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The Retail Lumber Establishment and Farm Dwelling Construction in Iowa

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The Retail Lumber Establishment and Farm Dwelling Construction in Iowa¹

BY EDNA DOUGLAS

Farm families of Iowa spent about \$48 million in 1948 for farm housing. About half of this—\$22 million—was for new dwellings. The remainder was for alterations and repairs. This total expenditure was about 2.2 percent of the estimated gross cash receipts from farming in that year.²

To appraise the industry which produces this housing, it is necessary to have some knowledge of revenue and costs of firms in housing construction at various levels of output. If one is also to determine the extent to which harmony of interests among producers, owners of resources and consumers of farm housing has been achieved, some knowledge of the cost-revenue structures of other industries would also be necessary.

To obtain this information, it is necessary to know, first, what functions are performed in housing construction and, second, what institutions perform them. Costs need to be tied to particular jobs performed by particular firms. That is, cost-revenue relationships must be studied within some kind of institutional and functional setting. Unfortunately, valid empirical data on revenue and costs for firms and industries are difficult to secure, and this is especially so in housing construction. It is easier to describe building functions and some of the general characteristics of firms which do them than it is to obtain information on the firms' revenues and costs. Moreover, many firms and individuals in housebuilding not only perform housebuilding functions but also do other kinds of marketing or construction functions. It is difficult, therefore,

to separate from their total costs those which should, for purposes of analysis, be allocated to one special type of housing construction.

This study is, therefore, a practical compromise with the ideal objective of a complete description and economic appraisal of farm housing construction. It focuses attention upon only one kind of establishment in the farm housing construction market—the retail lumber yard. The approach is largely descriptive; because of the inadequacy of data, the appraisal is only suggestive. The objectives are:

- (1) To review briefly what is known about
 - (a) The functions of housebuilding in general and
 - (b) The principal characteristics of the industry which performs those functions;
- (2) To describe the role of the retail lumber establishment in the building of farm dwellings in Iowa in terms of
 - (a) The housebuilding functions which it performs,
 - (b) Its relationship to other establishments and to individuals in farm housing construction, and
 - (c) The importance of farm housing sales in the lumber yard's total volume of business; and
- (3) To suggest
 - (a) Possible reasons for the patterns of functions described and
 - (b) Certain hypotheses about the efficiency of the retail lumber yard in this particular market.

The retail lumber yard was chosen for this exploratory study because the performance of certain housebuilding functions is a part of its activities. It was chosen, also, because it is one of the few participants in rural housebuilding which operate through an established place of business, exhibiting sufficient stability to make possible the gathering of data. Information was obtained through interviews with managers of 113 retail lumber and building materials yards in Iowa. These were 10 percent of the total number of yards in the state in 1947-48 and represented a

¹Project 972, Iowa Agricultural Experiment Station. The author acknowledges with appreciation the considerable help given by Professors Raymond Jessen and Emil Jebe, Statistical Laboratory, Iowa State College, in the planning, interpretation and presentation of statistical aspects of this study. Professors Elisabeth Willis, Howard Hines, Donald Kaldor and Frank Robotka, Department of Economics and Sociology, Iowa State College, read the manuscript in its entirety and offered many constructive criticisms. Mr. James E. Toepel, Assistant Secretary, and Mr. Robert H. Laird, formerly Field Secretary, Iowa Retail Lumbermen's Association, gave encouragement and advice at various stages during the course of the study but are not, of course, responsible for any errors of fact or interpretation. The writer is particularly indebted to the 113 retail lumber dealers of Iowa for their intelligent and patient cooperation in answering detailed questions in the survey questionnaire.

²Expenditure figures are estimates based on a sample survey. See Douglas, Edna. An estimate of the volume of farm dwelling construction in Iowa. Iowa Agr. Exp. Sta. Res. Bul. 414. 1954. These estimates do not include expenditures for the purchase and installation of plumbing, heating and electrical equipment. Estimates of cash farm receipts are from U. S. Department of Agriculture. Agricultural statistics. p. 640. U. S. Govt. Print. Off., Washington, D. C. 1951.

random sample selected from an array by counties of all dealers in the state.³ Data obtained by this method contain sampling errors, errors arising out of nonresponse and errors from wrong response. This last group may be peculiarly important in this study, because interviews were only with managers of retail lumber yards. It is probable that the bias was greatest where questions were designed to show the relationship between the retail lumber dealer and other participants in housebuilding and, particularly, the division of responsibility between the lumber yard and other parties. Because the picture is seen through the eyes of the lumber dealer, his role may not be defined objectively. However, the farm housing market appears to involve a complex pattern of relationships. Therefore, in spite of limitations, a single source of information was used to obtain a preliminary description of one type of firm operating in the market in which new farm houses are built and sold.

THE FUNCTIONS AND CHARACTERISTICS OF THE HOUSEBUILDING INDUSTRY

The production of a dwelling involves the performance of four basic functions which have both physical and economic aspects.⁴

(1) Planning: the site, the structure, the marketing of both productive factors and finished product, and the construction process.

(2) Acquisition of the factors of production: the site, materials, labor, capital and building management.

(3) Construction: site preparation and performance of the building operation.

(4) Transferring title to the completed dwelling. While these functions are basically the same as those performed in any type of form production, the housebuilding industry⁵ has certain

identifying characteristics, some of which are unique among consumer goods industries. Eight of these are discussed below.⁶

(1) A house is distinctive physically because it is a large, heavy and relatively immobile consumer good made up of many parts. It is usually built by specialized craftsmen who are present at one site and who jointly and simultaneously fabricate what is generally an unstandardized product attached to that site.

(2) The total retail price of a dwelling unit is greater than that of most other consumer durable goods. Because of its durability, however, the estimated annual national consumption expenditure for housing was, in 1952, fourth among 12 general categories of consumer expenditures, although it ranked second from 1929 through 1934, and fifth, 1947-51.⁷

(3) Houses remain one of the few durable consumer goods often produced with little capital equipment, although in recent years there has been an increased use of power tools by the specialized craftsman and of machines for on-site and off-site fabrication.⁸

(4) Builders vary greatly in size. The average builder in urban areas of the United States started two dwelling units in 1949 (see table 1) and the median builder, one unit (see table 2). The range in size was considerable. One-house builders accounted for 82 percent of all builders but started only 33 percent of all new units. The large builders who started 50 or more units each accounted for only 1 percent of all builders yet started 32 percent of all units.

The large builder was more important in metropolitan areas than in nonmetropolitan areas.⁹ The average metropolitan builder started four dwelling units in 1949. Less than 2 percent of all builders started as many as 50 or more, yet they accounted for 45 percent of all units begun in that year. In nonmetropolitan areas, nearly 90 percent of the builders were one-house "firms," accounting for more than two-thirds of the entire volume.

(5) One of the unique characteristics of housebuilding is the nature of the relationship between "manufacturer" (or builder) and consumer. Data in table 1 differentiate between commercial builders and owner builders. Commercial builders assume general managerial and entrepreneurial functions for wages and profits; owner builders are potential owner-occupants who perform their own general managerial functions. Commercial

³See Appendix A for a description of the method by which the sample was drawn.

⁴For other enumerations or discussions of functions, see: Twentieth Century Fund, *American housing*, p. 59. The Twentieth Century Fund, New York, 1944; Ratchiff, Richard U. *Urban land economics*. Ch. 7, especially pp. 175-187. McGraw-Hill Book Co., Inc., New York, 1949; Grebler, Leo. *Production of new housing*. Chs. 1 and 2, pp. 1-100. Social Science Research Council, New York, 1950; and Maisel, Sherman J. *Housebuilding in transition*. University of California Press, Berkeley, 1953.

⁵An industry is comprised of all the firms which produce a similar product, and the housebuilding industry consists of all firms which produce housing. The identification of the industry empirically is, however, much more difficult than is its identification conceptually; many housebuilding "firms" are temporary, while others are often more clearly identifiable as part of the construction industry in general than as part of the housebuilding industry in particular.

A firm is a unit of business organization within which productive resources are combined to produce goods and services. Its functions include both management and entrepreneurship. An establishment consists of a complete productive unit at one locality and includes both the physical and human productive factors which are organized in that unit to perform one or more related productive functions. A firm may own and operate one or more establishments.

The housebuilding industry consists of all firms whose principal activities are the performance of functions necessary to construct houses. One type of firm whose functions are closely related to housebuilding is the retail lumber firm, which is the unit of business organization through which are performed functions necessary to transfer title to lumber and other building materials to ultimate consumers or to farmers plus certain associated functions of physical supply. These are performed through the ownership and control of certain productive factors. Retail lumber firms of Iowa maintain one or more establishments. Independents have one establishment. Line yards have two or more establishments (called yards), each separated physically and functionally from the other but both coordinated through central

ownership and usually some degree of centralized management. Line firms may also have establishments which perform vertically related functions.

⁶See also Grebler, op. cit., Chs. 2 and 3, pp. 23-116, and Maisel, op. cit., for a discussion of characteristics of production organization in housing construction.

⁷U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Office of Business Economics, *National income—1951 edition*. pp. 192-199. U. S. Govt. Print. Off., Washington, D. C. 1951; and *Survey of Current Business*. 33:22-23, No. 7, July, 1953.

⁸For earlier empirical data on the capital investment of primary and secondary contractors, see Twentieth Century Fund, op. cit., pp. 82-83, 385; for later data, see Maisel, op. cit., pp. 39 and 359.

⁹See table 1, footnote *, for the definition of "metropolitan" and "nonmetropolitan."

TABLE 1. PERCENTAGE OF TOTAL BUILDERS OF PRIVATE NONFARM DWELLING UNITS IN THE UNITED STATES WHOSE BUILDING WAS COMMERCIAL AND NONCOMMERCIAL AND PERCENTAGE OF TOTAL PRIVATE NONFARM DWELLING UNITS STARTED BY COMMERCIAL AND NONCOMMERCIAL BUILDERS IN METROPOLITAN AND NONMETROPOLITAN AREAS OF THE UNITED STATES, 1949.

Type of Builder	United States			Metropolitan Areas*			Nonmetropolitan Areas*		
	Builders		Private nonfarm dwelling units started, percentage of total	Builders		Private nonfarm dwelling units started, percentage of total	Builders		Private nonfarm dwelling units started, percentage of total
	Percentage of total	Average number of dwelling units		Percentage of total	Average number of dwelling units		Percentage of total	Average number of dwelling units	
All builders	100	2	100	100	4	100	100	1	100
Commercial Builders	30	6	71	39	9	84	24	2	41
Operative builders†	14	8	43	19	11	53	10	3	20
General contractors‡	14	3	17	16	4	17	13	2	16
Operative builders§	2	13	{ 7 }	4	15	{ 9 }	1	6	{ 3 }
General contractors§			{ 4 }			{ 5 }			{ 2 }
Owner builders**	67	1	27	56	1	14	75	1	58
Unknown	3	2	2	5	2	3	1	1	1

*Metropolitan and nonmetropolitan areas were defined as in the 1950 U. S. Census of Population. Each standard metropolitan area contains at least one city of 50,000 or more population and comprises the county containing the central city and contiguous counties (in New England, contiguous cities and towns) that are economically and socially integrated with it. Outlying counties must meet qualifications regarding population density and volume of nonagricultural employment. U. S. Department of Commerce, Bureau of the Census. Census of Population: 1950. Preliminary reports. Series PC-7, No. 4. p. 1. November 20, 1951. Nonmetropolitan areas are all other areas in this table excluding rural farm but including rural nonfarm.

†Operative builders own or control rights to the land (site) upon which they build, act as their own general contractors, and build for sale or rent.

‡General contractors build on order for others according to the design and specifications of the owner and do not own or control the land upon which they build. They customarily make subcontracts with special trades contractors.

§Builders included in these two categories sometimes build as operative builders and sometimes as contractors. Figures in the columns showing percentage of dwelling units started indicate the relative importance of the two types of activities to these builders.

**Owner builders are individuals who started houses for their own occupancy or that of close relatives. Though not in the construction business in 1949, they acted as their own general contractors. Building work was done by the owner, his family or his friends; by workmen hired by the owner and provided with materials; by special trades contractors who dealt directly with the owner; or by any combination of these.

Source: Structure of the residential building industry. Monthly Labor Rev. LXXIII:455. No. 4 October 1951; and correspondence with U. S. Department of Labor, Bureau of Labor Statistics, Division of Construction Statistics. July 30, 1952.

TABLE 2. PERCENTAGE OF BUILDERS WHO STARTED VARIOUS NUMBERS OF PRIVATE NONFARM DWELLING UNITS AND PERCENTAGE OF PRIVATE NONFARM DWELLING UNITS STARTED BY BUILDERS OF VARIOUS NUMBERS OF DWELLING UNITS IN METROPOLITAN AND NONMETROPOLITAN AREAS OF THE UNITED STATES, 1949.

Number of dwelling units per builder	United States		Metropolitan areas*		Nonmetropolitan areas*	
	Percentage of		Percentage of		Percentage of	
	Builders	Dwelling units	Builders	Dwelling units	Builders	Dwelling units
Total	100	100	100	100	100	100
1	82	33	74	18	89	68
2-4	11	11	15	9	8	16
5-9	3	7	5	7	2	8
10-24	2	10	4	12	1	4
25-49	1	7	1	9	†	2
50-99	†	8	1	10	†	1
100-249	†	10	†	15	†	1
250 and over	†	14	†	20	†	0

*Metropolitan and nonmetropolitan areas were defined as in the 1950 U. S. Census of Population. Each standard metropolitan area contains at least one city of 50,000 or more population and comprises the county containing the central city and contiguous counties (in New England, contiguous cities and towns) that are economically and socially integrated with it. Outlying counties must meet qualifications regarding population density and volume of nonagricultural employment. U. S. Department of Commerce, Bureau of the Census. Census of Population: 1950. Preliminary reports. Series PC-7, No. 4. p. 1. November 20, 1951. Nonmetropolitan areas are all other areas in this table excluding rural farm but not including rural nonfarm.

†Less than 0.5 percent.

Source: Structure of the residential building industry. Monthly Labor Rev. LXXIII:455. No. 4. October 1951; and correspondence with U. S. Department of Labor, Bureau of Labor Statistics, Division of Construction Statistics. July 30, 1952.

builders are divided in this table between operative builders, who own the land upon which they build and generally build in anticipation of a consumer purchase order, and general contractors, who do not own the land upon which they build and who build on contract order for others.

In metropolitan areas, operative builders accounted for 23 percent of all builders but for 62 percent of all new dwelling units in 1949. General contractors were second in importance, representing 20 percent of all builders and starting 22 percent of all new units. Owner builders were most numerous, accounting for 56 percent of all builders, but for only 14 percent of all units started.

In nonmetropolitan urban areas, operative builders accounted for 11 percent of all builders and 23 percent of all units, while contractors accounted for 14 percent of all builders and 18 percent of all units. Owner builders were the most important single group, accounting for 75 percent of all builders and 58 percent of all units.

Since 70 percent of the new urban dwelling units constructed in 1949 were started in metropolitan areas,¹⁰ the pattern of building in these areas dominated the national picture. In the United States as a whole, operative builders accounted for an estimated 50 percent of all new units, contractors for 21 percent, and owner builders for 27 percent.

These figures show that about twice as much residential building took place in metropolitan areas as in nonmetropolitan urban areas in 1949. Large-scale operative builders and contractors dominated the metropolitan market, while one-house owner builders were most important in nonmetropolitan areas.

(6) In most building firms, except those of operative builders, management is decentralized and only loosely coordinated. Sometimes coordination is achieved informally without the control of even a contract.

(7) There is an apparent lack of permanency of many building firms. This is also true of owner builders who usually build only one house.

(8) Farm dwelling¹¹ construction is different from urban dwelling construction in both methods and organization.¹²

This general outline of functions and characteristics of the industry which distinguish it from other industries suggests certain "typical" functional and institutional patterns in housebuilding with which the rural housebuilding industry of Iowa can be compared. This study is narrowed to

the activities and market relationships of one kind of establishment operating in one segment of the Iowa housing market. Special attention is directed to the location of management in rural housing construction and to the relationship of the lumber yard to management.

THE RETAIL LUMBER ESTABLISHMENT AND HOUSEBUILDING FUNCTIONS

Housebuilding functions of the retail lumber establishment are considered in this section under two broad headings: (1) those related to planning the house and its construction and (2) those related to buying and assembling productive resources—building materials, labor and capital—and to constructing the house.

PLANNING THE STRUCTURE AND THE CONSTRUCTION PROCESS

Some of the ways in which the retail lumber yard participates in planning a new farm dwelling and the extent to which it does so are shown in tables 3-8.

INITIAL CONTACT

Managers of lumber yards believed that farmers, when planning new dwelling construction, made either the lumber yard or the contractor or carpenter their first point of contact with the building industry and divided these contacts about equally between the two¹³ (see table 3). A few dealers believed that over the years the lumber yard had become increasingly important as the agency through which farm dwelling construction is initiated.

THE HOUSE PLAN

The single source of farm dwelling plans reported most frequently was stock plans available through the lumber yard,¹⁴ although many of

¹³This is based upon the assumption that the third category itemized in table 3, "Lumber yard, carpenter, or contractor," resulted in equal division between the lumber yard and the two building representatives in accordance, roughly, with the percentages for the two preceding items in that table. Attention should again be called to the bias possible in these responses. It is possible that a lumber dealer may not be certain of his importance as the point of initial contact or of what steps the customer has taken before he visits the lumber yard.

¹⁴The frequency with which this source was mentioned may be unduly high in relation to other sources, for dealers would probably have close to perfect knowledge of whether their own stock plans were used, while they might be unaware of other sources. Moreover, their interest in the use of their own service might produce bias in their response.

TABLE 3. PARTY FIRST CONTACTED BY FARMER WHEN INITIATING NEW FARM DWELLING CONSTRUCTION REPORTED BY A SAMPLE OF IOWA RETAIL LUMBER DEALERS, 1947 AND 1948.

Party	Lumber yards	
	Number	Percentage of total
Carpenter or contractor	37	33
Lumber yard	41	36
Lumber yard, carpenter or contractor	29	26
Total reporting	107	95
Total not reporting	6	5
Total	113	100

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

¹⁰Structure of the residential building industry. Monthly Labor Rev. LXXIII:455, No. 4, October, 1951.

¹¹"Farm dwelling" is used throughout this study to refer to the residential structure occupied by the farm family. "Farm buildings" refer to all nonresidential structures on the farm.

¹²The following statement by Leo Grebler probably over-emphasizes the differences: "The conditions under which farm housing is produced are so different, and the farm house itself is so much a part of the entire farm plant that the production of farm and of nonfarm housing have little in common except perhaps the material used." See Grebler, op. cit., p. 4. For a discussion of five basic differences between farm and nonfarm housing, see Douglas, Edna. An economic appraisal of Iowa farm housing. Iowa Agr. Exp. Sta. Res. Bul. 367. pp. 250-253.

these plans were greatly modified before use (see table 4). Seven percent of reporting lumber establishments maintained or had access to a drafting service while, at the other extreme, unknown sources accounted for 14 percent of all sources mentioned.

More than one-third of all yards reporting either offered no plan service or provided plan services which were infrequently or rarely used.¹⁵ Only one-third of those yards carrying stock plans indicated that they were usually used¹⁶ as the basis for new farm dwelling construction, while another one-third reported occasional or frequent use of such plans (see table 5).

Where stock plans were reported used, either as simple floor plans or blueprints, adaptations to suit the prospective owners' needs were more often made by carpenters or contractors than by lumber yards¹⁷ (see table 6). In all cases, of course, the prospective owner participated in the planning of revisions.

The problem faced by the dealer who tries to help his customers in the planning of farm dwellings is exemplified by the following paraphrased statement:

Yard 35.

We carry plan books and usually work out the plan for our customers. I began last January and spent about 2 or 3 months just working out plans for people. We need some planning aids a lot. There aren't many plans really designed for farm use. I'd be willing to pay for a good plan service. We really need the services of a first-rate architect.

A characteristic of new farm dwelling construction in Iowa is the common practice of using pencil sketches rather than blueprints. Three-fourths of the dealers reporting indicated that only a pencil sketch of the floor plan was generally used¹⁸ (see table 7). However, blueprints with detailed specifications are required where Veterans Administration or Federal Housing Administration loan guarantees are involved.

Several lumber dealers expressed concern over the inability of carpenters in their area to read blueprints. The extent of their use depends upon the training and skill of those in the building trades. Use of a blueprint is no sure indication of the quality of the plan or of the quality of

¹⁵Two dealers who did not carry plans reported as follows: Yard 79—"No, we don't carry any house plans, and I don't intend to. Nobody's ever asked for any, and I just hadn't thought about keeping them around since there's never been any demand for them." Yard 100—"No, we don't have any plan books. They don't want our plans. Besides, if we gave them plan books, they'd take them down to [competing town] and buy their lumber there. They have two yards there."

¹⁶Use refers to use of either the complete stock plan or just the floor plan itself as shown in the plan book. It could involve "use" in the sense that a basic plan was used exactly as given or merely as a first approximation only, subject to considerable modification.

¹⁷This is based upon the assumption that the 20 percent reporting that the lumber establishment and/or the carpenter—or contractor—made revisions should be divided equally between the two preceding categories in table 6.

¹⁸The manager of Yard 98 reported as follows: "There's one farm house going up near here right now that'll cost about \$40,000. They have no plan whatsoever. They started out with a picture from the front of this magazine, This Business of Farming, for a ranch type house. The carpenter's a good man; he knows what he's up to. But things like that really makes a lumber dealer's blood run cold. Actually there's really nobody around here who should build a house. In this case, the plumbing was a little too much for the carpenter, so they got a plumbing manufacturer from to come up and plan that. That's the only good thing they did."

TABLE 4. USUAL SOURCES OF PLANS FOR NEW FARM DWELLINGS CONSTRUCTED IN IOWA REPORTED BY A SAMPLE OF RETAIL LUMBER DEALERS, 1947 AND 1948.

Source	Frequency mentioned	
	Number of times*	Percentage of total
Lumber yard†	79	49
Carpenter or contractor	41	26
Magazines or neighbors‡	18	11
Unknown	22	14
Total	160	100

*Based on reports from 107 yards. The total number of responses exceeds the total number of respondents since many mentioned more than one source.

†Stock plans and/or drafting service. Complete drafting service maintained by the yard or head office of eight establishments, representing 7 percent of all reporting establishments.

‡Neighbors: same source as a neighbor.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

TABLE 5. AVAILABILITY AND USE OF STOCK PLANS IN RETAIL LUMBER YARDS OF IOWA REPORTED BY A SAMPLE OF RETAIL LUMBER DEALERS, 1947 AND 1948

Availability and use	Lumber yards	
	Number	Percentage of total
Stock plans carried*	102	91
Usually used	32	29
Occasionally or often used	37	33
Rarely used	26	23
Never used	7	6
Stock plans not carried	6	5
Total reporting	108	96
Total not reporting	5	4
Total	113	100

*The first three of these four terms were probably not interpreted in exactly the same way by all respondents. "Usually" refers to a majority of instances. The other two are listed in descending order of frequency.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

TABLE 6. PARTY WHICH REVISES STOCK PLANS CARRIED BY LUMBER YARDS AND USED FOR NEW FARM DWELLINGS REPORTED BY A SAMPLE OF IOWA RETAIL LUMBER DEALERS, 1947 AND 1948.

Party	Lumber yards reporting	
	Number*	Percentage of total
Carpenter or contractor	45	48
Lumber yard	30	32
Lumber yard and/or carpenter or contractor	19	20
Total	94	100

*Includes only those yards which reported some use of stock plans carried by yard. One of the 95 yards which carried plans did not report who made changes in plans used. Excludes 19 lumber yards, seven of which reported no use of stock plans carried by yard, six of which carried no stock plans, and six of which did not report.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

TABLE 7. USE OF PENCIL SKETCHES OR BLUEPRINTS IN NEW FARM DWELLING CONSTRUCTION REPORTED IN 1947 AND 1948 BY A SAMPLE OF RETAIL LUMBER DEALERS IN TOWNS OF FOUR POPULATION SIZES IN IOWA.

Population, 1940	Lumber yards				
	Reporting			Not reporting	Total
	Using pencil sketch	Using blueprint	Total		
Number					
10,000 and over	6	5	11	1	12
2,500-9,999	11	7	18	0	18
1,000-2,499	17	4	21	1	22
Less than 1,000	45*	12*	57	4	61
Total	79	28	107	6	113
Percentage					
Total	70	25	95	5	100

*Two yards, each reporting equal division between the two practices, were divided, with one counted in each of the two columns.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

construction. The extent to which a builder actually utilizes a blueprint which may be in hand is not shown by a statement of the lumber dealer that blueprints are "used." Nor does such a statement indicate the quality or the degree of detail of the blueprint. Careful planning of the structure can be achieved more effectively through the use of blueprints with detailed specifications made by competent building specialists, than through the use of pencil sketches of the floor plan. Also, the quality of the completed structure is improved if detailed blueprints are used.

THE BILL OF MATERIALS

A bill of materials is an itemized list of the kinds and quantities of building materials required to construct a particular house and is included with a well drafted blueprint. However, since most farm houses in Iowa are built from pencil sketches of floor plans rather than from blueprints, the responsibility for making out the bill of materials rests logically with the carpenter or contractor who is to supervise construction. In most cases, the carpenter or contractor assumed responsibility for drawing up the materials list (see table 8), and most dealers who dealt with independent carpenters and contractors expressed a preference for this method because of the differences among builders in their building methods. Yet, nearly one-third of the lumber dealers reporting stated that they drew up the materials list or did so in consultation with the carpenter. Of these, many expressed concern over the inability of head carpenters, to whom this function logically belongs, to do it.¹⁹

¹⁹One dealer reported that he required the customer to hire a carpenter before the yard would draw up the materials list so that the yard could adapt the quantity of materials to the building methods of the carpenter who would do the work. This was done because certain carpenters were known to waste more materials than others would.

Some of the comments of dealers on this subject are paraphrased below.

Yard 20.

The carpenter ought to figure the bill of materials out, but most of them around here aren't able to do it. So we sit down usually and help them do it. The carpenter can usually figure it roughly, but most of them fail to include enough for waste and things like that.

Yard 29.

It's better if the carpenter draws up the bill of materials, because no two carpenters work exactly the same.

Yard 73.

There's only one carpenter here who can draw up a bill of materials. We usually provide that service because it gives us a better than even chance of selling materials. Carpenters used to be able to draw up their own materials list. Now most of these old fellows just can't do it. We do it and send the stuff out to them. They can tell by what it is where it goes. We need a lot more labor trained in the building trades.

Yard 83.

The bill of materials is usually made out by us. That's sad but true. If a carpenter doesn't know enough to make out his materials list, how can he build a house? We even have to specify what every single item is for, like the rafters, siding, and so on. In a larger city like, where I started out as a carpenter, the lumber yard sends a man to the carpenter or contractor for his list of materials. But in a small town like this, we have to make out the list.

Yard 85.

Out of the eight carpenters here, there's only one who's able to draw up a bill of materials. We have to do it for the rest of them.

ACQUIRING THE FACTORS OF PRODUCTION AND CONSTRUCTING THE DWELLING

The factors of production used in farm dwelling construction are land, in the sense of site; building materials; capital equipment; construction labor; and construction management. Acquiring these factors of production involves the performance of marketing functions, while combining and using them in the process of construction involves the performance of form production functions.

This section describes the part played by the

TABLE 8. PARTY WHICH USUALLY MAKES OUT BILL OF MATERIALS FOR NEW FARM DWELLINGS REPORTED BY A SAMPLE OF IOWA RETAIL LUMBER DEALERS, 1947 AND 1948.

Party	Lumber yards	
	Number	Percentage of total
Carpenter or contractor	74	66
Lumber yard	19	17
Lumber yard and/or carpenter*	14	12
Total reporting	107	95
Total not reporting	6	5
Total	113	100

*Usually lumber yard in consultation with carpenter; lumber yard alone only if carpenter is unable to do so.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

retail lumber yard in the acquisition and use of three of these factors of production—building materials, labor and construction management. Acquisition of a site and of capital equipment are not considered separately in this study because they are both cases of common supply. The site for a farm house is acquired along with the farm, and the farm itself will most often be bought and sold on the basis of its income-producing characteristics. Therefore, it is the choice of a dwelling site on the farm which constitutes the primary "land" problem in farm housing. Consequently, this is not a major marketing problem and is not a function of the lumber yard except in so far as the yard manager may help the farm family in planning the choice of a site on the farm. Capital equipment is also in common supply with labor since most farm housing construction is done by building laborers who own and use their own equipment.

BUILDING MATERIALS

The retail lumber yard's primary contribution to the construction of farm dwellings is in serving as a middleman for building materials. The marketing functions performed by the typical dealer are: (1) buying materials, in nearly all cases in quantities greater than those in which they are resold; (2) receiving shipments, usually in carload lots for items of bulk, breaking lot, reassembling a variety of materials, and reshipping in truck or less-than-truck lots; (3) storing and maintaining inventories; (4) selling, involving activities essential to contacting, negotiating, and transferring title in a routine sense as well as activities intended to affect the position or elasticity of the demand curve; and (5) facilitating functions of financing,²⁰ providing market information, bearing risks, and, to a limited degree, standardizing and grading.²¹ In the course of this survey, a few general observations were made about the nature of these functions as they are performed by lumber dealers.

The functions of physical supply probably account for a greater share of marketing costs at the retail level than do those related to transfer of title. This is because of the bulkiness of building materials and because of the importance of storage and reassembly in lumber yard operations. Breaking specialized lots, sorting, and reassembling mixed lots is necessary because of the specialized manufacturing of materials in contrast to the use of a variety of materials in a single structure. The maintenance of inventories by the lumber yard is especially important to builders of farm dwellings, for this makes it unnecessary for the local builder to maintain his

own inventory of materials.²² The storage facilities of the lumber yard and the maintenance of inventories not only help to make possible the low capital investment of most builders, but are virtually made necessary by the small capital of builders and by the greater economy of having inventory maintained by one lumber yard for several building operations.

Lumber dealers commented on two major changes during recent years in the performance of selling functions by the retail lumber yard. One has been the increasing emphasis given to sales promotion through such devices as the modernization of the yard's sales room and physical plant, advertising, and the extension of credit. The other has been the offering of a wide range of building services to farm families. The offering of these services may be an extension of the selling function in an effort to affect the amount and elasticity of demand or it may be an integration of marketing and construction functions within the same firm to increase the firm's net income.²³

The efficiency with which these marketing functions are performed is reflected in the competitive structure of the retail lumber market.²⁴ Of the structural characteristics of the Iowa market which have been identified, those conducive to efficiency in the operation of firms within that market are the overlapping of market areas, imitation of services and prices, and relative freedom of entry. Those identified as barriers to maximum consumer welfare are the oligopolistic character of the market and the presence of certain imperfections and rigidities in local markets.

LABOR

In only a minority of cases did the retail lumber dealer assume a positive role in helping farmers secure building labor for the construction of a new dwelling. More than two-thirds of the dealers interviewed disclaimed any participation in selecting carpenters for farm dwelling construction (see table 9). A few of these were unwilling even to recommend a carpenter because of the responsibility then assumed by the lumber yard for the quality of his work. Of the remaining yards, half would recommend a carpenter if requested to do so. About one out of ten assumed a positive role in securing labor by maintaining working relationships with carpenter crews or, in a very few cases, by maintaining their own crews.

Several dealers reported that many yards which had previously taken contracts for materials and labor refused to do so during the immediate post-war period, partly because of the labor shortage. But in other cases, because of the shortage of

²⁰Because of its special importance in farm housing, financing of both goods and services sold by the lumber yard is discussed in a separate section.

²¹These functions might, of course, be classified into the traditional three categories: transfer of title, physical supply and facilitating.

²²One lumber dealer pointed out that local contractors bought materials only from the two local lumber yards, because the inconvenience of picking up additional materials from day to day and of returning unused materials to an out-of-town yard would have more

than offset any saving the contractor might get through a lower competitive bid from the out-of-town yard.

²³The nature and extent of the forces accounting for this integration are discussed in the section, "Realignment of functions between retail lumber and other housebuilding firms."

²⁴See Douglas, Edna. The structure of the Iowa retail lumber industry. Iowa Agr. Exp. Sta. Res. Bul. 395. 1953.

TABLE 9. AID GIVEN BY LUMBER YARD TO FARMER IN ACQUIRING CARPENTER FOR NEW FARM DWELLING CONSTRUCTION BEFORE WORLD WAR II REPORTED BY A SAMPLE OF IOWA RETAIL LUMBER DEALERS, 1947 AND 1948.

Type of aid	Lumber yards	
	Number	Percentage of total
None	77	68
Recommends carpenter if requested	18	16
Usually secures head carpenter and/or crew	13*	12
Total reporting	108	96
Total not reporting	5	4
Total	113	100

*Nine of these yards offered contracts covering the complete structure or, more often, building materials and labor only. Four yards merely had carpenter crews which took jobs secured by the lumber yard but without contracts. Of the nine yards which offered their own contracts, two maintained their own carpenter crews, while the other seven subcontracted building labor.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

labor, the lumber dealer was asked more often than before to help secure a carpenter.²⁵

MANAGEMENT

This section focuses upon management in rural housebuilding in Iowa, with special attention to the role of the retail lumber yard in construction management. Sometimes management and entrepreneurship are closely integrated in the same participant; sometimes they are widely separated. Entrepreneurship and management are defined in this study as two distinct though related functions within the business firm. Entrepreneurship is the bearing of uncertainty and the making of decisions which involve uncertainty.²⁶ Management is the execution of production (i. e., policy) decisions and involves the making of subsidiary decisions essential to the carrying out of a policy and the coordination of functions of the productive factors.²⁷ The returns to the entrepreneur are profits and to management, wages. Both of these productive factors may, however, receive an additional monopoly revenue.²⁸

The uncertainties which give rise to entrepreneurship in housebuilding are those of (1) changes in costs during the construction period, which may arise out of unmeasurable and, hence,

²⁵A related, though slightly different, case was reported by the manager of Yard 4: "I used to help Joe get materials when they were short and now he sticks to me and takes jobs I get."

²⁶That is, unmeasurable "risk," in contrast to measurable risk which is risk proper. See Knight, Frank H. *Risk, uncertainty, and profit*. Houghton Mifflin Co., Boston, 1921. Reprinted in Series of Reprints of Scarce Tracts of Economic and Political Science, No. 16, pp. 19-20. The London School of Economics and Political Science, London, 1933.

²⁷Management is "the control of the process of executing a given policy and is to be clearly distinguished . . . from the formulation and determination of that policy, which is the task of the process known as administration." Sheldon, Oliver. *Management*. Encyclopedia of the Social Sciences, Vol. X, p. 77.

²⁸One type of profit theory regards profits as the positive or negative residual of price over cost, arising out of a restriction of output which will, in time, be converted totally or partially into rents. Another theory regards profits as the return to the entrepreneur for the performance of his entrepreneurial function. See Haley, Bernard F. *Value and distribution*. In Ellis, Howard S., ed., *A survey of contemporary economics*, pp. 45-48. The Blakiston Company, Philadelphia, 1948; and Knight, op. cit., pp. 19-20. See also Knight, Frank H. *The economic organization*, pp. 118-121. Augustus M. Kelley, Inc., New York, 1951.

unpredictable price changes or out of variations in the time of availability of one or more production factors, thereby causing higher or lower costs for other factors; and (2) in the case of construction which takes place before the retail sale, changes in selling prices. These uncertainties are rooted in changes in demand and supply conditions for housing of various qualities. Examples of these in the housing market are: a contract is made by a builder with uncertain knowledge of the prices of building materials and labor within the ensuing 4-to-6-month construction period; an owner builder cannot be certain in advance of construction of the availability in the retail market of all materials and labor at the time each is needed; an operative builder is uncertain at the time he incurs given costs of construction of the exact price at which the finished dwelling unit can be sold.

Management in housebuilding begins after the decision regarding number and quality characteristics of dwelling units to be constructed have been made. It involves the acquisition of the productive factors and the planning of the organization and functioning of construction by the firm.

The discussion below describes the forms of management organization in rural housebuilding in Iowa, with attention directed to the relationship of the lumber yard to construction management. Relationships between managerial and entrepreneurial functions which have been determined by observation or by inference are also commented upon.

FORMS OF MANAGERIAL ORGANIZATION²⁹

About three out of every four lumber dealers reporting stated that farm houses built within their selling areas were usually constructed without any formal type of centralized management (see table 10). This does not mean a lack of production organization, nor does it mean the absence of management, but rather that the managerial function was either decentralized among a number of participants or was coordinated informally by one of them or by the owner himself.

The procedure followed by farmers of Iowa when building a new farm dwelling was reported by yard managers as similar in most communities. After having planned for a year or two, the farmer and his wife will consult either the carpenter (occasionally the contractor) or the lumber dealer and begin drawing up or securing a plan (see tables 3-6). After the plan is selected and revised, the materials list is drawn up, usually by the carpenter. The farmer will then take this list to several yards to be priced and will

²⁹Information on the types of managerial organizations in housing construction in rural Iowa and estimates of the frequency of use of these various types were secured from question 4a in the field survey among lumber dealers. This was an open-end question. If the dealer failed to give information on certain aspects of construction procedure, this information was secured through additional questions. See Appendix A.

TABLE 10. FORMAL AND INFORMAL MANAGERIAL COORDINATION FREQUENTLY USED IN THE BUILDING OF FARM DWELLINGS PRIOR TO WORLD WAR II REPORTED BY A SAMPLE OF IOWA RETAIL LUMBER DEALERS, 1947 AND 1948.

Type of coordination	Lumber yards	
	Number	Percentage of total
<i>Informal</i>		
No centralization of management	75	66
<i>Formal</i>		
Contracting by one party for building materials and labor, minimum	27*	24*
Total reporting	102	90
Total not reporting	11	10
Total	113	100

*A greater number of yards than are indicated here reported infrequent contracting in their communities. The classification in this table is based only upon practices reported used "often" or "usually."

The difference between the 27 yards listed here as reporting frequent contracting and the 28 yards listed in tables 11, 12 and 15 is one yard which offered contracts direct to farmers for materials only. Because these contracts covered only one category of items, this yard is not included in this table as providing centralized management but is included as a contracting agent in the other three tables.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

generally select that yard at which he gets the lowest quotation.³⁰ It is then the responsibility of the farmer to select his carpenter, if this has not yet been done, and any other specialists he may need. These may include an excavator, mason, painter, electrician, plumber and heating specialist. Sometimes one or more of these specialists are not needed if their functions are performed by the carpenter or the farmer himself. In a rural community where the number of these specialists is not great, the procedure in procurement is not necessarily uncoordinated. Sometimes one of the participants, frequently the carpenter or the lumber yard, will assume responsibility for contacting the others, although the farmer and each specialist are usually responsible legally directly to each other unless a formal contract and subcontracts have been made. The procedure described above spreads the managerial function among several participants on the job,³¹ with the principal task of coordination upon the head carpenter and the owner himself. With some variations, this is the informal means of construction coordination in most rural areas of Iowa. In spite of obvious disadvantages, it is not without certain efficiencies.

The other form of construction coordination is a more formal type achieved through the contract.³² Only one-fourth of the dealers reporting

³⁰During the postwar period most dealers said that they could quote only on estimated price.

³¹See table 1, especially footnote **, for similarities between this pattern, as described by Iowa observers, and that described by the Bureau of Labor Statistics for owner builders in the nation as a whole. About 27 percent of the dwelling units started in the United States in 1949 were built by owner builders, and 58 per cent of those started in nonmetropolitan areas were so constructed.

³²A contract is an agreement between two or more competent persons, having for its purpose a legal object, wherein both persons agree to act or to refrain from acting in a certain manner. This definition breaks up logically into four component parts:

indicated that farm houses were more often than not built under some sort of contract. The most common types were the fixed price, cost plus a percentage of cost, and fee contracts. Under a fixed price contract, the contractor agrees to complete a structure of given specifications for a specified sum of money. Changes requested by the owner during the course of construction are usually charged for, at least to the extent that they add to the cost of construction as originally planned. The amount of money specified in the contract is based on the contractor's estimated costs for labor, materials and capital equipment; for subcontract; and for his own services, including management and risk bearing, and profit. The cost plus contract, which was common during the latter half of the 1940's, is an agreement to construct a specified house for all costs incurred by the contractor plus a percentage of that total amount to cover the value of the contractor's services and his profit. A fee contract is an agreement to construct a specified house for all costs plus a specified fee. Where a contract was used in farm dwelling construction in Iowa prior to World War II, dealers stated that the fixed price contract was the common form.

Centralization of management through the operative builder is not characteristic of farm dwelling construction in Iowa because of the geographic decentralization of the demand for new dwellings, the attachment of the farm and residential sites and the consequent importance of consumer initiative.

Since contracting represents the principal means of achieving centralized management in rural dwelling construction in Iowa, its characteristics and importance are examined in detail in the sections below.

CONTRACTING PRACTICES

FREQUENCY OF CONTRACTING

About seven out of every ten dealers who reported indicated that someone in the community did some kind of contracting for farm dwelling construction before World War II, but only about three of these seven reported frequent use of such

"1. Agreement—offer and acceptance.

"2. Competent parties.

"3. Legal object.

"4. Mutuality—consideration."

Dillavou, Essel R. and Howard, Charles G. Principles of business law. p. 23. Prentice-Hall, Inc., New York, 1937.

The terms "contract" and "subcontract" as used in this discussion conform to this legal definition. But because their use in house-building involves an agreement on particular kinds of activities to be performed by particular kinds of parties, their meanings, as used in this study, are further clarified below.

"Contract" and "primary contract" are used interchangeably to refer to an agreement between the potential owner of the completed house and one producer in housing construction. The agreement requires the producer to perform work and/or to provide materials and the owner to pay a specified or computable sum to the producer.

"Contractor" and "primary contractor" are used to refer to the producer in housing construction who makes a primary contract.

"Subcontract" and "secondary contract" are used interchangeably to refer to an agreement between two producers in housing construction. The agreement may be the same as all or part of a primary contract, but both parties are in the business of housebuilding.

"Subcontractor" or "secondary contractor" refers to the producer in housing construction who agrees to provide materials and/or labor in exchange for payment from another producer in the construction.

TABLE 11. FREQUENCY OF USE OF CONTRACTING SERVICE IN IOWA COMMUNITIES BEFORE WORLD WAR II REPORTED IN 1947 AND 1948 BY A SAMPLE OF RETAIL LUMBER DEALERS IN TOWNS OF FOUR POPULATION SIZES.

Type of service in community and frequency of use	Lumber yards				Total
	Population of town, 1940				
	10,000 and over	2,500-9,999	1,000-2,499	Less than 1,000	
	Number				
Contracting	8	15	15	33	71
Frequently*	4	9	2	13	28
Infrequently*	4	6	13	20	43
No contracting	3	3	5	20	31
Total reporting	11	18	20	53	102
Total not reporting	1	0	2	8	11
Total	12	18	22	61	113
	Percentage				
Contracting	67	83	68	54	63
Frequently*	33	50	9	21	25
Infrequently*	33	33	59	33	38
No contracting	25	17	23	33	27
Total reporting	92	100	91	87	90
Total not reporting	8	0	9	13	10
Total	100	100	100	100	100

*"Frequently" refers, roughly, to more than half of the new farm dwellings constructed; "infrequently," to less than half. The differentiation between the two could be made during the field survey only very roughly.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

services³³ (see table 11). The occurrence of frequent contracting did not differ significantly in towns of four different sizes.³⁴

This study does not show that towns of 2,500 to 10,000 population had more frequent contracting than larger or smaller towns had. But even though such evidence is lacking, it would seem that this possibility might warrant further investigation. One might logically expect a town of "medium" size to be large enough to support one or more contracting firms on the basis of the combined city and rural demand. A smaller city might have too small a volume of business to support the managerial specialization characteristic of the contracting firm. Larger cities might be expected to make possible the growth of contracting firms which would specialize in city building with, perhaps, a few doing both rural and city business. But as the size of the city increases, the diversified firms would probably account for a smaller percentage of the city's total volume of building sales. The hypothesis: The community in which builders contract for rural dwellings must be large enough to reflect a local and rural demand sufficient to support such a specialized service but

³³See table 11, footnote *, for the definition of "frequent" and "infrequent" as used in this study.

³⁴On the basis of the chi-square test, variations in the occurrence of frequent contracting reported by lumber yards in towns of these four population sizes could be explained by random sampling from a population of such towns in which the true percentages of yards reporting frequent contracting were equal. $\chi^2 = 7.33$; $n = 3$; P is greater than 0.05 but less than 0.10.

not so large that the offering of such a service to rural customers is overshadowed by the greater profitability of the local intra-city building demand. A qualitative factor may also have contributed to this pattern: It is possible that in the large city the characteristics of the house and of its construction are so unlike those of the farm house that a single firm is less likely to contract for both than is a firm in a smaller town where urban and rural houses and construction methods are more nearly alike. Although available data make these propositions conjectural, they are perhaps worth further study.

In most communities, the frequency of contracting was as great in town as on farms. Only two yards out of ten reported that contracting was more common in town than on farms. Almost half of these were in towns of 10,000 or greater population; and about 80 percent in towns of 2,500 or more population (see table 12).

The sample showed that contracting was more frequent in western Iowa³⁵ than in eastern Iowa, but the difference in frequency between the two areas was not statistically significant at the 5-percent level³⁶ (see table 13).

About two out of every ten yards reporting indicated that someone in the community was offering some type of contract or coordination service during 1947-48 (see table 14). This was in a period when fixed price contracts were rarely in use, being replaced generally by cost plus contracts. But only one-third of the yards reporting such contracting indicated that most new farm houses were actually being constructed under contract. The peculiarities of the postwar building market—shortages of materials and the uncertainty of delivery, rapidly rising prices, labor shortages, shortages of experienced contractors, and a greatly increased demand—discouraged contracting and made it unnecessary to obtain business. How permanent this change is will probably depend upon the permanency of the causes. There is some evidence that contracting has sometimes developed as a competitive means of securing business and has, therefore, been most prominent in a buyers' market.

CONTRACT COVERAGE

Seven out of every ten dealers reported some kind of contracting in their communities before World War II. Most of these stated that contracts generally covered building labor and materials or, less often, building labor *or* materials. But among those who reported frequent use of contracts in farm dwelling construction, half reported contracts covering the complete structure and the other half, building materials and/or labor (see table 15).

Two-thirds of the 21 yards reporting contracts covering the complete structure stated that such

³⁵Defined as that area west of a line drawn from north to south on the eastern borders of Kossuth, Humboldt, Webster, Boone, Dallas, Madison, Clarke and Decatur counties.

³⁶ $\chi^2 = 3.74$; $n = 1$; P is greater than 0.05 but less than 0.10.

TABLE 12. DIFFERENCES IN FREQUENCY OF CONTRACTING IN IOWA COMMUNITIES BEFORE WORLD WAR II IN THE CONSTRUCTION OF FARM AND TOWN DWELLINGS REPORTED IN 1947 AND 1948 BY A SAMPLE OF RETAIL LUMBER DEALERS IN TOWNS OF FOUR POPULATION SIZES.

Population of town, 1940	Lumber yards						
	Reporting				Total	Not reporting	Total
	Same amount of contracting in town		More contracting in town				
	Infrequent contracting on farms	Frequent contracting on farms	Infrequent contracting on farms	Frequent contracting on farms			
	Number						
10,000 and over	0	1	7	3	11	1	12
2,500-9,999	5	6	4	3	18	0	18
1,000-2,499	16	2	2	0	20	2	22
Less than 1,000	88	13	2	0	53	8	61
Total	59	22	15	6	102	11	113
	Percentage						
Total	52	20	13	5	90	10	100

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

contracts were frequently used in farm dwelling construction, while only a little more than one-fourth of the 50 yards reporting contracts covering building materials and/or labor reported frequent use. The difference between these two proportions was statistically significant at the 1-percent level.³⁷

WHO CONTRACTS

The most frequently mentioned contractor was the carpenter who contracted for building labor or building labor and materials. But among those who contracted frequently, the carpenter who contracted or coordinated the complete structure

³⁷ $\chi^2 = 15.57$; $n = 1$; P is less than 0.01.

TABLE 13. FREQUENCY OF USE OF CONTRACTING SERVICES FOR NEW FARM DWELLING CONSTRUCTION BEFORE WORLD WAR II IN WESTERN AND EASTERN IOWA REPORTED BY A SAMPLE OF RETAIL LUMBER DEALERS, 1947 AND 1948.

Type of service in community and frequency of use	Lumber yards	
	Eastern Iowa	Western Iowa
	Number	
Total	62	51
	Percentage of total	
Contracting	56	70
Frequently	16	35
Infrequently	40	35
No contracting	33	22
Total reporting	89	92
Total not reporting	11	8
Total	100	100

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

was most important, with the lumber yard second, and the carpenter who contracted for materials and/or labor third (see table 16).

Lumber yard contracts were of particular interest in this study of the lumber yard's role in dwelling construction. Only about one out of every six yards reporting on contracting did any primary contracting direct with farmers;³⁸ but of these, 70 percent did such contracting frequently. Of the 10 yards (out of the 102 responding) who reported frequent contracting by the lumber yard, six contracted for building materials and labor,

³⁸This excludes subcontracts made by the lumber yard with carpenters or full-fledged contractors.

TABLE 14. FREQUENCY OF CONTRACTING FOR NEW FARM DWELLING CONSTRUCTION IN IOWA COMMUNITIES DURING 1947-1948 REPORTED BY A SAMPLE OF RETAIL LUMBER DEALERS, 1947 AND 1948.

Type of service in community and frequency of use	Lumber yards	
	Number	Percentage of total
Contracting or coordination of complete structure or of parts*	21	19
Frequently†	7	6
Infrequently†	14	13
No contracting	86	76
Total reporting	107	95
Total not reporting	6	5
Total	113	100

*Only five yards reported the use of fixed price contracts. One of these reported contracts for carpenter labor only and another, building materials only. The other 16 yards reported contracts on a cost plus percentage basis. One yard reported coordination of construction rather than contracting.

†"Frequently" refers, roughly, to more than half of the new farm dwellings constructed; "infrequently," to less than half. The differentiation between the two was made in the field survey only very roughly.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

TABLE 15. CONTRACT COVERAGE AVAILABLE IN IOWA COMMUNITIES IN THE BUILDING OF FARM DWELLINGS BEFORE WORLD WAR II REPORTED BY A SAMPLE OF RETAIL LUMBER DEALERS, 1947 AND 1948.

Contract coverage in community	Lumber yards			Percentage of total
	Number			
	Infrequent use*	Frequent use*	Total	
Complete structure	7	14	21	19
Building labor and/or materials†	36‡	14‡	50	44
Total with contracting	43	28	71	63
Total without contracting			31	27
Total reporting			102	90
Total not reporting			11	10
Total			113	100

*"Frequent use" refers, roughly, to use for more than one-half of the new farm dwellings constructed; "infrequent use," to use for less than one-half. The differentiation between the two was made in the field survey only very roughly.

†Building labor: usually carpenter labor only; less frequently, structural labor only, excluding plumbing, heating and electrical labor, but including carpenter and mason labor.

‡Building materials: usually structural materials only, excluding plumbing, heating and wiring materials; sometimes also excluding masonry materials.

‡These totals were broken down as follows:

Contract coverage	Number of lumber yards reporting	
	Infrequent use	Frequent use
Building labor and materials	25	11
Building labor and/or materials	5	1
Building labor only	4	0
Building materials only	0	1
Building labor and/or materials and/or complete structure	2	1
Total	36	14

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

three for the complete structure and one for building materials only.³⁹

Carpenters who contracted for labor only generally had a small crew. Those who contracted for materials and labor secured an estimate or a firm subcontract from the lumber yard. Contractors usually began as carpenters and, with experience, organized their own crews and took contracts for jobs, usually subcontracting for work not performed by their own crews. These crews nearly always included carpenters and frequently masons. Lumber yards which took contracts for building labor and materials either (1) subcontracted with a carpenter crew for building labor; (2) estimated labor and material costs, hiring an independent carpenter crew on an hourly basis; or (3) estimated labor and material costs, maintaining their own carpenter crew on an hourly basis.

THE EXTENT OF CONTRACTING NATIONALLY

Data of the United States Department of Agriculture for 1949 indicate that 19.4 percent of the total cash expenditure for new farm houses in the United States was for labor and/or materials bought under contract. The percentage was 15.3

³⁹These figures are derived from the data upon which table 16 is based.

in the North and West regions combined and 23.9 in the South. For major improvements, contract construction accounted for 30.7 percent of the total cash expenditure in the nation, 37.7 percent in the North, 28.4 percent in the South and 23.8 percent in the West.⁴⁰

MARKET CHARACTERISTICS AND MANAGERIAL PATTERNS

There were three principal types of construction management found in this survey of rural house-building in Iowa. One was decentralized management, with the ultimate responsibility for coordination upon the owner. Another was some degree of centralized management through the general contractor. Between these two was a third type with elements of both owner management and the contract system in which the owner negotiated directly with one or more special trades contractors. A fourth form—operative building—was not reported for rural Iowa, probably because it would have entailed high costs of transportation to meet a geographically scattered demand.

Therefore, the choice was between contract construction of varying degrees of coverage and owner managed construction. The discussion below sets forth some of the conditions under which contracting has taken place in rural Iowa and possible reasons why owner management dominates the building picture.

⁴⁰U. S. Department of Agriculture. Bureau of Agricultural Economics. Farm housing and construction. pp. 23, 25. U. S. Dept. Agr., Washington, D. C. February 1952. (Processed.)

TABLE 16. TYPES OF CONTRACTORS AND CONTRACTING SERVICES AVAILABLE IN IOWA COMMUNITIES IN THE BUILDING OF NEW FARM DWELLINGS BEFORE WORLD WAR II REPORTED BY A SAMPLE OF RETAIL LUMBER DEALERS, 1947 AND 1948.

Type of contractor and service	Lumber yards			Percentage of total
	Number			
	Infrequent use	Frequent use	Total	
<i>Carpenter contracts*</i>				
Building labor and/or materials†	33	7	40	35
Complete structure*	6	11	17	15
<i>Lumber yard contracts‡</i>				
Building labor and/or materials†	3	7	10	9
Complete structure	1	3	4	4
Total with contracting	43	28	71	63
Total without contracting			31	27
Total reporting			102	90
Total not reporting			11	10
Total			113	100

*Including two cases of functional coordination of the complete structure; no fixed price contracts.

†Building labor: usually carpenter labor only; less frequently, structural labor only, excluding plumbing, heating and electrical labor, but including carpenter and mason labor.

‡Building materials: usually structural materials only, excluding plumbing, heating and wiring materials; sometimes also excluding masonry materials.

‡Including contracts made by lumber yard directly with farmers; excluding subcontracts made by lumber yard with carpenter or contractor.

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

A contract to perform certain functions necessary in building construction in exchange for a specified amount of money has three major effects upon housing construction and the market situation. First, it centralizes management in the contractor and tends to formalize the lines of authority and responsibility in construction. Second, it shifts the risks of physical loss and uncertainties of cost changes⁴¹ during the course of construction to the contractor and especially to subcontractors. Third, it permits the buyer to make price comparisons before purchase of a custom-built product, although differentials in quality between the products of different contractors are not completely controlled.

It would appear that certain demand and supply forces have led to the development of contracting in housing construction. On the demand side, there may have been a preference on the part of customers for contracted construction rather than for noncontracted construction. If they expected superior quality because of more efficient management, if the supply price of their own management and entrepreneurship were higher than that of the contractor, or if the contract system facilitated their buying by making price comparisons possible, customers might derive sufficient added utility from the acquisition and use of the contracted house to make their preference apparent in the form of higher subjective prices. It is also possible that they may have preferred the contracted house, not because of its greater utility or ease of purchase, but because it represented a lower priced product of comparable quality than the uncontracted dwelling to the extent that any lower costs of production were reflected in the quoted price. This latter situation is a reflection, not of a change in demand because of product differentiation associated with a contracting service, but of a less than perfectly inelastic demand.

Supply forces conducive to contracting may have included lowered costs of construction arising through centralized and vertically integrated management or through the reallocation of risk and uncertainty to points where it could be borne at lower cost. Another supply factor may have occurred when a carpenter or lumber yard manager assumed additional managerial functions for which he received added compensation. By extending his area of responsibility and activity, he employed his managerial ability more fully and increased his income. Even those carpenters or lumber yards which experienced no cost advantage in contracting may have been forced to assume contractual obligations in order to reduce net losses. This would tend to occur if consumer demand were strong, competition were powerful

⁴¹Cost changes may come not only from price changes but also from the unavailability of materials and labor which leads to delays in a given job, an interference with work flows, and operation of the firm at less than full capacity.

and the supply of productive factors were inelastic.

In order for these forces of demand and of supply to result in contracting, certain market conditions had to exist—a legal system which made possible the enforcement of a contract, ability on the part of the contractor to estimate costs for an entire dwelling at prevailing prices, some given expectation on the part of the contractor of the availability of materials and labor, and sufficient confidence of the contractor in his expectation of either price stability or the direction and amount of price change to permit the making of a contract.

Is there evidence that these forces and market conditions were important in determining the extent of contracting in rural Iowa? To obtain a first approximation, retail lumber dealers were asked whether carpenters, farmers and lumber yards did or did not prefer to contract for construction and reasons for that preference. Their responses are summarized in the sections below.⁴²

THE OPINIONS OF LUMBER DEALERS ON THE ATTITUDE
OF CARPENTERS TOWARD CONTRACTING

Although some carpenters wanted to contract because of the possibility of greater income due to any of the conditions mentioned above, the evidence secured in this survey indicates that carpenters in most communities of Iowa preferred not to work under a contract system. Several reasons for this attitude were suggested by lumber dealers: (1) the inability of some carpenters to estimate costs;⁴³ (2) the lack of capital of many carpenters and the unwillingness of lumber yards, subcontractors and farmers to make a contract or subcontract with them;⁴⁴ (3) the legal liability of the contractor; (4) the unimportance of the protection of a formal contract in a small town where people know each other well;⁴⁵ (5) the resentment of customers when extra charges above the contract price must be made because of changes made in the house plan by the owner during the construction period;⁴⁶ and (6) during the postwar period, shortages of materials and labor, changing prices, and the uncertainty of materials deliveries.

Some of the legal factors which discourage contracting deserve special comment. Liability for workmen's compensation in the event of injury on the job has discouraged the formation of work crews with employer and employees. Instead,

⁴²It is especially important to remember that responses of lumber dealers regarding possible reasons for preferences of carpenters and farmers may not be valid because of lack of information about the preferences of other persons or because of bias resulting from their own attitudes or reasons.

⁴³Dealer 86 said: "We have no contracting here. There was only one carpenter here who ever did it, and he's dead. Only young fellows are here now, and they can't estimate their costs."

⁴⁴Several dealers reported that the risk of a mechanic's lien made contracting undesirable.

⁴⁵In commenting on the lack of contracting in his selling area, retail lumber dealer 39 said, "If I couldn't trust a man to work by the hour, I wouldn't trust him to work under a contract."

⁴⁶Dealer 20 said: "One of the problems of contracting was changes. You never have a house built without some changes. We used to keep two separate materials lists: one for 'extras' and one for the stuff on the contract. We had to charge extra for all additional costs, so we tried to get people not to make changes. But it was always a headache and sometimes caused trouble."

carpenters often prefer to work independently but cooperatively, with each working without liability to others in the event of accidents on the job.⁴⁷

Another legal impediment to such crews is the requirements set up in connection with the Social Security Act, first effective in 1935 and extended in coverage in 1950. Under the 1935 law, employers of eight or more persons were subject, with certain occupational exceptions, to a payroll tax of 3 percent up to a maximum \$3,000 annual wage per person for unemployment compensation. Most contracting crews in Iowa had too few employees to be affected by this tax. The payroll tax to support the old age and survivor's insurance program, however, began at 1 percent and was levied against both employer and employees of a broader group, including those in firms in which there were fewer than eight employees. Several persons familiar with the trade commented on the tendency for contracting and even carpenter crews to be broken up after 1935 in order to avoid (1) the 1-percent payroll tax on both employer and employee; (2) the bother of computing the tax, making quarterly reports, and paying the tax; and (3) the risk of having their books inspected by agents of social security. When the crew was broken up, each party became self-employed even though the group might still work together.

In 1950 the coverage of the old age and survivor's program of the Social Security Act was extended to include many self-employed people who earn at least \$400 per year. Most independent carpenters would be included in this group and are, from 1954 through 1959, subject to a tax of 3 percent of their earnings up to \$3,600 per year. (This compares with a 2-percent tax on both employee and employer for those who are not self-employed and are not otherwise exempted from the program.) Even though self-employed carpenters are now covered, it is doubtful that the change in law is sufficient by itself to encourage the reorganization of crews.

THE OPINIONS OF LUMBER DEALERS ON THE ATTITUDE OF FARMERS TOWARD CONTRACTING

Some farmers apparently liked contracting for new farm dwellings, and some did not. According to retail lumber dealers, those who did like it preferred (a) to have a single price quoted for the entire house or for a substantial share of its cost; (b) to be able to compare bids of several contractors; and (c) to have construction management and uncertainty shifted to another party, especially when there were shortages of materials and labor.⁴⁸

Those who did not like the contracting system objected to (a) risks arising under the mechanic's lien law, (b) the added cost when changes in the plan are made during construction, (c) the margin

⁴⁷Iowa. Code, 1946, Ch. 85. 1946.

⁴⁸Dealer 32 reported: "Farmers like the contracting system pretty well. It gives the contractor the job of running everything down, and farmers are showing more and more inclination to buy things as complete as possible."

above the costs of materials and labor which the contractor received for his managerial services and for protection against price changes, (d) the risk that the quality of materials and labor might be sacrificed in order to present a low bid, and (e) removal of managerial responsibility from the farmer's control.⁴⁹

Of these, the mechanic's lien law perhaps requires special comment. The Iowa law provides that a principal contractor, i.e., one who has a contract directly with the owner, and subcontractors, i.e., ones who furnish under contract material or labor to a principal contractor, for building or other permanent improvements may, within 90 and 60 days, respectively, of delivery of the last material or labor, file with the clerk of the district court a statement of the lien. Payment by the owner to the contractor prior to 60 days does not relieve him of his liability to subcontractors if they file liens within the time provided by law unless the contractor has provided waivers by all parties or his own bond to protect the owner against losses arising out of liens filed by subcontractors.⁵⁰ The purpose of this law is to protect those who provide materials and labor for improvements on real estate in the event that either the owner or the contractor is insolvent. The probable effect of the law upon contracting is (a) to encourage special tradesmen to enter into subcontracts with principal contractors because of the right to perfect a lien and, on the other hand, (b) to discourage owners from contracting with the principal contractor unless the principal contractor provides waivers by all parties or provides bond or unless payment is not made by the owner to the principal contractor until after 60 days following completion of work. A contractor in Iowa cannot legally require payment before 60 days unless waivers or bond is provided. Owners who are fully aware of their rights are adequately protected by the Iowa law. But this protection may not be adequate in the eyes of a farmer who has in the past suffered a loss because he failed to behave in such a way as to protect fully his rights or who wishes to avoid the risk of court action even in the event of proper conduct.⁵¹

THE LUMBER YARD AND THE CONTRACT SYSTEM

The lumber yard participated in the contract system either as subcontractor or primary contractor.

Subcontracting by the lumber yard. Lumber dealers who had had successful business relations with contractors, on either a straight sales or subcontract basis, expressed satisfaction with making sales to contractors rather than directly to

⁴⁹Dealer 28 said: "Farmers are more suspicious than town folks. They don't trust contractors too much."

⁵⁰Iowa. Code, 1946, Ch. 572. 1946.

⁵¹Statements from lumber dealers relevant to this point were: (1) Yard 3—"If the contractor is not financially responsible, we collect for the materials directly from the owner." (2) Yard 39—"If the contractor didn't pay us, we took a lien on the job. So the farmer was responsible and saw to it that the contractor paid us." (3) Yard 42—"If the farmer pays the contractor and he doesn't pay us, we can attach the farmer's property. We've taught them that. So they see that the contractor pays us. That's the Iowa law."

owners. The advantages claimed were: (1) the contractor knows specifications and, therefore, makes fewer errors in placing his order and has fewer false expectations about the quality of lumber and other materials; (2) he makes out his own bill of materials; (3) he can and does use short cuts of lumber which the farmer generally dislikes buying; (4) he is generally less particular about the quality of lumber, while the farmer always wants the highest quality; (5) the contractor gets the blame if there is a complaint by the owner, thereby protecting the lumber yard; and (6) the lumber yard can sell more cheaply to a contractor who assumes more of the marketing functions than the farmer does.

Opposition by the lumber yard to the private contractor centered around three points: (1) by doing the job himself, the farmer could save the margin that he pays the contractor for his services; (2) most contractors are not financially responsible; and (3) contractors shop around for cheap materials and do not care about their quality.⁵²

The first of these—saving the contractor's margin—warrants special comment. The farmer who does for himself the contractor's job is assuming the functions of marketing and construction management which would otherwise be performed by the contractor. There are two situations in which this might be an economical procedure. One is where the market in which the contractor's services are sold is one of imperfect or monopolistic competition. This would cause the contractor's margin to include an element of monopolistic profit which the farmer could desirably retain for himself even if it meant sacrificing income which he might otherwise get in the more nearly competitive market in which he usually sells his services as farm manager. The other case in which farmers would "save" the contractor's margin by assuming the contractor's functions would arise where the farmer's managerial capacities would otherwise be unemployed or less than fully employed. In this case, the supply price for his services may be lower than for similar services of independent contractors. To that extent, he can do the job at lower "cost" than can the contractor. But it is only in these cases of competitive differentials in the farmer's and contractor's labor markets that the contractor's margin can be "saved" by the farmer. And it is probable that the farmer's skill in construction management is much less than that of the contractor so that the cost per unit of output may be even higher.

Primary contracting by the lumber yard. The reasons why a few lumber yards sold under contracts to owners while most yards refused to do so are especially helpful in understanding the housebuilding functions of lumber yards. Reasons

⁵²This characteristic was not universally recognized. Some dealers said that contractors rarely shopped among different yards for prices, maintaining more or less continuous relations with one yard. Such yards were generally those which liked to do business with contractors.

mentioned by dealers for making primary contracts included the following four, which were often mentioned in pairs: (1) farmers wanted a contract and a single price; (2) other competing yards quoted bids on contracts; (3) no other participant in the local building business was able or willing to contract; and (4) the lumber yard secured the contractor's margin.⁵³

These contracts were carried out in various ways. (1) In a very few cases, the lumber yard maintained its own carpenter crew. Two of the nine yards reporting frequent use of lumber yard contracts prior to World War II⁵⁴ (see table 16) had their own carpenter crews who were hired and paid by the lumber yard. (2) In most cases (seven out of nine), the lumber yard used the services of private carpenters, paying them by the hour but not regarding them as regular employees of the firm or, less often, paying them by the job on the basis of a firm subcontract. (3) An informal plan of coordination occurred where the lumber yard and carpenter crew maintained working relations but with no primary or secondary contract. This was referred to by members of the trade as carpenters "who work out of this yard" and generally occurred where the customer made the yard his point of initial contact, and the yard informally assumed the job of getting the labor. This was especially important in some localities during the labor shortage following World War II.⁵⁵ (4) An informal but inclusive system of coordination was developed by one yard following World War II and is described here as an interesting and apparently effective plan for this particular dealer who was seeking a compromise between a lumber yard contract for the complete structure and complete decentralization of housebuilding management. The following is a paraphrase of the dealer's report of his plan. He was in a town of 2,500-5,000 population.

Yard 30.

We've operated under three or four different programs here. The one we have now I call the "home coordination" setup. We try to coordinate all the home building functions at one place—the lumber yard. It's a service we provide free of charge for the customer.

We take the responsibility for getting a plan and all the labor and materials. The only responsibility of the owner is to handle any details involved in making changes in the plan and in doing such things as cleaning up around the job. The idea is to get an integrated relationship in the building of houses.

⁵³Two comments were: (1) Yard 34—"We used to take contracts in the middle thirties but not since then. We didn't do it because we wanted to but because it was a service the customer sometimes wanted. We didn't try to make any money out of it. We got our money out of materials. Sometimes, too, we'd contract in order to get a job." (2) Yard 105—"We used to give the farmer a contract. Most of them like the idea of a single price, and we'd do it if they wanted it. Then they paid us for everything [materials and labor only], and we paid the carpenters. We're not doing that now because of the labor supply, but we'll probably do it again when the labor situation is better. In fact, competition will probably force us to do it again."

⁵⁴One of the 10 yards listed in table 16 contracted for building materials only.

⁵⁵Dealer 71 reported: "We don't have any carpenters working out of this yard. The yards at and do, and we've lost some jobs this year because of that. It's the shortage of labor that makes it so important to the farmer. You used to be able to get a carpenter any time you wanted one. Now some of the yards are taking that on."

The owner makes his payments direct to the lumber yard for materials, carpenters and masons, and also for small contracting jobs, such as excavating and special work. He pays the medium-sized subcontractors directly. These include plastering, heating, lighting and sometimes painting.

The reason we don't want to subcontract these medium-sized jobs is the social security tax. We want to keep our number of employees down so that social security doesn't have to be paid. The other thing is that if we have a great deal of subcontracting, we're subject to investigation for social security tax. While it might not cost us any money in tax, it would just be the nuisance of having someone plow through our books for several days.

We have five carpenters on our payroll now. They're paid by the week. If we paid them by the month, we might get into difficulties a year or two from now when conditions change, and we don't want to get an undesirable precedent set. Thus far we've had no trouble with the seasonality of building. However, the number of helpers we employ varies; and if business slacked off, there would be problems.

If materials weren't short, our maximum capacity in houses would be about 10 a year if we didn't do anything but housing. We've built 11 during 1948: five on farms and six in town.

Not all building this year has taken place under this new plan. The reason is that materials and especially labor have been short, and we just couldn't take on all the work that came our way. We've been able to get materials, but we couldn't always get them when we need them. Timing is the factor here.

One of the advantages of this plan is that the layman stays out of it and the lumber yard takes charge of the complete job from the ground up. It's exactly the same principle as my going to a garage to get my car fixed, and I pick up some tools and start to help the mechanic. I'm more hindrance than help. Another advantage is that a lot of waste is eliminated.

Before the war we took contracts for the complete house, but I never want to do that again. The reason is it's too costly for the volume of business that we have here. If I could afford to hire another man in here to do my work in the office, it would pay. When you contract, you have to be out on the job all the time. I would be willing to take a contract for a small house; but if you do that, people wonder why you don't do it for a big house.

Nobody can take a contract now unless it's safe, and that involves a big margin. I'll give you an example. Not long ago a house was put up on two lots in _____, which is an exclusive residential district. The lots out there sell for around \$3,000 or \$4,000, and these two lots cost about \$8,000. Now the house was built under a contract for \$30,000. Except for some small differences, I built exactly the same house under my plan for \$18,000. A house that costs you about \$20,000 right now on a contract we can build for around \$12,000 or \$13,000.

We build from either blueprints or a floor plan. If it's a simple house, we just use a floor plan. But we've had very good service from a firm in _____ that makes our blueprints for us. I like to use a stock plan whenever I can. Of the 11 houses we completed this year, three were built from stock plans.

In addition to our five carpenters, we also use the services of one contractor with 10 men (including masons but not plasterers) and one with six men. We're really short of masons here. One thing that makes this service work here is that there are no unions, and that makes our costs a lot less.

I've had this type of package selling in mind for a long time and have just now gotten it started. We also do this same thing for farm buildings, usually larger ones such as barns, machine sheds, etc., rather than corn cribs and other small buildings. This includes complete service from the foundation through the finish. Farmers in this area rarely do much work on their farm buildings.

We've operated under two systems in the matter of payments. The first was an adaptation of the old FHA plan: one payment after the foundation is complete, one when framing is done, one when it's closed in, and one when the whole thing is complete. That's either three or four payments. Now we settle on a monthly basis. But it works out about the same, because instead of three or four installments according to how much is done, it takes us about 120 days, on an average, to complete a house. That means the foundation is usually finished in about 30 days, and so on. We've finished some houses in less time than that, but that's about average.

One dealer presented a picture of the evolution of lumber yard contracting, and his report is paraphrased below.

Yard 10.

About 5 or 6 years before World War II we contracted for the complete house, including heating and plumbing. This was a fixed price contract. We had about 10 carpenters who worked for us by the hour, and we would subcontract for plumbing and heating. Most of the carpenters here in _____ work out of one yard most of the time. They can and do work for others sometimes, but 90 percent of the time they stick to one yard.

This yard got into contracting by an evolutionary process. We had been working with a contractor here and then he left. Then some jobs came along that the people wanted on contract. But the carpenters here weren't financially responsible; so they asked us to sign the contract since we were financially responsible. It was a question of doing it because the carpenters weren't able to get anyone else to do it. So we contracted. That was for farm houses, farm buildings and houses here in town.

Right now we don't want to contract for several reasons. Up until this summer [1948] we couldn't get enough materials to be sure when we could finish the job, and I won't take a contract under those circumstances. Then, too, we've lost some of our men. One of them has gone into contracting on his own. And also I have to supervise the job and I'm too busy right now.

Another reason is that we're short of good carpenters. We have a few good ones here, but it's still a problem. Most carpenters aren't even able to make out their own bill of materials. So we have to do it for them. That's another reason I won't take a contract now. If we figure the bill of materials and the carpenter doesn't cut it right, it will run to more than I've estimated and we'll be out that. Another disadvantage of contracting is that the carpenters sometimes aren't responsible, and we may be stuck for the job. If the yard signs a contract for the carpenter and the carpenters don't complete the job, we suffer the loss.

Most of the yards here in town don't contract but work through some contractor. One yard, though, has taken a contract recently. I expect we'll go back into contracting again as soon as we can. Farmers like the contracting system. They want to depend as little as possible on their own labor. Most farm houses built by us 5 or 6 years before the war were built under our own contract. That wasn't true 10 years before the war, though.

Numerically offsetting these yards which offered primary contracts were those which refused to give such contracts. Reasons stated by dealers for this policy were: (1) the cost of workmen's compensation and social security; (2) the lack of profit to the lumber yard in such contracts;⁵⁶ (3) the amount of the manager's time consumed by

⁵⁶This apparently was related to the fact that contracting was not demanded in their selling areas; therefore, the customer would be unwilling to pay the lumber yard an extra amount for performing the functions of contracting.

building supervision;⁵⁷ (4) labor difficulties, including the inability of independent carpenter crews to subcontract, the lack of financial resources of carpenters who might subcontract, and the possibility of payroll costs during slack seasons for the yard which hired its own carpenters; (5) the cost and customer dissatisfaction resulting when customers change the house plan during the construction period; (6) the lack of skill on the part of the lumber yard manager in estimating costs and managing construction; (7) the successful relations of the yard in the past with independent contractors and carpenters; (8) the frequent use of parts of old houses in new dwellings, making cost estimates difficult to make in advance.⁵⁸

Comments on the future of lumber yard contracting. Lumber yard managers made various observations on the future of lumber yard contracts. The statements below are paraphrased.

Yard 8.

The lumber yard has been very laggard in doing very much about farm housing or any housing for that matter. Usually people would go to the carpenter or contractor first and he would draw up the plan for them. Then we would work pretty closely with certain contractors. They usually got more business for us than we ever got for them. We don't anticipate going into contracting because we have several contractors that we've had good relations with. That's a selfish point of view, of course.

I think lumber yards in this area could offer a lot more service to home builders. Some of the yards in small towns do. For example, the yards at and have a drafting service. I think that eventually we'll handle all the materials needed for a new house. That includes things like plumbing and heating supplies. Then the customer can come to one place and get everything for his house instead of having to go to the lumber yard, the millwork plant, the plumbing shop, and so on.

Yard 14.

We used to do a little contracting, but we really can't do that. That's a full-time job. We'd have to have another man here if we took that on; it's too much for me to do with work here in the yard.

Yard 16.

If we had a builder's office right down here, we could offer a complete building service, but our chief service is to sell materials . . . The lumber yard has no business doing contracting. We're specialists in lumber. You need a specialist to build a house. If I were having a house built, I'd rather have a builder do it than do it myself. Then our job is to recommend No. 1 or No. 2 subflooring, and so on.

Yard 43.

We very seldom take contracts, but the head office is encouraging us to do that now.

Yard 58.

I've been at this yard for 40 years, and I don't know of any new houses on farms except fire replacements. The farmers thought they were in the money after the first World War and built big, expensive

houses. Now the size of farms is increasing, and there are more houses and buildings on some farms than they need. There are even some vacant houses. Several times a farm house near here has been moved into town. It's a lot cheaper than building one in town. I know of one 400-acre farm near here with four sets of farm buildings on it. The mother and father live in one house and the son in another.

I have no interest at all in housing. It's an unprofitable business for the lumber dealer, and other dealers will tell you the same thing. In the first place, we might start a house now [October] and finish it next summer. We have our money tied up in the materials all that time. Another thing is the housewife is a major problem, if you'll excuse me for saying so. She can't visualize what she wants until she sees it. The plan may specify a certain type of window. Then we order them and she changes her mind. So the yard has to keep them in stock and usually absorbs a loss on them. The other day I sold some windows that I bought 37 years ago. I sold them for \$1 apiece just to get rid of them. Another reason housing is a headache is that there's always some stuff left over from a house. Maybe you order 1,000 feet of something and only 750 feet are actually used. You take back the 250 feet and the loss may eat up all your profit. There's just no profit in housebuilding, and we're in business for profit.⁵⁹

Yard 85.

I believe that lumber yards are going into house contracting before long and that the line yards will go into it in a big way. I'd like to get into contracting myself. I'd prefer to have my own carpenter crew so I could figure costs. It takes careful calculating to contract a house, because you figure a closer margin on a big job. But I believe there's good money in contracting.

Yard 91.

I think the trend in the future is for the lumber yard to have everything for the new house. That includes plumbing and heating equipment and furniture. That's so they can come to one place and get everything at once. That's for farm people—not town people.

FINANCING THE BUILDING OPERATION⁶⁰

That aspect of building finance of greatest concern to the retail lumber establishment relates to payments to the lumber yard for marketing and other functions. Dwelling construction adds to the costs of operation of the retail lumber yard to the extent that the lumber firm provides materials for construction before payment is received. Assume, for example, that four dwellings are under construction at one time, and each involves \$4,000 of materials from one lumber yard. If one is started each month and \$1,000 of materials are used in each per month, then the total investment by the lumber yard in materials amounts to \$10,000 at the end of four months. If imputed interest is estimated at an annual rate of 6 percent and payment for the materials is received within 30 days of completion, the total interest cost to the dealer for each of these dwellings is approximately \$50.⁶¹ From the consumer's viewpoint, it is im-

⁵⁷This would imply that the opportunity cost was higher than the added income which the yard might receive from contracting. The dealer's services as manager of the yard were worth more in added income than his services as construction manager. It might also suggest lumpiness in combining productive factors.

⁵⁸This was frequently mentioned in those areas where farm dwelling vacancies were high.

⁵⁹This statement was followed by another question: "Would some of these problems be taken care of if you had a large enough volume of housebuilding business?" The answer: "No, I used to be in a large city and it was the same thing there."

⁶⁰Since this is one of the marketing functions, facilitating the transfer of title to materials, it could have been included in the section, "Building Materials." It is given separate treatment only because of its special importance in farm housing.

material who initially bears the cost of financing during the period of building construction so long as imputed interest cost is as low as possible commensurate with the nature of the investment.

There is little evidence that the retail lumber dealer in Iowa provides working capital for dwelling construction for very long (see table 17). Four out of five dealers reported that payments were made in two to four installments during the period of construction, with the last upon completion of the structure. The following are representative schedules used:

- A. Two payments
1. Roof on; plastering completed; or one-half completed
 2. Completion
- B. Three payments
1. One-third down
 2. One-third roof on but before plaster
 3. One-third on completion
- or
1. 30 percent down
 2. 60 percent roof on
 3. 10 percent by arrangement
- or
1. Foundation completed
 2. Roof on or plastering completed
 3. Completion
- C. Four payments
1. Foundation completed
 2. Roof on
 3. Plastering completed

⁶¹This is only approximate. It is based upon an estimated \$1,000 worth of materials sold without payment for 4 months; \$1,000 worth for 3 months; \$1,000 worth for 2 months; and \$1,000 worth for 1 month. Actually, the total interest cost would vary, depending upon (1) the actual rate at which materials are used up in the building process; (2) the necessary investment in inventory to sustain the level of building operations; and (3) the terms (invoice price, dating and discounts combined) of lumber yard purchases.

TABLE 17. PAYMENT SCHEDULES REPORTED IN 1947 AND 1948 BY A SAMPLE OF IOWA RETAIL LUMBER DEALERS IN TOWNS OF VARIOUS SIZES FOR MATERIALS USED IN NEW FARM DWELLINGS.

Schedule of payments	Lumber yards					Percent- age of total
	Number					
	Population of town, 1940				Total	
10,000 and over	2,500- 10,000	1,000- 2,500	Less than 1,000			
Two to four install- ments, the last on completion	6	13	19	47	85	75
Monthly	1	2	1	3	7	6
Monthly or install- ments	3	0	0	0	3	3
Varies with customer	1	2	0	2	5	4
One payment on completion	0	1	1	2	4	4
Cash for each pur- chase	0	0	0	1	1	1
Total replying	11	18	21	55	105	93
Total not re- plying	1	0	1	6	8	7
Total	12	18	22	61	113	100

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

4. Completion
- or
1. First floor completed
 2. Second floor completed
 3. Roof on
 4. Completion
- or
1. Down payment
 2. Roof on
 3. Plastering completed
 4. Completion or specified date

One yard reported a five-payment schedule as follows:

1. Foundation completed
2. Second floor completed
3. Roof on
4. Millwork and plaster completed
5. Completion

Some dealers indicated, however, that these schedules were sometimes modified to meet the needs of particular customers. Only 4 percent of the reporting establishments waited until completion of the dwelling to receive payment for materials, while an additional 5 percent used a varying schedule of payments. One dealer, who formerly received payments in four installments and then shifted to monthly payments, reported nearly comparable results under the revised system where the structure could be completed in approximately 120 days.

Systems of payment in general use in farm dwelling construction do not place the function of financing the building operation upon the lumber dealer. That function is assumed primarily by the specialized financing institution, the farmer or the contractor. With a few exceptions, credit extension by the lumber yard is limited to an approximate average of 2 to 6 weeks. The cost of construction financing in the long-run, however, is borne by the owner of the completed structure, regardless of the immediate allocation of the function.⁶² The longer the credit period granted by the lumber yard, the more important the yard becomes as the source of short-term investment in the building process. Most dealers are unwilling to assume this function on the grounds that it is a highly specialized activity extraneous to their other housebuilding functions. For example, dealer 16 commented, "We're in the lumber business, not the banking business."

Comments of dealers, paraphrased below, reflect certain practices in farm dwelling finance.

Yard 6.

We never question the farmer's ability to pay now. But if farm income should fall, we might have to go back to the old system of getting paid twice a year.

Yard 43.

..... and farm building finance companies won't finance farm houses because they don't want to get their capital tied up that long.

Yard 85.

You have to have a big job like a house paid for

⁶²It may in the short-run be borne partially or totally by one of the participants in the building process, depending upon the elasticity of demand for the services of the agent or merchant, the nature of competition within the industry, and the elasticity of supply of factors of production. The incidence of financing costs in the short-run is a special problem in a period when such costs are changing.

all along. The reason is that on a job like that you narrow your margin, and interest on money from the bank eats up your profit if you have to carry the owner on credit very long.

ESTIMATED SALES BY RETAIL LUMBER ESTABLISHMENTS FOR FARM DWELLING CONSTRUCTION⁶³

To reach any conclusions as to the reasons underlying the patterns of housebuilding functions performed by the retail lumber establishment and to formulate even a tentative judgment as to the possibilities of expansion or contraction of such activities by the lumber yard, it is necessary to have some measure of the amount of farm dwelling construction and its importance in the lumber yard's total volume of sales.

A series of questions was included in the questionnaire to secure estimates of rural dwelling construction volume in Iowa in 1948 from the sample of retail lumber dealers. Each lumber dealer was asked how many of his farm customers built new dwellings or made major dwelling repairs⁶⁴ during 1948 and what the average cost of building materials for these new structures and improvements was.

While figures for only 1 year do not permit any conclusive interpretation, they do offer a basis for certain tentative conclusions. From the lumber dealers who were interviewed, the investigator was left with three general impressions about the volume of farm construction in 1948: (1) the total volume of farm dwelling construction—both new dwellings and repairs—in Iowa during 1948 was quite high (other data indicate that this was also true in the nation as a whole); (2) the amount of nonresidential farm construction was also quite high, not only because of increased income but also because of the very large corn crop of that year with its accompanying storage problems; and (3) both residential and nonresidential farm construction were limited in some cases by shortages of building materials or labor. In these respects, therefore, these figures may not be representative of building volume in all years.

Total sales of building materials for new farm dwellings, major farm dwelling repairs and minor farm dwelling repairs in Iowa in 1948 were about \$22 million, which represented a little more than 12 percent of total sales by retail lumber yards and building materials dealers in that year. About 40 percent of these sales were for new dwellings; the balance was divided about equally between major improvements and minor repairs.

1. About 2,000 new farm dwellings were built in Iowa in 1948. The average lumber yard provided materials for 1.8, although four out of every

ten yards built none. The 12 percent of yards which built the most accounted for nearly 40 percent of all new dwellings built. One-half of the total were reported by yards in towns of less than 2,500 population, although the greatest number per yard were in towns of 2,500-10,000 population. The building materials purchased from the retail lumber yard averaged \$4,300 per dwelling unit or \$7,700 per lumber yard. All lumber yards together sold about \$9 million worth of building materials for new farm dwellings in 1948. The estimated average total cost of these dwellings, including both building materials and other costs, was \$11,000 per dwelling unit or \$22 million for the state as a whole.

2. About 7,000 major farm dwelling repairs were made in Iowa in 1948. The average lumber yard provided materials for 6.0, although one out of every ten yards had none. The 17 percent of yards which built the most accounted for a little more than 50 percent of the total number. Over half of the total was reported by yards in towns of less than 2,500 population, although the greatest number per yard was in towns of 2,500-10,000 population. Building materials purchased from the retail lumber yard averaged \$990 per major repair or \$6,000 per lumber yard. All lumber yards together sold about \$7 million worth of building materials for new farm dwellings in 1948. The estimated average total cost of these repairs, including both building materials and other costs, was \$2,000 per dwelling unit, or \$14 million for the state as a whole.

3. Detailed data were not secured for minor repairs, but certain estimates made by lumber dealers indicate that building materials for such repairs cost farm families a total of \$6 million in 1948, representing an estimated total expenditure of \$12 million for both materials and labor.

Lumber dealers also reported that they provided materials for a total of about 4,700 new town dwellings in 1948, or an average of 4.1 per yard. However, building materials for many urban dwellings do not move through the lumber yard, and census data indicate that the total volume of nonfarm construction in that year was probably closer to 13,500 new dwelling units.

AN APPROACH TO THE APPRAISAL OF THE ROLE OF THE RETAIL LUMBER ESTABLISHMENT IN FARM DWELLING CONSTRUCTION

How desirable or undesirable the patterns of functions described in this study are for consumers of housing depends upon the efficiency with which lumber yards are doing their job relative to others who might do it and upon how readily and completely efficiency of performance is transmitted through lower prices to buyers of new farm houses.

The data produced by this study do not enable one to measure the efficiency of the

⁶³Estimates upon which this section are based were derived from data reported by a sample of approximately 10 percent of Iowa retail lumber dealers (see Appendix A). The collection and interpretation of such data involve questions of validity and reliability. A complete discussion of the method used, problems involved and findings are contained in Douglas, An estimate of the volume of farm dwelling construction in Iowa.

⁶⁴A "major farm dwelling repair" was defined as one in which the building materials purchased from the retail lumber yard cost the farmer \$500 or more.

rural housebuilding industry in general or of the retail lumber establishment in particular. But, in spite of limitations of the data, it may be useful to pose certain questions regarding efficiency which are relevant to some of the descriptive material resulting from this survey. A few preliminary observations can be made. This second, and far cruder, method of appraisal is based on the following assumption: Failure to achieve maximum efficiency in the housebuilding industry arises out of rigidities and imperfections in the industry (or in related industries to which or from which productive resources must move in order for adjustments to be achieved). Therefore, one type of firm can be described, and roughly appraised, in terms of its apparent ability to contribute to the solution of the industry's basic problems. These problems are recognized as the facts or conditions which create rigidities or imperfections in the market in which the firm operates. They are barriers to efficiency. In addition to these problems which are a part of the industry's structure and functioning, there are what might be termed social problems of the industry—i.e., the inability of the industry, even though operating in equilibrium and with optimum efficiency, to satisfy the goals or standards of the society.

Four major characteristics of the demand for and supply of housing appear to be the source of many of these rigidities and imperfections. One of these characteristics is the house itself. Many of the problems of the industry are the direct result of the physical characteristics of the structure. It is a bulky, durable product comprised of many parts which, when assembled, become attached to a given location and have only limited mobility. The design of the house, its plan, which is complex and variable according to family needs, and the quality of its environment affect its utility, cost and value.

A second problem area lies in construction methods and construction organization. Most small-town and farm houses are put together by specialists who assemble many parts on a single site, often operating at less than full capacity. Management is often spread among many specialists who informally coordinate their activities.

A third problem is the cost of the dwelling and the financing of ownership. The cost of the structure is the total cost of many productive factors. Current housing expenditures have, in recent years, been the fifth largest item in the average family budget; and in certain earlier years, they were even more important.⁶⁵ Because housing is more important than any other consumer good as a medium for saving, many families have been greatly affected by the terms under which home ownership is achieved.⁶⁶

⁶⁵U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Office of Business Economics, National income—1951 edition, pp. 192-199.

⁶⁶1953 Survey of Consumer Finances, Part III, Housing of Consumers, Board of Governors of the Federal Reserve System, Washington, D. C. August 1953.

A fourth problem area consists of the structure and functioning of the market. The local nature of the market in which old and new houses are bought and sold makes for restricted competition. The market is also unique in that new dwellings, especially in small towns and rural areas, are built largely upon consumer initiative, which is not conducive to efficient large-scale production. Another characteristic is the loose or informal integration of productive factors. Moreover, few consumer goods markets exhibit the rigidities of the housing market or the tremendous cyclical fluctuations in new housing construction. Another market phenomenon is the fact that supply comes largely from old houses. While the second-hand market operates in rural housing in a way quite different from that in urban housing, it is, nevertheless, a predominant part of the total rural housing market. Closely related to this characteristic is the close long-run social and economic relationship which exists between the farm house and the farm to which it is attached. Some of the so-called "problems" in this fourth group may, of course, actually be reflections of other conditions which are the basic "problems" of the industry.

These four areas in which problems arise are not unrelated, for each tends to stem from the others. However, the physical characteristics of the dwelling are probably basic to all problems of the industry. To the extent that activities of the retail lumber yard can be observed as contributing to the solution or perpetuation of these sources of housing "problems," certain tentative conclusions may be drawn about the effectiveness of the housebuilding activities of the retail lumber firm.

SOME OBSERVATIONS ON EFFICIENCY

The observations in this section are directed in a very general way toward two questions:

- (1) Are retail lumber firms performing their present functions with maximum efficiency?
- (2) Would efficiency of either the retail lumber firm or the rural housebuilding industry be affected if retail lumber firms or establishments assumed
 - (a) More housebuilding functions or
 - (b) Fewer housebuilding functions?

EXISTING PATTERNS OF FUNCTIONS

The retail lumber dealer is primarily a merchant middleman, performing the marketing functions necessary to transfer title of building materials to consumers and to farmers and other businessmen and to make such materials available physically. Preliminary observations of the structure of the market in which these services are bought and sold suggest that it has some characteristics which are socially desirable (the overlapping of market areas, rapid imitation of services and prices, and possibly considerable freedom of entry) and some which are not socially desir-

able (the existence of oligopoly and local structural imperfections and rigidities).⁶⁷ Until studies are made of the structure of costs and of revenue, it is necessary to conclude that observed characteristics of the retail lumber market suggest the existence of a structure which is conducive to less than maximum efficiency in the performance of the existing pattern of functions. However, the functioning of the retail lumber industry does not appear to be a major deterrent to the efficiency of farm dwelling construction.

REALIGNMENT OF FUNCTIONS BETWEEN RETAIL LUMBER AND OTHER HOUSEBUILDING FIRMS

While the typical retail lumber establishment has specialized in the performance of the functions of marketing building materials, it is instructive to observe the circumstances under which, or possible reasons why, some dealers have assumed more or fewer housebuilding functions.⁶⁸ Those dealers who have increased their activities have usually added a planning service, some kind of managerial service and, in some cases, a contracting service. Firms which sell construction services in addition to building materials will do so because they expect the expansion of functions to increase profits or decrease losses. There are five possible circumstances under which this may occur.

(1) Profits of imperfect or monopolistic competition in construction. In the market in which construction (and/or contract) management is bought and sold, there may be profits of a less than purely and perfectly competitive market which could be absorbed by the retail lumber firm. The lumber dealer is sufficiently close to the market to be informed of such opportunities when they exist.

(2) Unused capacity in the retail lumber establishment or firm, especially managerial capacity. This condition is most likely to appear during a period of decreasing demand, especially if exit from the industry can only be made slowly. If unused capacity exists, if the marginal cost resulting from its utilization is less than the marginal revenue and if the anticipated marginal profit resulting from an extension of operations into additional lumber marketing is less than the anticipated marginal profit from the extension of operations into construction management or contracting, then it would be economical for the retail lumber firm to extend its operations into construction.

(3) The efficiencies of vertical and/or horizontal integration. Integration of marketing and construction functions within the same firm may, in some cases, make possible certain economies by reducing marketing costs, especially those of buying and selling; by reducing certain elements

of risk and uncertainty if intrafirm communication is more efficient than interfirm communication; and by achieving an optimum utilization of productive resources through better managerial control of work flows. These cost reductions would give rise to short-run profits and, under proper competitive conditions, to a decrease in the long-run equilibrium price.

(4) Integration as a means of product differentiation. Integration of materials marketing and construction management makes possible the joint and/or common supply of related services which may constitute a differentiated product to the consumer. There may, therefore, be a reduction in the elasticity of demand for the product (and services) of a particular firm and/or an increase in the demand for the product (and services) of the particular firm (the latter in the event that some product differentiation existed before integration).

(5) Continuation of existing profits or minimization of losses associated with increasing or decreasing demand. An increasing demand may, in the early stages of growth, make necessary the performance of certain associated functions not sufficiently great in volume to support a specialized institution. But continued growth of demand eventually increases the volume of sales to enable the function to be performed more economically by a specialist. During a period of declining demand, a similar realignment of functions may take place. As demand for a particular good declines, certain functions previously performed by specialists are no longer in sufficient demand to support a specialized firm (i.e., the average total cost of production is greater than the selling price). Such specialized functions become incorporated into the catalogue of functions of some other firm performing other activities, to whom the decline in net profit from the assumption of the function is less than the decline in net profit from failure of assumption.⁶⁹ This would apply not only to secular growth and decline of the industry but also to the very marked cyclical fluctuations associated with all forms of construction, especially with residential construction.

Paralleling these possible reasons for the assumption of added housebuilding functions by certain retail lumber establishments and firms are the opposing reasons for the failure of most dealers to assume added functions.

(1) The absence of profits of imperfect or monopolistic competition in construction. Profits of construction and/or contract management could be zero or negative in the short-run. It may also be true that the uncertainties associated with the addition of construction management as a function of the lumber firm are greater than those associated with the usual marketing func-

⁶⁷Douglas, The structure of the Iowa retail lumber industry.

⁶⁸See section entitled "The retail lumber establishment and housebuilding functions" for a description of the nature and frequency of these patterns.

⁶⁹This proposition is developed in Stigler, George J. The division of labor is limited by the extent of the market. *Jour. Political Economy*. LIX:185-193, No. 3, June 1951.

tions of the firm. This necessitates the expectation of a greater profit ratio if expansion of the firm is to take place in that direction. The marked cyclical fluctuations in the demand for construction management would contribute to uncertainty.

(2) The absence of unused capacity in the firm or the existence of unused capacity which cannot be used most efficiently in construction management. The latter situation would be especially important where yard management lacked the skill necessary to undertake construction management.

(3) The diseconomies of vertical or horizontal integration. Important in this case are the spreading of management over diversified tasks and the rigidities of the vertically integrated firm in a market in which demand shows marked cyclical fluctuations.

(4) The short-run nature of profits of monopolistic competition arising from the offering of vertically integrated functions by a single firm. Such profits may tend, in the long run, to be zero; and in the short-run, they may sometimes be negative.

(5) A volume of business sufficient to support specialized institutions. If the amount of construction business within the selling area of the retail lumber yard is sufficient to support specialized construction management, or if other firms participating in construction, such as carpenters, are able to assume managerial functions more efficiently than the lumber yard can, such functions are not likely to become a part of the functions of the retail lumber establishments. Whether a particular lumber firm will or will not extend its operation into the planning and managing of farm dwelling construction depends upon (a) the kind of competition in the local market in which the retail lumber establishment operates and in which construction management is bought and sold; (b) the optimum size of the retail lumber firm and establishment, with size a variable in terms of both volume of sales and numbers and kinds of functions; and (c) the quality of lumber yard management⁷⁰ compared with that of other firms participating in the local housebuilding market.

These, then, constitute the principal observations about the realignment of functions between retail lumber yards and other participants in rural housebuilding: (1) only a very few firms provided construction services over and above those associated directly with the retailing of building materials to owners or contractors of farm dwellings; (2) those additional services which were provided consisted of aids in planning, informal or formal managerial coordination of the activities of the many specialists in housebuilding, and the occasional, although rare, assumption,

⁷⁰Quality of management can be conceived of quantitatively in terms of the number and variety of operations which management is able to execute. In this case, it would become a determinant of the optimum size of firm rather than be a third condition in this list.

through the contract, of certain risks and uncertainties during the building process itself; and (3) the performance of these services by lumber dealers appears to have been the result of the nature of competition in the local retail lumber and rural housebuilding markets, the desire to achieve optimum size of the retail lumber firm, and the quality of yard management.

Is it possible to draw any conclusions about the effect of the lumber yard's performance of its "regular" functions and, to the limited degree that integration has been achieved, of its integrated functions upon the welfare of consumers? While nothing very conclusive may be said on the basis of these findings, one useful approach is to see which of the various problems of housebuilding outlined above have been modified or accentuated by the patterns of activity observed.

The dwelling structure. By participating in the choice of design, floor plan and environment, lumber dealers have unquestionably affected the quality of dwelling structures. They have also affected housing quality through the buying and selling of materials. How favorable or unfavorable these effects have been depends upon the skill of dealers and upon the alternative sources of planning help which farm families might have had. With proper knowledge, there is little doubt that yard managers could have had a very favorable effect on the quality of new structures.

Construction methods and construction organization. Their effect on the methods and organization of construction has resulted from their ability to encourage (or discourage) centralized management, from informal cooperation with contractors or certain carpenters, or from their own direct participation in construction management. The effect of formal or informal integration of activities upon consumer welfare can be examined in terms of the possible reasons for the coordination of functions within the lumber yard.

To the extent that lumber yards took over construction management to secure existing profits of imperfect or monopolistic competition in such markets, the consumer would not necessarily benefit in the short-run. There would merely be a shifting of profits from one participant to another. But at the same time, the ability of the lumber firm to enter the construction management market would increase the supply of management or the elasticity of supply, causing lower prices to consumers and lower returns to management more readily than would otherwise be true.

If the reason for combined marketing-construction operations were to achieve the economies of vertical and/or horizontal integration, or if it were to utilize unused capacity in the firm, the combined operation would generally be a competitive device for achieving lower costs, probably yielding greater profits in the short-run and lower prices in the long-run. If, on the other

hand, the vertical-horizontal integration of marketing and construction services were merely a means of achieving product or service differentiation, the short-run result would be greater profits, while the long-run consequence, though less certain, would probably be lower prices.

A fifth reason for combined operations is the absorption by the lumber yard of functions abandoned by other participants. This basis for integrated operation is economically sound from the consumer's standpoint so long as the integration does not result in greater rigidities which prolong any uneconomic allocation of resources that may occur in the short-run.

It would appear, therefore, that to the extent that integration of marketing and construction functions were undertaken by the retail lumber yard to achieve greater profits, it did not necessarily result in maximum benefits to consumers in the short-run. But to the extent that it was used as a competitive device for achieving lower costs and lower prices through increased efficiency or stability of income, or as a short-run semi-monopolistic technique which eventually resulted in lower prices or better quality for consumers, it resulted in greater consumer welfare.

There are, however, some cases in which lumber yards may actually have discouraged greater centralization of management because of their unwillingness to sell to contractors. Where this was done because of the contractor's incompetence or his lack of capital, it was to the consumer's benefit; and yard opposition to a particular participant in the construction market is probably not powerful enough to prevent his survival if he offers some cost advantage.

Costs and financing. The contribution of the lumber yard to cost reduction was primarily in the efficiency with which its marketing functions were performed and in the efficiency with which it may have assumed other functions. Certain characteristics of the industry's structure suggest that it was less than perfectly and purely competitive and may not, therefore, have operated at maximum efficiency in all cases. However, there is some evidence that construction coordinated through the lumber yard sometimes resulted in cost reductions through greater efficiency, although the evidence is not conclusive. Financing services of the retail lumber yard in new farm dwelling construction were quite limited in the postwar market, although there was evidence that during periods of low income the two-payments-per-year system resulted in the performance of some financing functions on the part of the retail lumber dealer during the building process.

Structure and functioning of the rural housebuilding market. There is little evidence that this was affected by lumber yard activities except through the effect of lumber yards on the supply of materials and of construction management.

The retail lumber industry appears to have shown marked inelasticity of supply and probably slowness to increase and decrease output, with possibly greater slowness of adaptation during periods of declining demand than of increasing demand. But because of the nature of their operations, lumber yards have probably been better able to expand (i.e., better able to demonstrate increases in supply and possibly also to demonstrate greater elasticity of supply with rising prices) than other participants in housebuilding. There is some question as to whether this flexibility would work with equal sensitivity for decreasing supply and, with a given supply, for decreasing price.

One other observation may be made about the retail lumber firm and its role in farm dwelling construction. Dwelling construction in general, and farm dwelling construction in particular, are only one part of the retail lumber firm's outlet for materials. This fact alone explains why most dealers have not participated in the construction process much beyond the performance of functions associated directly with the marketing of building materials. Yet, a minority of dealers had a sizable volume of sales of materials for farm dwelling construction and accounted for a share of such sales in the state disproportionate to their numbers. Because of this, the extension of yard activities into the construction area by even a small minority of dealers could have a marked effect on the institutional structure of the rural housebuilding industry in Iowa. The effect of the retail lumber industry upon the rural housebuilding industry depends, therefore, not upon the costs and practices of all firms, weighted according to their volume of total sales, but upon those of firms which provided materials for farm dwelling construction, weighted according to their volume of sales of building materials for such purposes. It is possible that in an industry characterized by oligopoly and frequent cut-throat competition, certain marginal firms may carry a weight in the local housebuilding market greater than their share of total sales would indicate. And while the number of new houses constructed in any 1 year is a very small percentage of the total number in use that year, they are consumed over a period of many years. Therefore, it is possible for farm housing to be greatly affected by the activities of even a small percentage of all dealers.

SUGGESTED MEANS OF INCREASING EFFICIENCY

These are suggestions of possible means by which retail lumber dealers might contribute to increased efficiency in farm dwelling construction and to increased consumer benefits from the industry. They are based, in some cases, on observed experiences and, in other cases, on unproven methods which have been experimented with or which appear to be reasonable in the light of observation of this and other industries.

Achieving an optimum revenue-cost ratio in the performance of the marketing functions of physical supply and transfer of title for building materials. The performance of these functions is basic to all activities of the yard, and maximum efficiency in their performance will contribute to efficiency in housing production.

Experimentation with the integration of construction and marketing functions. Experimentation would give additional evidence of the advantages and limitations of such integration in the particular local market. Integration would be most economical where the total volume of construction is expanding at a more rapid rate than the number of specialists available to perform housebuilding functions or where the long-term contraction of construction volume has raised the cost of certain housebuilding functions when performed by specialists above that possible under integrated operation. This means, in effect, that where the volume of sales, costs of the added functions, skill of management, and competitive structure permit, the extension of activities into construction might be undertaken. But there are clear limitations to the extent to which this can be carried economically by retail lumber firms, and most dealers have probably been wise in limiting their activities to the performance of marketing functions.

One other observation is that there are conditions which encourage, and others which discourage, the line firm in the addition of construction activities. If the greater volume of business of the line firm makes possible greater specialization, diversification of the lumber yard's activities by the taking on of construction functions would be discouraged. However, if certain fixed costs are associated with construction and construction management, the line yard would perhaps be better able to assume those functions than would the independent yard.⁷¹

Cooperative programs to increase efficiency. Cooperative programs may be undertaken by several lumber yards or by lumber yards and other participants in farm dwelling construction. The line firm offers a possible means of economically providing such things as a central planning and drafting service and a program for training local yard managers in yard management and, perhaps, construction management. The trade association is another medium for the sharing of certain fixed costs associated with yard management and construction. Yard managers may also cooperate informally to support research, a planning and drafting service, or the sharing of information.

Another potential cooperative area lies between yards and other participants in farm dwelling construction, especially laborers, contractors and

⁷¹There were too few yards (14) reporting some kind of lumber yard contract for chi-square to be used to determine whether differences in the occurrence of such contracting among cooperative, large-line, small-line, and independent yards were statistically significant.

other materials dealers. Cooperative activities among these related parties to restrict output or to maintain prices would be damaging to the consumer's interests, but those directed toward cost reduction or improved quality of construction should eventually benefit consumers. Especially useful would be agreements to reduce prices in periods of declining demand or in periods of a declining rate of growth in demand, although this practice is greatly limited by law. This is sometimes not easily achieved by independent action in a market in which the cost of each item represents so small a percentage of the total cost of the finished product that the demand for any one item is highly inelastic.

Education and research. By encouraging, through the dissemination of information to farmers and builders or through direct management of construction, the reduction of costs of farm dwelling construction in order to stimulate volume of sales to the extent that the elasticity of demand will permit, and by supporting research in the efficient operation of the retail lumber yard and in efficient construction, lumber dealers might benefit both themselves and consumers, especially during certain stages of the building cycle. The effect of this kind of program upon the volume of construction will depend largely upon its timing. It will probably be most effective in increasing output near the peak of the building cycle where the differential between selling prices and costs has begun to narrow and to stifle new construction slightly.⁷²

If these four suggestions are realistic, they delineate both opportunities and limitations of the retail lumber firm in "solving" farm housing problems. While it is not within the scope of this study of the lumber firm to appraise thoroughly other means or other institutions through which the industry might be improved, it is perhaps not inappropriate to mention four such media which observations made in the course of this study have suggested either directly or indirectly.

(1) The state college should be able to contribute to farm dwelling construction through research and extension, with the extension program directed to include not only farm families, but also local builders and materials dealers.

(2) Increased efficiency on the part of other participants in farm dwelling construction should be encouraged. This is especially important where construction management is largely a responsibility of carpenters or contractors.

(3) Technological improvements in the mate-

⁷²See Wood, Ramsey. Housing needs and the housing market. Housing, Social Security, and Public Works. Postwar Economic Studies No. 6. pp. 1-39. Board of Governors of the Federal Reserve System, Washington, D. C. June 1946. It is important to recognize, of course, that Wood's analysis of the interrelationships of the old house markets and the new house markets are appropriate for urban housing but not for farm housing. However, the effect of the margin between cost and selling price upon the volume of construction is applicable to both urban and farm housing markets, even though "selling price" in the farm market is determined by forces quite different from those operating in the urban market.

rials and methods of housing construction should be encouraged by private and public agencies. Cost reduction potentials exist not only in the physical character of the house and its assembly but also in the structure of firms of the industry. For example, the development of production techniques which would make possible greater mobility of operations would enable the industry to nurture firms of larger size and, perhaps, lower unit costs, servicing a larger area more efficiently than decentralized specialists.⁷³ This type of technological change would have far-reaching effects on the now highly decentralized rural housebuilding industry.

(4) Through public control, rigidities and restrictions in the materials, labor and management markets should be loosened to permit more nearly optimum utilization of resources in the industry and free movement of resources into and out of the industry. Since many rigidities and restrictions are the result of attempts to achieve security in an unstable industry, public efforts to contribute to greater stability of demand would indirectly encourage fewer restrictive practices. Policies directed toward stabilization of output would have the additional advantage of helping the industry meet housing needs more effectively during those periods when the quantitative difference between demand and needs is greatest.

CONCLUDING OBSERVATIONS

The role of the retail lumber yard in the building, improvement and maintenance of farm dwellings in Iowa is tremendously important in affecting the welfare of farm families of the state with respect to their housing consumption. Its importance is evidenced by the fact that an estimated 40 to 50 percent of the total cash expenditure for housing in 1948⁷⁴ was used for materials purchased from the retail lumber yard. But, while materials purchased from the lumber yard accounted for only 40 to 50 percent of the cost of the house to the owner, such sales accounted for a little more than 12 percent of the "average" yard's total volume in 1948.⁷⁵ Although the "average" yard had little incentive to improve its operating efficiency on behalf of farm housing, a sizable proportion of yards did. Nearly one-fifth of all establishments did an estimated 30 to 50 percent of their total volume in materials for farm housing in 1948; over one-third did 20 to 50 percent. If this volume of housing business is sustained over enough years, and if competition among yards for these sales is sufficiently keen, some yards (although probably a minority) might find it advantageous to devote at least a proportionate amount of their man-

agerial skills to increasing their efficiency in the farm housing market.⁷⁶

However, the role of the retail lumber firm in farm dwelling construction is a complementary one, and only a part of the problems of farm housing can be solved through the quality of its performance. A rather crucial institutional question relevant to consumer welfare remains unanswered by this study. Is efficiency and long-run progress in farm housing construction more likely to be achieved through the initiative of some one participant in the construction process, or must it be achieved through the actions of all participants? If one, which one? If all, can the incentive for each be made sufficiently strong in a relatively free market to achieve overall efficiency?

If the structure of the industry remains as it is, overall cost reductions must be the result of activities of many participants. But, if there is a tendency for management to become more highly centralized, whoever assumes that role is most likely to be the initiator of numerous small economies which add up to overall cost reductions. It is not clear whether the lumber yard or the carpenter will assume this role should existing institutional patterns give way to greater integration. While the carpenter may have a greater financial stake in expenditures for farm housing than the lumber yard has,⁷⁷ it is not an unreasonable conjecture that survival of the retail lumber yard in periods of either full or less than full employment is more likely than survival of either the independent rural carpenter or the small town carpenter crew. Carpenters may be lured increasingly into agricultural or urban employment, and the existence of the small town carpenter crew has become more complicated legally. In an industry subject to sharp cyclical fluctuations and possibly a declining rate of secular growth, the strongest of the various kinds of firms involved, or the slowest to adjust to changing market conditions through exit of productive resources and firms, is most likely to inherit functions cast off by the other firms in the process of adjustment to changes in demand. Oddly enough this may be associated with the ability to expand output

⁷⁶This may or may not be a perfectly wise policy, depending upon the margins secured on housing jobs and the marginal costs of taking on this type of selling and the other functions associated with it.

⁷⁷This is based on the assumption that payment for the carpenter's services is largely net income to him while payment to the lumber yard is only about 25 percent gross margin (22-26 percent in the West-Central Area in 1945). U. S. Office of Price Administration, Office of Temporary Controls, Economic Data and Analysis Branch. Survey of retail lumber dealers, wholesale stock millwork distributors, plumbing and heating equipment jobbers and dealers. OPA Economic Data Series No. 16, pp. 8-10. U. S. Govt. Print. Off., Washington, D. C. 1947. See also Briley, Paul W. The cost of doing business—operating results in 1947 of retail lumber yards—Kansas, Missouri, Oklahoma, Arkansas. University of Kansas, Bureau of Business Research, Lawrence, n.d.; Dun and Bradstreet, Inc., Research and Statistical Division. 1940 retailers' operating cost survey—lumber and building material dealers; analysis of 1939 operations. Dun and Bradstreet, Inc., New York, 1940; Starr, G. W. and G. C. George. Operating costs of retail lumber dealers. Indiana Business Studies No. 24. University of Indiana, School of Business, Bureau of Business Research, Bloomington, 1942; Kentucky Retail Lumber Dealers' Association. Lumber dealers' business survey, 1946, 1947, 1948. Ky. Retail Lumber Dealers' Assn., Lebanon, 1947-49; and Robert Morris Associates. Retail trade—lumber and building material as of December 31, 1946. Robert Morris Assocs., Philadelphia, 1947. (Processed.)

⁷³This proposal is based on the knowledge that scale of operations is one significant factor associated with efficiency of the firm and upon evidence that many economies have been achieved by large-scale construction, especially by certain operative builders.

⁷⁴National figures, computed on a different basis, indicate about 60 to 70 percent.

⁷⁵This is a weighted average. See Douglas, An estimate of the volume of farm dwelling construction in Iowa.

during a period of increasing demand with greater rapidity than other firms in the industry can. There is a little evidence that this may be one of the long-term roles of the retail lumber yard in rural housing in Iowa.

The most promising areas for future economic research on the rural housebuilding industry suggested by this introductory study are: (1) the delineation of housebuilding functions performed by other institutions in the rural housing industry; (2) measurement of the structure of costs for the various kinds of firms in rural housing construction separately and jointly; (3) determination of the short-run inter-relationships of functional costs within each firm and of the short-run and long-run inter-relationships among the costs of various kinds of firms participating in rural housing construction; and (4) determination of the structure of demand.

SUMMARY

1. The principal function of retail lumber establishments in Iowa farm housing construction following World War II was the marketing of building materials.

2. Some establishments also provided planning aids, managed construction and, occasionally, contracted for materials and labor.

3. Management in farm housing construction was generally found to be highly decentralized among building specialists and dealers.

4. Where it existed, centralized management was usually achieved through contracts.

a. Farm houses in only about three out of every ten Iowa communities were built under contract prior to World War II.

b. Contracting fell almost to zero during World War II and the early postwar years, although a few dealers experimented with contracting or construction management following the war.

c. When contracts were used before World War II, about half were for the complete house and half for building materials and labor only.

d. Most contracts were made by carpenters.

e. About one out of every six lumber yards had made contracts at some time directly with farmers, but only one out of ten had done it frequently. These contracts were usually for building materials and labor only.

5. Contracting developed in those markets where:

a. Consumers preferred the practice,

b. Contractors found that it increased profits or reduced losses, and

c. Legal and institutional characteristics of the market made it possible to make and enforce contracts.

6. Lumber yards which assumed added housebuilding functions in addition to the marketing

of materials appear to have done so because they anticipated greater profits due to:

a. Imperfect or monopolistic competition in the contract market;

b. Unused capacity in the retail lumber firm, especially managerial capacity;

c. Efficiencies of integration;

d. Integration as a means of product differentiation; or

e. Changes in the demand for construction services.

7. The evidence in this study does not show conclusively whether retail lumber establishments were operating with optimum efficiency in the housing market, but there are certain empirical and theoretical bases for indicating possible means of increasing efficiency.

8. As trends in demand and supply move the rural housing market toward a state of long-run equilibrium, it is possible that the retail lumber establishment may logically absorb more housebuilding functions as other less stable segments of the industry move out of rural housing construction.

APPENDIX A

FIELD SURVEY METHODS

A field survey was made during the fall months of 1947 and 1948 among approximately 10 percent of the retail lumber dealers of Iowa. The purpose was to obtain information by interview on certain structural characteristics of the retail lumber industry and operating practices related to farm housing. The sections below describe the sample, the interview questionnaire, and the supplementary mail questionnaire.

THE SAMPLE

The 1,147 retail lumber yards in Iowa, as reported in the Northwestern Blue Book for 1947,¹ were arrayed by counties listed alphabetically; within counties, by towns, listed alphabetically; and within towns, by yards, listed alphabetically. A number was chosen at random between, and including, one and ten, and every tenth yard was identified on the list. These comprised the original sample of 113 yards. Substitutions were made during the field survey for 16 of these yards. This was done where the manager was not available for an interview, where the manager was so new that he had had no experience as a basis for answering questions or where he refused to answer most or all questions. In 15 cases, a substitution was selected from the same town, if another yard was there, or from the nearest town of approximately the same size in the same county. In the sixteenth case, a yard was selected at random from among a group of four adjacent counties in south-central Iowa where no yard had come up in the sample because of the alphabetical basis for distribution. These 16 substitutions re-

¹Northwestern Lumbermen's Association. Northwestern Blue Book. Minneapolis, 1947. Both census data and field checks indicated that this list was complete and accurate.

sulted in a slight increase in the percentage of yards classified as line yards but practically no change in distribution of sample yards among towns of various population sizes. Table 1-A shows certain characteristics of the total and sample populations.

THE INTERVIEW QUESTIONNAIRE

Questions were of both the specific, short-answer and the open-end types. Open-end questions frequently yielded some of the most useful information on operating practices related to farm housing. Answers to questions 1, 2 and 3 were used in a study of the structure of the Iowa retail lumber industry. Question 4 was the one relevant to this particular study, and the answers to 5, 6 and 7 are summarized.

Question 4a was an open-end question designed to obtain information on the procedure followed by the farm family and by building participants in initiating, planning and constructing the new farm dwelling. The purpose of the question was to secure the dealer's description of the sequence of events in his own words and also information on specific aspects of construction procedure through more detailed questions, if necessary, at the conclusion of his answer. These specific details included (a) initial contract, (b) source of plan, (c) the bill of materials, (d) choice of carpenter or contractor, (e) choice of lumber

TABLE 1-A. TOTAL AND SAMPLE LUMBER YARD POPULATIONS IN IOWA, 1947, CLASSIFIED ACCORDING TO TYPE OF OPERATION AND POPULATION OF TOWN, 1940.

Characteristic	The state		Sample	
	Number	Percentage	Number*	Percentage
<i>Type of operation, 1947</i>				
Lumber yards				
Chain	678	59.1	73 (10)	64.6
Independent	389	33.9	33 (7)	29.2
Cooperative	80	7.0	7 (1)	6.2
Total	1,147	100.0	113 (18)	100.0
<i>Population, 1940</i>				
Lumber yards				
50,000 and over	47	4.1	5 (0)	4.4
25,000-49,999	30	2.6	3 (1)	2.7
10,000-24,999	38	3.3	4 (3)	3.5
5,000-9,999	66	5.8	6 (2)	5.3
2,500-4,999	101	8.8	12 (3)	10.6
1,000-2,499	201	17.5	21 (4)	18.6
Less than 1,000	577	50.3	57 (5)	50.5
Unincorporated	87	7.6	5 (0)	4.4
Total	1,147	100.0	113 (18)	100.0
Counties				
Number of counties	99	—	90	

*The number in parenthesis indicates how many of the total number in the sample were surveyed by interview in 1947 and again by a mail questionnaire to which they replied in 1949. For example, 73 chain yards were drawn in the sample. Managers of 10 of these granted an interview in 1947 and also replied to a supplementary mail questionnaire in 1949. The other 63 were interviewed in 1948 or are included among those not reporting the statistical data.

Source: Number of yards according to type of operation, 1947, from Northwestern blue book. Northwestern Lumbermen's Association, Minneapolis, 1947. Population data from U. S. Census of Population: 1940. Vol. I. pp. 379-382.

yard, (f) the extent and nature of contracting, if any, and (g) transportation of materials.

A tabulation of responses to a few of the questions are not included in this study, either because too few dealers were able to make estimates or because the questions were included merely for exploratory purposes and were not asked in cases where it seemed desirable to shorten the interview.

THE SUPPLEMENTARY MAIL QUESTIONNAIRE

Statistical data collected under questions 5, 6 and 7 during the 1947 interviews were made comparable to that collected in 1948 by a supplementary mail questionnaire sent on March 28, 1949, to the thirty-one 1947 interviewees. Eighteen dealers (58 percent) replied, and the distribution of these is indicated in table 1-A.

QUESTIONNAIRE USED IN FIELD SURVEY AMONG A SAMPLE OF IOWA RETAIL LUMBER AND BUILDING MATERIALS DEALERS, 1947 AND 1948

1. a. Which of the following items do you sell: (1) lumber; (2) millwork; (3) roofing; (4) bricks, tile; (5) building stone; (6) cement; (7) ready-mixed concrete; (8) lime, plaster; (9) builders' hardware; (10) paint, varnish; (11) glass; (12) wallpaper; (13) iron, steel building materials; (14) wallboard; (15) insulating materials; (16) coal, coke; (17) ice; (18) fuel oil; (19) fencing, gates, posts; (20) farm implements; (21) heating equipment; (22) plumbing equipment; (23) grain, feed, fertilizers; (24) other?
- b. What percent of your total sales this year would you estimate were building materials (excluding such things as coal, oil, farm implements, heating and plumbing equipment, grain, and feed)?
2. a. Approximately what percent of your purchases of lumber this year were southern lumber?
- b. Would that percent hold for pre-war years also?
- c. Why do you prefer (northern, southern) lumber?
- d. (If line yard) Which of the products you handle do you buy and which does the head office buy?
- e. (If line yard) Do you set your own prices, or are they set by the head office?
3. a. From what area do you draw your customers?
- b. What keeps your area within those limits?
- c. Is competition among lumber dealers in this area mainly in prices or services?
- d. What are the best ways you have discovered for meeting competition from other yards?
- e. Are your prices delivered prices or f.o.b., the yard?
4. a. Suppose that a farmer near here decides to build a new house. How does he usually go about it?
- b. How is that different from the way a person here in town would build his house?
- c. What are the principal differences between the way a farmer gets his house built and the way he gets his other farm buildings built?
- d. How soon after he gets his building materials from you for a new house does the farmer (or carpenter or contractor) usually pay for them?
5. a. Approximately how many.....do you have here in town? (1) contractors; (2) carpenters (finish and rough); (3) masons; (4) electricians; (5) plumbers; (6) plasterers.
- b. (If lack) Where do you get.....from?
- c. Are any of them organized into unions?
6. a. How many new farm houses have you supplied materials for this year? (all; part)
- b. How many of those will be completed by December?
- c. What would you estimate is the average total cost of those new houses?
- d. On an average, about how much of that is for the materials from your yard?

- e. How many new houses have you supplied materials for here in town? (all; part)
 - f. How many of those will be completed by December?
 - g. What would you estimate is the average total cost of these new town houses?
 - h. If we consider a major repair as one requiring \$500 worth or more of materials, approximately how many of your farm customers have made major repairs on their houses this year?
 - i. What was the average amount spent for materials from your yard for one of these repairs?
7. a. Approximately what percent of your sales of building materials this year were made to farmers?
- b. About what percent were made to farmers before the war?
 - c. Of your total building materials sales to farmers this year, approximately what percent was for farm buildings and what percent was for the family dwelling?
 - d. Is that about what it was before the war?
 - e. Of the total amount sold to farmers this year for the family dwelling, about what percent was for new housing and what percent was for repairs?
 - f. Of the total amount of materials you sold here in town this year, what percent would you estimate was for housing?

APPENDIX B

SOME OBSERVATIONS ON NEW FARM DWELLING BUILDING PROCEDURE

In the course of interview, retail lumber dealers were asked: "Suppose that a farmer near here decides to build a new house. How does he usually go about it?" During his answer, supplementary questions were generally asked, either to clarify statements made or to provide information on specific phases of the planning and organizational procedure. These phases included source of plan, making out the bill of materials, securing carpenter (or contractor) and other labor, securing building materials, extent and nature of contracting, and transportation of materials.

Extracts from some of the notes recorded from this part of the interview are reproduced below to show some of the differences in practices in various localities and to show how certain phases of the procedure looked through the eyes of the lumber dealer. The extracts recorded here were, in many cases, not the complete response to this set of questions but are included to illustrate some phase of the dealer's experience or viewpoint. Because the responses were recorded after the interview, the quotations below are paraphrased. They are classified according to the population of the town in which the lumber yard was located.

POPULATION OVER 50,000

Yard 4.²

Well, they come in to see us, and then we sit down with them and block out what they want. Sometimes we start with a basic plan from a book, but we usually change it a lot. Then when we get the plan worked out, we usually make out a bill of materials. I used to have Joe [carpenter] check it, and he'd usually add something to strengthen it. But now I add about 10 percent extra materials and that usually comes out about right. We have several carpenters that work out of this yard. Joe..... is our best one. He has two or three men who work with

²This yard is probably not representative of yards in cities of this size, for it is located just outside the city limits. It is more like a small town yard than a city yard.

him and can get hold of four or five others if he needs them. Then we use the..... Construction Company when we get a job in the city. And then Ed..... has two or three men usually. Bob..... has one man. Bob and his man are the only ones that belong to the union. I'm not sure about Ed, but I know Joe doesn't.

POPULATION 5,000-9,999

Yard 16.

Farm housing is still pretty much put up the same old-fashioned way it used to be. First the farmer comes to the lumber yard and says he wants to build a house. Then we ask him what type of house he wants and how much he wants to pay. Then we pick out about six plans from the thousand or so that we have here. The reason we give him just a few to pick from is that we don't want to confuse him with too many. Then he picks out the one he likes. We order the blueprints for him, and we do this as a free service on the assumption that he'll buy the materials here.

Then we ask him who's going to do his work. If he has a carpenter, then that's taken care of. Or he may ask us to suggest a builder. We don't like to do that because if the job isn't done right, we feel responsible. But if the farmer picks his own builder, then we aren't responsible for any mistakes.

Then we ask him how he wants it financed: whether he wants it by the hour and then pay separately for the materials or on a contract. That affects his choice of a builder, too.

Now practically all farm houses are built by this old-fashioned method. Of course, here in town most houses are built by contract.

POPULATION 2,500-4,999

Yard 21.

About 50 to 60 percent of the time he comes into the lumber yard first. The rest of the time he goes to the carpenter first.

If he comes in here, I always tell him to go get his wife and bring her in. Or sometimes I just go out to see them. The reason she ought to be in on it is that she's got to live in the house. Then I try to find out about what they want and what they can afford to pay. Then I give them some plan books with houses they might want. When they select a plan, I give them an estimate of how much the materials will cost. I used to estimate the carpenter work, plumbing and things like that, too; but I can't do that very well any more. Then the farmer goes out and hires his own builder. I don't encourage him to go on a contract because if he did, the contractor would have to have enough margin to cover any emergencies and still get a profit, and the farmer could save that much. Besides this isn't a contracting town. Before the war there were about five carpenters here who'd take contracts, but in a small town like this people know each other pretty well and don't have to have a contract.

POPULATION 500-999

Yard 73.

About half the time the farmer gets his pet carpenter first. The other half of the time he comes into the lumber yard. Then he gets his plan worked out and we draw up the bill of materials. There's only one carpenter here who's able to do that. We do it because it gives us a better than even chance of selling the materials. Carpenters used to be able to draw up their materials list. Now most of these fellows just can't do it. We do it and send the stuff out to them. They can tell by what it is where it goes. We need to get more fellows trained in the building trades. The carpenter used to be pretty important to the farmer, but he's not any more. He just builds the thing without doing any of the extra help like planning and drawing up the bill of materials.

Usually they get their plan from farm magazines. We have plan books, but generally they've been thinking about it for several months and have plans from magazines. Then we help them draw out their ideas. They just use a floor plan—no blueprints around here any more. There's only one carpenter here who uses blueprints.

There's no contracting here now. There are two reasons why carpenters won't do it now. One is that they don't have enough capital to do it. The other is social security. They won't keep records and make reports every 90 days. The social security tax has pretty well broken up carpenter crews. We don't have any crews any more—there's just one left. The other carpenters all work as individuals.

One big change that's come about with the automobile and good roads is that farmers have changed their building procedure. They used to get all materials on the place at once and then start building. Now they get to the point where they have a hole for a window, and they get in the car and go get the window. And they'll drive a lot of miles just to get it right then.

POPULATION LESS THAN 500

Yard 105.

He usually comes to the lumber yard first. He may have already talked with someone who has just built to get an idea about costs. The first thing we do is ask them who's going to do the work. The reason for that is that it depends on the carpenter as to how much materials will be used. A mechanic will leave out a lot of things and build a poorer quality house, but he wastes more materials and so requires more stuff to start with. I adjust the bill of materials according to the carpenter who's going to do the job.

We have plan books, and people usually use one of those plans as a start but usually make a lot of changes. Then we and the carpenter help them make changes. A good carpenter doesn't need blueprints; he can just work from a floor plan. Generally a good carpenter already has some blueprints.

We used to take a contract for the house. Most farmers like the idea of a single price. Then he could pay us for everything, and we'd pay the carpenters. The reason we're not doing this now is the labor supply. We'll probably do it again when the labor situation is better. In fact, competition will probably force us to. We did this just whenever the farmer asked for it.

We usually figure the bill of materials. We did it when we took contracts, and we do it now when there's so much poor labor. Most of the carpenters and mechanics we have now can't figure a bill of materials.

We usually get paid in two installments: one, when the house is enclosed and ready for plaster; and the second, within 30 to 60 days after it's done.

APPENDIX C

A NOTE ON THE SUPPLY OF BUILDING LABOR IN SMALL TOWNS OF IOWA

Questions 5a and 5b used in the field survey were designed to obtain information on the number of building workers living in the area serviced by the retail lumber yard. Managers of yards located in towns of less than 2,500 population were generally able to report the number of carpenters, masons, plumbers, and plasterers and their organization into crews. Managers in larger towns found it more difficult to do because of the greater numbers. One problem faced by nearly all dealers was that of identifying a carpenter. Some dealers differentiated between "finish carpenters," "mechanics" and "rough carpenters." Others said it was difficult to know who really was a carpenter, since many persons, including farmers, did such work at various times and with varying degrees of skill. Plumbers, masons and plasterers were apparently somewhat easier to identify and count, even though the work usually performed by such laborers was, in some communities, performed by carpenters. Some dealers also pointed out that the increasing use of concrete blocks for foundations has caused fewer workers to become masons. Perhaps, also, there is more use of concrete blocks because of the shortage of masons.

Table 1-C summarizes the findings for most towns of less than 2,500 and for six towns of 2,500 through 4,999 population. The average community reporting had 11.0 carpenters, 1.3 masons, 0.3 plasterers and 2.0 plumbers. Although imperfect, these figures are included here because of the importance of labor to consumers of farm housing and to the retail lumber yard. Three observations can be made on the basis of the data.

(1) There were marked differences among towns in the quantity of building labor.

(2) There were acute shortages of building laborers in many communities in 1948. Only seven of the 74 dealers included in table 1-C indicated that the number of workers available was adequate for the community's needs. Shortages were most often reported among masons and plasterers.

TABLE 1-C. THE RANGE AND AVERAGE NUMBER OF CARPENTERS, MASONS, PLASTERERS AND PLUMBERS ESTIMATED BY 74 RETAIL LUMBER DEALERS IN SMALL TOWNS OF FOUR POPULATION SIZES IN IOWA, 1948.

Population of town, 1940	Number of lumber dealers reporting	Estimated number of							
		Carpenters		Masons		Plasterers		Plumbers	
		Range	Average	Range	Average	Range	Average	Range	Average
2,500-4,999	6	12-37	25.3	1-8	3.2	0-6	1.0	3-10	5.2
1,000-2,499	17	8-36	16.4	0-8	1.9	0-5	0.2	1-4	2.4
500- 999	25	3-30	10.3	0-4	1.3	0-3	0.5	0-5	2.2
Less than 500	26	0-9	4.7	0-3	0.5	0-2	0.1	0-4	0.7
Total	74	0-37	11.0	0-8	1.3	0-6	0.3	0-10	2.0

Source: Interviews with a sample of Iowa retail lumber dealers, 1947 and 1948.

Carpenters were sometimes also in short supply, and competent carpenters were frequently reported as scarce. Another fact frequently mentioned was the shortage of young men in the building trades.

Differences among towns in the number of workers and shortages in many communities reflect the unwillingness of laborers to enter the building trades in many small towns. This unwillingness is probably related to such factors as the costs of training, the presence or absence of apprenticeship training programs, the desirability of the work in terms of psychic income, the size and stability of earnings in the trade, and, especially, the earnings in alternative employments—i.e., building trades in the city and non-building jobs in either rural or urban areas.

There are two conditions that would discourage workers from entering the building trades in rural areas: (a) the instability of earnings in an industry subject to marked cyclical fluctuations and (b) the possibility that the volume of rural construction is not expanding at so rapid a rate as are sales of many other industries.

Another factor contributing to the postwar shortage is that the quantity of building labor is not capable of rapid increases and decreases with changes in consumer demand. The supply is probably very inelastic and subject to change slowly.

(3) Consequences of these shortages in certain localities probably include higher costs, less construction volume and possibly also lower structural quality. Higher costs of construction probably occur during periods of increased demand because of the relatively inelastic labor supply. They may also result from less specialization and from the absence of efficiency incentives in a seller's market. These forces making for higher costs might be offset to a very small degree by the lower supply price of labor associated with its use at close to full capacity during a period of high demand. Greater mobility has probably helped to make this possible. The effect of a limited labor supply upon the quantity of construction is obvious. And its effect on the quality of structures (which could be translated into a price effect) would be due to less skill, less specialization and the reduction of efficiency incentives.

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