Chapter 2

Organization of healthcare systems

2.1 Introduction

A healthcare system can be defined as a collection of interdependent organizations that, together, produce healthcare services. The list of organizations includes healthcare insurers, hospitals, doctor practices, diagnostic facilities, nursing homes, and homecare providers, self-regulation colleges for doctors and nurses, and pharmacies. While each such organization exhibits its own structures, incentives and personnel selection mechanisms, the system is typically configured with specific structures and incentives that bind its components together to varying levels of success. In general, the structure and the incentives interact and there are compatibility issues. For instance, if the system incorporates competition in its various parts, i.e. the structure will allow many organizations for the same function, incentives must be such that those organizations are motivated to compete.

Unlike in a great majority of markets, a healthcare system embodies both the demand and supply sides of the market except when patients access the system at first with some symptoms. Once in the system, a patient's demand for services takes shape through interactions with doctors who also happen to be the providers. Therefore, a major challenge for system architecture (including incentives and selection problems) is to solve doctors' problem of split loyalty.

Moreover, since insurance is desirable in the presence of uncertain and lump-sum expenditures as is the case in serious illness episodes, individual demands are typically integrated into group demands. Most countries go further and establish public health insurance in which case demand and supply for healthcare are integrated through the whole electorate's willingness to pay for healthcare which determines the system capacity to deliver. Once, however, political processes determine resource allocation within the system, it is inevitable that equity and access issues have to be addresses whereas such issues are external to market allocation of resources. Thus: "Discussions about healthcare reform are inseparable from redistributive politics, … some level of access to healthcare will be determined by the choice of a healthcare system." (Besley & Goouveia [1994], p.205)

In the light of the above definition, the analysis of healthcare systems can be described by an organizational chart, as in Figure 2.1 below, where the essential building blocks are the patients, the major providers, i.e. doctors and hospitals, and the insurers. Of course, the existence of public insurance invokes a political economy analysis as the patient-insuree votes to determine first the constitutional structure or the governance of the system and, then, its capacity by choosing investments into physical and human capital

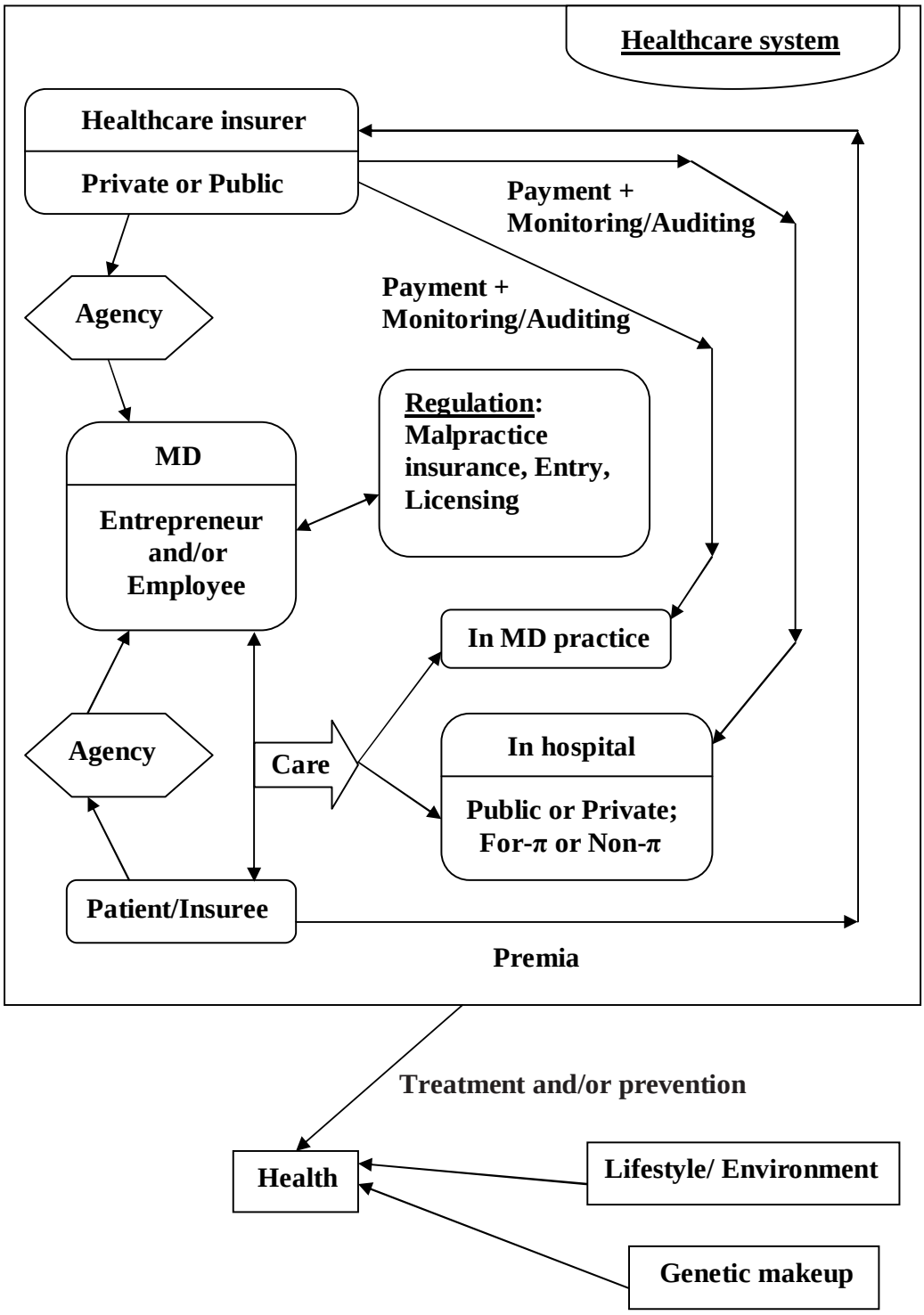

Figure 2.1 Generic structure of a healthcare system

inputs. The constitutional structure of the system corresponds to the public-private balance in the two main areas in the system, financing and delivery. In fact, real world systems are customarily classified using these two broad components.

A useful method of understanding healthcare systems may be the supplementation of the above organizational picture in Figure 2.1 with feasible choices. If an organization can be schematically represented by a combination of its three pillars, i.e. structure, incentives and personnel selection, then various choices will generate a menu of systems. However, since not all combinations of options are compatible, the number of systems available is strictly less than the formal number of combinations. For example, gatekeeping by the general practitioner will only function if patients' access to specialists is restricted.

There are many dimensions to available choices under a healthcare system: (a) the insurance and delivery are public, private or hybrid; (b) insurees can opt out and/or supplement the publicly covered bundle of services; (c) there is insurance and/or delivery competition; and, finally, (d) whether individuals have choices within the first three dimensions. Normally, under all systems, individuals can complement the publicly covered bundle of services, i.e. they may purchase private insurance for such services.

Insurance choice		Provider choice		Treatment
Collective	Individual	Collective	Individual	choice
	• Yes or no		• First contact	• Refuse treatment
• Public/private	• Public/private	• First contact gatekeeper?	• Gatekeeper choice	• Treatment choice
• Public coverage	• Complement, supplement	• Specialist referral?	• Specialist choice	• When?
• Public funds	• Fund choice (and premia)	• Hospital referral?	• Hospital choice	• Location
• Private coverage	• Coverage (and premia)	• Hospital doctor choice	• Doctor choice	• Facility
				• Participate in trials

Table 2.1 Choice taxonomy in a healthcare system

First, insurance choice corresponds to demand choice for individuals who cannot afford a pay-as-you-go private healthcare system whereas under some systems public insurance restricts the coverage and imposes compulsory insurance packages on insurees. For instance, the Canadian provincial healthcare insurance is compulsory, comes with a fixed coverage for all without free supplementation and, hence, restricts individual choice to complementary procedures not covered under the public insurance packages. Second, public insurance is a collective choice yet, in many countries, individual supplementation is allowed. Thus, public coverage can be individually supplemented by private coverage

and, also, opting out of the public system is an option. Curiously, in Germany, high income individuals may opt into the "public"[1] coverage but .

Of course, more choice is preferable to less but it is also costlier to provide the diversity. Chapter 13 studies real-world healthcare systems in terms of access, choice and cost whereas the following provides a generic comparison based on fundamental components.

2.2 Healthcare systems typology

The combination of structures and incentives, which typically defines an organization, also defines a system because, after all, a system is also an organization, but of more complicated components. The generic structure presented in Figure 2.1 will now be revisited to yield the variety of healthcare systems observed. The conventional classification of healthcare systems, simple and easily understandable to non-specialists, debuts with a distinction of financing from delivery. In terms of Figure 2.1, financing corresponds to the payer and delivery to providers, including doctor practices and hospitals. A myriad of other providers complete the system design.

A coarse but useful healthcare system classification is provided in Besley & Gouveia [1994]. Differentiating between financing (mostly the demand side) and delivery (supply) systems are classified into three types, as in Table 2.2 below.

	Public delivery	**Private delivery**
Public financing	Type III	Type II
Private financing	Type II	Type I

Table 2.2 A simple classification of healthcare systems

Of course, one would find scant few examples to fill in the Type I and Type III boxes as all countries have mixtures of private and public components. The classification must, then, surely be interpreted with an eye to operational relevance. Thus, countries where public financing (delivery) is dominant ought to be classified as characterized by public financing (delivery) and vice versa.[2] For instance, the existence of US Federal-State joint programs of Medicaid (insurance coverage for the poor) and Medicare (insurance coverage for the elderly) do not make it a mixed system in this operational classification. On the other hand, if one were to classify the Canadian healthcare system with mostly public insurance, the classification of delivery is tricky. Although doctors are private entrepreneurs and hospitals predominantly private non-profit, the heavy regulation under government monopsony locates the Canadian delivery midway between fully private and

[1] The German sickness funds can be better described by private non-profit although government regulation is overbearing. Originally covering various professions, late reforms freed them from corporatism. They are funded in small part by governments but mostly by insuree contributions via payroll deductions and employer contributions.

[2] See section 2.4 below for a graphic classification.

public extremes. By adapting the above Table 2.1, the Canadian system can be better described, as in Table 2.3 below.

Insurance	choice	Provider	choice	Treatment
Collective	Individual	Collective	Individual	choice
	• Public insurance compulsory		• First contact: Family MD or Emergency	• Can refuse treatment if legal adult
• Public for all plus complementary	• Extensive complementary plus US supplementary	• Family MD as gatekeeper	• Gatekeeper choice (restricted if shortage)	• Treatment choice
• Public for a given bundle	• Complement, no Canadian supplement	• No specialist self-referral	• Specialist choice, yes somewhat	• Timing somewhat, location
• Public funds	• No fund choice, tax based	• No hospital self-referral	• Hospital choice, yes somewhat	• Timing somewhat, location
• Private complementary coverage	• Coverage and premia	• Hospital doctor choice somewhat	• Doctor choice somewhat	• Facility somewhat
				• Participate in trials

Table 2.3 Choice taxonomy in Canadian healthcare systems

The generic Canadian healthcare system may well be described as a Type III system, rather than a formal Type II, by virtue of public financing and heavily regulated private delivery. For instance, financing as well as quantitative controls impose heavy restrictions on private providers. Though private, most hospitals' board members are appointed or approved by provincial authorities, a process that substantially restricts the range of decisions. Moreover, provinces typically micromanage hospital budgets, so much so that there are different regulations and processes governing operating and capital budgets. As for doctors, beyond the fee negotiations, provinces regulate location choices through licensing as well as fee structures. Thus, although they are mostly private, Canadian providers face steep financial incentives and rigid quantitative controls that induce them to act within the parameters imposed by provincial governments.

2.3 Complementary and supplementary insurance

Since premia must be correlated with coverage, both in breadth and depth, the complementation and supplementation of a given coverage may be represented rather simply using an individual choice framework.

Voluntary and compulsory insurance can be understood by a simple public choice analysis of collective decisions. However, the first step is to understand the two types of transfers to (and from) individuals: Per-unit and lump-sum subsidies. Per-unit subsidies lower the effective price of the good subsidized whereas lump-sum subsidies are unconditional transfers that increase the receiver's income. Below, in Figure 2.2, the generic individual has an income of y_0 and the price of good q is p_0. The individual's budget constraint is given as $y_0 = c + p_0q$ where c represents the total expenditure on all-other-goods. The optimal bundle chosen is then (q_0,c_0). When the individual receives the

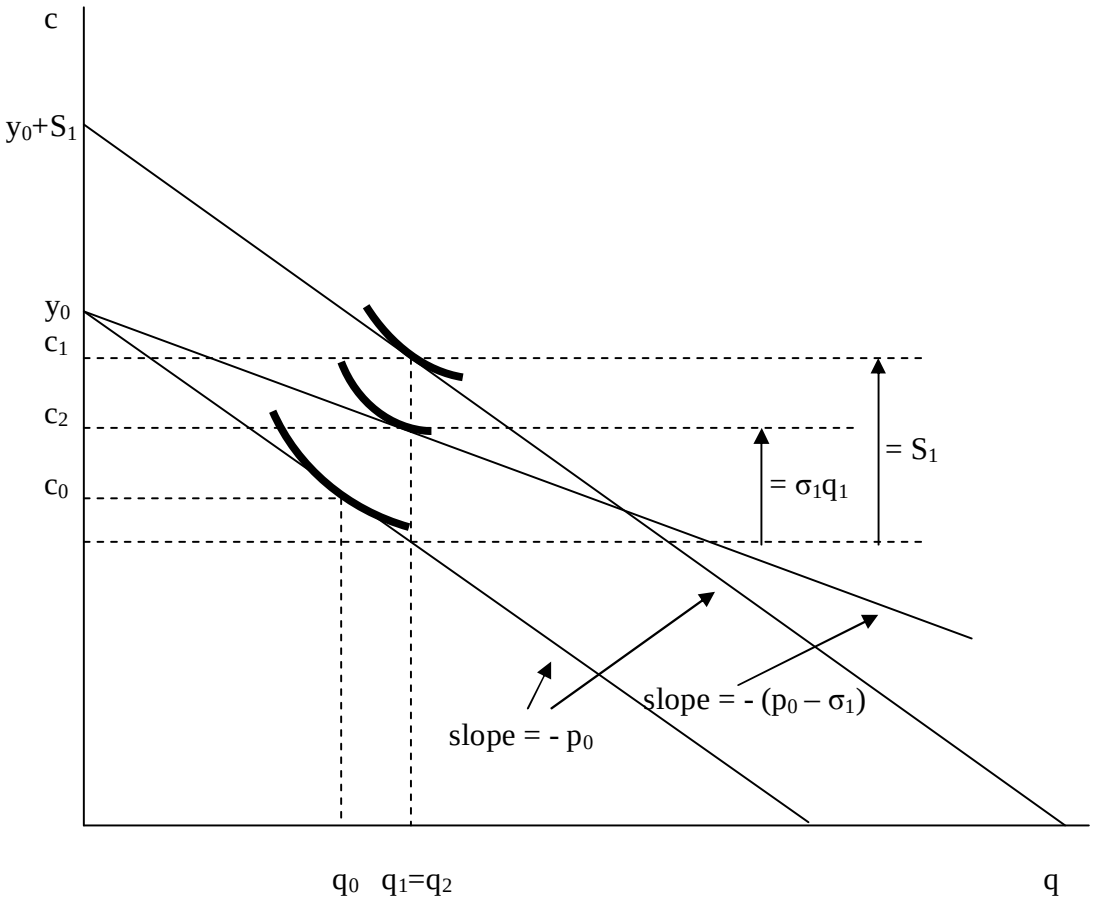

Figure 2.2 Lump-sum and per-unit subsidies

lump-sum transfer S_1, his budget constraint becomes $y_0 + S_1 = c + p_0q$ and the bundle chosen is (q_1,c_1). More of q is chosen because it is a normal good. Needless to say, the composite good c is necessarily a normal good. When, instead of the lump-sum transfer S_1, the individual receives a per-unit subsidy σ_1, the budget constraint becomes

$y_0 = c + (p_0 - \sigma_1)q$ and the bundle chosen is constructed as (q_2,c_2). We then note that, under the per-unit subsidy, the total subsidy reaches $\sigma_1 q_1$, an amount smaller than the lump-sum that produced the same quantity increase (q_1-q_0) for the subsidized good q. Thus the per-unit subsidy produces the desired increase at a lower cost. This outcome is due to the fact that a lump-sum subsidy does not lower the opportunity cost of q whereas the per-unit subsidy precisely does that.

Compulsory insurance results from a collective decision. In reality, there exist broadly two types of compulsory insurance. The first is the requirement that individuals have to purchase some minimum insurance, not necessarily the same coverage. Usually known under the title of social insurance, various examples can be found in Europe, from German sickness (or better described as solidarity) funds to Dutch hybrid insurance markets and Swiss private insurance markets. The second variety is public insurance where coverage is identical for all, with different varieties according to complementation and supplementation rules. For example, with no supplementation but unconstrained complementation, the Canadian system is one example whereas Britain and Australia exhibit different supplementation and complementation rules. The US Medicare can be interpreted as falling into the same category.

As depicted below in Figure 2.3, compulsory insurance is a collective decision. On the diagram, the level provided is q_M^0. Since the system is required to serve three users L, M and H, three units of service have to be provided. Given the unit price p_0, the total provision costs $3p_0q_M^0$. We note that, by construction, $p_0q_M^0 = {}^1/_3 y_M$. whereas the total cost of provision $3p_0q_M^0 = 3({}^1/_3 y_M) = {}^1/_3(y_L + y_M + y_H)$. Thus ${}^1/_3$ is the required income tax rate to finance the system.

Given that each individual consumes q_M^0 and is taxed at the rate ${}^1/_3$, their bundles are respectively $(q_M^0, {}^2/_3 y_L)$, $(q_M^0, {}^2/_3 y_M)$ and $(q_M^0, {}^2/_3 y_H)$. If these same individuals were free to purchase q in the market, their bundles would have been (q_L^0,c_L^0), (q_M^0,c_M^0) and (q_H^0,c_H^0) where $c_M^0 = {}^2/_3 y_M$.

The social consequences of public insurance are favourable (unfavourable) to individual L (H) because his utility is higher (lower) due to the lump-sum income transfer under public insurance. Since it is a flat rate (at ${}^1/_3$) taxation system, individual H contributes a higher amount into the provision budget than either of the other individuals whereas L receives a lump-sum subsidy. In Figure 2.3, the high-income individual would have achieved the utility U_H^{PR} on his own in the marketplace yet he remains at U_H^{PUB} as there is no opt-out of insurance. By contrast, the low-income individual could only have achieved the utility U_L^{PR} on his own in the marketplace yet he achieves U_L^{PUB} under public insurance with the transfer from individual H.

Of course, as to why q_M^0 is the level of provision requires an explanation. In this community of three individuals endowed with majority voting, the level of provision q_M^0 would always win against any alternative by two votes to one. The high-income voter would prefer q_M^0 over a lower level of provision whereas the low-income voter would prefer q_M^0 over a higher level. Thus various proposals would have to locate very close to

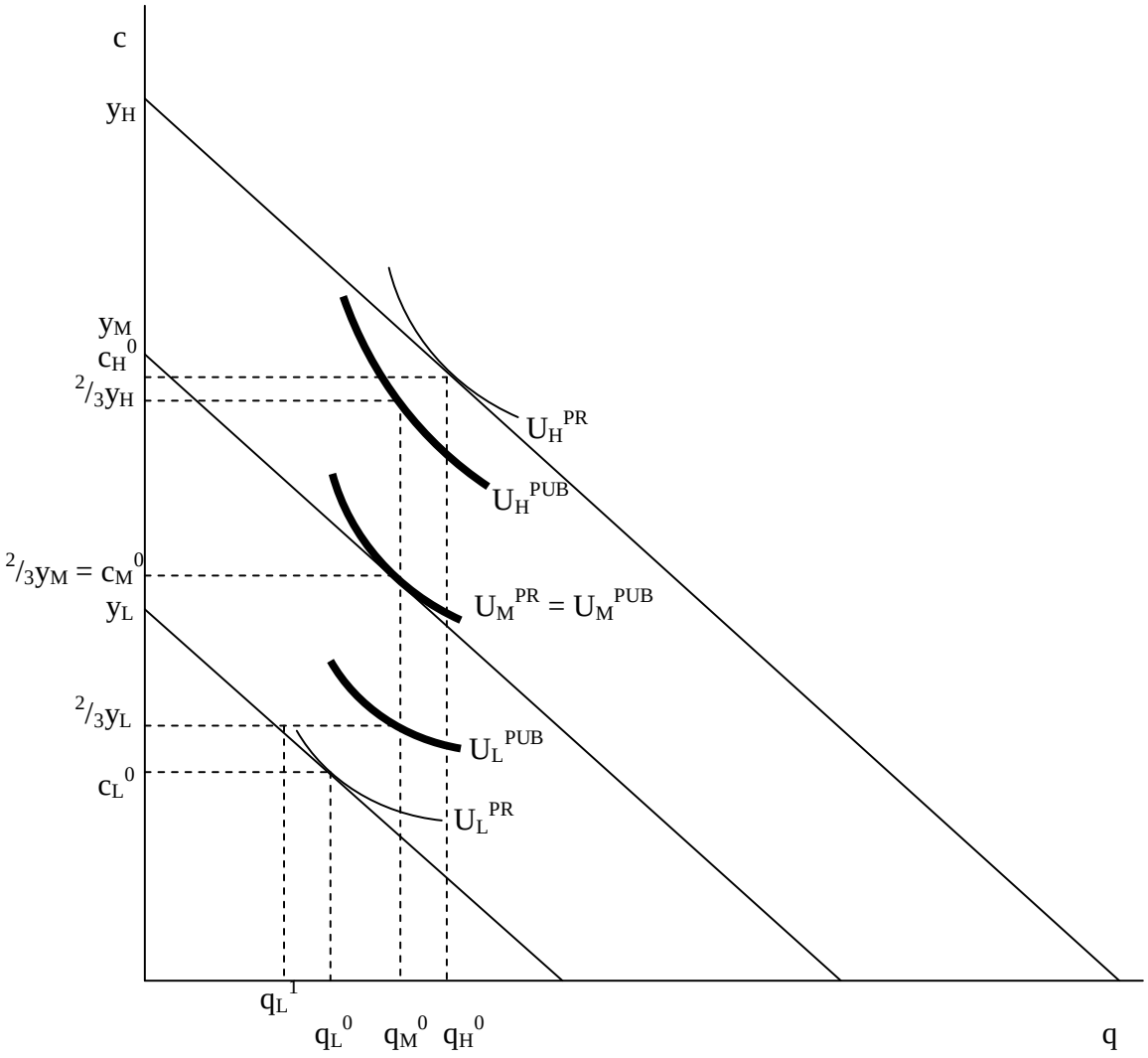

Figure 2.3 Public provision and political equilibrium

q_M^0 or risk losing. In public choice analysis, this simple observation is known as the median voter theorem. Given this collective choice, as resolved by majority-voting, high-income voters are left wanting for more, ready to opt out of insurance or supplement (top-up) the level offered under public insurance. Yet, low-income voters achieve a bundle outside their budget constraints by virtue of the transfer. With one-third of their incomes allocated to q, low-income voters could only afford to buy the quantity q_L^1. Figure 2.4 below (where, for clarity's sake, the tax rate is constructed to be one-half) represents the incentives faced by high-income individuals. The bundle (q_M^0, ½ y_H) in Figure 2.4 corresponds to (q_M^0, $^2/_3 y_H$) in Figure 2.3. Since, by normality of q, the high-income individual prefers (q_H^0,c_H^0) over (q_M^0, $^2/_3 y_H$) in Figure 2.3, (q_M^0, ½y_H) is not the preferred

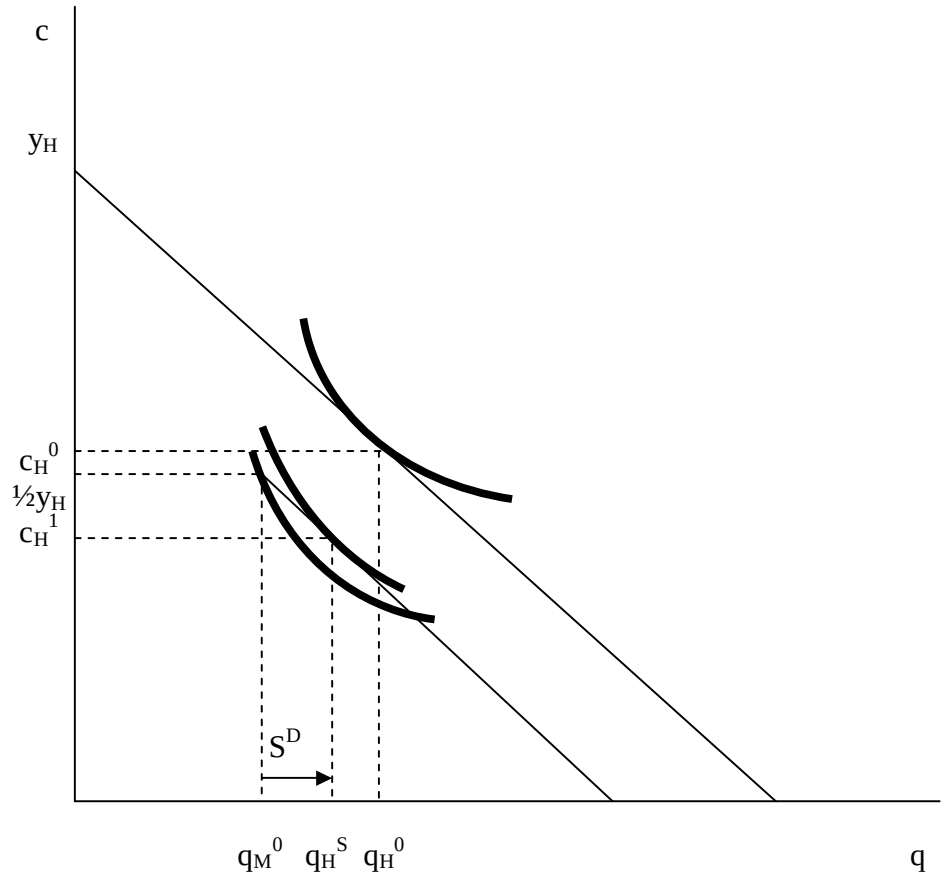

Figure 2.4 Public provision, opt-out and supplementation (S)

bundle, in Figure 2.4, i.e. at $(q_M^0, ½y_H)$ the high-income individual's marginal willingness to pay, as given by the slope of his indifference curve, exceeds p_0, the slope of the budget constraint starting at $(q_M^0, ½y_H)$ as imposed by public insurance and representing the opportunity cost of q. The high-income individual would, short of enjoying the freedom to choose (q_H^0, c_H^0), would prefer supplementation (or top-up) up to q_H^S or the bundle (q_H^0, c_H^1). Thus, in addition to the healthcare tax $½y_H$, the high-income individuals would spend the amount $p_0(q_H^S - q_M^0) = c_H^1 - c_H^0$ on supplementation. The quantity demanded of supplementation is denoted by S^D in Figure 2.4.

This top-up demand lies at the source of the impending political pressure by retiring baby-boomers in Canada and elsewhere whenever public insurance is restrictive enough to ban supplementation (Courchene [2003]). For such groups, top-up (through supplementary insurance or by plain out-of-pocket payments) is somewhat an alternative to opt-out while for the society as a whole it may serve as an allegiance preserving mechanism. However, in particular, availability of supplementary insurance coupled with private provision is often called a parallel private or two-tiered system besides public insurance. We discuss various related phenomena in the next section.

2.4 Systemic organizational issues

The presence of public insurance poses multiple challenges. From the scope of coverage to the dynamics of coverage, a host of issues arise not only due to changing social, political and economic circumstances but also due to technological change, both in medical technology but also in pharmaceuticals. A challenge arising from a need for a change in coverage is the required organizational architecture for deciding on services to be covered by public funds. Of course, any such organizational architecture has to address the twin questions of who decides and by what process (Awad et al. [2004]). As a particular government level or a government agency takes these decisions concerning the scope of the bundle and the process, serious questions arise as to how to build accountability in the absence of market discipline.

There is another facet to public insurance in healthcare. If financing is structured to come out of general taxes, public insurance is also social insurance, i.e. a wider net than health insurance because whereas this latter envisages transfers from healthy to sick social insurance also includes transfers from high-income to low-income individuals, the extent

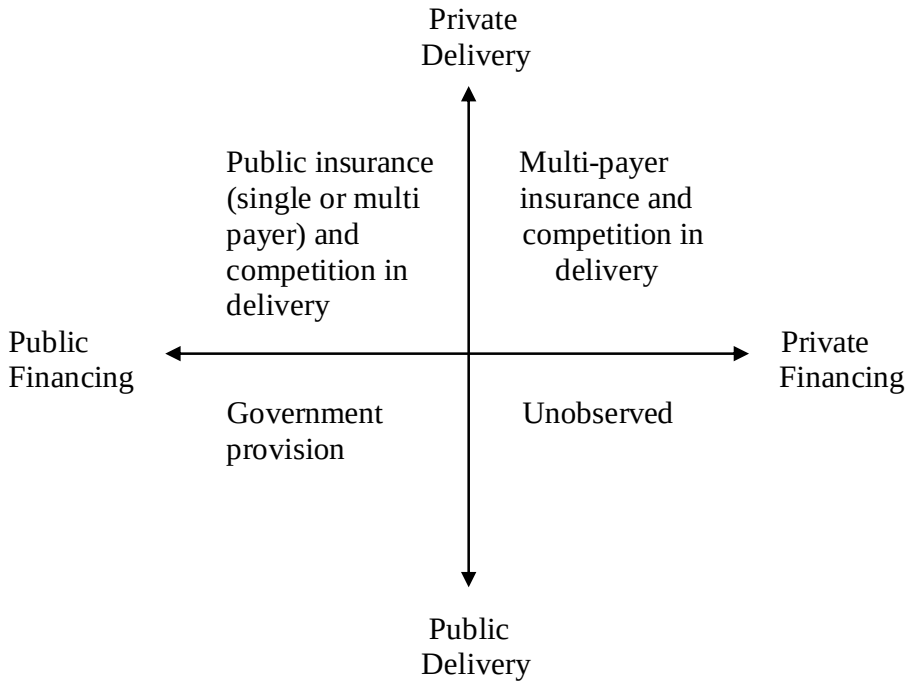

Figure 2.5 Financing and delivery taxonomy

of the transfer depending on the taxation system in place. The fact that this particular aspect does not explicitly appear in Figure 2.5 is another weakness of the simplistic financing/delivery classification of systems. Since public financing is embedded within the given taxation system, this latter imposes the transition from public healthcare insurance to social insurance. Mandated-insurance systems, where individuals have to purchase insurance, are not intrinsically social insurance systems unless supplemented by transfers. The desirability of social insurance (Besley & Coate [1991]) depends on factors beyond the healthcare insurance framework.

An example should illustrate many of the concepts we have just developed. The US healthcare sector exhibits a most complex system. Medicare and Medicaid (Centers … [2009]) constitute large chunks of public financing together with Veterans' Administration that provides healthcare to US veterans. However, the system is mostly privately financed insurance and private delivery but only partially necessarily for-profit. The part of the system relating intimately to our current discussion is the interaction between the public and private insurance provision in the case of Medicare. This fairly comprehensive insurance scheme for seniors is typically a shared program between the federal government and states. It consists of public financing and private delivery. Interestingly, its coverage is incomplete in both breadth and depth, implying it exhibits gaps that can be complemented and weaknesses in quality and quantity that can be supplemented. For these reasons, eligible individuals may purchase Medigap coverage in tightly-regulated markets. This regulation takes the form of strictly commensurable coverage contracts to enable seniors to compare different products easily. Thus Medigap policies consist of both complementation and supplementation of Medicare.

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