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**Provider Payment  
Mechanisms in  
Health Care:  
Incentives,  
Outcomes, and  
Organizational  
Impact in  
Developing  
Countries**

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## Mission

The Partnerships for Health Reform (PHR) Project seeks to improve people's health in low- and middle-income countries by supporting health sector reforms that ensure equitable access to efficient, sustainable, quality health care services. In partnership with local stakeholders, PHR promotes an integrated approach to health reform and builds capacity in the following key areas:

- ▲ *better informed and more participatory policy processes in health sector reform;*
- ▲ *more equitable and sustainable health financing systems;*
- ▲ *improved incentives within health systems to encourage agents to use and deliver efficient and quality health service; and*
- ▲ *enhanced organization and management of health care systems and institutions to support specific health sector reforms.*

PHR advances knowledge and methodologies to develop, implement, and monitor health reforms and their impact, and promotes the exchange of information on critical health reform issues.

## August 1998

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# Abstract

This paper assists with development of a research design for a study exploring the impact of alternative methods of provider payment mechanisms in developing countries. The paper sees provider payment as a form of contract between purchaser and provider and draws upon the economic literature on agency contracts to consider the problem of how best to develop appropriate payment mechanisms. In addition, the paper suggests the need to study the effects of payment mechanisms on the organization of the health care system, not only in terms of market structure, but also in the way providers are organized internally. It is argued that changes in payment mechanisms provoke realignments in the mode of service delivery through risk shifting, specialization, competition, integration, etc., which in turn affect health care outputs. At the same time, different basic conditions in the health care sector may affect the impact of new incentive mechanisms. The main payment methods and the incentives inherent in them are discussed.

A brief overview is given of main payment structures in OECD countries. The paper then discusses the impacts of provider payment reforms on the structure of health care markets and the internal organization of providers. The paper also presents several examples of empirical research that help explain the impact of provider payment reforms on intermediate outcomes (such as health care provider organization) and on final outcomes (such as health outcomes, expenditures, utilization, and quality). The paper concludes with a list of issues that should be taken into account in the research design on provider payment systems.

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# Acronyms

<b>DC</b>	Diagnosis Category
<b>DRG</b>	Diagnosis Related Group
<b>HOPD</b>	Hospital Outpatient Data
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>PPS</b>	Provider Payment System
<b>RGN</b>	Refined Group Number
<b>WHO</b>	World Health Organization





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# Foreword

Part of the mission of the Partnerships in Health Reform Project (PHR) is to advance “knowledge and methodologies to develop, implement, and monitor health reforms and their impact.” This goal is addressed not only through PHR’s technical assistance work but also through its Applied Research program, designed to complement and support technical assistance activities.

The research topics that PHR is pursuing are those in which there is substantial interest on the part of policymakers, but only limited hard empirical evidence to guide policymakers and policy implementors. Currently researchers are investigating six main areas:

- ▲ Analysis of the process of health financing reform
- ▲ The impact of alternative provider payment systems
- ▲ Expanded coverage of priority services through the private sector
- ▲ Equity of health sector revenue generation and allocation patterns
- ▲ Impact of health sector reform on public sector health worker motivation
- ▲ Decentralization: local level priority setting and allocation

Each major research project comprises multi-country studies. Such cross-country comparisons will cast light on the appropriateness and success of different reform strategies and policies in varying country contexts.

These working papers reflect the first phase of the research process. The papers are varied; they include literature reviews, conceptual papers, single country-case studies, and document reviews. None of the papers is a polished final product; rather, they are intended to further the research process—shedding further light on what seemed to be a promising avenue for research or exploring the literature around a particular issue. While they are written primarily to help guide the research team, they are also likely to be of interest to other researchers, or policymakers interested in particular issues or countries.

Ultimately, the working papers will contribute to more final and thorough pieces of research work emanating from the Applied Research program. The final reports will be disseminated by PHR Resource Center and via the PHR website.

Sara Bennett, Ph.D.

Director, Applied Research Program

Partnerships for Health Reform



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# 1. Introduction

During recent years the question of how to provide the most cost-effective health care services has been of increasing interest to health care managers, health insurers, providers, patients, and governments. Provider payment systems have been central to this discussion. These mechanisms are defined as the way money is distributed from the government, insurance company, or other fundholder to a health care provider. Different payment systems generate different incentives for efficiency, quality, and utilization of health care facilities, and these incentives may vary according to whether one is a provider, patient or payer.

To date, not much is known about the impacts of provider payment reforms in developing countries (Bitrán and Wouters, 1997). To remedy this, the Applied Research Program of the Partnerships in Health Reform Project plans to conduct an evaluation of the impacts of provider payment reforms in selected less developed countries. This paper draws attention to some important issues to be considered in developing a research design. The paper reviews the health economics and industrial organization literature to compile a list of potential intermediate and final impacts of payment reform that could be monitored as part of this evaluation project. This review is not intended to be exhaustive, but to present enough evidence to justify consideration of several issues in the research design. Specifically, the paper suggests studying the effects of payment mechanisms on the organization of the health care systems in terms of their market structure and on the way providers are organized internally. The main argument is that changes in payment mechanisms provoke rearrangements in the provision modes—e.g., risk shifting among facilities; physician and hospital specialization; competition, integration, or contractual agreements among providers—which affect health care outputs. These changes in the structure of health care provision are particularly important in developing countries, where mixed public-private systems interact, affecting each other and generating quality gaps and misallocation of facilities across and within countries.

Section 1 focuses on the analysis of provider payment mechanisms. Section 1.1 introduces the notion that provider payment mechanisms can be thought of as contracts among several players with unbalanced information and not always coincident objectives. Section 1.2 reviews the incentives created under various payment methods and how these incentives can be used to mitigate actual problems. Section 1.3 brings some examples of empirical exercises to measure the impact of payment schemes over health care outputs. Section 2 analyzes the interaction among payment systems, market structure and the internal organization of providers. Section 2.1 considers the use of this approach for developing countries, while section 2.2 reviews some literature from the field of industrial organization. That section explains how payment incentives may alter providers internal organization and reshape—or be affected by—the health care market structure, using some examples from the empirical research about this relationship. Finally, section 3 concludes the paper with a summary of key issues to be considered in designing research to evaluate the impact of payment reforms in developing countries.



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## 2. Provider Payments: Methodological Discussion from the Economic Literature

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### 2.1 Provider Payment Methods: A Contract among Multiple Players

Any contact between a physician and a patient involves the problem of asymmetric information, to the disadvantage of the latter. The patient depends on the doctor to know the nature of his illness, but he does not know if the amount and quality of the received health care is correct. Only results can (sometimes) be evaluated. Moreover, if the patient does not pay but has health insurance, he does not have to worry about the cost of the treatment, leaving more room for physician discretion. Then the informational problem is between the doctor and the insurance company. Likewise, health insurance companies and patients do not always share the same ideas about the “right” treatment. The problem is how to align the preferences of all parties?

Provider payment mechanisms are one of the tools to address this problem. A payment mechanism can be defined as a type of contract among two or more players—patients, providers, and payers—that creates specific incentives for the provision of health care and minimizes the risk of opportunistic behavior. In the case of a provider payment mechanism, it helps to take care of some aspects of the lack of symmetric information across actors, by defining rules such as price per patient or group of patients, cost reimbursements, and criteria for patient transfers or rejection. Although this topic is on the agenda of any health care system, it is especially important in developing countries, where the shortage of resources available for health care requires making the most of investments in this area.

The economic literature refers to these types of contracts that create incentives under imperfect information as agency theory. Agency theory considers the contractual relationship between two actors: a *principal* and an *agent*, where the former hires the latter to perform a task or service. If the goals of both actors do not necessarily match, then the agent—knowing the impossibility of perfect monitoring/knowledge of his actions—does not fulfill principal’s goals if there is a contradiction between his and the principal’s. Principal-agent theory suggests that the perfect contract does not exist, but that the best possible deal will be found if the principal generates incentives such that the agent’s best choice is to align his goals with the principal’s as much as possible. Those incentives are related mainly to payment mechanisms.

Four main actors are affected by provider payment reforms: health care facilities (e.g., hospitals), health professionals (e.g., physicians and nurses), patients, and insurers/payers. Each actor has its own set of goals that may or may not coincide with those of the others. Depending on how they are used, provider payment mechanisms may exacerbate differences in these goals or may offer a means to bring the goals of each actor closer together. Payers are those institutions that insure and pay for health care services. They receive their income directly from patients or indirectly from them through taxation, as in the case of the public health care system. Private payers (e.g., health insurance companies) tend to maximize a profit function, while public financiers look for cost minimization. Hospitals are either for-profit or not-for-profit. The former are profit seekers, while

the latter look for a combination of profits and quantity maximization (Dranove, 1988b). Patients want to maximize their own set of preferences, where purchasing health care is just one among many ways they choose to spend their resources. Finally, health professionals tend to maximize a profit function, although their behavior varies according to their preferences for altruism.

The relationships among these players in the provision of health care are shaped by differences/similarities in their goals and how well performance under negotiated agreements/contracts can be monitored. Physicians, as agents for patients, health care facilities, and insurers, are often caught between contrasting sets of goals. To the extent that their performance as agents cannot be monitored, they may be able to pursue their own goals rather than those of the principal to which they are under contract. Researchers have often used this as an explanation for induced-demand for health services (Dranove, 1988a).

A partial solution to this problem might be to select provider payment methods that align (or strike a compromise between) the goals of the principal and the agent. In other words, provider payment methods may offer a mechanism to compromise among players with different goals and may also offer financial incentives to encourage players to achieve these contracted goals. For example, Ellis and McGuire (1986), in an economic modeling exercise, found that in a situation where a for-profit physician acts as an agent for both a patient and a hospital, a full cost reimbursement method tends to result in an oversupply of services, whereas the outcome under a prospective payment system will depend on the doctor's "agency preferences" between his two principals (the hospital and the patient). Assuming that the hospital has more influence on a physician's ability to prescribe, the authors suggest a trend toward undersupply of health care services under a prospective payment mechanism. They suggest that a mixed form of reimbursement that combines elements of both prospective and retrospective payment systems may be the best alternative to reaching a compromise of goals among all three players.

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## **2.2 Economic Contract Options: Payment Methods and the Incentives They Create**

If provider payment methods can be used to work out compromises among the goals of various players in the health care market, then it becomes important to define the provider payment options and what incentives they create. There are six main payment methods to consider, all briefly defined in Table 1. They include: line item budgets, global budgets, capitation, case-based payment, per diem, and fee-for-service (Wouters et al., 1998; World Health Organization 1996; Swartz and Brennan, 1996; Lave and Frank, 1990).

In defining a provider payment method, it is important to specify when payment rates are actually set. When the payment rate for a package of health care services is negotiated and agreed upon before the treatment takes place, it is referred to as prospective payment. Prospectively set payment rates—including case-based and per capita-based payment—increase the incentive for efficiency because the health provider faces higher financial risk. When the payment rate is selected during or after the service has been rendered, it is referred to as retrospective payment, or sometimes as cost-based reimbursement and is well known for being cost enhancing rather than cost reducing. Fee-for-service is a typical form of retrospective reimbursement. Although prices for each service may be set in advance, providers are not limited by a predetermined agreement on the types and number of services rendered.



**Table 1**  
**Six Payment Methods and Main Incentives Created**

<b>Payment Method</b>	<b>Unit of Service</b>	<b>Retrospective or Prospective</b>	<b>Main Incentives Created [Note: Quality assurance mechanisms should accompany each payment method]</b>
Line Item Budget	Functional budget categories	Either	Little flexibility in resource use, cost control of total costs, poor incentives to improve productivity, sometimes results in rationing
Global Budget	Health facility	Prospective	Spending artificially set rather than through market forces, not always linked to performance indicators, cost-shifting possible if global budget covers limited services, rationing may occur
Capitation	Per person to a health care provider who acts as fundholder	Prospective	Incentives to undersupply, strong incentives to improve efficiency that may cause providers to sacrifice quality, rationing may occur, improves continuity of care
Case-based Payment	Per case or episode	Prospective	Incentives to reduce services per case but increase number of cases (if per case rate is above marginal costs), incentives to improve efficiency per case
Per Diem	Per day	Prospective	Incentives to reduce services per day but increase length of stay (if per diem rate is above marginal costs)
Fee-for-Service	Per unit of service	Retrospective	Incentives to increase units of service

Payment methods that are intended to improve incentives for efficiency must differentiate between those health care providers that are high cost because of inefficiency and those that are high cost because they treat more severely ill patients or face higher local prices of inputs.

The World Health Organization (WHO, 1996) suggests that the goals of provider-patient insurance contracts, as established through payment methods, should be to improve efficiency and quality, increase accessibility, permit choice of physician by the patient, and be easy to implement. European communities often have chosen to combine several methods of payment as a way to increase productivity while maintaining patient satisfaction and adequate control over costs. In addition, there is a shared view in Western European countries that all members of society have a responsibility to provide for one another through collective action to guarantee an adequate level of well-being for everyone (Graf von der Schulenberg, 1994). Many European countries have price mechanisms to protect the poor and the old. Tables 1 and 2 in the Annex summarize the payment schemes for outpatient and inpatient care in Western European countries, as reported by WHO's European Office (WHO, 1996). They show that 10 out of the 16 European countries considered apply prospective budgets to pay operating costs for inpatient hospital services. The remainder use some form of payment linked to services rendered. Of these, three countries link payments to patient days. In terms of primary care services, 11 out of 17 countries use contracted physicians. Of these 11

countries, five pay their contracted physicians using fee-for-service (Austria, Belgium, Germany, Luxembourg, Switzerland), five use some type of price differentiation by age or income, and five use some kind of gatekeeping system.

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### **2.3 Empirical Research: Examples of Provider Payment Impacts on Health Care Outputs in OECD Countries**

This section introduces a few examples from OECD countries about how certain outputs of health care systems, such as length of stay, expenditures, number of encounters, and quality are affected by prospective payment. This review is clearly not exhaustive, but intends to highlight the characteristics of the empirical studies carried out in industrial nations and to focus attention on the issue of payment mechanisms in the research design.

One type of study intends to isolate the payment structure and measure its impact on health care outcomes. For example, Cole et al. (1994) analyze the effects on mental health outcomes in a psychiatric center of a change from a fee-for-service payment mechanism to a capitated payment system. The hypotheses are that the new capitated system reduces hospitalization rates and improves functioning and symptoms for severely and persistently mentally ill adults, without increasing costs. The study, a controlled experiment exercise, was performed on two groups of patients. The first group—the experimental group—was covered under a capitation-based system, while the second—control—group was financed under a fee-for-service scheme. The article shows that the patients under continuous treatment assigned to the experimental group spent fewer days in the hospital during the two-year follow-up period than those who belonged to the control group. However, the study was not able to detect significant changes in the two other outcomes selected—patient functioning and symptoms.

A second type of related empirical analysis tries to forecast the influence of a payment mechanism on health care outputs. Two examples of this approach are McCrone et al. (1994) and Wellock (1995). In the first case, the authors analyze the implications of a future application of a diagnosis related group (DRG)-type mechanism to reimburse health care services in the United Kingdom. That study looks for correlations between length of stay and diagnosis that justify the application of such system. The hypothesis is that the effectiveness of using that payment structure can be proven by the ability of the diagnostic groups to explain variations in length of stay. Individual patient information was collected and distributed among 43 diagnosis categories, defined specifically for the exercise. Using basic comparative statistics, the authors calculate an indicator of homogeneity in length of stay within each diagnosis, correcting by patient age. The exercise shows that only 3 percent of the variation in length of stay is explained by the built diagnosis groups.

Using the same methodology, Wellock evaluates the appropriateness of the Refined Group Number (RGN) classification system for funding psychiatric discharges in Alberta, Canada, by comparing it with a prior research performed with the DRG classification used in the United States. The author finds that the performance of the RGN methodology is better than that of the U.S. DRGs, although the system is still weak enough to cause inequitable funding for psychiatric discharges.

Both articles conclude that diagnosis groups are poor indicators of length of stay and of resource utilization. However, such conclusions are weak, because the authors do not evaluate incentives provided by the current payment method, and, therefore, may not necessarily be measuring the provider's reaction to the new payment. An alternative way to analyze the effects of changes in payment mechanisms upon expenditures is introduced by Miller and Sulvetta (1995). Their article points to U.S. Medicare's success in containing inpatient services, which grew annually by 6.3 percent of the GDP between 1985 and 1992, at the same time that hospital outpatient services

grew at an annual rate of 15.5 percent. The success in controlling inpatient expenditures is attributable to the application of a per-admission Prospective Payment System (PPS). Based on that, the U.S. Congress requested the Health Care Financing Administration to extend the PPS to outpatient department services.

The basic argument introduced in the article is that a prospective payment per encounter in outpatient services will be effective in terms of cost reduction only in the range of expenditures triggered by physician behavior (i.e., the number and complexity of services provided per encounter). However, if Medicare outpatient expenditures are driven by input prices or the number of encounters per beneficiary, the increases in expenditures will not be affected. Using hospital outpatient data from the Health Care Financing Administration, a sample of encounters was selected, demonstrating a 21 percent increase in hospital outpatient charges between 1988 and 1990. The total annual change was decomposed into its different components that are out of provider control, such as beneficiary growth, input prices, and case mix, all of which are responsible for 42 percent of the change.

The conclusion from that exercise is that an encounter-based PPS does not create incentives to reduce the number of encounters per beneficiary, and, in fact, produces the opposite reaction. Adding the encounters per beneficiary with the variables exogenous to the provider, the authors conclude that almost 69 percent of the observed growth in Medicare charges is not solved by a per encounter PPS-type policy.

A third type of research relates quality in health care services to payment mechanisms. Hsia and Ahern (1992) check the validity of the belief that prospective payment rewards skimping<sup>1</sup> for a sample of Medicare discharges. If the hypothesis is true, prospective reimbursement gives hospitals a financial motivation to reduce not only unnecessary services, but also necessary ones. From the original sample of patients, 5.5 percent failed to get the professionally recognized level of quality care, and almost all of these were cases of skimping. Skimping cases were classified according to the type of service omitted (laboratory tests, radiology, physical therapy, etc.). In some cases, omission of some therapeutic services changes the DRG and therefore the payment. However, in other cases, the omission of services causes no change in remuneration, creating an economic disincentive for their delivery. In order to check the effect of PPS on quality of care, the authors compare pairs of procedures, multiplied by the probability of occurrence of the event covered by a certain DRG.

According to Hsia et al., when skimping was identified the hospital's best response would have been to provide good quality care. This would have increased the hospital profits by 7.9 percent, because it would have moved the patient into a different, and better remunerated, DRG. They conclude that the provision of good quality of care is supported by the fact that the difference between DRG payments and the standard medically indicated services increases faster when the level of specificity of diagnosis and intensity of care are higher. In addition, separating the analysis by groups of institutions according to their bed capacity and patient age, it was found that smaller hospitals had a significantly higher rate of quality problems than larger hospitals. However, skimping does not vary significantly with hospital size.

Finally, Lave and Frank (1990) also studied the effects of different payment methods on health care outputs, but their analysis is developed within a broader context, which includes different hospital services, differentiation by geographical location, and patient characteristics other than clinical diagnosis. The article specifically analyzes the effects on length of stay—in this case, for Medicaid patients—of changes in provider remuneration schemes. The results show that the

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<sup>1</sup> Term used to describe the pressure exerted by hospitals on physicians to omit medically indicated tests and therapies. This reduces costs while the hospital receives a DRG payment intended to cover all necessary services.

variation in length of stay explained in surgical cases is much higher than for medical and psychiatric cases. According to Frank and Lave (1985), it is a result of better DRG classification for surgical patients. In their study, patient characteristics are consistently correlated to length of stay: the elderly and African-Americans are associated with a longer time in the hospital, while males are associated with shorter stays. The variables related to psychiatric dependencies have the expected result, enlarging the length of stay. Large hospitals and teaching hospitals are also positively related with the variable to be explained. As a result, prospective cases and negotiated contracts consistently reduce length of stay, at the same time that per diem payments have different results according to the type and specialty of the institution. According to the authors, such difference is due to variations in the relationship between per diem rates and marginal costs across patient types and hospitals.

The examples introduced in this section show how broad are the possibilities of analyzing the impact of payment mechanisms on health care outputs, as well as how important are the data requirements to perform them. On the other hand, these studies also discuss how to isolate the payment mechanism effect on health care outputs from other influences—i.e., demographic characteristics, availability of health care facilities—or how to properly introduce the framework within the linkage between payment and outcome takes place. This issue acquires importance for the design of a research agenda in developing country health care systems, which have broader diversity and disparity—within and among them—than do European health care systems. The understanding of these differences is the starting point to perform and evaluate the effects of health care reforms in developing countries.

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## 3. The Interaction among Payment Systems, Market Structure, and Internal Organization of Providers

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### 3.1 Issues for a Provider Payment Research Agenda in Developing Countries

The design of a research agenda on provider payment mechanisms in developing countries, and their effects on health care outputs, require considering two sets of elements. The first includes knowledge of the typical reactions in performance triggered by each remuneration scheme, as well as the kind of empirical studies performed to measure those reactions (summarized in section 1). The second set considers the limitations and constraints that arise from the study of developing nations' health care systems, which may determine not only the effects of the payment incentives but also the research possibilities. There are three main types of limitations: (1) data availability, (2) awareness of the basic conditions that exist before the payment reform begins, and (3) awareness of how the diversity within and between developing countries—in terms of health status, location of facilities, distribution of income and health resources, regulation, health system structure, etc.—affects the linkage between monetary incentives and health care outputs.

Data sources are scarce in developing countries, and there is little chance of performing a study that accounts for conditions before and after a change in payment mechanisms, across facilities, and across patient diagnoses and treatments. Alternative means of evaluation must be explored, such as measuring the impact of provider payment mechanisms at a more general level, or focusing on specific intermediate outputs that may provide insights about the reaction of the health care system to new payment stimulus.

Developing countries are much more diverse than developed nations, not only in terms of health profiles but also in matters related to the organization of the health care markets. Annex tables 1 and 2 show Western European countries as a group of nations with similar resources, strategies, and health care structures. In contrast, developing nations differ in their health care needs and in their allocation of resources, although in general, dispersed rural populations are poorly covered while urban areas are relatively oversupplied. The actors participating in the provision of health care also differ, as do their interactions. In addition, the presence of NGOs, of a private structure based on atomistic for-profit doctors versus organized insurance schemes, or of community coverage based on social insurance versus formal social security systems may change the effectiveness of any payment reform. The reason is that mixed systems provoke interactions that offset or increase the effect of any policy applied in one of their components. As a result of the nations' level of income and the structure of their health care services, health care outcomes differ, not only between countries of the same region but even within the same nation.<sup>2</sup> Therefore, the application of a capitation payment

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<sup>2</sup> For example, in Latin America in 1992, Uruguay's infant mortality rate was 20 per 1,000 while in Bolivia the same indicator was 75 per 1,000. For the same period, life expectancy in Costa Rica and Haiti was 76 and 57 years, respectively (source: Inter-American Development Bank database). These differences exist within the countries: In Peru, the infant mortality rate of the Inka is double that of El Callao (102.8 and 52.4 per 1,000), while life expectancy is 52.9 and 70.2 respectively. Differences are still bigger in the Colombian infant mortality case (Sucre 25.7 per 1,000 and Choco 78.2 per 1,000), although the dispersion in life expectancy is similar (70.91 and 54.78, respectively). Sources: for Peru, The Development Group. 1991. "Peru health care assessment"; for Colombia, Florez and Mendez. 1995. "Estimaciones de Mortalidad Infantil en Colombia," mimeo.

system at the hospital level in a mainly rural country with a dispersed population, poor epidemiological profiles, and low attendance at health centers will have a smaller impact than the same reform implemented in a urban, educated country with high attendance rates.

The need for alternative ways to measure the impact of provider payment reforms, plus the need to account for the reactions between and within providers that link the payment incentive with its effect on outputs motivates the discussion of the next section. The discussion applies several principles from the field of industrial organization to the analysis of provider payment mechanisms. Throughout the section, the discussion is illustrated with examples of empirical research in health economics that describe the relationship among payment incentives, market structure, and the organization of health care providers.

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### 3.2 Provider Payment and the Structure of Health Care Markets

Earlier sections presented payment mechanisms as contracts between two or more players: patients, payers/insurers, and health care professionals and institutions. However, these contracts are not isolated; they are applied to contexts with different patient and provider characteristics, as well as different institutional rules and resource endowments. Therefore, different contract structures may impact differently on health care markets. Likewise, a different context may alter the effectiveness of a contract.

Therefore, payment mechanisms are just one important ingredient in the health care provision system. They, along with other basic conditions—e.g., infrastructure, epidemiological patterns, education levels, urban concentration—redefine the incentives for providers. Hospitals and professionals react to the new payment mechanisms in different ways, reshaping the structure of health care markets and affecting the provision of care. The incentives, in turn, modify players' strategies and performance in terms of quantity and quality of outpatient care and length of stay, among other health care outputs.<sup>3</sup>

This view is the *structure-conduct-performance* paradigm, supported by the traditional industrial organization perspective,<sup>4</sup> which has been used as a referential framework to study market behavior in a broad sense. According to this approach, *market structure* (i.e., number of providers and their market shares, degree of product differentiation and subcontracting, characteristics of the private sector) determines firm *conduct* (price setting strategies, investments in capital and R&D, advertising methods), which in turn affects market *performance* (efficiency, cost-effectiveness, profits, equity). Basic conditions, such as epidemiological patterns and geographical location of factors, simultaneously influence market structure and supplier conduct. However, it is known that the influence of one element on the others is not always unidirectional: performance feeds back to

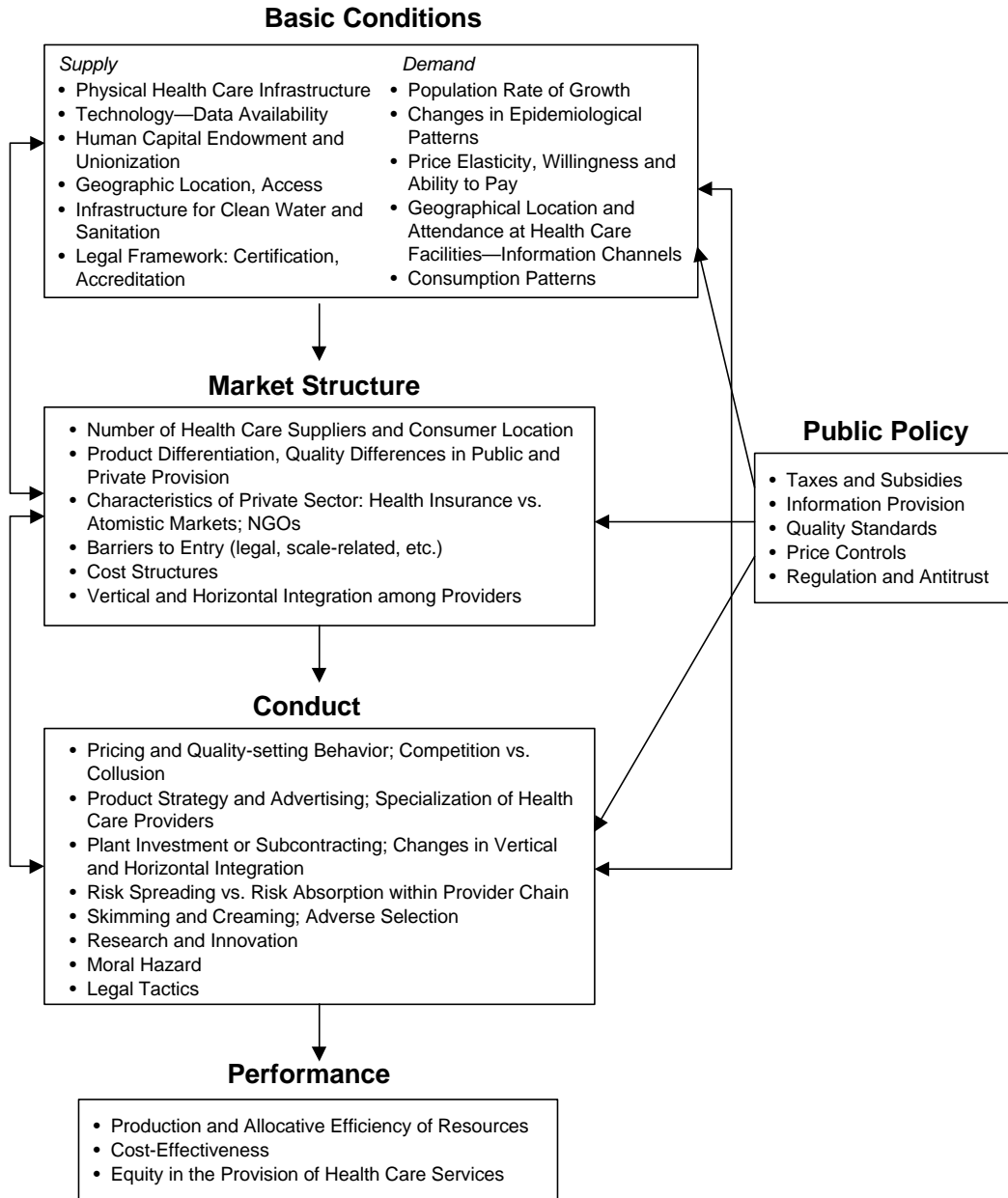
structure, and changes in conduct affect the basic conditions that link with the structure of the market. Chart 1 shows the typical setup of the structure-conduct-performance paradigm, which has been slightly altered to fit the case of health care markets.

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<sup>3</sup> Examples are abundant: The success of any provider payment reform will be deeper in communities with better educated populations or more advanced epidemiological profiles. Any capitation payment system, by promoting preventive medicine in health care providers, tend to be more effective over time in young communities than in old ones. The ratio of doctors to population may affect a payment method's performance, creating competition and modifying the quality of care. As mentioned before, in countries with mixed public-private systems, incentives generated in one sector may affect those in the other, increasing or offsetting payment reform. Even when capitation creates incentives for low-cost and preventive health care, these are probably ineffective in rural areas, where disperse a population requires a more demand-oriented incentive policy.

<sup>4</sup> Sherer and Ross. 1990.

**Chart 1**  
**The Structure–Conduct–Performance Paradigm in Health Care Markets**



Based on Scherer & Ross (1990)

Staten et al. (1988) show that, given the wide acceptance of preferred provider organizations (PPOs) and health maintenance organizations (HMOs) in the US during the 1980s, strong price differences may be attributable to level of competitiveness and bargaining differences across markets. These facts confirm that not only payment structures but also market characteristics are relevant in defining pricing strategies in health care.

The conduct of health care providers is related not only to their responses to payers and insurers, but also to the relative impact of price policies across suppliers. Hence, an additional aspect to be included in the research on payment mechanisms and hospital performance is how differences in hospital specificities, such as size and scope, are affected by remuneration schemes. Hospital costs vary greatly, even after they are standardized for observable input price differences and the diagnostic mix of patients treated. According to Pope (1990), “when Diagnosis Related Group (DRG) payment rates for Medicare’s Prospective Payment System (PPS) were calculated, these enormous cost variations were largely ignored.” Under the rationale of establishing an “efficient” cost per case, a national average was set, which implied a strong redistribution from high-cost to low-cost hospitals. The cost divergence may reflect legitimate differences in hospital treatment rather than inefficiency, that is, “within DRG severity” not captured in the diagnostic groups used by Medicare. Considering this argument, PPS provokes a redistribution that does not necessarily create incentives for efficiency and cost containment. Pope (1990) shows that the solution rests in a combination of PPS and cost-based reimbursement, allowing the correction by both patient severity and historic hospital costs standardized by case mix and location. This proposal resembles the general answer—although with incurred costs instead of historic cost—presented by Ellis and McGuire (1986) about payment mechanisms. In this example, changes in market structure can be considered an intermediate effect of payment mechanisms on health care provision. From a public policy perspective, the method suggested in Pope’s article may help in designing provider payment mechanisms as a way of coordinating between public and private facilities in developing countries, thus “reshaping” the supply of health care services according to population requirements.

There are many alternatives for changing provider strategies. Always depending on patient needs and the characteristics of their facilities, health care providers may decide to specialize in a few medical activities or to expand the types of services offered. They may prefer to keep certain type of patients, shifting the rest to other providers. They also may choose to avoid risks or unexpected costs and subcontract out certain services or, on the contrary, enhance their reputation by incorporating new high-quality services in their plans.

In addition, providers generally supply services to patients who belong to different insurers/payers. Thus it is feasible that changes in the payment scheme carried out by one payer may generate cost-shifting among patients for two reasons: first, and depending on how competitive the market is, the provider can apply price discrimination among consumers according to their payment method. Second, a payer who represents a large share of a hospital clientele has a better chance of applying reductions in its remuneration structure (oligopsony power), forcing the provider to compensate for losses by charging higher prices to other consumers. This alternative is more likely if the hospital is a non-profit institution that maximizes a combination of profits and quantity of services, and the payment reductions originated with a public payer.<sup>5</sup> This argument is supported by Dranove (1988b), who tests the cost-shift among hospitals as a response to reductions in Medicaid payments in the early 1980s. The empirical analysis measures the correlation between changes in prices charged to private payers and changes in profits to cutbacks in funding for Medicaid

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<sup>5</sup> The argument that non-profit providers maximize a combination of quantities and profits rests on the idea that these kind of institution has not only monetary but also altruistic goals. Considering that the public payer finances health care for the poor, and facing a reduction in its remuneration, the non-profit hospital will be more likely to shift costs to other patients than a for-profit provider, whose goals are strictly monetary.



hospitalizations. The exercise shows that the correlation is negative, which is evidence of cost shifting, controlling for changes in costs and market concentration.

The replication of this analysis has direct implications for an applied research agenda on provider payment mechanisms in developing countries—characterized by mixed public-private health care structures. This could be especially useful in countries where the public sector plays a double role of financer and non-profit provider of health care services, competing at the provision stage with for-profit private providers. Such an analysis would help to measure the effectiveness of payment mechanisms under different ownership models, or alternatively, the effectiveness of different payment schemes under similar ownership structures.

Two main issues can be discerned from the structure-conduct-performance approach in the design of a payment mechanism research plan. First, the impact of provider payment reforms cannot be considered in isolation: the payment mechanism may provide the direction of the change, but not its intensity; other factors define a significant portion of the impact. This is important when comparative studies are performed. These studies need to control for each case's basic conditions to avoid over or underestimation of the policy effects.

As seen in section 1.3, Lave and Frank (1990) acknowledge that the characteristics of the Medicaid payment system represent just one set of the factors that influence patient length of stay. Therefore, other variables that affect the hospital output are included in the analysis. Among them, they consider patient and hospital characteristics. Patient characteristics take into account differences in the population that seeks health care in each hospital, which constitute a “basic condition” that influences provider conduct and market outcomes. Even when the DRG measures patient health status, it reflects only the clinical aspects of the population. In order to make the exercise more accurate, they include social-demographic features such as sex, race, and age.

On the supply side, hospital characteristics included in the article show the presence or absence of partial hospitalization programs, long-term beds, the number of psychiatric emergency rooms, and the number of beds in the psychiatric unit. The first two variables are expected to have negative and positive signs, respectively, because in some way they explain the hospitalization strategy of each institution. These variables, together with hospital bed size and the level of teaching intensity, represent market power and market differentiation characteristics, completing the set of explanatory arguments from the supply side of the market. They reflect the structure of the paradigm. In addition, specific aspects related to the availability of health care per region are considered through the use of physicians per capita, short-term beds per capita, and dummy variables per region.

The second issue is that the impact of a provider payment mechanism on health care outputs is the result of a sequence of linked reactions provoked by the policy through the health care system. It leaves room to measure intermediate outputs of the provider payment reform, such as changes in preventive-curative care, increase or decrease in transfers cross facilities, as well as their effects on the internal organization of the providers and on the market structure.

In order to identify measures of intermediate results, special attention should be given to the internal organization of providers and its interaction with the payment structure and the market conditions. For instance, several authors (Swartz and Brennan, 1996; Whitesell and Whitesell, 1995) state that hospitals in the United States have undergone dramatic changes during the last 15 years in response to the regulatory framework and the payment methods applied by state agencies and the insurance industry. These changes in the hospital market are seen as improvements in efficiency/cost reduction measures, including mergers, changes in the vertical integration structure, and subcontracting methods.

According to Swartz and Brennan (1996), the organizational strategy followed by health care providers in the United States can be seen as a response to financial incentives across time. During the 1970s and early 1980s, physician decision making in health maintenance organizations had to be cost-effective because the organizations were at risk for costs of care (but)...cost savings generated by traditional utilization review techniques had started to plateau by the mid-1980s and insurers began to look for alternative ways to reduce costs.” As a result, preferred provider organizations evolved rapidly. At the beginning of the 1990s, and as care management matures, fewer services are sought from specialists, and hospitals need larger primary care bases to feed their existing hospital-based secondary and tertiary care systems. This situation has caused greater horizontal and vertical integration of health care, with hospitals, physicians and (in some cases) managed care organizations coming together into one cohesive structure in an increasing number of metropolitan areas.”<sup>6</sup>

*Vertical integration/de-integration process*<sup>7</sup> is one of the main issues in the analysis of market structure that has direct application to health facilities. Hospitals may respond to changes in provider payment mechanisms by reshaping their internal organization or by rearranging their contractual relations with their staff. Vertical integration also constitutes a decision about how to allocate resources, deal with uncertainty and risk, or react to competitors.<sup>8</sup> Furthermore, vertical integration provides the firm with the possibility of eliminating payment of markups and eventual inefficiencies in downstream stages, affecting its cost structure. It leads to changes in competitiveness and profits, given certain demand and market characteristics. It is the instrument that sets the limits of the firm, defining the boundary between internal costs and transaction costs.

The interaction between prices and internal organization is shown by Melnick et al. (1992). Their article investigates the significance of market changes in the definition of prices at the hospital level. Per diem price negotiated between a California Blue Cross insurer and its providers are explained by a set of variables representing market structure, provider characteristics, and contractual agreements between both sides. The research shows that the integration—collusive behavior, merger—of two health providers would lead to a 9 percent increase in prices at the time that selective contracting is the strategy used by payers to reduce prices while keeping quality of provision.

Following Williamson’s (1979) *transaction costs approach*, vertical integration-like processes depart from the idea that each good or service requires a certain level of specificity for its production. The specificity is defined as requirements in technology, quality in outputs or inputs, as well as geographical location. For each level of specificity there are costs associated with the production of a good or service within the firm—in this case, the provision of health care in health facilities—which differ from those costs related to buying it in the market or through subcontracting. This is called the “make inside or buy outside” choice. The higher the level of specificity, the smaller the chance of finding it in the market at a reasonable price or under desirable conditions. Because of that, higher specificity requirements are associated with in-house production and vice versa. As in the case of health care providers before changes in payment mechanisms, the probability

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<sup>6</sup> “...generous cost-based third party payment systems increased demand for medical services and thereby encouraged the for-profit sector of the hospital market, particularly in large health care delivery corporations. They grew explosively in the seventies and early eighties. Investor-owner hospitals, including multi hospital systems grew largely through mergers, gaining power from their ability to raise capital to restructure their firms to respond to changing market conditions. Multi hospital systems and hospital management chains also benefited from economies of scale relevant to purchasing, management, and compliance with regulatory requirements; they gained market power in bargaining with the insurance industry (Whitesell and Whitesell, 1995).

<sup>7</sup> Generally speaking, it is called vertical integration when one firm buys/obtains control of/signs a specific contract with a second one, which is either the provider of inputs for its productive process or a purchaser of its products, as inputs for the second firm’s production. In health care markets, a hospital may contract/buy, e.g., a diagnosis center, integrating it vertically. Reasons may be: to reduce costs, for quality or delivery-on-time assurance, or for risk reduction. The economic literature extensively discusses types of and opportunities for vertical integration (Asanuma and Kikutani, 1992; Perry, 1989, among others).

<sup>8</sup> As it is shown by Asanuma and Kikutani (1992), and Kawasaki and McMillan (1987), vertical integration processes may be associated with risk absorption or risk transfer strategies between the upstream firm—i.e., the hospital—and its providers. Risk absorption occurs when the hospital prefers to keep a quality network of providers, looking to differentiate its products from those of competitors, even at risk of financial losses. On the other hand, a risk transfer decision may occur when the provider prefers to shift risks to providers, contracting with them only during high-demand periods, and transferring the financial risk—i.e., stopping contractual agreements—when demand is low (Carlton, 1979). In both cases, the number of hospitals and eventual contractors, as well as their abilities to compete, plays a decisive role.

of contracting a service out or producing it inside the health care facility depends on the length and characteristics of contracts between the payers and providers, as well as the way those contracts help the actors to deal with risk and uncertainty. In this direction, the empirical literature on transaction cost economics may help to analyze aspects related to the impact of changes in payment mechanisms in health care intermediate outputs.<sup>9</sup>

The application of these concepts from the field of industrial organization offers the chance to develop relevant research on payment mechanisms, especially in developing countries. The lack of competition among health providers in some markets, the volatility in prices and contractual linkages among actors, and the limitations in some countries' insurance systems may require in-depth studies of the sequence of reactions triggered by a health care reform. The literature cited in this section may be useful for identifying intermediate outputs to monitor at different levels of the health care provision chain, helping policymakers in the decision process.

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<sup>9</sup> Empirical studies of transaction costs generally consider a dichotomous dependent variable—the make or buy choice—as explained by a set of independent variables related to e.g. capital, geographical, or quality specificity. Alternatively, the set of variables characterizing “specificity” is used to explain length of contracts among providers and payers. As provider payment mechanisms define specific rules in contracts between payers and providers, they may be used as additional variables to explain health providers' internal organization. This type of exercises has not been applied before in health care markets. However, it was extensive used in the field of industrial organization. For references, see Joskow (1987) about length of contracts, Monteverde and Teece (1982) about subcontracting and specific skills, and Lyons (1994), where a set of variables related to trust among contractors as a measure of specificity may help in the analysis of health care contract schemes.



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## 4. Suggestions for an Applied Research Agenda

The articles reviewed (and summarized in table 3 in the Annex) offer some useful insights for designing an applied research agenda on payment mechanisms in developing countries. Among them is the need to understand the incentives generated by the different payment structures and their reactions in terms of cost containment, length of stay, and quality of services. However, it is also relevant to understand the internal response of the provider organization. As noted in section 2, changes in payment structure trigger changes in the mode of provision. Each provision mode implies modifications in the organization of supply, such as: vertical integration structures, responses to risk, definition of management strategies, specialization and subcontracting. In turn, these organizational responses generate changes in health care outputs.

This sequential adjustment process leaves room to study—in a broader sense—the changes generated by the remuneration patterns as a chain of events, where intermediate outputs are signals of how providers respond to monetary incentives. From the point of view of the Partnerships for Health Reform Project, this approach may be useful because it provides a rationale to study intermediate outputs of the system, and contractual relations among insurers and providers as a way to learn about the effects of payment mechanisms on health care.

An example is given in the review of the transaction cost literature. There, “length of contract” between provider and insurer is an intermediate output of the system, in terms of internal organization of the provision, where the payment structure may be a type of specificity. The length of a contract may be a key to understanding health care outputs (i.e., changes in patterns of consumption by patients, which can be associated with induced demand) or to identify market reactions to payment mechanisms, which is a signal of the effectiveness of the remuneration method.

The need to take a broader view when studying health care effects of changes in payment methods is supported by Dranove (1988b), who tests hospital cost shifting as a response to reductions in Medicaid payments in the early 1980s. Many concepts from this paper can be used in empirical research on payment mechanisms. One of them is to perform a comparative analysis of changes in health care outputs in a context where there are two or more co-existent ownership structures in provision or two or more co-existent payment schemes. An example of the first case is the public sector subcontracting different private providers (i.e., for-profit and non-profit) to supply services to the poor, when those providers also serve other private patients. An alternative analysis is to choose two markets with similar structures but different public payment schemes. In this case, the comparison can be applied to a typical fixed budget-financed public hospital against a private provider subcontracted by the public health authority.

In both cases (the one controlled by the provider, and the alternative controlled by payment structure), the use of demographic and medical characteristics will control for differences among patients. These kinds of experiments will give hints about the effectiveness of the payment mechanisms applied under different ownership models. On the other hand, Hsia and Ahern (1992) propose a mechanism for evaluating skimping, a quality indicator in health care services. Even when the information required is fairly ambitious, several other variables can be used to reach a measure of quality in health care services. One of them is the rate of referrals: it can be seen as an intermediate output, at the same time that it gives information about the quality of the system and effectiveness in the allocation of resources.

In all cases, the use of cross-sectional analysis in a broad sense—by departments within a hospital, by hospitals, by regions, by ownership structure, even by countries—seems to be an interesting and informative approach, providing more accurate results. The advantage is that it provides a clear set of variables that represents the framework where the remuneration scheme takes place. Love et al. (1990) is an example of this methodology.

The preceding discussion offered some suggestions for developing a debate about what issues should be considered in defining an empirical research study on provider payment mechanisms. Depending on the availability of information, the research could be focused on the characteristic payment-health care outputs relationship found in the OECD literature, or could be focused—or completed—with aspects associated specifically with market structure and organizational responses to different payment schemes.

# Annex 1: Tables

<b>Table A-1: Funding and Paying Inpatient Hospital Services in Europe</b>			
<b>Country</b>	<b>Predominant funding source for acute inpatient hospital services</b>	<b>Predominant approach to paying operating costs for acute inpatient hospital services</b>	
		<b>Prospective budgeting</b>	<b>Service-based financing</b>
Austria	Social Insurance Funding		Social Insurance Funding based on length of stay with lump-sum subsidies by the Ministry of Health
Denmark	Decentralized, tax-based funding	Prospective Global Budgets	
England	Centralized, tax-based funding		Activity based payment determined by purchaser/provider contracts
Finland	Decentralized, tax-based funding		Service-based reimbursement by municipality
France	Social Insurance Funding	Prospective Global Budgets	
Germany	Social Insurance Funding	Prospective Flexible Budgets	
Hungary	Social Insurance Funding		Performance-related payment system based on DRGs
Ireland	Centralized, tax-based funding	Prospective Global Budgets	
Italy	Centralized, tax-based funding	Prospective Global Budgets	
Latvia	Taxation		Daily charge and service-related payment
Netherlands	Social Insurance Funding	Prospective functional budgets partly based on activity	
Norway	Decentralized, tax-based funding	Prospective Global Budgets	
Poland	Taxation	Annual Global Budgets	
Slovakia	National Health Insurance		Daily charge/bed-day
Slovenia	Compulsory Health Insurance		Annual, prospective funding based on contracts incorporating payment/bed-day and service-related funding
Sweden	Decentralized, tax-based funding	Prospective departmental budgets combined with activity-based payment	

Source: WHO, Regional Office for Europe (1996), *European Health Care Reforms*, pag. 154, Copenhagen.

**Table A-2: Principal Method of Payment for Primary Care Physicians, Western European Countries**

Countries	Type of Payment	Annual visits per capita ca. 1992	Gatekeeping	Cost-sharing
<b>Indirect Provision (contracted)</b>				
Austria	Fee-for-service	5.1 (f)	No	20% population pays 10% or 20%
Belgium	Fee-for-service	8.0 (f)	No	Self-employed pay full costs
Denmark	28% capitation (flat fee) 63% fee-for-service 9% allowances	4.4 (d)	Yes	None
France	Fee-for-service Salary in Health Centres	6.3 (f)	No	25% including extra billing
Germany	Fee-for-service	12.8 (e)	No	None
Ireland	Fee-for-service if higher income Capitation (age differentiated fee) if lower income	6.6 (b)	Yes	None if low-income patients
Italy	Capitation (age differentiated fee)	11.0 (b)	Yes	None
Luxembourg	Fee-for-service		No	5%
Netherlands	Fee-for-service if higher income Capitation (age differentiated fee) if lower income	5.8 (g)	Yes	None if low-income patients
Switzerland	Fee-for-service	11.0 (e)	No	10% of cost
U.K.	Capitation (age differentiated fee) Fee-for-service Allowances and target payments	5.8 (e)	Yes	None
<b>Direct Provision (employed)</b>				
Finland	Salary	3.3 (d)	Yes	US \$0.17
Greece	Salary	5.3 (a)	No	None
Norway	35% Salary/ 65% Fee-for-service		Yes	30% costs of selected items
Portugal	Salary	3.1 (f)	Yes	None
Spain	Salary/ Capitation (age differentiated)	6.2 (c)	Yes	None
Sweden	Salary	3.0 (f)	No	US \$6 - US \$9

*(a) 1982, (b) 1988, (c) 1989, (d) 1991, (e) 1992, (f) 1993, (g) 1994.*

*Source: WHO, Regional Office for Europe (1996), European Health Care Reforms, pag. 145, Copenhagen.*



**Table A-3: Empirical Papers Reviewed—Methods and Results**

Author (Topic)	Indicator Studied	Explanatory Variables	Method	Interest for PHR Project
<b>Cole et al. (94)</b> (Payments and outcomes in health care)	Length of stay patient symptoms	Capitation vs. fee-for-service payment methods	Descriptive statistics	Effects of payments on health care outputs
<b>Dranove (88b)</b> (Market structure)	Changes in price per admission by private paying patient	Changes in earnings from the government (Medicare and Medicaid) changes in costs from admissions number of beds	Ordinary least squares	Spillovers cross patients when changes in payment method
<b>Hsia et al. (92)</b> (Payments on quality of health care)	Omission of medically indicated services (skimping) and supply of unnecessary services	Structure of payment on diagnosis related groups (DRGs)	Descriptive statistics	Mechanism to evaluate quality in health care services
<b>Joskow (87)</b> (Transaction cost economics)	Length of contracts in coal industry US	Site, physical asset, output specificity—amount of trade	Ordinary least squares	Intermediate outcomes
<b>Lave et al. (90)</b> (Payments and outcomes in health care)	(logs of) Length of stay for public and non-public hospitals and for medical, surgical, and psychiatric services	Demographic and clinical patients info. differences in payment charact. hospital and market characteristics	Ordinary least squares	Complete study effects of payment structure on health care outputs
<b>Lyons (94)</b> (Transaction cost economics)	Existence of contract (dichotomous variable) between engineering industry and small subcontractors	Measures of: geographical location vulnerability (risk of opp. behavior) complexity (effort required) length of contractual relation years of contractual relation in-house production	Probit models	Intermediate outcomes
<b>McCrone et al. (94)</b> (Payments and outcomes in health care)	Length of stay	Diagnosis related group-type classification	Descriptive statistics + regression	Problems in identifying incentives
<b>Melnick et al. (92)</b> (Market structure)	Per diem prices paid by PPO	Measures of: provider charact. (cost-ownership) market charact. (concentration index) payer mix specific relation between contractors	2 stages least squares	Price-market interaction and scope of mkt. definition
<b>Miller et al. (95)</b>	Outpatient costs components (dependent or not on physician's decision)	N/A	Descriptive statistics	Impact on costs of changes in provider payment
<b>Monteverde et al. (82b)</b> (Transaction cost economics)	Make or buy dichotomy automotive industry US	Dummy for part contracted dummy for contractor engineering effort required/part	Probit model	Intermediate outcomes
<b>Wellock (95)</b> (Payments and outcomes in health care)	Length of stay	Diagnosis related group-type classification	Descriptive statistics + regression	Problems in identifying incentives



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