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THE INDUSTRIAL DEMAND FOR AGRICULTURAL ECONOMISTS

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FACTOR DEMAND

Industrial demand for agricultural economists can be viewed theoretically as the demand for a factor of production. In this case, the marginal revenue productivity of an industrial economist defines the factor demand. This factor demand is "derived" from the demand for the product.

It is an hypothesis of this paper that the industrial demand for economists has shifted outward and to the right. This has occurred because the two components of factor demand—marginal physical productivity of the factor and marginal revenue of the product—have both shifted outward and to the right. In addition, more entrepreneurs have added economists to their payrolls for the first time. For the given supply of economists, the more entrepreneurs there are, the further to the right will lie the aggregate demand curve and the higher wages and salaries will be [10, p. 249]. Unfortunately, data are unavailable to quantitatively test this hypothesis, but a verbal argument can be presented.

It is believed that the marginal physical productivity of industrial economists has increased for a given input level due to better training and education in recent years. An extra unit of an industrial economist's services adds much more to the total product of the industrial firm today when compared with, say, a decade ago. Also, product demand has increased in the aggregate over time due to population and income growth. This translates itself into an outward shift in the marginal revenue of the product.

If we assume that the supply of industrial economists is fixed, the increased demand for the factor leads to a higher wage rate or salary level. While a perfectly inelastic supply curve for industrial economists is unreasonable, it is equally ludicrous to argue

that the factor supply curve is perfectly elastic. Industry is unable to obtain an unlimited quantity of industrial economists at a constant wage or salary level. It is, therefore, hypothesized that the factor market is imperfect with respect to supply. Additional supplies of industrial economists are available, but only at progressively higher salaries.

Because of the increased demand for economists by industry and the positively sloped supply curve for the factor, the salaries of industrial economists have increased dramatically. A later section of the paper will present survey data regarding salary levels of industrial and business economists.

THE IMPROVING ROLE OF THE INDUSTRIAL ECONOMISTS

The profession of the non-academic economist did not come into public prominence until the days of the depression in the 1930's when economists assumed important positions in government. Economists in business and industry were basically unknown only a generation ago. Business began to employ economists in increasing numbers only after World War II.

A survey of 1,000 large companies in 1950 by the National Industrial Conference Board revealed that only one out of ten firms employed full-time economists. What was more surprising was the finding that only a small minority of the companies surveyed felt any need to retain professional economic counsel [11, p. 98]. By 1958, the role of the corporate economist has improved somewhat. Thirty percent of 500 large scale companies reported to Socony Mobil that they employed one or more staff economists and twenty percent used outside economic counsel. But one-half of the respondents claimed they had no need for either staff economists or outside counsel. According to one respondent:

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As a group, economists are a waste of time. It is the function of top management to be its own economists and not rely on the vagaries of this mystic cult ... [11, p. 98].

Mystic cult, to the contrary, by 1964 industry and business economists accounted for one-third of the total number of professional economists in the United States. According to the National Association of Business Economists, the growth of the profession of business economics has resulted from an increasing awareness by businessmen that applied economics can provide assistance in solving business problems and in formulating business policies [7]. Professor Henry B. Arthur of Harvard University contends that the economist's greatest contribution to corporate decision making stems from his ability to construct bridges between highly technical research and practical business action [1, p. 81].

DEMAND FOR INDUSTRIAL AGRICULTURAL ECONOMISTS PER SE

There is a relatively small and limited industrial demand for professional agricultural economists per se. The unique demand that exists for "agricultural" economists is not likely to increase in relation to the overall demand for industrial economists. This result is highly probable because the dramatic growth in the demand for industrial economists has occurred in the corporate and business sector. Even agricultural supply and consumer product companies are more interested in employing economists with general qualifications. The specific nomenclature on the diploma, e.g., agricultural economics or economics, has little relevance. Members of the National Association of Business Economists, for example, regard themselves as general economists rather than specialists in particular fields of economics [7, p. 14]. Also, the primary qualities of an industrial economist do not necessarily include the knowledge of specific commodity details. Professor Arthur's four essential attributes of an industrial economist appear to have widespread acceptance. They are:

(1) Competency as a professional economist, preferably with a good grasp of the tools of quantitative analysis, including accounting and statistics. (2) Sense of business organization and an ability to work within the business environment. (3) Demonstrated ability to solve problems. (4) (Singularly crucial) An ability to communicate (without a dependence upon technical economic jargon), [1, p. 85].

Thus, the opportunity for Departments of Agricultural Economics to fulfill the industrial demand relate to their ability to provide competent, quantitatively trained economists with communication and organizational skills. In this sense, there is an almost unlimited

demand for agricultural economists. It is believed that the Departments of Agricultural Economics have been particularly effective in introducing quantitative methods in a problem-solving framework, but they have not provided adequate training in business methods and communications.

As mentioned earlier, there is a limited demand for "agricultural" economists in business and industry that cannot be fulfilled by other specializations within the economics profession. Agricultural commodity organizations, agricultural trade organizations, and specialized positions in finance, agricultural production and marketing, and consulting organizations require employees with either M.S. and/or Ph.D. degrees in agricultural economics.

A unique employer of quasi-industrial agricultural economists is the Florida Citrus Commission. While a state agency, the Florida Citrus Commission can be regarded as business oriented in that it operates from self generated revenue sources and with marketing objectives that serve industry members. Since 1962, the Florida Citrus Commission has employed Ph.D. agricultural economists to solve industry marketing problems. The Economic Research Department of the Florida Citrus Commission is authorized to employ four Ph.D.'s in agricultural economics or economics, along with several research assistants. They operate informally within the administrative framework of the University of Florida's Department of Agricultural Economics. Their overall research objective is to relate basic economic concepts to business decisions consistent with long range industry objectives [2, p. 111]. The fulfillment of this objective is pursued with a variety of research projects that attempt to solve both short term as well as basic problems.

COMPARATIVE SALARY LEVEL OF INDUSTRIAL ECONOMISTS

Not only is the median salary of all economists above the median of all other social and physical sciences, but the median salary of the industrial economists is the highest among all other scientific fields employed by industry and business. The annual median basic salary of business economists in 1968 was estimated to be \$20,200 by the National Association of Business Economists. Moreover, because slightly more than one-half of the business economists earned professional income above their basic salary, the median gross professional income of business economists was \$22,000 in 1968 [7, p. 13]. On the basis of the 1966 survey by the National Register of Scientific and Technical Personnel, those industrial economists who had supplementary income earned an average annual supplement of \$3,110—a supplementary income that was even larger than the amount received by economists in educational institutions [14, p. 15].

The largest users of business economists are industrial corporations and banks. Consulting firms, investment and insurance companies, and trade associations also ranked high as industrial employers.

Bank economists' median salaries were reported by the National Association of Business Economists to be above the average of all business economists. And self-employed economists and those working for consulting firms had the highest salaries. Fifty percent of these economists earned over \$24,000 in 1968 [7, p. 13].

As one would suspect, there is a high correlation between salary level and education. Almost one-half of the business economists with Ph.D.'s were estimated to have salaries of over \$24,000 in 1968.

The survey results of the National Association of Business Economists are consistent, but somewhat higher in level, when compared with salaries reported by the National Science Foundation (NSF). The median annual salary of business and industry economists in 1966 was \$15,300 over all educational levels [8]. As stated earlier, the median salary of business and industrial economists was the highest among all professional industrial groups, which includes chemistry, earth sciences, meteorology, physics, mathematics, agricultural sciences, biological sciences, psychology, statistics, sociology, anthropology, linguistics, and "other" fields.

Excepting the Ph.D. industrial economists, there was a negative correlation between educational level and median salary, as reported by the National Science Foundation. That is, the median salary of industrial economists with a Master's degree was \$14,000, with a Bachelor's degree it was \$15,000, but with less than a Bachelor's degree it was \$18,000. The median salary of Ph.D. industrial economists was \$20,000 [8]. This perverse relationship between education and salary at the sub-Ph.D. levels arises from the difference in the average level of experience at each level of education. At similar levels of experience, industrial and business employers generally paid their employees with Master's degrees more than those with Bachelor's degrees [13, p. 4]. In a survey for the National Association of Business Economists in 1964 by Daniel L. Rosen, it was concluded that there was no salary advantage accruing to those with Master's degrees as compared with those having only a Bachelor's degree, and those employees with all but their Ph.D. dissertation completed fared only slightly better than those holding Bachelor's or Master's degrees [9, p. 273]. Rosen's finding of a high correlation between length of professional experience and salary level suggests that his findings are compatible with those of the National Science Foundation.

With respect to the relationship between salaries and the level of experience among industrial, government, and educational employers, each type of employer pays higher salaries to professional workers who have had longer professional experience. However, industrial employers pay higher salaries than government, and government, in turn, pays higher salaries than educational institutions at every level of experience except the lowest. Moreover, the progression of salary with added experience tends to be largest in industry, intermediate in government, and least rapid among educational institutions [14, pp. XIX-XX]. This can be partially explained from the fact that 50 percent of the industrial economists are engaged in administrative and management functions, compared with 40 and 10 percent, respectively, for the federal government and educational economists [14, p. 26].

The increase in the median salary of economists of all types has occurred in recent years despite a large influx of new professionals. And while the salary levels continue to be strongly related to the length of professional experience, the largest increase in median salary were obtained by those employees with relatively short periods of previous experience. Industrial and academic research employed an 18 percent larger number of economists in 1966 than in 1964, compared with an increase in only about 7 percent in the number of economists engaged in teaching and in the total of all activities. In spite of the influx of new personnel, the median salary of those engaged in industrial and academic research rose by 9.7 percent between 1966 and 1964, or slightly above the average for economists as a whole [12, p. 1318]. This partially substantiates the previous allegation that the demand for the factor has shifted outward and to the right. The outward shift in the factor demand has more than offset increases in the quantity of employees supplied, and has, therefore, resulted in increases in salary levels. (Whether this increase in money wages has also been an increase in real wages could be determined by discounting for changes in the price level.)

IMPROVING THE MARGINAL PHYSICAL PRODUCTIVITY OF INDUSTRIAL ECONOMISTS

Because of the relative size of the market and the generally attractive salaries that prevail, it should be the responsibility of the Departments of Agricultural Economics to continue to improve the training and education of potential industrial economists. A qualitative improvement in training and education can increase the marginal physical productivity of the factor, thereby, tending to increase factor demand.

According to Norman Coats of the Ralston Purina Company, there are five important areas of training for industrial economists. They are: application of electronic computers, business accounting and fi-

nance, marketing at the consumer level, human relations and communications, and profit orientation [3, pp. 1601-1602].

Lester Kellogg of Deere and Company and Coats both agree that a broad training program is essential. Kellogg believes that the industrial economist's understanding of prices should extend beyond the special case of inelastic demand. He urges that labor economics, statistics, accounting, international trade, and verbal communication skills should be basic requirements [5, p. 1599]. Clifton Cox of Armour and Company argues that agricultural economists place too much emphasis upon the role of prices in present day marketing. Noticeable voids in current training programs involve a lack of emphasis and knowledge of advertising and promotion, packaging, production control, and long range planning [4, p. 1605]. Roy Stout of the Coca Cola Company believes that economists should also become familiar with psychology and that agricultural economists should extend the economics of marketing beyond the commodity market level. Psychology is the discipline underpinning 75 percent of consumer market research and an overemphasis upon the commodity approach limits the employability of graduates seeking jobs with industry.¹

Both Stout and Kellogg question the desirability of maintaining separate departments of agricultural economics in view of the declining role of specialization in training personnel for the industrial market. However, Maurice M. Kelso states the problem in a

broad perspective:

I have been gradually coming under the conviction, disturbing to a practicing, professional agricultural economist, that there is no such thing as agricultural economics--there is only economics applied to the problems of agriculture. Indeed there is no such thing as economics--there is only social science applied to economic problems. More disturbingly, I fear there may not even be such a thing as social science--there may only be science applied to the agricultural economic problems of society; but neither is science alone enough--judgment, intuition, common sense, skill, ingenuity, knack, all of which derive from experience, are required. Art, as well as science, must be applied to the agricultural economic problems of society [6, p. 16].

CONCLUSION

The profession of business and industrial economist has come of age. Industrial economists account for one-third of the total of all professional economists. And the median basic salary of the industrial economist in 1968 was \$20,200, highest among all types of scientists employed by business and industry. Moreover, the career of industrial economist is increasingly being recognized as one of the routes to top management. Economists with specializations in agricultural economics have an opportunity to enter this market only if they possess broad training and verbal and organizational.

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¹ Dr. Roy G. Stout, Director of Developmental Research, Market Research Department, Coca Cola Company, in a personal interview with the author, Dec. 31, 1968.

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