Deciding How to Choose the Healthcare System

Olga Shvetsova and Katri K. Sieberg

1 Introduction

The continuing debate in the United States over the form of health care provision is illustrative as to how difficult that choice can be. The choice is further complicated by political activity—lobbyists with a vested interest in various formats—and a noticeable effect from path dependence—people are used to what they have and are afraid of change, and some groups actually stand to lose from change, at least in the short run. What might the decision have been in the absence of these effects? Our paper creates a model to explore this question. In particular, we appeal to insights from Buchanan and Tullock (1962), Rawls (1971) and Kornai and Eggleston (2001) to ask what type of health care provision would a polity choose from behind the veil of ignorance, and what type of mechanism—unanimity (constitutional) or majority (legislative) would they prefer to use to select it?

The selection of a health care system is a highly charged subject. Health care is a service that is expected to be used by everyone at least once in their lifetime, and because access to health care can make the difference between life and death, many argue that health care should be a right. However, the situation is complicated. Health care is expensive, and improvements in technology—while improving outcomes—also make it even more costly (Newhouse 1992). Thus, debates focus on which type of system would best provide health care at efficient costs, and what tradeoffs are associated with which systems. Many, including Pauly (1986), and

O. Shvetsova (✉)
Department of Political Science, Binghamton University, P.O. Box 6000, Binghamton, NY 13902, USA
e-mail: shvetsova@gmail.com

K.K. Sieberg
Department of North American Studies, University of Tampere 33104, Tampereen Yliopisto, Finland
e-mail: katri.sieberg@uta.fi

Klarman (1969) among others, assert that the market is the best way to induce efficiency in health care consumption. Here, cost control is the main objective. They appeal to the effect of prices to reduce surplus demand—noting that without this incentive, health provision will become overly costly. Klarman states,

> After considering several possible explanations, the hypothesis is advanced that health insurance may enhance one's taste for health services and permit one to indulge in it as the risk of large, unexpected, and unwanted bills is eliminated. (1969, 557)

Others (including Enthoven (1993); Fuchs 1996) argue for a highly regulated form of private insurance to avoid inherent problems in private provision—among these, lack of universal coverage. Hsaio (1994) and Sieberg and Shvetsova (2012) argue that if universal care is a goal, then private coverage will be more, not less costly.

Given the range of the debate among social scientists, it is interesting to consider what system would be chosen if given an opportunity to do so outside of the prior social context. Further, from an institutional perspective, we explore how the selection mechanism itself would affect that choice. Appealing to the logic of Buchanan and Tullock (1962) and Rawls (1971), we show that under unanimity, a polity would select an entitlement system of health care provision, and under majority rule, the same polity would opt for private provision. Behind the veil of ignorance, a polity would select unanimity as the selection mechanism in order to minimize overall cost to society.

One noteworthy aspect of our model is that although it is motivated by decision making over health care systems, it is not limited to that particular case. Instead, the model extends to apply to a certain case of collective actions problems. In typical collective action problems, society would be better off under cohesive support for one policy, but individual self-interest can lead to suboptimal provision. The twist for this particular set of problems is that this self-interest is bolstered by median voter awareness that 1. The polity is unwilling to allow the suboptimal outcome to occur, and 2. The median voter herself is unlikely to bear the added costs associated with choosing the suboptimal policy while nonetheless enjoying the benefits of the 'rescue' with regard to the outcome. In addition to the selection of health care systems, arrangements such as the Glass-Steagall Act (and the FDIC),[1] universal education provision, pollution control, among other issues, can be addressed through this analysis. We argue that in cases involving this particular version of the collective action problem, unanimity is the ex-ante preferred mechanism to make decisions.

1.1 Buchanan and Tullock

In *The Calculus of Consent* (1962), Buchanan and Tullock ask the same question as those debating the reorganization on healthcare in America are raising on both

---

[1] We are grateful to a reviewer for this suggestion.

sides of the controversy: "How shall the dividing line between collective action and private action be drawn?" (p. 5). Since, unlike the current debaters, Buchanan and Tullock offer a theory as their answer and not a prescription to cure all ills, their theory can be applied and we do so here.

Specifically, Buchanan and Tullock's theory of constitutional choice consists of two main components: they define a constitution as a delineation of which decision rule to apply to each policy area, and they propose to start with a premise that the constitution itself is arrived to by unanimity. Faced with healthcare as a policy area then, their approach is to: 1) unanimously choose which decision rule to put into the constitution for 2) making fundamental decisions on healthcare policy (we can suppose that the particulars of policy implementation can be delegated to the bureaucracy).

When it comes to defining a feasible set of decision rules, their approach is general, and they allow any fraction of the population to potentially be deemed decisive on an issue. While not claiming that they model any actual constitutional process, Buchanan and Tullock illustrate how various constitutional provisions are in actuality the decision rules of the format of "the fraction of the population." Of specific interest is their explanation of how one would model the Bill of Rights in this way: a right is a policy issue which can only be decided by unanimity, they say. Indeed, with any right, an individual is in a possession of her initial endowment of it (e.g., of free speech, or of property of some land). It is a matter of the society or some of its subsets wanting to expropriate that endowment that the constitution must address. So protecting the right means setting such a decision rule for that issue that expropriation can occur only with the consent of the person who possesses the initial endowment. Unanimity, with a blocking coalition of one, is the unique decision rule satisfying this requirement.

Another type of a decision rule common in constitutions is simple majority. Simple majority has the advantage of generating just one decisive coalition for each decision, whereas deciding by a specified-size minority has a potential for simultaneous existence of two or more decisive coalitions promulgating conflicting policies.[2] Realistically then minority decision rules fall in a category of federal or autonomy provisions, with *majoritarian* procedures, but instituted within constitutionally specified minorities.

In a constitution as it addresses the polity at large, then, options for deciding in policy areas range from simple majority, to super-majorities, and all the way to unanimity. To capture the constitutional process of Buchanan and Tullock, Fig. 1 takes just the extremes of the feasible set of decision rules and for a given policy issue sketches the sequence of decisions.

By backward induction, in order to know which decision rule would benefit her most, an individual at the unanimous constitutional stage needs to compare expected utilities from implementation of policy decisions which would be made under each

---

[2]Note however that majoritarian coalitions in representative bodies elected by majority in districts can reflect but a minority support in the electorate, in the extreme speaking for "50 percent of 50 percent."

Fig. 1 Logistics of
institutional choice according
to Buchanan and Tullock
(1962)
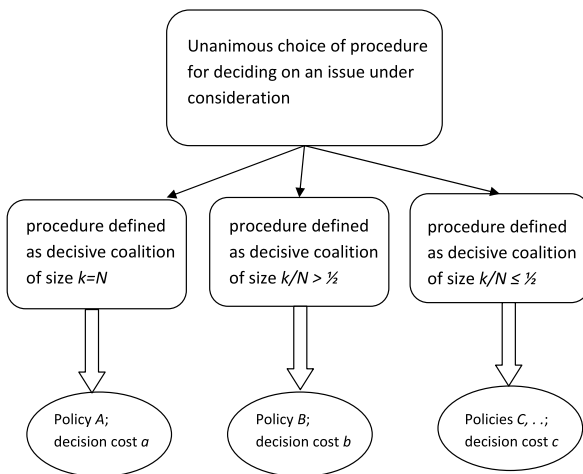
feasible procedure. This directly reflects the theory of Buchanan and Tullock: constitution is a unanimous choice of rules where we proceed from their expected consequences and select by backward induction.

1.2 Rawls

Unanimity, of course, is problematic because it can so easily lead to the inability to decide or, in Buchanan and Tullock's terms, to the cost of decision making becoming prohibitive. Indeed, under unanimity, each individual is a blocking coalition, and if they want different things, bargaining can be endless and even futile. Buchanan and Tullock suggest resolving the difficulty through agreeing on utility transfers and bargaining over the amounts of those transfers. That approach however works only in an ideal environment of perfect enforcement where one can be assured of receiving the utility transfer just as was promised at the bargaining stage. But in any realistic setting the commitment that the future winner from a policy would then (upon having won) share the benefits with the losers cannot be credible, and this knowledge would prevent the expected losers from entering any such contract. Promise of utility transfers made at a policy making stage might just as well be excluded from consideration once contract enforcement difficulties are taken into account. This makes unanimity as a decision rule impractical. Indeed, unanimity seems to work best when we want something *not* to happen, such as when we want a right not to be violated or entitlements withheld. But when it comes to reaching an active consensus, conflicting preferences present an insurmountable difficulty, which does not bode well for the constitutional stage as in Buchanan and Tullock (1962).

Rawls (1971) introduces an assumption which allows the unanimity rule to produce a Buchanan-Tullock style constitution successfully: in order for the individuals

to be able to decide unanimously, they must decide as one. Literally, the decision-making process of each person must be exactly the same and incorporate identical inputs as everybody else's—we need a society to be comprised of individuals who are similarly uninformed about their positions in the future distributive processes which the constitution will regulate. In Rawlsian terms, at the meta-constitutional stage individuals decide behind the "veil of ignorance" and find it easy to think alike because they are in fact alike. Rawls makes de-facto additional assumptions about the risk-aversion of these individuals by invoking the maximin solution concept (thus his individuals are extremely risk-averse), but that assumption is needed only in order to lead to the specific constitutional outcome of interest to Rawls. If we keep an open mind with regard to what a constitution might be, his first, minimalist assumption that individuals are similarly uninformed about themselves, i.e., have identical beliefs, including about their risk-aversion, is sufficient for each individual to have the same preferences over institutional options and thus for the unanimity procedure to bear fruit.

If Rawls' framework can be accepted, then it could be argued that any individual, when properly deprived of identifying information, would know exactly what the decision rule should be for a particular policy area. Whether we see this theoretical construct as an appropriate approximation for the choice of the decision rule for a specific policy area depends very much on that policy area. On some issues it is easier to imagine that individuals do not know their type than on others. Things that will need to be weighed in when determining how far behind "the veil of ignorance" individuals remain with regard to their future gains or losses from the policy would include the issue-specific mechanisms by which the types of individuals become revealed, including the utility function and the technology of the provision of the good in question. We will return to the discussion of the Rawlsian assumption as it applies to healthcare when we describe the model below.

1.3 Kornai and Eggleston

Looking for the basis on which to ground the model's assumptions about the preferences of actors on the issue of interest—the safeguarding of health and life—what can one say about the social demand regarding healthcare outcomes? Can we discern at least some consensus for what could be viewed as a long-term social welfare function for healthcare? It turns out that the answer may be a very cautious "Yes." Kornai and Eggleston (2001) posit that, at the very least,

(1) people do not want a poor person to die from a disease from which a rich person would not have to die with standard medical treatment, and
(2) people do not believe that a sick person must pay more for basic necessary care than a healthy person (Kornai and Eggleston 2001, p. 50).

It is, of course, ultimately an empirical question whether or not individual preferences are aligned according to these assumptions. It is possible that different societies correspond to Kornai's postulates to different degrees. We adopt these two

assumptions here, on the grounds of their theoretical appeal and based on the initial empirical validation in classroom experiments at the University of Tampere and Binghamton University in Fall 2010 and Fall 2012.

The two assumptions above sketch the popular consensus within the principal in favor of a social welfare function with the following characteristics:

– If it came to a life-threatening emergency, the principal will prefer to pay to apply accepted life-saving treatment, and
– The principal prefers not to withhold the public subsidy for the care of the more sick (whose care is more expensive) by the less sick (whose care is less expensive).

These presumably are the common preferences of every citizen in a society and thus are unanimously held at the constitutional stage. It is these preferences that designate our problem into the special class of collective action problems. Individual self-interest can lead to suboptimal provision under majority rule, and yet the polity is unwilling to let individuals suffer the consequences.

2 Actors: The "Society" and the "Patient"

Thinking about the process depicted in Fig. 1 above as a choice of a contractual mechanism where the society in some form functions as the principal, we observe that an individual—a patient—becomes the society's agent to whom the legislation assigns however many or few responsibilities for organizing her own healthcare financing.

Another observation to draw from Fig. 1 is that "society" is too general a term within this framework, because individuals who comprise it make decisions under different rules of aggregation at different junctions and experience changing levels of information as the process unfolds. We thus need to be more specific and identify the "society" in its varying incarnations as separate players. At the Rawlsian stylized "constitutional" stage, not knowing yet whether one will be rich or poor, healthy or sick, all individuals are as one and they share these preferences. If they were also maximin players (Rawls 1971), and so sought to avoid the worst possible turn of event, they would compare the alternative choice structures from the point of view of the most destitute member of the society. Thus when we assign payoffs for the ex-ante principal, we assign the minimal level of payoff achieved by any of the three principals. The payoffs of agent-patients may be even lower, but we ignore that in order to avoid building our argument on a tautology that the principal produces a certain policy because as an agent he would suffer the least under that policy.

This approach allows us to view the choice of the decision body which then chooses the healthcare policy as delegation to a sub-principal of the full principal, or, alternatively, as relying on a super-agent of the full principal. The principal's preferences over who to entrust with the drafting of the healthcare "contract" will then simply depend on the comparison of the implementation outcomes of the contracts which maximize the respective utility functions of the appointed sub-principal (super-agent) which acts on the society's behalf.

In addition to the Constitutional principal and the policy-setting principal, there is also the stage of implementation of the policy, and the contract enforcement at the implementation stage is also conducted by the principal or some authorized representative thereof. If, for example, a patient has no assets to cover a life saving or life extending treatment, it is up to the medical provider on site to deny her care if that is what the contract calls for, and a doctor or a hospital in that case unilaterally represents the societal principal.

In a sense, we have three different personifications of what colloquially is treated as the same actor in matters of welfare provision. Multiple personifications however imply separate actors with distinctive preferences and potentially conflicting interests. Our model exposes the implications of these conflicting interests within different institutional structures.

The three types of actors representing the societal principal are labeled below as EAP, IP, and PP. An Ex-ante Principal, EAP, acts at the constitutional stage. An Interim principal, IP, depending on the constitutional choice, can be either majoritarian or by unanimity (IPM or IPU). Notice that the by-unanimity interim principal is comprised of the same people but differs from the ex-ante principal by the level of information that members of the society have about their own types and the distribution of types in the population. Finally, at the implementation and enforcement stage, there is the Ex-Post Principal, PP.

All four (counting both IPM and IPU) actors representing the principal, we claim, share the basic preferences as postulated by Kornai and Eggleston (2001) which we discussed above.

2.1 The Ex-ante Rawlsian Principal

Rawls's premise and Kornai–Eggleston's assumptions have been historically appealing to scholars of political economy. Hayek has argued as far back as 1945 that:

> There is no reason why, in a society which has reached the general level of wealth ours has, the first kind of security should not be guaranteed to all without endangering general freedom; that is: some minimum of food, shelter and clothing, **sufficient to preserve health**. Nor is there any reason why the state should not help to organize a **comprehensive system of social insurance** in providing for those common hazards of life against which few can make adequate provision. (emphasis added, Matthews 2010)

Fuchs (1996, 16) also states that medical care meets Adam Smith's 1776 definition of a necessary—in that it is necessary to sustain life and that it is indecent for even the lowest people in society to be without it.

Insofar as the total (or average) cost of the policy is concerned, we assume that the constitutional principal, EAP, prefers it minimized as long as acceptable outcome is achieved with regard to care. Provision of healthcare at some level viewed as adequate is the first priority, while cost-minimization is secondary. We stay away from

Table 1 Utility functions of the four types of principals

	Minimal adequate care	Personal tax burden	Societal cost (average tax burden)
EAP	Yes		Yes
UIP	Yes	Yes	
MIP	Yes	Yes	
PP	Yes		

the discussion of whether it is possible to view as minimally adequate a level of care that the society cannot afford (there is research to suggest that the notion of what is adequate may vary, to a point with the societal wealth, see Attfield (1990), Blank and Burau (2006), Howell and McLaughlin (1989)). Also, given the Kornai–Eggleston assumption of lexicographic preference for basic care provision, we do not include in consideration any surplus care beyond what is minimally adequate and make no additional assumptions about individual and societal preferences for that.
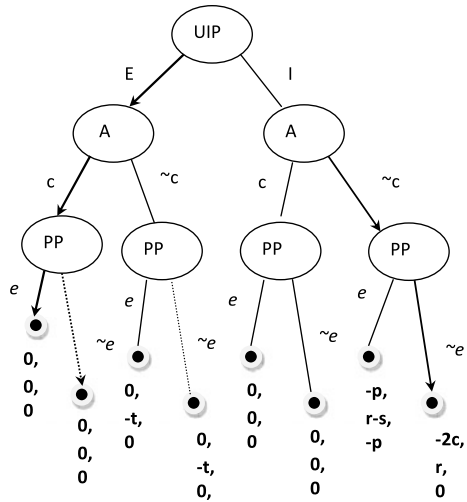
Table 1 summarizes the composition of the EAP's utility function, and also highlights the distinctions in the utility functions of the actors-principals. We elaborate on these differences below.

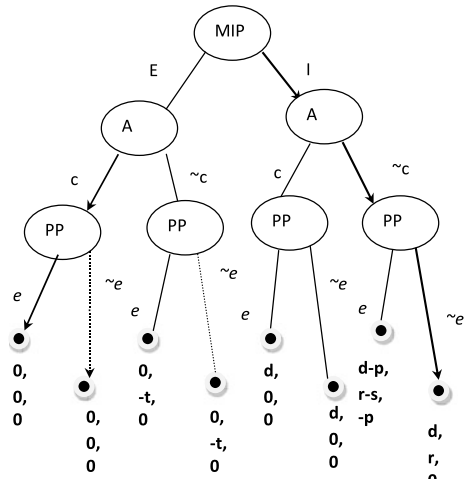## 2.2 Interim Principal—The Policy-Setting Body

Our interim principal is a coalition of individuals in the society of the size and composition as empowered by the constitution to be decisive on the fundamentals of the healthcare policy. It chooses the contract with the agent-patient which constitutes the healthcare policy. The choice of the contract/policy can take place anywhere from a constitutional body or a referendum to a legislative chamber or even the local government, depending on the rules in place. Importantly, only under unanimity, the set of members of the decisive coalition for policy is fixed at the outset as the entirety of the society. Under all other rules, the membership of the decisive coalition is endogenous to the policy choice and thus a pair: (specific policy choice; specific make-up of the decisive coalition) must be an equilibrium outcome of the interaction according to the rules of the decisive body.

In Fig. 2, we compare side by side the process of policy making and implementation where the venue for policy choice is a constitutional (unanimous) body versus a legislature with simple majority rule (the UIP or MIP respectively). Be it unanimous or majoritarian, the interim principal offers the patient/agent a contract of some sort. The contract might be: "we are going to automatically withhold a portion of yours and everyone else's earnings, and in return we assume the responsibility for taking care of your health." Something like that would effectively mean the entitlement single-payer system. Or a contract might read: "You can buy as much health coverage as you choose, either directly from providers at point of service, or by means of purchasing a specific amount and type of health insurance. You will be provided only with the services which either you or your health insurance can finance and

(a)

(b)

nothing beyond that, regardless of your health needs." This would be the contract behind an ideal type of a pure market private insurance system. In the model in Fig. 2 we limit ourselves with these two extreme types of policy choices, though in practice the full range of in-between options might also be available. While all contracts have their implementation issues, below we show that the latter is fundamentally non-enforceable, yet even knowing it to be non-enforceable, decision bodies of certain types would choose to adopt such a contract.

The utility function of a citizen as a member of an interim principal is more specific than that of the EAP in regards to which costs become the part of the calculation. Notice, that the contract/policy necessarily must include the a) the funding

principle, b) the level of services (only covered or all that is necessary), and, c) also must stipulate the fallout provisions, as in what to do when there is a cost overrun. We claim that such provisions are indeed in place, through the access to the general state budget, and that they are implied within the broad constitutional framework of the state. We will thus assume that any shortfall which might arise from enforcement failure is made up from regular taxation, where the general tax burden is allocated via the majoritarian process. From that our actors who know what share of the tax burden they bear can form expectations about the share of the cost overrun that will fall on them if the enforcement of the contract/policy fails.

2.3 Ex-post Principal at the Contract Implementation Stage

At the time of enforcing the market-type contract/policy, the ex-post principal is a citizen in a position of authority who acts on the society's behalf, such as a doctor or administrator in an emergency room where an uninsured patient shows up. This individual then has to make a decision on whether or not to treat the patient who is in breach of a contract. It has been long claimed that at this stage the market-type contract goes unimplemented: though patients cannot pay and have failed to carry sufficient medical coverage, they receive the treatment which ought to be denied to them according to the rules, including treatment for not immediately life-threatening conditions. Providers thus incur costs which they cannot recoup from these patients, and such costs, in one way or another, are eventually transferred to be covered by the society at large, either by overcharging the paying patients or through infusions from state budget. This observation is consistent with our assumption that the principal adheres to Kornai and Eggleston's premises. Specifically, PP holds a preference to treat the patient and to not deny care to the poor which he would be able to offer to the rich. IP, in a position to sanction PP most severely, in turn prefers not to do that because the alternative outcome for the patient—her continued sickness or death— is considered even worse by the IP as well. This could be the last move in games in Figs. 2a and 2b, but we leave it unmodelled for it is redundant given the assumed preference of the principal. This redundant move by UIP or MIP is sufficient to justify the use of state budget to cover cost overrun. The last resort access to state budget follows logically from the Kornai–Eggleston assumptions.

In the model's terms, then, the ex-post principal, PP, has the choice at the last decision node to *enforce* or *not enforce* a contract (in the case of *Entitlement*, the contract is enforced via taxation, so there the move by PP that we show is redundant[3]). These choices, *e* versus $\sim e$, apply under *Insurance* health policy to enforcing the implied "no-care" policy for those without purchased adequate coverage and without sufficient private funds to cover the cost of treatment. Parameter $-p$ in the PP

---

[3]The choice to enforce or not to enforce the "no care" provision reappears where the entitlement is not universal, and might apply, for example, when the treatment of immigrants/non-citizens is concerned.

payoff captures this utility loss from having to deny a patient needed care because of his or her failure to pay or carry insurance. It captures Kornai's premises, and as it applies to every individual in the society, it is felt by the ex-post principal, but it is also present in utility functions of other actors-principals, EAP, UIP, and MIP. They all sustain loss if care is indeed refused to a patient.

The Agent (patient) values her health and wants to receive care if sick. But generally she does not like to bear the costs according to the contract/policy. In reality, the agent sometimes is financially unable, not just unwilling, to bear the cost of a serious treatment or of an insurance that would cover such treatment—but that consideration calls for a separate, normative argument, and so we do not include that possibility in our model. Here, the agent abides by the contract choosing between c (*comply*) and $\sim c$ (*not comply*). To *comply*, depending on a subgame, means either to pay the social tax or buy enough insurance (zero may be enough if no treatment is sought). To *not comply* in a single-payer system requires that the agent stays out of the workforce, and her payoffs reflect that. In a market-type system, *not complying* consists of two components: how much coverage one has purchased and how much care she is requesting. Thus, to *comply* means to ask for care in the amount the patient/agent has covered. To *not comply* means to ask for care in excess of what she can pay for.

The decision to not comply in the Entitlement case is strictly dominated for the agent since it equals non-participation in employment thus escaping universal tax. This is indicated in Fig. 2 by the utility loss of $-t$ due to the loss of wages. Generally, we stay away from the problem of enforcing tax collection, thus de-facto assuming that tax collection is enforced. The same, however, is not the case with *compliance* under the market-based policy. Not buying insurance does not by itself constitute non-compliance, and therefore cannot be punished or otherwise enforced. The contract can be enforced only at the point of service, when denying care to a sick uninsured patient who chose to request care. If the contract is enforced, the agent sustains a catastrophic utility loss from avoidably getting worse, a decline in the quality of life, or from dying. If on the other hand the contract is not enforced by the PP and care is provided, then no such utility loss to agent occurs while no contribution to financing the care is made by the agent-patient.

3 Health-Related Technology and Costs to Actors

3.1 Extra Cost of Delivering Health Care as Emergency Care

In Fig. 2, $c > 0$ captures the financial efficiency loss from substituting emergency care for preventative and regular care. Scholars of healthcare consider it a major objective to determine whether similar health outcomes can be reached with greater efficiency under some medical "technology" compared to others. Specifically, a substantial consensus has developed that investment in preventative measures generates much better returns than that in high-end life-saving medicine (see Halfon and

Hochstein 2002, among others). This effect is potentially explained by the fact that consistent preventative and regular care reduces the instances of having to save lives in emergencies (Institute of Medicine 2002).

If we accept the tradeoff in favor of preventative medicine as efficient, then logic dictates that the principal who is willing to pay for emergency procedures should be willing to pay for the cheaper preventative medicine as it replaces at a lower cost some of the eventual emergency medicine. Put plainly, since we are willing to pay (and are paying) for the latter, we should be willing to replace a part of that with "regular" care, since regular care is cheaper than treating the share of emergencies that it will prevent. There is even a possibility that regular and preventative care may boost the productive resources of the society (Bloom and Canning 2000) and generate a net surplus, thus paying for itself twice.

So combining the premise of preference for saving lives in an emergency with the technological fact that emergency care is more expensive than regular care as its substitute, we must conclude that the principal prefers the outcomes where regular and preventative care is consistently applied.

Summing up the discussion of the aspects of medical technology that affect the overall cost to the principal, we can conclude that the information that we have about the aims in the social welfare function and the cost structure in the medical field lead to the prediction that the overall cost to the principal is minimized when the outcome is that all have preventative and regular care, and when health is financed in a society-wide "insurance" or other redistributive pool.

3.2 Marginal Costs of Healthcare Are Increasing

Technology aspects bearing on the costs to agent/patient add further complexity. Having mentioned earlier the possibility of paying with private funds for care, we mentioned that such funds are unlikely to be available (with the exception of very few individuals) when it comes to urgent need for specialized and critical care. Here is the right place to elaborate why that is the case, and consequently why the financial transfers from the healthy to the sick are a present-day necessity. They are necessary, and it is pure luck that, according to Kornai and Eggleston (2001), the collective principal has preferences consistent with authorizing those transfers.

For almost any individual or family, as the costs of medical innovations and life-saving procedures rise, as is implied by the technological characteristics of medical innovations, the cost of treatment *if* one actually becomes very ill exceeds the ability to pay.

The distinctive nature of healthcare as a good, another technology-related aspect, accounts for the second-order market failure following the first-order market failure as described above. Where with any other good the financial markets would make the resources available, and the price of credit would be bolstered by the strength of the individual's demand for such credit, with financing health this approach fails. This is because in financing healthcare a lender would be financing the "investment"

in the survival and the subsequent earning ability of a sick individual—the greater the demand for funding, the sicker the individual and, so to speak, the weaker the "collateral."

The view that individual savings can become a means of financing health care is similarly fallacious for related reasons. A large number of the sickest patients are sick because of genetic or related to genetic predispositions reasons and thus need expensive care when they are younger than the wage-earning age. Moreover, this view once again fails to account for the peculiarities of health as a good. The costlier variety of health care is demanded by the sickest individuals in a society—by precisely those who encounter additional difficulties in developing their earning capacity in the knowledge-based economy and present high risk as potential hires. And later in life, once an illness strikes, maintaining one's career can be near impossible even for high-earning individuals. Finally, almost a necessary precursor to high earnings in a modern economy is accumulation of massive debt—not savings—during the stage of professional education and early career development, which excludes a large portion of the demographics from the ability to accumulate savings of sufficient size to fund a serious treatment.

A combination of failure to purchase adequate amount of insurance, not having enough ready money, and getting sick and requiring treatment falls in our category of non-compliance with the market-type health contract/policy as in Fig. 2. In our abstract representation, it is up to an individual to decide how much insurance or care to purchase, as long as she does not attempt to receive anything beyond what she paid for. In other words, one can look at the situation from the following angle: *asking* for treatment for which you are not eligible under this form of the social contract is what constitutes non-compliance by the Agent (patient).

3.3 Is Consumption of Healthcare Peculiar?

The next question that we need to ask ourselves as we generate the payoff functions for our model is to what extent and when is the demand for healthcare elastic? Pauly (1986) revisits the application of the economic model of insurance to health care to argue that tax subsidies to health insurance create incentives to overuse health care. He argues that moral hazard plays a strong role in medical insurance. Here, moral hazard can either occur when the presence of health insurance causes the insured person to spend less on preventative care—i.e. to take greater risks because the of certainty of coverage in the event of an illness—or it occurs when the purchase of insurance causes a person to spend more to treat an illness than that person would have spent without the insurance. (1986, 640) As an example, Pauly cites data showing that people who are insured for only part of the year use ambulatory care twice as much while insured than while uninsured. (1986, 636). He assumes that the relative lack of care while uninsured indicates the true value of health care for this group—thus the care consumed while insured constitutes overconsumption.

The moral hazard notion has a number of critics. A RAND corporation experiment notes that high levels of co-pays for health insurance will induce people to use

less health care, but not necessarily in an efficient way (Gladwell 2005). Many of the services they neglected were necessary and using them could have decreased, rather than increased, overall costs. In a popular article, Gladwell (2005) thus portrays the real-life choices many lower income people make in health care consumption:

> Steve uses less health care than he would if he had insurance, but that's not because he has defeated the scourge of moral hazard. It's because instead of getting a broken bone fixed he put a bandage on it.

Gladwell's numerous colorful examples show that, rather than revealing low utility for health care, many choose not to purchase health insurance because that purchase would make it impossible for them to purchase anything else. If this is the case, then we must be careful to not let concerns regarding misuse of medical care be inflated in assessing efficiency.

This elasticity, manifested in reduced demand below some basic level of necessary care due to agent's inability to pay, is contrary to the principal's preferences, and therefore a decrease in demand for these reasons decreases the principal's utility, costs notwithstanding. And it might not even reduce the costs: Currie and Gruber (1996) explore the effects from the extension of Medicaid services to a larger proportion of people. They note that, consistent with Pauly's findings, following the increased opportunity to use health services, a larger number of people made use of them. They also note that this use was beneficial—child mortality decreased significantly. In terms of efficiency, they argue that the cost per life saved was lower than the typical "value of a human life"—or that the benefits of the Medicaid extension were higher than the costs. This is consistent with the claim that access to regular care is less costly than reliance only on emergency care.

Another aspect of moral hazard with agents-patients arises when they do not put enough effort in preventative care and so eventually run up the cost of treatment by developing advanced diseases or acute problems. However, since they are unlikely to delay seeking treatment when they have coverage as compared to those who are uninsured, this possibility merely has the potential to wipe out some of the cost gains. Yet one more instance of moral hazard is when patients fail to select the cheaper and more efficient providers and treatments out of available alternatives. This can be addressed by incentive schemes in a straightforward way. To encourage the use of preventative care which may be personally costly in terms of time and effort, the principal may choose to reward desirable behavior of individuals. When it comes to encouraging economical use of health care resources, health care structures must provide incentives.

4 Health Policy Choice: Entitlement Versus Market (Insurance-)Based Contracts

We simplify the field of healthcare provision mechanisms to two stylized policy extremes between our policy makers who will be choosing using their constitutionally decided decision rule: the entitlement mechanism with automatic flat tax

versus fully individualistic purchase (of either healthcare of health insurance). The Entitlement policy is the single payer guaranteed basic care provision funded with a universal tax on all workers (a system like the funding of Medicare and Social Security). The single payer system generally collects taxes from the population and uses that money to fund universal health care for its population. On the one hand, it maximizes the size of the risk pool, and on the other hand it requires making resource allocation decisions that would allow the resource expenditures over the entire population to fit within the budget constraint. Both of these aspects of the *Entitlement* policy choice are outside of our analytical framework here. We do not rely in our conclusions on assuming that population wide risk pool improves financial solvency of the system, nor do we address the decision by the principal of what healthcare services and under what circumstances must be provided to each person.[4]

4.1 The Model

Our model analyzes the choice of policy coverage using backward induction. In Fig. 2a, we depict the choices made using unanimity rule. In this situation, the UIP must decide between health care as an *entitlement*, *E*, or through private (*insurance*) purchase, *I*. Next, the Patient/agent, A, either *complies* (*c*) or not ($\sim c$) with the requirements of either coverage scheme. Finally, the PP chooses whether to *enforce* (*e*) or not ($\sim e$) the rules of the given coverage scheme at point of service.

Moving now to the stylized model of constitutional and policy choice, payoffs in Fig. 2 to all three actors-principals reflect their preferences for delivering health benefits according to Kornai and Eggleston (2001). The other model's necessary component is the allocation of costs within the principal, and payoffs to EAP, UIP, MIP, and PP reflect those costs as they are born by each particular type of a player. A contract that the principal chooses consists of a funding scheme and of the guarantee of the delivery of the good (healthcare), which may or may not be a function of the agent's contribution to funding. Due to the lexicographic preferences in the polity, the budget constraint within the health policy area is soft and provision does not have to cease when designated funding is depleted.[5] This is not an ad hoc assumption but follows from the presumed preferences of the PP and the nature of the enforcement process. In short, it is this assumption that identifies the particular case of collective action problems that we address.

In this essay we choose to treat the soft budget constraint in regard to health as an assumption, but it could be viewed a part of an equilibrium strategy of the principal who, among other things, could be asked to decide whether or not to hold the budget

---

[4]For arguments regarding the relative efficiencies of single payer versus private insurance systems, see Sieberg and Shvetsova (2012).

[5]As noted by a reviewer, the terms 'soft constraint' appears to be an oxymoron. We use the term here to distinguish between the intended constraint on health care spending determined by private purchase and the extra spending, that must covered by taxation, because the principal is unwilling in the end to let the people pay the price for their own decisions.

constraint as firm at a price of human lives or health. The source of additional funds presumably is the national budget, where the budget constraint is firm but one could allow for borrowing against the next period or redistributing from other spending areas.

Thus, to make up for the potential shortfall in the area of healthcare, in parallel, and in the background, there is a nesting policy of general taxation addressed in the extant literature discussed in the next section. General taxation to cover any care that was provided but not purchased, we here assume, is always decided by majority.[6] Thus we can fall back on the results on the median voter tax preferences.

Constitutional choice for policy procedure that we model applies only to the area of healthcare. But actors in their decisions are cognizant that it takes place under the expectations generated by majoritarian general taxation and this factors into their expected payoffs. We show that the majoritarian procedure leads to exploiting the state budget in lieu of designing an efficient policy-specific financing mechanism. The combined (health policy-designated budget, plus cost overruns covered from general taxation) funding mechanism will be more equitable if the decision is made by unanimity, and will end up more redistributive when the decisive coalition diminishes in size (e.g., under majority). This is because when the contract is designed by (ex-ante) unanimity (as in the case of UIP in Fig. 2a), there does not exist a minority outside the decisive coalition which could be legally obligated to disproportionately finance the policy (or as may be the case in the US, its cost overruns), so every person will have to agree to bear a part of the burden.

4.2 The Median Voter Theorem and Majoritarian Taxation

While the taxing decision is not included in the extensive form in Fig. 2, it is certainly implied and must be accounted for in the payoffs of the interim principals both in Figs. 2a and 2b. Under a private insurance system, individuals will purchase a certain amount of coverage, beyond which they should not get treatment. However, there is a contingency where the ex-post principal will not deny treatment in the case of need. If, ex-post, these unfunded expenses are covered from general taxation, agreed on by majority rule, then majority preference over healthcare policy that generates budget overruns will depend directly on how much of this excess burden is borne by the median voter.

Scholars of fiscal policy (see, e.g., Meltzer and Richard 1981, 1983) rely on the premise that median income is way below the mean of the income distribution and thus redistributive taxation by majority is enabled. The voluminous body of literature predicts it to be placing the chief burden of taxes on the wealthy minority. In a population with an income distribution that is skewed towards the left, the

---

[6]In general, taxes can be used to fund a host of services, projects, redistribution schemes, etc. To avoid complication, we merely address the issue of taxation to finance extra health care spending here.

median voter has a lower income than the mean voter. This voter, then, has more incentive to demand redistributive taxation (see Rosenthal and Eibner 2005, Nelson 1999) because she bears less of the burden. Holcombe and Caudill (1985) show that the median voter can bear no tax burden at all. In this case, the median voter prefers an insurance system in which she pays only for her own insurance, and wealthier voters pay for the care of those who need care beyond their level of coverage. If this holds, then a healthy median voter would pay less under an insurance scheme than with *Entitlement*; thus her payoff for *Insurance* is d which is greater than or equal to the baseline payoff of 0. This idea is consistent with other research on the link between the median voter's tax share and social spending. For example, Corcoran and Evans (2010) find that a reduction in the median voter's tax share induces higher local spending on public education. Thus the expectation of the majority coalition on the dimension of general taxation is zero personal contribution to paying for the cost overrun on healthcare.

4.3 Median Preferences on Healthcare Policy

The next step to identifying the payoff to MIP is to see what the median on health-care dimension expects to pay and to receive. Adding the premise that the distribution of health is skewed similarly to that of wealth but in the substantively "opposite" direction, we assume that the mean "level of sickness" is above the population median, meaning that most healthcare costs (due to the costly specialized care and severe disability maintenance) are demanded by a relatively small minority of the population.

As an illustration, consider a hypothetical example with binary types in the population on each dimension. Suppose, to keep it simple, that individuals who comprise the principal at the interim stage know their health type as well as their wealth type, and the probabilities are .2 of the wealthy type on the dimension of wealth, and .2 of the sick type on the dimension of health. Then the joint distribution in the voting population deciding on healthcare policy given that cost overruns are made up from general taxation becomes as in Table 2.

Notice in the illustration in Table 2 that in this rather extreme case 64 percent of the electorate will not need to pay anything for their own healthcare AND are not going to be in the fiscal pool for general taxation. Relatively to the baseline payoff from *Entitlement* policy, with its uniform tax, they are thus saving some positive amount d, as reflected in the payoffs to the MIP in Fig. 3.

In real circumstances, the distributions of health and/or of wealth might be relatively more centered, yet the coalition with preference for *Insurance* might still

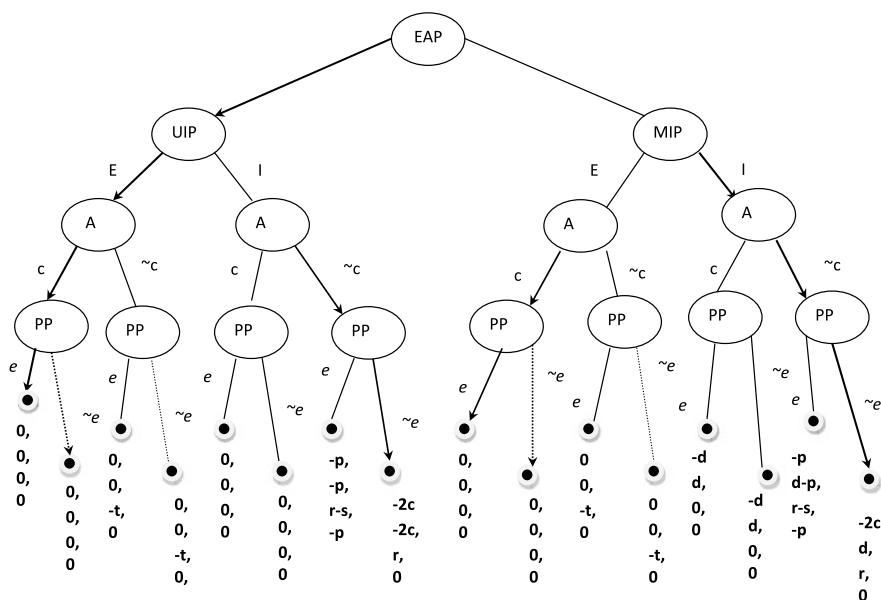| **Table 2** A hypothetical distribution of types in the electorate	Poor	Wealthy
Sick	.16	.04
Healthy	.64	.16

Fig. 3 Choice of the decision rule for Healthcare policy at the constitutional (Rawlsian) stage (the payoff of the ex-ante principal (EAP) is the first payoff)

exceed majority—due to those groups that are exempt from participation in the policy but can vote on its adoption.

5 Analysis

We can now apply backward induction to the game with the payoffs generated from the above discussion. In the subgame starting with the move by UIP on the left hand side of the tree in Fig. 3, if *Insurance* is the policy, the PP obtains a negative payoff of $-p$ if he *Enforces* the rules and does not treat a patient who has not purchased sufficient coverage. Given that preference of PP, the Agent knows that she can safely *not comply*, because she does not risk the payoff r–s, and instead she can obtain the positive payoff r.

If the policy is *Entitlement*, the PP has no difference in payoffs due to his choice, because all citizens are covered under *Entitlement* and so he has to provide care under both *enforce* and *not enforce*. The Agent, in this case does better by *complying*—and obtaining the baseline payoff of 0 than by *not complying* and obtaining $-t$ if she stays out of the workforce (which is what it takes to *not comply*).

At the top of the subgame, then, the UIP knows that it faces a choice between the baseline payoff, 0 and covering emergency care, $-c$, so the UIP will opt for *Entitlement*.

In the subgame on the right hand side starting with the move by MIP, however, the situation differs. Here, the left hand side of the tree is identical to that in the UIP

subgame, with Agent complying. And on the right hand side, the PP will still opt not to enforce the rules. Given the choice by PP, the Agent, similarly, knows that she can safely *not comply*.

But the MIP's preferences are different from the UIP's and so with the same expectation with regard to the outcomes, he makes a different move. The median voter, at most, pays only for her own insurance. And she is also exempt from the general tax which will be used to cover the care of those who will *not comply*. This lower personal cost to the median voter results in a higher utility than the baseline payoff, thus, the MIP will opt for *Insurance*.

The move by EAP in Fig. 3 shows the decision at the Rawlsian "veiled" stage. Our EAP, anticipating the outcomes in the Unanimity and Majoritarian subgames and their respective consequences, will opt for *Unanimity*, thus avoiding a lower payoff, $-2c$, from paying for emergency care instead of regular care.

6 Alternate Coalitions

To this point, we have not considered the possibility that emergency health care is inferior to regular care not just in its cost, but in the health outcomes as well. Introducing that assumption now allows us to suggest the potential for other coalitions that could arise with regards to health care coverage systems. In particular, if we assume that the value of emergency care is less than that of regular care (or, more generally, that the expected utility from emergency care is lower than that from regular care) then the poor and unhealthy are less likely to be as satisfied with the emergency care as their sole health care option as they would be with access to regular care. If a poor person pi's utility from care that she would receive under Entitlement, R, minus her uniform tax that she would pay, T_{pi}, were higher than her utility from emergency care, E, i.e. if

$$U_{pi}(R - T_{pi}) > U_{pi}(E)$$

then pi would prefer the Entitlement option.

Similarly, if a wealthy person, rj, pays lower taxes under *Entitlement* than her own health premiums and other payments under *Insurance*, d_{rj}, combined with her burden of funding the emergency care of the sick poor, IT_{rj}, then she would also prefer *Entitlement*, as long as the following holds (where I is health care from *Insurance* while R is health care from *Entitlement*):

$$U_{rj}(R - T_{rj}) > U_{rj}(I - d_{rj} - IT_{rj}).$$

If the combined population in the two above groups is large enough to constitute a majority, then these groups can form a coalition and adopt Entitlement even at the legislative stage.[7]

---

[7]If, in addition to differences in values of emergency versus regular care, we include high enough uncertainty as to one's own health status, we have the potential for everyone to opt for Entitlement.

7 Conclusion

Organization and financing of healthcare is characterized by an apparent general preference for something that, at least in the US, the legitimate and democratic political process is not quite able to supply—some sort of a fair single-payer system. This makes healthcare one in a class of issues for which the established political process seems to be a "wrong" decision structure. There are other issues with similar manifested qualities which linger unresolved or unaddressed possibly for similar reasons—maternity and parental leave and pay policies, and societal support for childcare, pollution control, and banking regulation come to mind. All of these situations are among the special case of collective action problems described above. Among the developed democracies, so similar in so many other regards, some seem to have much easier time grappling with such issues than others, suggesting that the theoretical story to explain the variation might involve institutional differences. We here suggest that those institutional differences are to be found at the constitutional level.

We claim that these "hung" issues are so problematic because the decision-making rule applied in their attempted resolution is "suboptimal", given the distribution of preferences and the technology of the good provision. In the tradition of Buchanan and Tullock (1962), we show that, given the preference distribution, *for that issue*, the society would have preferred a different decision rule if it were possible for it to revert to the ex-ante, rules-choosing, constitutional stage and to pick rules for one issue at a time.

Our conclusions here are two-fold. First, with regard to the healthcare policy, or any policy in this set of collective action problems, we show that the socially preferred rule for producing such policy is not majoritarian. We tentatively suggest that it approximates the unanimity given our assumptions. This means that the socially preferred approach to healthcare given the modern state of technology of that industry is to treat the issue as (quasi-)constitutional, rather than to relegate it to the on-going legislative process. In practice, this could manifest in giving it the status of a positive right or an entitlement and fixing its funding principle outside of the ebb and flow of the policy process, much as is done in the US with Social Security.

Second, on a grander scale, our findings lead us to argue that reliance on the policy process to address all issues, including those that significantly evolve and transform and those that newly emerge, is fraught with efficiency losses. Health care is but one example where access to the "constitutionalization" of an issue could be of benefit. Rigid and impervious to amendment, constitutions which evolve mostly by interpretation may engender political environments that are particularly unfit to take up such issues.

There are numerous arguments in favor of single-payer entitlement health care systems ranging from assertions that it reduces health care risks for citizens and avoid inequities (Blumenthal and Hsiao 2005) to that it is more socially efficient than private insurance systems (Sieberg and Shvetsova 2012). Regardless of their benefits, single payer systems may fail to be implemented if the decision procedure

itself is not selected carefully. Our model shows that the legislature is not necessarily the best venue to decide ALL issues of importance for the society at large. Some majority choices, while understandably best for their particular coalition, are particularly costly to society overall. Behind the veil of ignorance, the ex-ante principal would have recognized this potential and opt to have these matters decided as constitutional.

References

Attfield R (1990) The global distribution of health care resources. J Med Ethics 16(3):153–156

Blank R, Burau V (2006) Setting health priorities across nations: more convergence than divergence? J Public Health Policy 27(3):265–281

Bloom DE, Canning D (2000) The health and wealth of nations. Science 287(5456):1207–1209

Blumenthal D, Hsiao W (2005) Privatization and its discontents—the evolving Chinese health care system. N Engl J Med 333(11):1165–1170

Buchanan JM, Tullock G (1962) The calculus of consent: logical foundations of constitutional democracy. University of Michigan Press, Ann Arbor

Corcoran S, Evans WN (2010) Income inequality, the median voter, and the support for public education. NBER working paper No 16097

Currie J, Gruber J (1996) Health insurance eligibility, utilization of medical care, and child health. Q J Econ 111.2:431–466

Enthoven AC (1993) The history and principles of managed competition. Health Aff 12(Suppl 1): 24–48

Fuchs VR (1996) Economics, values, and health care reform. Am Econ Rev 86(1):1–24

Gladwell M (2005) The moral-hazard myth: the bad idea behind our failed health-care system. The New Yorker, August 29

Howell JD, McLaughlin CG (1989) Regional variation in 1917 health care expenditures. Med Care 27(8):772–788

Halfon N, Hochstein M (2002) Life course health development: an integrated framework for developing health, policy, and research. Milbank Q 80(3):433–479

Holcombe RG, Caudill SB (1985) Tax shares and government spending in a median voter model. Public Choice 46:197–206

Hsiao WC (1994) 'Marketization'—the illusory magic pill. Health Econ 3:351–357

Institute of Medicine (2002) Care without coverage: too little, too late, committee on the consequences of uninsurance, board of health care services. National Academy Press, Washington

Kornai J, Eggleston K (2001) Welfare, choice, and solidarity in transition: reforming the health sector in Eastern Europe. Cambridge University Press, Cambridge

Klarman HE (1969) Reimbursing the hospital the differences the third party makes. J Risk Insur 36(5):553–566

Matthews D (2010) Hayek on social insurance. The Washington Post, 9 July

Meltzer AH, Richard SF (1981) A rational theory of the size of government. J Polit Econ 89:914–927

Meltzer AH, Richard SF (1983) Tests of a rational theory of the size of government. Public Choice 41:403–418

Nelson P (1999) Redistribution and the income of the median voter. Public Choice 98:187–194

Newhouse JP (1992) Medical care costs: how much welfare loss? J Econ Perspect 6(3):3–21

Pauly MV (1986) Taxation, health insurance, and market failure in the medical economy. J Econ Lit 24(2):629–675

Rawls J (1971) A theory of justice. Harvard University Press, Cambridge

Rosenthal H, Eibner C (2005) Immigration and the median Voter's incentive to redistribute income in the United States. Paper presented at the annual meeting of the society for the advancement of

socio-economics, "What counts? Calculation, representation, association," Budapest, Hungary. June 30–July 2

Sieberg KK, Shvetsova O (2012) Kustannustehokkuuden ja kattavuuden ongelmat Yhdysvaltain terveydenhuollossa (Efficiency and coverage problems in United States' Healthcare) Puheenvuoro. Hallinon Tutkimus, Administrative Studies (forthcoming)