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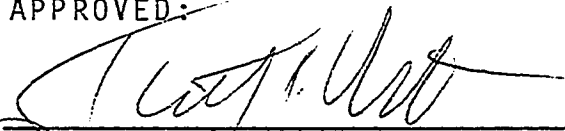
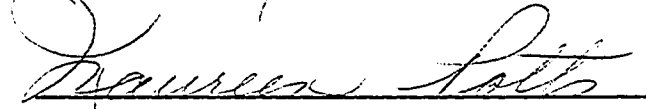
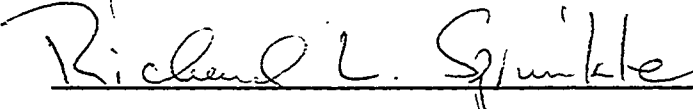
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PREVIEW

AN APPRAISAL OF EMPIRICAL RESEARCH ON THE
PHYSICIAN-INDUCED DEMAND HYPOTHESIS

APPROVED:


Dean of the Graduate School

AN APPRAISAL OF EMPIRICAL RESEARCH ON THE
PHYSICIAN-INDUCED DEMAND HYPOTHESIS

by

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THESIS

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CHAPTER I

INTRODUCTION

Parkinson's law is the theory that work expands to fill the time available, even if the work is of dubious value. Economists first recognized this principle at work in bureaucratic settings. It was not until 1975 that the health economist, Uwe Reinhardt, argued that he saw a variant of this principle at work in the medical marketplace, specifically, in physicians' behavior. This law, as it relates to physicians, is now familiarly referred to as the theory of "physician-induced demand," meaning the possible influence of physician supply on the demand for their services. In Reinhardt's view, "an increase in the physician-population ratio tends to increase the number of services (tests, revisits, medical procedures) physicians prescribe for given medical conditions, and neither fees nor physician incomes are likely to fall" (1978, p. 121).

Given the increasingly important role of social programs in the medical-care system and the growth of federal health care expenditures, the physician inducement hypothesis has important implications for national health policy. If the notion of a medical variant of Parkinson's law is correct, then medical-care costs might be reduced by

limiting the quantities of resources available; i.e., restricting the number of physicians trained in medical schools, and limiting the supply of hospital beds and new technology. If it is incorrect, then costs might be controlled by exactly the opposite policies--increasing the number of physicians, hospitals, and medical resources (Tussing, 1983, p. 228).

The physician-induced demand debate centers on the assumption that supply may create its own demand. Since it is essential that public health policies be based on "facts," it is important that health analysts test the above hypothesis. The physician-induced demand issue is especially critical in light of demands by some prominent American politicians to reorganize the entire health-care delivery system into a government-controlled entity for the purpose of slowing the rate of increase of health-care costs and maintaining access to quality medical care.

In order to assess the issue of physician inducement, two aspects of the medical-care market must be addressed: (1) What motivates physician behavior? and (2) What impact does the supply of health resources have on utilization patterns? These critical questions must be answered before any changes in the medical-care delivery system are enacted.

The purpose of this thesis is to examine the issue of physician-induced demand and to determine its

significance in the medical system. I will first describe the structure of the medical marketplace, its distinguishing characteristics, the components of medical expenditures, and the role of the physician within the existing market framework. Then, I will analyze the two basic models of physician behavior, stressing the important predictions emerging from each model. In the fourth chapter, I will examine empirical evidence relating to the physician-induced demand controversy and then I will explain some of the empirical and methodological problems encountered when testing for physician-induced demand. Finally, I will summarize the contributions of the existing empirical work and offer my suggestions for future research.

PREVIEW

CHAPTER II

MEDICAL-CARE MARKET

Is Medical Care Different?

Medical care is a varied and complex commodity. As suggested by Weisbrod, medical care includes a variety of resource inputs (e.g., physicians, nurses, drugs) that are provided in many opposing organizational structures (e.g., solo medical practitioners working on a fee-for-service basis, prepaid group practices, hospitals), and that operate simultaneously in the public sector, private for-profit, and private nonprofit sectors. Fuchs (1972, p. 211) defines health care as "those activities that are undertaken with the objective of restoring, preserving, or enhancing the physical and mental well-being of people."¹ The term health care encompasses a wide gamut of goods and services--some consumed frequently and easily understood, like cold medication and routine pediatric care, and others extremely technical, often experimental, and consumed relatively infrequently, like heart transplants. Medical care can be

¹Kenneth Arrow differentiates between the medical care industry and health. "The causal factors in health care are many, and the provision of medical care is only one." Other authors interchange the terms freely. I have adopted the loose interpretation.

strictly informative in nature, or can involve a passive acceptance of some involved therapeutic procedure. This diversity in the kinds of medical care offered and the kinds of situations in which medical care is delivered makes an economic analysis of the medical care industry more complicated than other industries.

Aside from the fact that medical care is not a homogeneous commodity, the important issue pertaining to this study is whether medical care is sufficiently different from other goods and services that it requires different supply and demand models to explain the operation of the market. Are analysts correct in defining the structure of the medical-care market in the context of a traditional economic model, either competitive or monopolistic, or do the unique characteristics associated with this market necessitate the formulation of an alternative model? This issue, as yet unanswered, is of utmost importance to public policymakers who usually base their conclusions on existing conventional models.

The literature varies from Kenneth Arrow's widely accepted view stating that obvious characteristics of the medical-care industry do differentiate this market from conventional markets, to a more recent conditional approach proposed by Pauly (1978). Pauly contends that the appropriate answer to the question is not "yes or no" but, rather, "yes, no, or maybe." He believes that it is

important to make distinctions among types of medical care in order to appropriately answer the question. Pauly argues that there are currently some forms of medical care that respond to orthodox economic analysis while there are others for which "the usual kinds of market-like analysis will not work, or might not work perfectly, but might work reasonably well" (1978, p. 11). The main issue I want to emphasize is that both analysts agree that important differences do exist between most types of medical care and other goods. Their unique characteristics fall, in general, under two rubrics: (1) the lack of consumer information, and (2) the role of physicians as both suppliers and demanders of medical services. Both Pauly and Arrow acknowledge that if these features are not accounted for, specifications of economic models for this market might be misleading and could result in analysts making the wrong recommendations for public health policy.

Consumer Information

The first unique feature of the health care market is the lack of consumer information on both the price and quality of medical services. A common assumption made about consumers of medical care is that they are, for the most part, "poorly informed." If this statement is true, it is necessary to question just what determines "reasonably" or "well-informed" consumers, why they are not well informed, and what occurs in the marketplace when they are not well

informed. Pauly suggests that consumers can be considered to have obtained fairly complete information if they are able to select the highest quality service provided for a given price from those available. Most economists agree that consumer information for "standard" goods and services is rarely perfect. According to Salop, "as long as enough people are well informed, the remainder can appropriately judge quality by price and so there is no need for them to become well informed." The issue that must be addressed is: Are enough people well informed in the market for medical care to make the appropriate decisions regarding their medical care purchases?

Pauly acknowledges that "reasonably well informed" is not easy to define and cannot be measured empirically; however, he suggests that some types of medical care are purchased by reasonably informed consumers. This group of services would include those for which consumers have extensive experience or those whose outcomes are easy to judge either during or soon after the performance of the service. Pauly (1978, p. 16) estimates that only one-quarter of total personal health care expenditures, mainly those of a routine nature, are made by reasonably informed consumers. The remaining three-quarters is subject to varying degrees of consumer ignorance.

Many factors contribute to the lack of consumer information in the medical-care market. To begin with, it

is well appreciated that lack of common knowledge concerning the price of medical care is limited due to the standards of "ethics" imposed on the medical profession by their own association. This code of "ethics" controls attempts by physicians to publicize their merits. "Organized medicine has traditionally justified advertising bans on the grounds that unrestrained competition among physicians would lower service quality" (Sloan and Feldman, 1978, p. 91). Such limitations, specifically those on the advertising of price, restrict consumers from making intelligent choices without undertaking a costly search for information that would require seeking advice from numerous physicians.

However, the important issue regarding lack of consumer information does not pertain to price but to lack of knowledge regarding quality of medical care. In this respect, medical care does differ from other typical commodities such as automobiles, furniture, and TVs. By far the most important reason why consumers have difficulty judging quality in the medical market is because the outcome that is expected from the consumption of medical services is more uncertain than what is expected from most other products. The inability to judge quality occurs because the human physiological system is an adaptive system, and also because each individual responds differently to illness and to specific medical-care treatments (Weisbrod, 1978, p. 40).

Uncertainty as to expected outcome is not a problem in markets for homogeneous products and services. For example, there is little question about the expected outcome when one purchases gas for his car. In the medical care market, no one, including professionals, knows for certain whether a particular operation, X-ray, drug, or lab test directly benefits health or not. Weisbrod believes "consumers are not well informed because they have difficulty specifying the 'counter-factual'--i.e., what the situation will be if the good is not obtained" (1978, p. 40). The important point is that quality is difficult to evaluate, not only before the purchase as it is in the used-car case but after the purchase as well.

The consumers' ability to judge quality is made even more difficult when better information is available to some persons, generally sellers, than to others, generally buyers. This situation in the health-care market gives those with more information the opportunity to take advantage of those with less, especially if the former are in positions of authority and trust (Weisbrod, 1978, p. 41). It allows sellers to offer a service at a price higher than the "going" rate on the premise of offering better quality or to suggest more services for a given condition at the existing price in the interest of improving the quality of care provided (Pauly, 1978, p. 19).

It appears, then, that uncertainty about quality of medical services distorts market demand curves by enabling a consumer to purchase a commodity at some quality lower than the expected utility maximizing one--a basic assumption of traditional demand theory. Overall, lack of consumer information restricts both the provision and consumption of optimal care at any price.

There are also other factors that affect the consumers' ability to assess quality. One issue concerns the lack of consensus on how quality is to be defined or measured (Pauly, 1978, p. 17). Professionals and patients rarely share the same values when they measure quality. The results expected by patients often differ and far exceed the more realistic expectations of experienced physicians. Another reason why consumers have difficulty assessing quality is that they gain little knowledge from prior experiences due to the rapid technological changes occurring in all areas of medical science today (Weisbrod, 1978, p. 39).

This problem of consumer ignorance is further complicated, because in most situations what consumers are really buying is primarily information to be used by them as a guide to making decisions about future medical purchases. Pauly (1978, p. 14) believes that "this results in a multiproduct industry, where the quality, quantity, and characteristics of one of the products--information--affects

the demand for other products. What is really demanded is not a typical commodity, but is information itself."

The unique characteristic of lack of knowledge about quality results in "everyone, including the experts, being imperfectly informed on much of medical care quality" (Pauly, 1978, p. 17). This situation results in greater uncertainty in this market than in standard markets, which could be misleading to consumers, either patients or physicians, in making knowledgeable judgments regarding the value of medical care purchases.

Physicians as Suppliers and Demanders

The second unique characteristic of the health-care market concerns the role of physicians as both suppliers and demanders. Medical care is different from most commodities in that patients, as consumers, cannot legally purchase most goods and services directly, nor do they have the technical expertise to make competent medical decisions. In this market consumers alone do not determine demand for most medical services. According to Somers (1978, p. 376),

the peculiarities of the doctor-patient-hospital relationship mean that, for most of the health care economy, there is no such thing as a "sovereign consumer." At least 75 percent of personal health care expenditures, and the purchasing decisions that determine these expenditures, are made by physicians, not patients. This includes not only expenditures for physicians' services per se, but most hospital costs, a substantial portion of drugs and appliances, nursing home care, and other personal health-care expenditures.

Physicians, therefore, function in a dual role as the principal producer and principal purchaser of most medical goods and services. This situation results in an environment where demand is not independent of supply and could subject physicians to possible economic conflicts of interest (Mitchell and Cromwell, 1981, p. 33). Since the physician often has a financial interest in the treatment, the patient's health may not be the only factor affecting a physician's advice when he recommends medical care purchases. This decision environment has prompted the development of alternative theoretical demand models of medical care that incorporate the influence of physician behavior.

It is obvious that lack of consumer information and the unique interdependence between parties that affect supply and demand are two conditions peculiar to the health-care industry that are not present in standard market models. In order to describe the medical-care market accurately, it is necessary to understand how these conditions affect conventional models. Before delving into this matter in any detail, it is first necessary to examine the nature of health-care expenditures in our economy and how they are affected by physician behavior.

Expenditures

Since the onset of the Medicare and Medicaid programs in 1966, the health-care market has been plagued by very large increases in cost and rates of utilization. These expenditures have placed a financial strain on federal programs and private insurance companies. As a result, policymakers are inquiring into the causes behind these high costs and are attempting to develop strategies to reverse the trend. This section outlines the major factors contributing to the escalation of costs and the reasons why they have occurred. Arguably, physician-induced demand is one of the major contributing factors to the recent escalation of health care costs. As this issue is the central concern of this thesis, it will be developed in detail in the following section.

The importance of the health-care industry in the U.S. economy cannot be underestimated. It is rated as the second largest and strongest industry in the U.S. in terms of employment and payroll. Between 1972 and 1983, output, measured by personal health care expenditures, as a percent of gross national product (GNP), grew approximately 3 percent, reaching 10.8 percent of GNP in 1983 (Gibson et al., 1984, p. 1). This growth has been attributed to three major factors: (1) price increases, (2) population growth, and (3) increased per capita utilization. Of the total

increase, 90 percent was caused by higher prices and higher utilization (U.S. Government, 1977, p. 3).

According to Gibson et al., the reasons for the growth in expenditures reflect both demand and supply-side factors and can be divided into two components--evolutionary and structural.

The evolutionary component includes a variety of phenomena. First, the U.S. population is aging, and, as such, demands more health care than does a younger population. Second, as the U.S. economy matures and enjoys increases in real income, our society desires an increasing proportion of services in all facets of living, including health care. The third reason concerns the issue of productivity. It is generally accepted that industries showing slower capital growth are less productive and exhibit more rapid price inflation. Since health care is still a relatively labor-intensive industry, despite the advancement of new technology, increased costs are endemic to this industry.

The fourth contributing factor involves a variety of issues, referred to in economic analysis as changes in taste and preference. Some of the more recent trends which have resulted in more consumption of health care per capita include the following: emphasis on the practice of preventive medicine; the fitness craze; a new medical ethic which stresses preservation of life at virtually any cost;

changes in social and economic conditions which have restructured the work-force toward women, necessitating the provision of more costly forms of health care; and, perhaps most important, the extensive practice of defensive medicine resulting from the existing medical-legal environment.

Lastly, the explosion of new medical technology has vastly expanded the treatment of disease. These advancements have increased both the number of medical-care services and the cost of each service provided per person. Also, in an effort to remain competitive, hospitals and physicians invest in new costly equipment which often is not used to its capacity and which further inflates the cost of medical services.

The structural components responsible for increasing health costs are caused by two unique conditions present in this market: the financial characteristics of the industry, and the behavioral incentives of physicians as demanders of medical care.

According to Gibson et al. (1984, p. 1), in 1983, 73 percent of all personal health care expenditures were paid for by third parties, almost exclusively in the form of government agencies or private insurance companies. Gibson et al. give a variety of reasons why this method of third-party reimbursement has led to greater consumption of health care. The first reason is that financial coverage has the effect of reducing the cost of care to the patient and in