia's manufacturing sectors

<u>Industry</u>	<u>Index of labor intensity</u> (Furniture and Fixtures = 100)
All industries	69.4
Food and kindred products	66.4
Tabacco	31.3
Textile	110.9
Apparel	175.4
Lumber and wood	164.3
Furniture and fixtures	100.0
Wood household furniture not upholstered	110.5
Wood household furniture upholstered	99.0
Paper and allied products	54.1
Printing and publishing	65.5
Chemicals	36.4
Rubber and plastics	94.8
Stone, clay, and glass	65.3
Primary metal	64.5
Fabricated metal	74.3
Machinery, except electrical	69.5
Machinery electrical	37.2

1

Labor intensity index equals value added by manufacturing divided by the number of production man hours, divided by labor intensiveness of furniture and fixtures

Source: Adapted from U.S. Bureau of the Census, 1960.

250 dollars for the production of 1,000 dollars of furniture. Further assume that wages are the same in both industries, then the labor cost to produce 1,000 dollars worth of electrical machinery is 93 dollars, since the electrical machinery industry is 37.2 percent as labor intensive as the furniture and fixtures industry (Table 6). Assume that the cost of labor increases 10 percent in the near future. This would result in a labor cost increase of 25 dollars for the same amount of furniture; while in the electrical machinery industry labor cost would increase only 9.3 dollars.

Electrical machinery, machinery (except electrical), and rubber and plastics are the three Virginia industries having the greatest percentage increase in growth between 1950 and 1960 (Fig. 2). Absolute increases in employment were highest in the food and kindred industry and the apparel industry during the same period. All of these industries, with the exception of the apparel industry, are less labor intensive than the furniture and fixtures industry and therefore have a labor cost advantage over them. The cost of labor inputs will become increasingly important to furniture manufacturers as competition inevitably pushes up wage rates. The more labor intensive the industry, the higher the cost of production as wages increase.

Due to relatively low wages in the furniture industry, the industry is at a disadvantage in competing for labor. The costs of labor can be considered a cost of production to a manufacturer and can be defined as the value of labor in its best alternative use. The definition implies that furniture manufacturers must pay employees a sufficient amount to attract and hold desirable amounts of labor from alternative employment. An employee's pay will vary with his skill, efficiency, and quality of work, among other things. If furniture employers increased wages to become more competitive, then wages would become an increasing burden to furniture manufacturers due to the labor intensiveness of the industry.

The definition of costs of labor can be altered to define a furniture manufacturer's return on labor as equal to what he could have earned had he invested the same amount of money elsewhere, such as in machinery rather than labor. For a given level of furniture production, assume that machinery may be substituted for labor. A better balance between labor and capital investment would reduce the labor intensiveness of the furniture industry and place the manufacturer in a position where increases in wages would not be an excessive burden. In other words a method of reducing the detrimental effect of increased wages in a labor intensive industry is to substitute capital for labor.

Unionization

Installation of unions in Virginia's economy has met with resistance by employers. In 1965 legislation was presented to Congress that attempted to repeal Section 14 (b) of the Taft-Hartley law. It is expected to be re-submitted in 1966. Section 14(b) permits states to enact right-to-work laws. The right-to-work laws are designed to permit the individual to make his own decision whether or not to join a union; they forbid every form of compulsory unionism.

Since passage of the Taft-Hartley law in 1947, 18 states have enacted right-to-work laws; 11 of the states are located in the South. Virginia has had a right-to-work law since April, 1947; agency, closed, and union shops and yellow dog contracts are all outlawed in Virginia (Sultan, 1958:59-61). The presence of right-to-work laws in the State has hindered attempts at unionization.

If Section 14(b) is repealed, greater efforts to unionize employees in Virginia will be attempted. An influx of industries from northern metropolitan areas and some union employees moving to Virginia with a company will also provide greater impetus and ease in unionizing firms.

Complacency by employees is another reason for the slow growth of unions in the South. "No doubt, union

membership has been held down by 14(b), particularly in the South. But the gains made, when and if it is repealed, may well be offset by adverse public sentiment; many Americans, whether or not they are accurately informed on the issue, still feel that a man should have a right to hold a job without belonging to a union (Time Inc., September, 1965:43)." However, if Section 14(b) is repealed the general trend will probably be increased efforts by union organizers to install unions in Virginia.

One effect of increased unionization may be increased wages. According to estimates by Lewis (1964:123), "the impact of unionism on the average wage of all union labor relative to the average wage of all non-union labor may have exceeded 25 percent near the Bottom of the Great Depression of the 1930's, was 5 percent or less in the latter 1940's, and almost 10 to 15 percent a decade later."

Summary

Since 1960, Virginia's population has exhibited rapid growth, twice the national average and greater than any state east of the Mississippi River except Florida. The labor supply increased annually by 17,000 people. Unemployment in Virginia, 3.3 percent, is much lower than the national average, 5.7 percent. Per capita income increased in Virginia at a greater rate than the national average. These facts all point to a generally favorable employment outlook for labor in Virginia.

In 1964, Virginia's furniture manufacturers employed nearly 21,000 workers. Forecasts indicate that furniture manufacturers will accelerate production to meet increased consumption patterns, and additional labor will be required. With expanding and new industries in the State, competition for labor can expect to be intensified. The question is, what, if any, competitive advantages for labor does the furniture industry have over competing industries?

Unfortunately, the industry presently has few apparent advantages. Furniture manufacturers are normally located rurally, near their wood raw material source, and may avoid the extreme competition that might be found in the metropolitan, industrial areas of the State. The location of the plant near employees' residences, in rural areas, might be enough of an inducement for workers to seek and keep jobs at plants in rural areas rather than relocate. Approximately 75 percent of the labor employed by furniture manufacturers are either semiskilled or unskilled while many labor competing companies may require a very high percentage of skilled employees.

A minor unemployment situation has existed in Virginia during the early years of the sixties. This situation will probably continue for some time because increased manufacturing employment needs have been satisfactorily offset by diminishing agricultural employment and the

influx of labor from other areas. However, with increased industrialization and decreasing agricultural employment, a long prediction of increasing competition for labor would appear acceptable.

Wages in the furniture and fixtures industry are considerably lower than other sectors of Virginia's economy. Compared to the average employee's salary for all durable goods, the furniture and fixtures industry was nearly 20 dollars lower per week. The furniture and fixtures industry's average weekly wage was nearly 30 dollars below that for the average chemical worker. Wages appear to be the weakest factor in competing for labor by the furniture industry. In time, as competition for labor is intensified, furniture manufacturers will be forced to increase wages and benefits. Increased wages will substantially increase the costs of producing furniture because the furniture industry is very labor intensive.

Greater efforts at unionization in Virginia can be expected as more, already unionized, companies move into the State. If Section 14(b) of the Taft-Hartley law is repealed greater efforts to organize workers by unions can be expected. The net effect of increased unionization and increased competition for labor will usually be higher wages and therefore higher costs of production.

Considering all aspects of labor with respect to the furniture industry, labor could be the major limitation to successful growth of the furniture industry in Virginia.

Raw Material

Wood is the primary raw material used in the production of furniture. In general, Virginia and its surrounding area have abundant wood reserves. The presence of available wood in the State is one of the primary reasons for the settling of furniture manufacturers in Virginia. After labor, wood is the most important factor in the locating of a wood furniture plant (Table 4). An additional indication of wood's importance is that for every 1,000 dollars worth of furniture, lumber and lumber products cost 124.21 dollars (Table 1). According to Table 1, lumber and lumber products are the greatest financial outlays by furniture manufacturers from other industrial sectors.

The twentieth century has been a time of great technological advance in development and new applications of materials. Some materials are stronger than wood, such as metal; others are lighter, such as plastic; however, few materials have the combination of favorable characteristics that have raised and maintained wood as the primary furniture raw material. According to Panshin (1962:168) some of the advantages of wood are:

- "(1) it is easily worked with hand and machine tools;
- "(2) it may be satisfactorily fastened together with adhesives, dowels, nails, and screws;

- "(3) it is strong for its weight, enabling the fabrication of strong parts possessing agreeable proportions without incurring excessive weight;
- "(4) damaged wood usually is easily repaired;
- "(5) it is comparatively noiseless when struck;
- "(6) it is a poor conductor of heat and therefore does not feel very hot or cold when touched, although its temperature may be considerably above or below body temperature;
- "(7) no other material possesses such natural beauty, with variations in figure and color that blend, although the shades of color and the contours of pattern are seldom, if ever, identical;
- "(8) pieces of wood that are not, in themselves, ornamental may be given attractive finishes; and
- "(9) no other material, as it grows old in service, enhances its beauty by taking on a darker color and rich appearance like the patina of old wood furniture."

There are a few unfavorable characteristics associated with wood; for example, it shrinks and swells as the moisture content varies. Technological advances have

been made and must continue to be made if wood is to continue as furniture's chief raw material.

Losses of wood up to 50 percent, occur in furniture manufacturing. Panshin (1962:179) indicated that most of the losses are due to: "(1) artistic shapes required in solid parts; (2) trimming of veneer for panels, particularly when flitches of sawed or sliced veneers are purchased; (3) matching of veneer, especially when unusual designs are sought; and (4) inability to use the entire piece of lumber purchased under regular grading rules because of losses from defects, saw kerf, shavings, and the impossibility of converting all the remaining clear material into usable cuttings of required sizes." The profitable future operation of the furniture industry will depend, in some degree, on the efficient use of raw material, thereby reducing the costs associated with manufacturing.

Species and Quality Requirements for Lumber Used in Furniture Production

It is impossible to precisely state the species of lumber that will be desired for furniture production in the future. Characteristics such as strength, workability, color, beauty, and grain certainly will influence future requirements. The availability of adequate quantities of acceptable quality lumber and its price are major considerations when discussing future lumber requirements.

Furniture production is oriented primarily to hardwood lumber. However, there has been a trend over the years toward using increasing amounts of softwoods. A 1928 survey showed that hardwoods accounted for about 94 percent of lumber used for furniture and fixtures (Johnson, 1938:18). By 1963, the hardwood percentage decreased to 83 percent (Siegel, 1963:n.p.). Hardwoods can be viewed as continuing their lead in furniture, but in the less visible areas of "hardwood" furniture and so-called "pine" furniture, softwoods can be expected to be increasingly utilized.

A relatively safe prediction of desired species for furniture would be to include the oaks, gums, birches, maples, and yellow poplar. These species have been consistent leaders throughout the century. Over the 12 year period, 1948 through 1960, species preference for furniture shifted appreciably, "since 1948 when two-thirds was yellow poplar, sweet gum, maple, birch and oak. Of these, demand for maple and oak has risen. For the other three, demand has declined substantially, paralleling resource trends. Tupelo and sweet gum furniture lumber declined from 20 to 11 percent of the total between 1948 and 1960. Certain minor Southern species in furniture manufacture have increased -- ash, basswood, cottonwood, hackberry and pecan, among others (Siegel, 1963)."

Virginia's furniture plants consume approximately 10.5 million board feet of lumber annually (Rodenback, 1959). The quantity of lumber, by species, consumed by Virginia's furniture manufacturers is not readily available; however, statistics are available for North Carolina. Due to the proximity of the two states and the similarity of the furniture produced, an approximation of species utilized in Virginia can be obtained by using figures for North Carolina. Yellow poplar is the number one species, accounting for 38 percent of the total lumber consumed, followed by gum - 20 percent, oak - 11 percent, and yellow pine - 6 percent; 3.3 percent of lumber consumption is attributable to imports of which 98 percent is mahogany. Table 7 indicates furniture lumber consumption, by species, for the nation from 1928 through 1960. Of special significance are the columns of percentages which permit comparison between periods. Over the span of years certain factors are evident; there has been a general trend toward increased softwood utilization, but hardwoods have maintained their dominant position; the popularity of species has varied over the period considered, sweet-gum was the most popular species at the beginning of the period, while maple, oak and yellow poplar were the more popular in 1960.

Table 7.--Lumber used in the manufacture of furniture, by species and specified years, 1923-1960¹

Species	1923		1948		1960	
	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>
Total	1,259	100.0	1,948	100.0	2,261	100.0
Softwoods	91	7.2	324	16.6	362	16.0
Hardwoods	1,121	89.1	1,591	81.7	1,854	82.0
Maple	91	7.2	219	11.2	362	16.0
Oak	143	11.4	210	10.8	314	13.9
Yellow poplar	110	8.7	332	17.0	283	12.5
Tupelo	55	5.4	92	4.7	140	6.2
Sweetgum	408	32.4	300	15.4	124	5.5
Alder	18	1.4	31	1.6	93	4.1
Birch	107	8.5	131	6.7	86	3.8
Ash	14	1.1	48	2.5	79	3.5
Cherry	2	.2	17	.9	48	2.1
Beech	39	3.1	57	2.9	45	2.0
All other hardwoods	134	10.7	154	8.0	280	12.4
Foreign woods	47	3.7	33	1.7	45	2.0
Mahogany	33	2.6	31	1.6	27	1.2

¹United States figures

Source: Gill, 1965:110

As indicated, wood is the primary raw material for furniture due to its many favorable intrinsic characteristics. The lack or reduction of these qualities could result in manufacturers seeking substitute materials. Unfortunately, "quality evaluation studies during the last quarter century indicate a decline in intrinsic wood quality (U.S. Forest Service, 1958:60)."

The quality requirements for hardwoods used in furniture vary somewhat by species and class of furniture (Table 8). However, over 90 percent of hardwoods used in furniture were of high or medium grades. A high classification includes "Select and Better" and higher; medium grades include "No. 1 and No. 2 common"; while low class includes "No. 3 common" and lower. Wood household furniture, not upholstered, which is Virginia's primary furniture class, uses 24 percent high class lumber, 64 percent medium class, and only 8 percent low class.

The furniture industry, requiring a better than average quality wood, is faced with a rapidly diminishing supply. According to the U.S. Forest Service (1958:59), "cull hardwood trees are equivalent in volume to one-fourth of the nation's entire hardwood growing stock." Senate Joint Resolution Number 22 of the General Assembly of Virginia (1955:10) stated that, "we are now in a period

Table 8.--Lumber used in furniture manufacturing by quality class and species groups, 1960^{1/}

Species and quality	Furniture class		
	Wood household (not upholstered)	Wood household (upholstered)	Wood office
Softwood			
High	26	5	2
Medium	37	62	80
Low	37	33	18
Hardwood			
High	24	11	21
Medium	68	80	74
Low	8	9	5
Sweetgum			
High	26	6	9
Medium	67	80	88
Low	7	14	3
Hard Maple			
High	35	44	33
Medium	52	55	63
Low	7	1	4
Red Oak			
High	25	2	20
Medium	52	92	76
Low	23	6	4
Yellow Poplar			
High	12	8	6
Medium	74	77	85
Low	14	5	9

^{1/}National Figures

Source: Gill, 1965:54

which is critical to those Virginia forest industries, such as sawmills and veneer and furniture plants, which must have good size sawlogs. Trees available for sawlogs are rapidly becoming smaller in diameter, even to the point of disappearing as sawlog material."

If wood is to continue to be used for furniture, then quality wood supplies must be available. Due to technological advances in laminating, the gluing of shorter pieces of quality wood to form larger pieces, and the combining of wood with other materials to improve properties, it has been possible to decrease the quantity of quality wood per unit of furniture. The increased use of plywood, particleboard and hardboard in furniture can decrease the need of quality wood since these prefabricated products can be used for core stock and other less visible areas.

Quantity Requirements of Lumber

Virginia produces large quantities of lumber. "The Virginia cut has exceeded one billion feet each year since 1939, except in 1945 when it was just under one billion (General Assembly of Virginia, 1955:19)." Since 1956, more than one-half of the hardwood produced in the South has been cut in five states. In order of hardwood production, 1957-1961, the leading states are: Virginia, Tennessee, North Carolina, Arkansas and Mississippi (Siegel, 1963:n.p.).

Unless the volume of commercial wood needed by the furniture industry is available in quality and species required, expansion of the industry is doubtful. Virginia has over 30 billion board feet of live sawtimber; of this hardwood accounts for a little over 20 billion board feet (Table 9). Large quantities of wood are available; the difficulty is that sufficient quantities of desired quality species of wood are diminishing.

Price of Lumber Raw Material

The availability of adequate supplies of quality timber of desired species is one problem to be faced by furniture manufacturers. A related problem concerns the price of lumber which has increased at a much greater rate than the price of most goods. According to Zaremba (1963:60), "the trend of lumber prices relative to all-commodity prices -- the deflated price trend -- has been strongly upward, increasing about eight times since 1850." For the period 1850 to 1958 lumber prices increased approximately 3 percent annually.

Reasons for the increasing price trend are many and varied, for example: higher cost of growing timber, inflation, poor efficiency of sawmills, smaller diameter trees, and higher cost of other factors such as transportation and labor. Following Zaremba's thinking, the important consideration is not why lumber prices increased

Table 9.--Net volume of live sawtimber¹ on commercial forest land in Virginia, 1963
(based on International 1/4 inch rule)

Species	Volume
	<u>Million bd. ft.</u>
All species	37,120
Softwood	12,701
Hardwood	24,419
White oaks	6,130
Red oaks	6,091
Yellow poplar	3,076
Hickory	2,313
Sweet gum	1,635
Tupelo and black gum	1,135
Soft maple	978
Hard maple	170
Other hardwoods	2,891

¹Sawtimber trees - live trees containing at least one saw log. Hardwoods must be at least 11.0 inches in diameter breast height. Softwood requirements vary by location, either 9.0 or 11.0 inches in diameter.

Source: Adapted from U. S. Forest Service, 1965:161-162

but why they rose faster than all commodity prices. Average per capita productivity for all commodities has increased over the last century at roughly 2 percent per year, and the increased productivity has been passed to workers in the form of wages. However, the data on the lumber industry indicates few advances have been made in increasing productivity of the industry. Lagging productivity results from insufficient technological advances in logging, transportation, milling, and manufacturing. Processing costs have also increased due to declining size and quality of trees and increasing distance between forest and consumer. Productivity in the lumber industry has not kept pace with the rest of the economy and wages have paralleled wage increases of the rest of the economy. Higher wages have been compensated for by higher prices.

Non-Lumber Wood Materials as Furniture Raw Material

The term processed, non-lumber, wood for furniture refers to wood products other than lumber such as plywood, hardboard, particleboard, and veneer which are manufactured from wood and later used in furniture production. The use of processed wood has advanced rapidly over the years. In 1960, approximately 16.2 percent of wood used in furniture manufacturing was in a processed form; the remaining 83.8 percent was lumber. The increased utilization of these products has been tremendous. From

1948 to 1956 hardboard production increased from 957 million square feet to 1,498 million square feet. Particleboard, almost unheard of prior to 1945, reached a production level of 570 million square feet in 1956 (Panshin 1962:248). In 1960, furniture was one of the chief users of these products; 16 percent of the hardboard and 25 percent of the particleboard produced was consumed by furniture manufacturers (Gill, 1965:17-18). These two wood products are indiscriminate in the quality or type of wood used in their fabrication, permitting the use of heretofore wood waste materials and poor quality and species of lumber. Techniques have been devised to adjust properties of the processed wood such properties as, specific gravity, modulus of rupture, and modulus of elasticity to desired levels.

Plywood is widely used in furniture; it can be used in most parts except sided pieces such as legs and rungs. The advantages of plywood are significant; by placing the grain of each layer at right angles to adjacent layers strength is increased and swelling, due to changes in moisture content, is retarded. Both of these factors make plywood extremely adaptable and advantageous for furniture construction. Nationally, production of softwood plywood has increased rapidly; from 125 million square feet in 1924 to 7,828 million square feet in 1959.

Hardwood plywood has also increased but not as spectacularly as softwood plywood (Panshin, 1962:165). Plywood is now being produced in the South using southern pines thus encroaching upon the dominant rule of the West in plywood production. Non-lumber wood materials will be increasingly used. The effect of increased prices and reduced quality will diminish the use of lumber and stimulate the use of processed wood.

Summary

Furniture is becoming more intensively styled which requires frequent changes in design. The low tooling cost required to change wood furniture design is a prominent advantage of wood over most competitive materials (U.S. Forest Service, 1963:60). This characteristic plus the other factors previously mentioned insure wood's dominance of the furniture industry. However, the prospects of decreasing quality and size of trees and the continuing price escalation of lumber may tend to reduce per unit wood use for furniture. The increased productivity and continued technological advance of processed wood products indicate increased per unit utilization of these materials.

The furniture industry has been riding the crest of record breaking sales the past four years and increased demands for lumber have paralleled the sales. The general outlook for lumber is increased prices due to stagnated productivity and increased wages.

In general, the outlook is very favorable for processed wood raw materials. Increased utilization, productivity, and technological advances with favorable cost advantages are indicated. The general analysis of lumber as furniture raw material does not suggest such advantages.

The lumber industry is beset by low productivity, increasing costs, poor technological advances and lower quality and size of trees. The United States lumber industry is composed of many small firms. With so many establishments of small size, any attempt at unified efforts in technology, advertising, cutting methods, or any other endeavor are limited. Unless gains in productivity and tree quality are achieved, price increases disproportionate with the rest of the economy will continue. Carrying this thought to an unprobable but possible culmination, lumber of quality may price itself out of the furniture market.

Transportation

Accessibility is a major factor considered in locating a manufacturing plant. Accessible roads and rails permit raw materials to enter a manufacturing area and the finished product to be shipped to consumers. Furniture plants are normally raw material oriented. The wood raw material is grown in outlying rural areas where existence of an efficient network of rails and roads is less probable. A link must be provided between the timber area and the principal consumption areas. Since approximately 50 percent of the wood volume purchased for furniture manufacture is eventually discarded, raw material transportation costs take on increased importance. This is one reason that a firm will place so much emphasis on locating the furniture manufacturing plant convenient to raw material supplies.

Another factor to consider in furniture transportation is the type of product being shipped. A unit of furniture presents numerous difficulties in shipping. It is a bulky high volume low weight product with legs of chairs and tables protruding, and it contains large amounts of empty space, such as drawers. Care must be taken in shipping since scratches and dents can drastically reduce the retail value of furniture.

These factors provide some justification for considering transportation as a major factor influencing the furniture industry; additional justification is that transportation

accounted for approximately 22 dollars of each 1,000 dollars of household furniture produced (Table 1). Due to the present impact of transportation on the furniture industry, it is of interest to determine the present status and expected changes in transportation and its probable influence on Virginia's furniture industry.

Virginia's Transportation Facilities

Waterways have only limited use for furniture manufacturers, since only small amounts of furniture goods are exported and very limited quantities of wood are imported. More important transportation facilities are the ever improving network of highways and railways providing accessibility on an inter and intra state basis.

Twelve class one railroads^{2/} and several lesser roads form a network of transportation within and outside of Virginia (Ferguson, 1951:5). The Chesapeake & Ohio Railway Company provides access to cities such as Chicago, Columbus, Louisville, Detroit, and Milwaukee (Hampton Roads Maritime Association, 1962:54-55). The 5,737 miles of track of the Norfolk and Western connects the six-state area of Virginia, West Virginia, Ohio, North Carolina, Maryland, and Kentucky. In October, 1964 it was obtained on a merger that increased the system's mileage

^{2/}A railroad whose annual revenue exceeds one million dollars.

announced that approval was obtained on a merger that increased the system's mileage to 7,800 miles covering 14 states and Canada (Traffic World, October 24, 1964:31). The world's largest railroad, the Pennsylvania, also serves Virginia. The railway complex passing through Virginia provides trade with all areas in the continental United States and Canada.

Virginia has an adequate highway network providing accessibility by truck to most areas in the state. In 1963, Virginia had 57,436 miles of roads and streets, of this over 50,000 miles were primary and secondary roads administered by Virginia (Bureau of Public Roads, 1965: 105). The road facilities in Virginia and throughout the nation have been boosted by the Interstate Highway System. When completed, the System will consist of 41,000 miles of roads of which 1,056 miles will be in Virginia (U.S. Department of Commerce, 1964:52-53).

Air carriers have had limited use in shipping furniture. Only eight cities in Virginia have airports suitable for commercial traffic and only in rare situations would the cost of air freight be economical. However, in 1955 it was estimated that furniture accounted for two percent of air freight outbound tonnage for all manufacturing sectors in Virginia (Ferguson, 1951:61). The entire network of rail, road, and air carriers provide a pattern of

transportation that offers access to most areas of the State.

Economics of Transportation

An obvious effect of improved transportation is the availability of goods, such as furniture, in areas where they are not produced. Improved transportation and resulting lower costs permits the formation of central markets. A central market, such as Richmond, Virginia, receives goods from manufacturers throughout the State and distributes the goods to many consuming areas. The extensive competition and large volume of goods handled in a central market prevent wide fluctuations in price that might exist in local markets. Improved, less expensive, transportation offers a manufacturer the opportunity to locate in areas distant from their consumers where factors of production such as labor, land, and raw materials are favorably priced. A manufacturer has the advantage of geographic specialization; i.e. a community that due to some factor(s) has an advantage over other areas in manufacturing a product. Competition can be stimulated by lower transportation costs since producers from distant areas can sell in the same market. In 1958, the three areas of Richmond, Norfolk-Portsmouth, and Roanoke accounted for 88.1 percent of the wholesale trade in Virginia's furniture (Table 10). These areas can be considered central markets in Virginia.

Table 10.--Type of wholesale trade compared for five standard metropolitan areas in Virginia, 1958

Area	Class of trade (thousand dollars)		
	Furniture and home furnishings	Lumber and constr. matls.	Wholesale trade, total
Richmond			
Sales	17,034	62,272	1,172,436
Percent of state	58.9	36.7	33.6
Norfolk-Portsmouth			
Sales	3,327	32,141	578,513
Percent of state	11.5	19.0	16.6
Roanoke			
Sales	5,105	9,813	236,710
Percent of state	17.7	5.8	6.8
Lynchburg			
Sales	*	8,218	101,029
Percent of state	*	4.8	2.9
Newport News-Hampton			
Sales	*	4,832	79,120
Percent of state	*	2.8	2.3

* Withheld in accordance with census law in order to avoid disclosure of operations of individual establishments.

Source: Ware, 162:8

Freight Rates

Two types of freight rates exist: class rates which apply to goods in large classes, and commodity rates which apply to specific goods. "Commodity rates are often established because the appropriate class rate is so high some commodity will not move at the class rate, or when a shipper or group of shippers have sufficiently strong bargaining power to get their rates reduced below class rates. In the United States most rail and highway freight and virtually all water freight moves at commodity rates (Ferguson, 1951:63)."

Freight cost is one of the five major concerns of furniture manufacturers in the future (U.S. Department of Commerce, 1964). The Virginia furniture industry has as its market the entire country, and freight costs a market size determinant. Increased freight rates would increase the price of Virginia furniture and make it less price competitive in distant markets with local manufacturers. Railroad freight rates, average revenue per ton, have generally been constant during the past decade 1952-1962 (Fig. 3). However, freight costs have been consistently rising for less-than-truckload and less-than-carload shipments (Dun's Review, 1965:130). The recent trend of level average freight costs for railroads will probably continue. Mergers, improved technology, and governmental

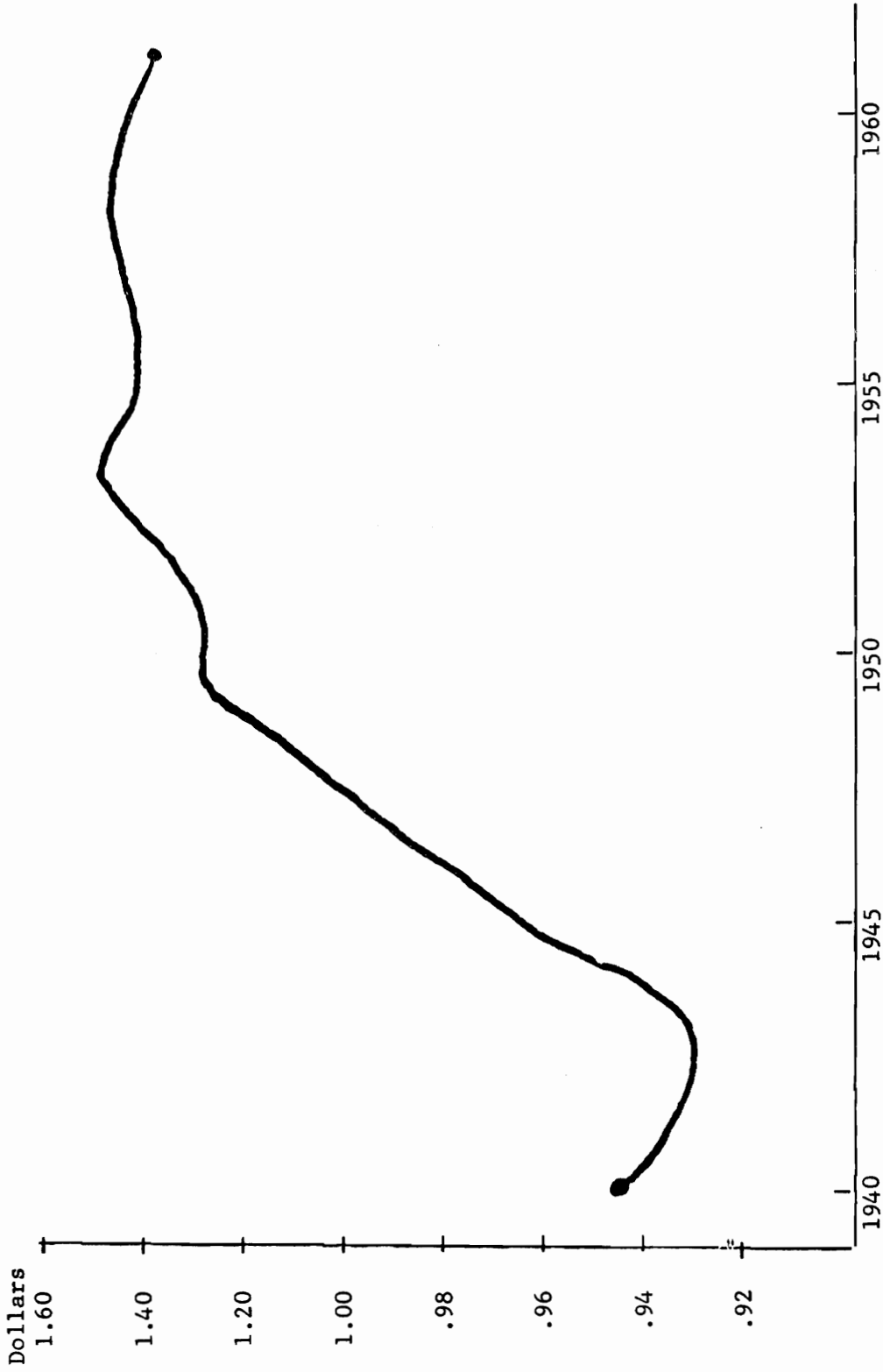


Fig. 3.--Average revenue per ton mile for Class I Railroads 1940-1962

Source: Eastern Railroads Presidents Conference, 1964:49

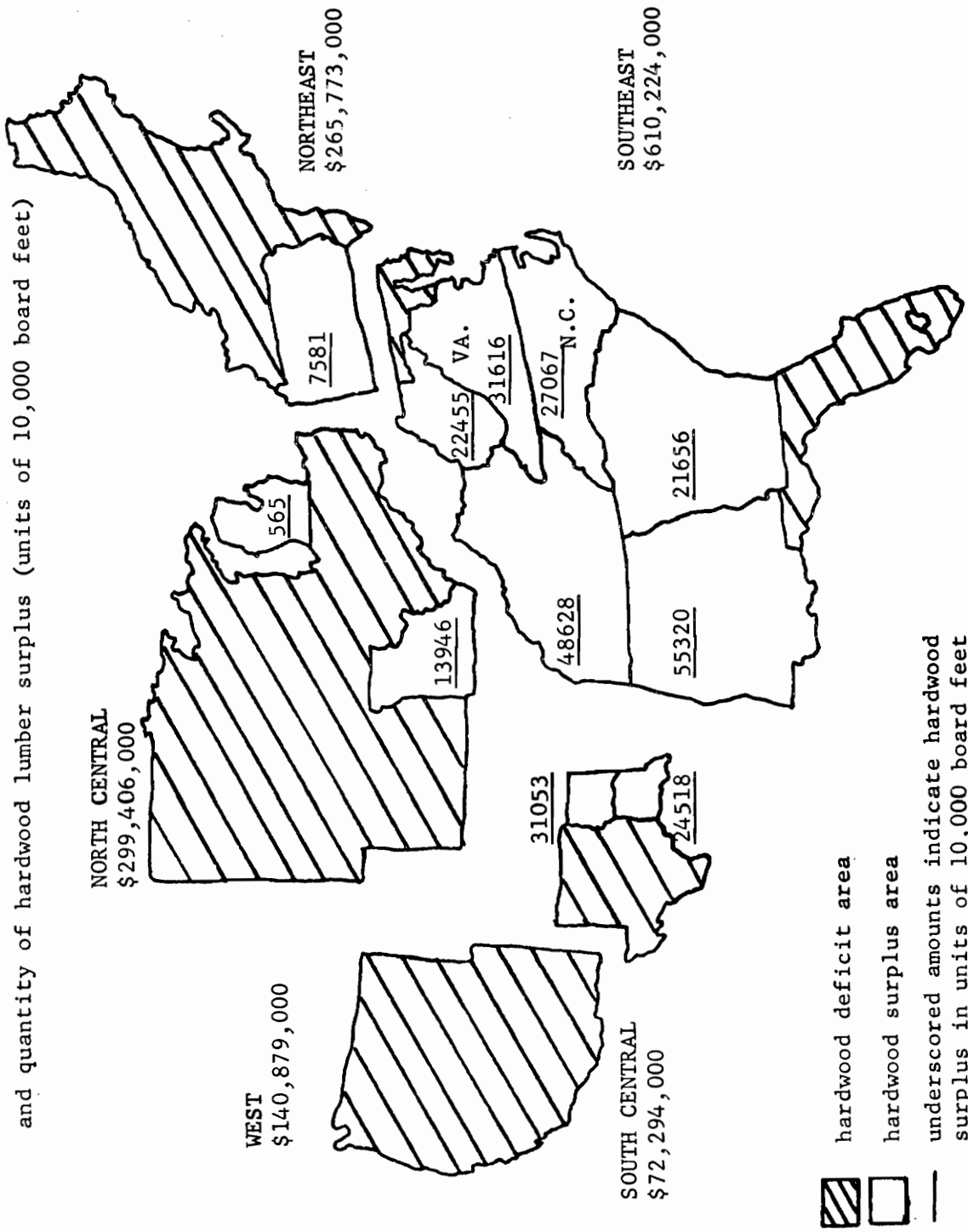
restrictions will likely prevent any abrupt change in rates, and they will offset increasing operation and maintenance costs. Motor carriers may increase rates but not enough to significantly limit the furniture industry in Virginia. Less expensive furniture may be restricted in its distribution to distant markets since an increase in freight rates would result in a greater proportional increase in the price of such furniture than for more expensive furniture.



The nation is patterned into five major rate territories where class and commodity rates vary. The territories are: (1) Official, (2) Southern, (3) Western Trunk Line, (4) South Western, (5) Mountain-Pacific (Locklin, 1947). Demarcation by area has special significance in Virginia since the State is divided into Official and Southern Territories for highway and rail rates. As might be imagined, numerous difficulties evolve from such a situation. Class rates are generally higher and commodity rates lower in Southern Territory than Official Territory. A manufacturer shipping from one territory to another is plagued with a confusing rate structure.

Geographical Flow of Wood and Furniture

Virginia is favorably situated near accessible wood raw material sources and furniture consuming areas (Fig. 4). The unshaded areas of Figure 4, which include Virginia,

Fig. 4.--Value of shipments wood household furniture (dollars), except upholstered, in 1958, and areas and quantity of hardwood lumber surplus (units of 10,000 board feet)



 hardwood deficit area
 hardwood surplus area
 - underscored amounts indicate hardwood surplus in units of 10,000 board feet

Sources: Southern Furniture Manufacturers, 1960:n.p.
Holland, 1962:18

are hardwood surplus areas. Virginia has a hardwood surplus of 316 million board feet.

The entire wood requirements of the State's furniture industry are not met by Virginia's timber reserves. Information on the sources of wood and type of transportation used by furniture plants in the State is not available. However, figures are available for neighboring North Carolina. Only 44 percent of the wood requirements of North Carolina furniture plants are obtained within that state; according to Smith (1954), the primary transportation facilities carrying wood to plants are rail - 57 percent and truck - 43 percent.

Figure 4 clearly indicates that Virginia is a focal point of hardwood production and wood furniture, not upholstered, production. Most of the states surrounding Virginia abound in hardwoods and are the primary sources of lumber raw material. The southeastern area produces nearly 50 percent of the nation's wood furniture, not upholstered. From 1947 to 1958, the value of wood furniture shipments increased by 87.9 percent.

Although Virginia is situated in a major wood raw material source, some materials such as dimension stock are procured from distant supplies. According to Haas (1964:7), "firms reached out as far as 348 miles to get rough-green dimension. For rough-dry stock the maximum

distance rose to 832 miles; and for both surfaced-dry and fully machined parts, firms made purchases from suppliers as far as 2,000 miles away. "Haas' survey indicated that transportation of dimension stock involved long distances and therefore expensive transportation costs.

Virginia is situated sufficiently close to the major consuming areas of the nation to command a favorable market position. One-half of the United States population is within a 500 mile radius of Virginia and that distance can be travelled in less than 24 hours by rail or truck (Division of Planning and Economic Development, 1958:23). The close proximity of primary consuming areas presents Virginia with a transportation cost advantage in the shipping of goods.

In 1961, Virginia shipped more than 20 tons of furniture to each of 15 other states (Table 11). A rate increase might reduce the volume of shipments to such distant areas as California and Washington. The distance would tend to limit furniture shipments to the high quality, more costly furniture.

The question arises, what would be the effect of an overall increase in freight charges on Virginia's wood furniture industry? Non-price competitive items such as advertising and brand name identification will not be considered. The analysis is limited to wood furniture,

Table 11.--Commodity class furniture shipped from Virginia
to other states by Class I Railroads, 1961

Destination ¹ (state)	Volume of freight	Short-line distance ²
	<u>Tons</u>	<u>Miles</u>
Arizona	24	2313
California	128	2781
Colorado	28	1704
Florida	40	765
Illinois	87	724
Iowa	27	1130
Massachusetts	73	695
Minnesota	41	1144
Missouri	72	892
Nebraska	30	1157
New Jersey	64	478
New York	73	562
Ohio	33	536
Texas	141	1327
Virginia	50	14
Washington	22	2059

¹Only states with shipments of 20 tons or more included.

²Short-line distance is the shortest rail route over which carload traffic can be moved without transfer of lading.

Source: Adapted from, Interstate Commerce Commission, 1963:253-254.

not upholstered since this is the primary type of furniture produced in Virginia. Wood furniture, not upholstered, production can be found in most areas of the nation with concentrations of production in certain areas (Fig. 4). By far the greatest nucleus of production is the Virginia - North Carolina complex with value of shipments totaling 412 million dollars in 1958 (U.S. Department of Commerce, 1960). Other leading areas of production are: California - 103 million dollars, Indiana-Illinois - 169 million dollars, New York-Pennsylvania - 171 million dollars, and Tennessee - 50 million dollars.

The five areas listed account for approximately 70 percent of the value of shipments of wood furniture, not upholstered. When comparing the value of shipments for each area the following facts are apparent:

1. With the exception of California, very little wood furniture, not upholstered, production occurs in the western half of the United States. Exportation of furniture from furniture production surplus areas has occurred from many states, such as Virginia, (Table 11). Freight rate increases may alter the pattern of transportation from area to area. Virginia - North Carolina would have a distance advantage in the southwest; while the Illinois-Indiana area is closer to the northwest.

2. Virginia-North Carolina has a definite advantage over all other areas in shipping to the southeast area of the United States.
3. The megopolistic area extending from Boston to Washington, D.C. is probably the greatest market in the nation. Of the primary furniture production areas, Virginia-North Carolina and New York-Pennsylvania have a competitive cost advantage in shipping to this market. An increase in freight rates would probably not alter the structure of the market or the production areas to any great extent.
4. Another consideration is the freight charges associated with the shipment of wood raw materials. Due to the concentration of hardwood raw material in the southeast any freight advantage in the shipment of furniture products from other areas may be more than offset by the costs involved in shipping wood raw material to the production site.

A quantitative approach in determining the influence of transportation costs on product distribution, plant location, and resource development is suggested for further study. A possible means of handling the problem is to view the problem in the framework of equilibrium among

spatially separated markets. A linear programming model could be incorporated as a problem solving device. A similar approach was used in determining the spatial structure of the lumber industry (Holland, 1962).

Transportation Trends

The last decade has been witness to widespread changes in the transportation industry. Technological advances in design, speed, and packaging have produced a broad flexibility for the carriers. Automation has produced faster and more efficient traffic and billing facilities. Leasing and individual ownership of transportation facilities by manufacturers has been expanding throughout the country.

Fierce competition exists in the transportation industry. To meet competition of other carriers, railroads are using modern marketing and management techniques, investing in new equipment, and merging with other railroads. In 1965, an estimated 1.5 billion dollar investment in new equipment will be made by railroads. Spending has been prompted by the "Governments 7% investment tax credit on new equipment purchases, and the guidelines permitting faster depreciation (Dun's Review, 1965:101)."

Where mergers and bigness seem to characterize railroads, the same is not true for trucking companies. Of 17,300 companies regulated by Interstate Commerce Commission

only 3,700 have operating revenues more than \$200,000 (Dun's Review, 1965:102). Numerous problems plague the trucking industry. Perhaps the major problem is the less-than-truckload shipments which have steadily increased costs. Jurisdictional arguments between carriers may prevent the use of the fastest and least expensive route. State road user taxes are a burden to truckers. For example, the median annual tax on a 40,000 pound, 3 axle, tractor-semi trailer for private operators is 1,544.58 dollars and 1,688.39.dollars for contract carriers. Virginia's road user taxes are very close to the median for most categories (Liston, 1964:36-37).

Due to the rapidly rising cost of less-than-truckload shipments and to give better control by the manufacturer some firms have shifted to private ownership or private leasing of trucks. Private ownership and private leasing offer a firm certain advantages, such as the trailer being used as a warehouse for the goods, faster delivery of rush orders, and shorter trip time when operating company owned vehicles. Additional advantages are that the truck can be designed especially for the product being shipped, and the side of the truck can be used for free advertising. The most important disadvantage is trucks delivering shipments and returning empty, termed deadheading. Firms are prohibited by law to arrange with other businesses to

carry common freight on a return trip unless the carrier is regulated by the Interstate Commerce Commission (Dun's Review, 1965:193). The very high initial cost of private ownership and the disadvantage of deadheading will limit the adapting of private ownership or private leasing to large companies.

Summary

The transportation network in Virginia is extensive and provides access to most areas of the State. Transportation is not a static industry in Virginia; considerable growth and development has been envisioned for the future.

Virginia is geographically situated at the cross-roads of many industrial areas and is sufficiently near over one-half of the nation's population to make it suitable, with respect to transportation, for manufacturing industrial and individual products. The State has excellent harbors, large railroads, and highways that compare favorably with the rest of the nation.

Many problems plague the Virginia transportation industry, such as taxation, congestion in towns and cities, regulation, and competition. Virginia is in no way an exception; these same problems and many others exist in most areas of the nation.

Costs of transportation account for 22 dollars of every 1,000 dollars of furniture. Costs are also incurred

in shipping the wood raw material to the plant, of which 50 percent of the wood results in waste material. Charges for transporting wood are equally distributed between wood used in furniture and waste.

Freight rates are confusing due to the various classes of goods, the territorial rate structure, and the restrictions placed on transportation by governmental groups. The rate structure in Virginia is especially complicated since the State is divided into Official Territory and Southern Territory with different class and commodity rate structures. Transportation rates will probably not increase appreciably in the near future, at least not enough to significantly limit the development of the furniture industry in Virginia.

A rejuvenation has characterized the transportation industry of late, and the future outlook indicates more efficient operation and greater flexibility.

Furniture Consumption

Purchasing, expansion, production, inventory, budget, and capital plans must be based on expectations of future sales. Estimates of furniture consumption help indicate the future economic health of furniture manufacturers in Virginia and their continuing contribution to the State's economy.

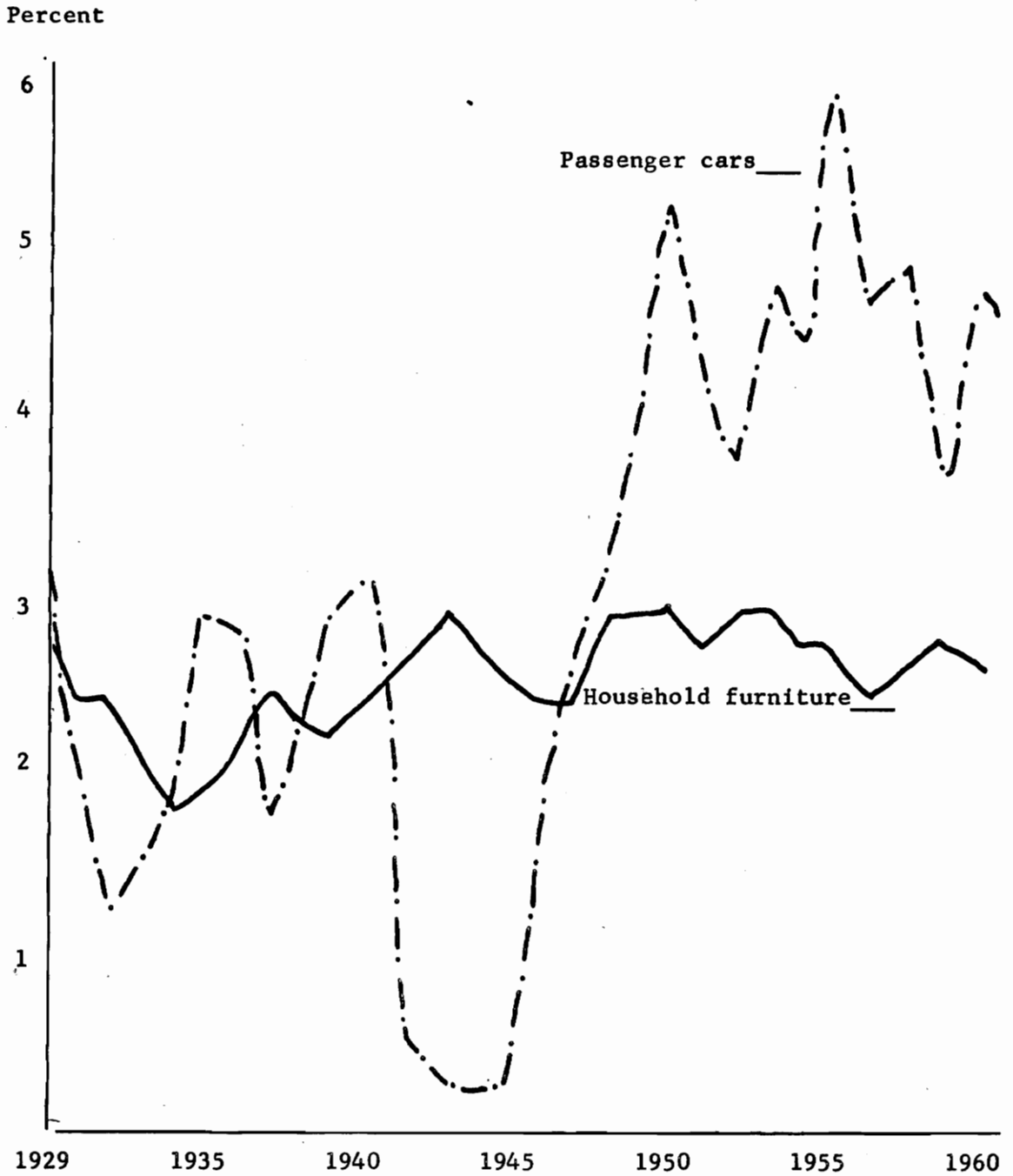
Factors Affecting Furniture Consumption

Various factors which influence consumers' consumption of furniture will be considered. The trend of these factors will provide some indication of the future facing the furniture industry.

In general, consumption of furniture fluctuates with the general prosperity of the nation. Furniture purchases over the past 20 years have consistently accounted for approximately 1.3 percent of disposable personal income (Robinson, 1965:278). Purchases of furniture cannot be postponed as readily as a luxury item such as a passenger car. Figure 5 indicates that both furniture and automobile expenditures followed the same trends of increases and decreases. However, fluctuations of passenger car expenditures have been far more pronounced than fluctuations of furniture expenditures.

The pertinent factors to be considered are closely related to furniture sales and will provide some indications

Fig. 5.--Percent of personal consumption expenditures for household furniture and passenger cars, 1929-1960



Source: Landsberg and others, 1963:544-545

of furniture sales trends. As the population increases, a reasonable increase in furniture sales should follow. The population of the United States increased by 75 percent between 1920 and 1962, an increase of 80 million people. In 1962 the population was 187 million people, and by the year 2000 it is expected to increase to 325 million. This is an annual growth rate of 1.5 percent (U.S. Forest Service, 1965:5). An additional factor is the so called "war baby boom". Housing construction will gather speed and generate demand for furniture as the children born after the war grow older and acquire families. It would be a mistake to assume that consumption requirements for housing and furniture would be stimulated by post war babies prior to 1967 (Prudential Insurance Company, 1964:6). The expected increase in population leads to similar increases in housing projections. In 1962 there were 54.7 million households, and predictions are for approximately 101 by the year 2000 (U.S. Forest Service, 1965:7). Each household will require furnishings for their homes. The next few years should produce a sharp increase in the consumption of furniture and a continued rate of increase in the years following but at a slower rate.

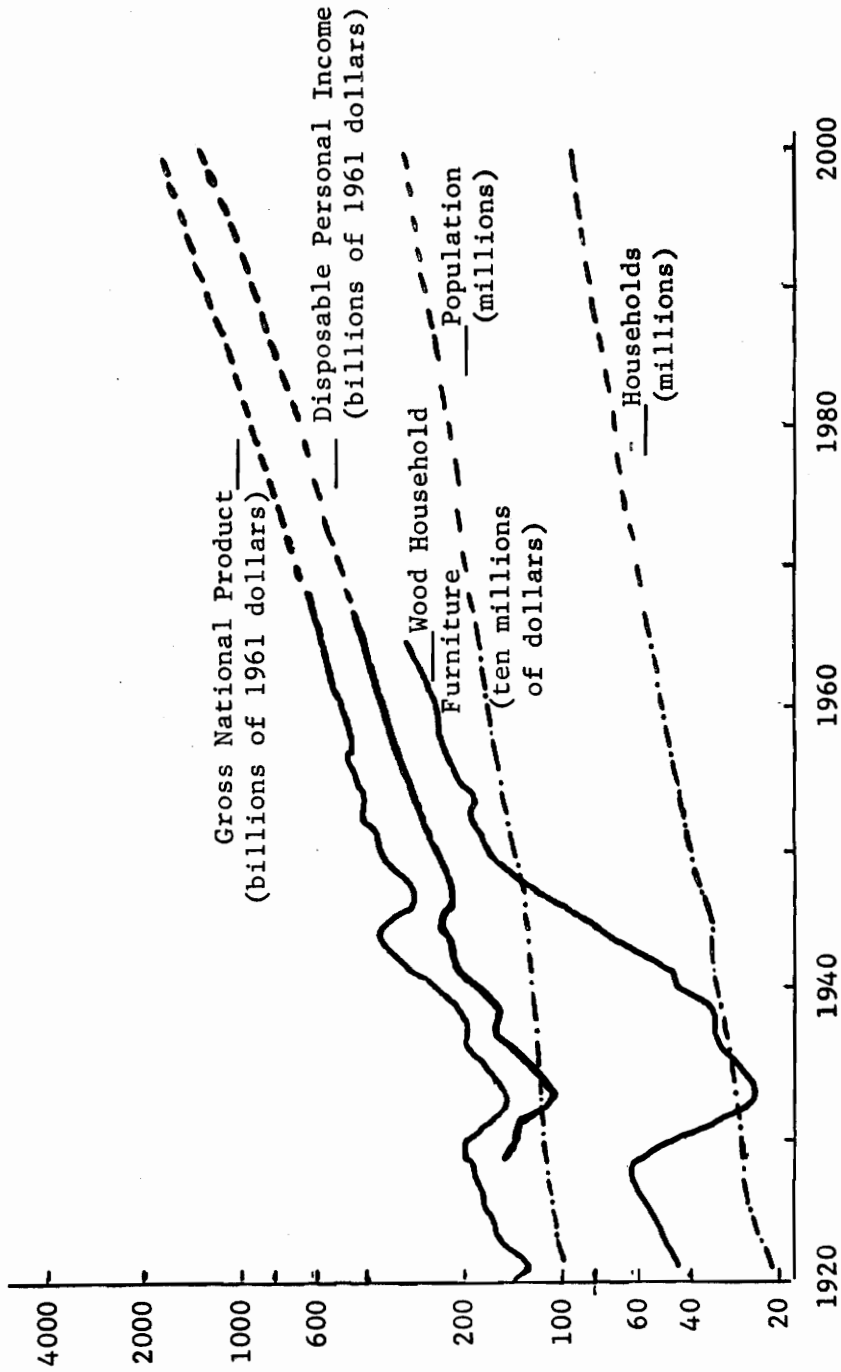
The general prosperity of the nation has been reflected in the increase in average family income reaching

6,800 dollars in 1965. A 21 percent increase in income between 1960 and 1965 and tax reductions which reduced income taxes in 1964 by 150 dollars per average family have provided families with increased spending capacities (Prudential Insurance Company, 1964:3). Increased real purchasing power of consumers suggest increases in consumer spending. "In terms of per capita disposable personal income, the projection rises from \$2030 in 1962 to \$4120 in 2000 (U.S. Forest Service, 1965:8)." The combined effect of increased population, households, and disposable income indicate excellent prospects for increased furniture sales. If both of these predictions materialize, more and larger dwellings requiring more and perhaps better quality furniture can be expected in the future. Figure 6 graphically illustrates the relation of Gross National Product, population, housing, and disposable personal income to value of wood household furniture production. The furniture industry can expect excellent growth in the future if the relation between furniture sales and economic growth indicators remains close.

Summary

The prospects for increased consumption of wood furniture appear excellent. The continuing rapid growth of the national economy, expanding populations, rising per capita income, and tax reductions indicate increased consumption of wood furniture.

Fig. 6.--Trends of economic growth indicators



Sources: U.S. Forest Service, 1965
 U.S. Department of Commerce, 1960
 Johnson, 1938

CONCLUSIONS AND RECOMMENDATIONS

Virginia's furniture industry is a major contributor to the State's economy; furniture manufacture ranks seventh among industries in number employed and value added by manufacturing (Virginia Division of Industrial Development and Planning, 1962:23). Existing expansion plans and proposed future establishment of new furniture plants in Virginia should substantially increase employment over the 20,000 employees currently in the industry. Intermediate industries, such as lumber and transportation, will receive additional business due to these existing plans for growth. It can be concluded that the furniture industry currently plays an important role in Virginia's economy.

Conclusions concerning the continued growth and future impact of the furniture industry on Virginia's economy hinge on two major economic considerations. First, the expectations of future furniture consumption. Second, the comparative advantages and disadvantages of Virginia as a furniture manufacturing location. A general conclusion is that Virginia's furniture industry should exhibit good growth in the future and maintain and expand its share of the furniture market.

Future Furniture Consumption

The furniture industry across the nation has experienced four record breaking sales years in a row, and indications

are that a fifth consecutive year, 1965, is certain to materialize. The very nature of furniture as a necessity item insures a ready market. Expectations of population increases, rising incomes, consumer expenditures, tax reductions, and other indicators all suggest expanding markets for furniture goods. The amount of expected growth is impressive. Sales volume of furniture is expected to increase to 8 billion dollars by 1970.

Virginia as a Principal Furniture Manufacturing Area

Unprecedented volume of furniture sales can be expected in forthcoming years. The advantages and disadvantages of Virginia as a furniture production area will dictate the industry's future growth in the State, and its impact on Virginia's economy.

Structure and Location

The geographical location of Virginia and the structure of the furniture industry in Virginia offer certain advantages and disadvantages in evaluating the future of the industry.

Advantages:

1. Virginia is presently a major producer of wood furniture, and the State has an established manufacturing industry and a trained labor force.
2. The spatial concentration of the industry enables manufacturers to keep abreast of style changes.

Virginia is situated near High Point, North Carolina, a furniture center.

3. Intermediate industries (Table 1) such as lumber, fabrics and yarn, and metal products are principal suppliers of materials to furniture manufacturers. All three of these industries are major manufacturers in Virginia (Fig. 2).
4. Distances are small between furniture's raw material sources and consumer markets for Virginia's furniture goods.

Disadvantages:

1. Furniture is generally a small business industry in Virginia, and profitability is generally lower with small furniture businesses than larger businesses.

The sole disadvantage mentioned is applicable to the nation as well as Virginia. Most of the increased furniture production will tend to be concentrated in larger companies due to the higher profitability associated with increased corporate size. The structure and geographic advantages of the furniture industry in Virginia offer excellent opportunities for increased furniture production in the State.

Inputs of Production

The inputs of furniture production considered in this

study are labor, wages, wood raw material, and transportation. The interaction of the production inputs presents certain advantages and disadvantages about the future of furniture production in Virginia.

Advantages:

1. Relatively low wages in Virginia's furniture industry suggest a cost advantage for furniture manufacturers competing with other furniture manufacturing areas of the nation. Wages have been almost 300 dollars below the average annual wage for the nation; compared to other South Atlantic states Virginia has been approximately 100 dollars higher (U.S. Department of Commerce, 1960).
2. Industries competing for labor may require higher proportions of skilled labor and labor trained in different skills than the furniture industry.
3. Consumers have preferred wood furniture due to its many intrinsic characteristics. Wood furniture has been and should continue to be the dominant type of furniture produced in Virginia and across the nation; the manufacture of metal furniture has been relatively insignificant.
4. Adaptability of the furniture industry has been shown in the substitution of non-lumber wood

products such as hardboard, particleboard, and softwoods for hardwood lumber.

5. A presently adequate and improving physical network of roads and rails exist in Virginia.
6. Freight rates have remained fairly level over the last decade. Technological advances and more efficient operating procedures should assist in preventing abrupt increases in freight charges.
7. Wide fluctuations in price for furniture goods are prevented by the establishment of central markets which are possible only with inexpensive transportation costs.

Disadvantages:

1. Competition for labor will increase in Virginia. Lower wages in the furniture industry compared with other industrial sectors of Virginia, place the furniture industry at a disadvantage in competing for labor.
2. Higher wages in Virginia's furniture industry will occur due to increased competition for labor and unionization.
3. Costs of producing furniture will increase due to higher wages. In the highly labor intensive furniture industry, costs of production will rise proportionately higher from any wage increase than for less labor intensive industries.

4. Wood shrinks and swells as moisture content varies. Losses up to 50 percent occur in furniture manufacturing.
5. The price of lumber inputs for furniture manufacturing have steadily increased, partially due to the low productivity of the lumber industry and the decreasing supplies of large, quality trees of desired species.
6. Many unfavorable factors are beyond the control of individual carriers such as transportation being overseered by a large number of governmental controlling agencies, high costs of taxes and maintenance expenditures, unequitable territorial rate structures, and unified efforts at improving efficiency are hampered by the smallness of most trucking companies.
7. Freight charges for less-than-truckload and less-than-carload shipments have steadily increased. Private ownership and leasing by manufacturers are attempts to decrease the increasing costs. A restricting problem in private ownership or leasing is the high cost of deadheading.

Assuming that the previous prediction of impressive growth in furniture sales materializes, Virginia's furniture industry can expect to maintain its share of the

market and probably capture a greater percentage of the market. The advantages cited support such a conclusion. The disadvantages noted suggest increasing costs and other problems to be faced by furniture manufacturers.

Increasing costs of production will be principally due to higher and more competitive employee wages. Higher costs associated with lumber raw material should also be expected. Freight costs for less-than-truckload and less-than-carload shipments will probably continue their rise. These three factors imply an outlook of higher costs for Virginia's furniture manufacturers. When viewing the increasing costs in more detail the problems lose some of their magnitude.

Increasing price of lumber is a national problem and not endemic to Virginia. To counteract increasing costs of lumber and decreasing supplies of desirable trees, furniture manufacturers will continue the trend of increased utilization of non-lumber wood products. Species of wood used furniture will undoubtedly change in the future as it has in the past. Depletion of large supplies or increased cost of a particular species may relegate it to a less utilized position. The overall reduction of quality lumber will lead to the increased use of smaller, lower quality trees in the future. Virginia can expect to fare better than most areas due to its

location in the leading hardwood production area of the nation.

Freight charges are also applicable to the nation and not specifically to Virginia. No abrupt change in average freight rates are expected. Additional furniture manufacturers may attempt private ownership or leasing of trucks to avoid the increasing costs of less-than-carload and less-than-truckload shipments. Such a decision must be made on an individual basis.

Increasing freight costs should not alter the furniture industry to any great extent in Virginia. The supply of furniture to distant states such as in the West Coast may be curtailed due to less favorable competitive situation for Virginia manufactured furniture than for furniture produced in the central or western areas of the nation.

Higher costs of raw materials and transportation should not be considered as major disadvantages for furniture production in Virginia. Both of these costs will increase across the nation and they should not distort the competitive situation among furniture manufacturing areas. Both of these costs will increase the costs of manufacturing furniture and probably the price of furniture goods.

Of major consequence is the anticipated higher wages in Virginia's furniture industry. Furniture manufacturers are in an unfavorable position in competing for labor due to low wages. Higher wages will raise production costs proportionately higher in the furniture industry than in other, less labor intensive, industries. However, furniture companies can absorb an employee wage increase and remain competitive with the average furniture manufacturer in the nation due to the relatively low wages presently paid furniture company employees in Virginia. Higher wages and therefore higher prices may place Virginia produced furniture at a price disadvantage in competing with goods from other South Atlantic states where wages are less than in Virginia. This assumes that furniture manufacturers in other South Atlantic states do not increase wages proportional to the increase in Virginia.

Recommendations for Further Study

If furniture production is going to be concentrated in a number of large companies, it is recommended to determine the effect of such concentration on the many small manufacturers in the State. The facts mentioned clearly warrant a more detailed study of the labor situation in Virginia. This would include the influences of unionization, increased competition for labor, malallocation of labor between regions, and the expected effect of labor

deficient areas on the growth potential of the furniture industry in Virginia. Also recommended is a study to determine the possibilities of increased automation and capital expenditures to reduce the labor intensiveness of the furniture industry.

An evaluation of the training and skills required by manufacturers in the State would be a worthwhile undertaking. A furniture plant would require labor in a proportion roughly dependent upon the quality of furniture produced and the complexity of industrial equipment required in its manufacture. Cognizant that furniture manufacturers are spatially concentrated, such as in Henry County, Virginia, a study of the quality of labor in such an area may provide manufacturers with the information needed to determine whether to expand operations in that area. It might also indicate whether it is feasible for a locality to orient its training program to the needs of local manufacturers.

Studies of some of the raw material problems facing the furniture industry may alleviate the magnitude of the problems. A study to determine more efficient processing methods might reduce the waste of wood raw material and thereby reduce costs. Further studies in utilizing different species for furniture products could provide the industry with greater flexibility in types of wood used.

Efforts oriented toward increasing productivity in the lumber industry could retard the spiralling price of lumber.

The confusion associated with the territorial rate structure suggests the need for a unified classification and rate structure in transportation. Additional studies to determine the affect of local and state taxes of transportation carriers compared with other industries might provide a more equitable basis for setting tax rates. A recommended study is quantification of how a change in freight rates will effect Virginia's furniture industry.

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VITA

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**PRESENT STATUS AND POSSIBLE FUTURE DEVELOPMENT
OF THE WOOD FURNITURE INDUSTRY IN VIRGINIA**

by

Edward F. Lyons

**Thesis submitted to the Graduate Faculty of the
Virginia Polytechnic Institute
in candidacy for the degree of**

MASTER OF SCIENCE

in

Forestry and Wildlife

Major

Forestry Economics

June 1966

Blacksburg, Virginia

ABSTRACT

The study had the dual objective of characterizing the present role of Virginia's wood furniture industry within the State's overall economy and evaluating the possible economic implications of changes in the major production factors influencing the future development of the industry. Supporting the hypothesis that the furniture industry is a major contributor to the economy of Virginia, the following factors were considered: size and number of plants, labor force, wages, and productivity of firms in Virginia. The industry in Virginia employed in excess of 21,000 employees in 1964.

Expectations of future furniture consumption were submitted based on patterns of economic indicators. With prospects of excellent growth in furniture sales, selected factors of production were studied to determine the position of Virginia's furniture manufacturers in meeting the demand for furniture in the future. Labor and wages, transportation, and raw material were the factors studied.

Transportation does not appear to be a major influencing factor. Raw material will probably continue the trend of increasing prices for lumber and the substitution of processed wood products for lumber. The interaction of a labor intensive furniture industry with prospects of higher wages seems to be the most critical factor to

consider in evaluating Virginia's furniture industry. The all encompassing conclusion is that Virginia's furniture industry should maintain its present share of the furniture market and possibly extend its share. Recommendations for further study were included, such as the influence of profitability on corporate size and a revision of the territorial rate structure.