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Research Summary

1. Introduction

In recent years I have devoted most of my research effort to two fields: health economics and economic theory. Even though these two fields are quite distinct in many respects, my work in them shares the common ground of searching for optimal mechanisms. In health economics, my work has been mostly devoted to the design of optimal reporting and payment mechanisms for health care providers and health insurers, and in economic theory it has been devoted to the design of optimal persuasion rules. In what follows I will elaborate on my work in these two fields.

2. Health Economics

2.1 The Design of Optimal Reporting Mechanisms

In light of the increasing prevalence of quality reports about health plans and providers, one of my main focuses within the field of health economics in recent years has been the design of (optimal) quality reporting mechanisms in health care. Casting the information to report to consumers about health plans as a policy decision, the question my colleagues and I have addressed is the following: How should reporting mechanisms be designed if the aim is to induce health care providers to supply the highest quality of health care, given the resources available to them? I have published four papers on this issue.

The first, "Inducing Quality from Health Care Providers in the Presence of Adverse Selection," coauthored with Thomas G. McGuire, was published as a chapter in M. Lu and E. Jonsson (eds.) Financing Health Care – New Ideas for a Changing Society, December 2007. In it we study the various mechanisms a regulator/payer can apply in order to induce health plans and other health care providers to provide the desired level of quality in the presence of adervse selection incentives. Among the mechanisms we consider are: risk adjustment, quality reporting, cost sharing, pay for performance and selection of plans and providers. The paper discusses the contexts in which each of these mechanisms (or a mix of them) is optimal.

The second paper, "Using Performance Measures to Motivate 'Report Averse' and 'Report Loving' Agents," was published in the Journal of Health Economics, December 2007, and coauthored with Thomas G. McGuire and Joseph P. Newhouse. Focusing on how a health plan designing a report on the quality of its services needs to account for the effect of the report on the doctor, hospital or other provider, this paper proposes a simple model of how quality reporting affects a health care provider, using the example of a cut-off point that ranks the provider above or below some standard. The paper analyzes how the regulator's or payer's choice of a cut-off point affects the provider's welfare through the provider's preferences on income and status and through the report's effect on market demand for the provider's services. It introduces the concept of "report averse" and "report loving" providers, as derived from the provider's attitude to reporting on quality, and shows how quality reports (of the cut-off point type) should be designed, if one wishes to take into account the attitude of the providers to reporting.

The third paper, "Mitigating the Problem of Unmeasured Outcomes in Quality Reports," was published in the B.E. Journal of Economic Analysis & Policy, 8(2-Contributions) Article 7, 2008. In it we address the widely discussed "multi-tasking problem" arising from the fact that most quality reports or profiles of health care providers are inevitably based on only a measurable subset of the organization's "output." The first observation of this paper is that if inputs used for outputs included in the profile also affect outputs outside the scope of the profile, this can be taken into account in constructing a profile of the measured outputs. We distinguish between "conventional" weights in a quality profile, and "optimal" weights that take into account commonality in the production process. The main contribution of the paper is the method proposed for addressing the commonality problem in designing a profile for a health plan, hospital or other health care provider. The basic idea is to increase the weights on discharges when they use inputs that are important to other discharges whose outputs are not included in the profile.

The fourth paper, "Using Global Ratings of Health Plans to Improve the Quality of Health Care," coauthored with Thomas G. McGuire, Zhun Cao and Alan Zaslavsky, was published in the Journal of Health Economics, 27(5), 2008. Global ratings, such as those based on consumer satisfaction, are a commonly used form of reporting on the performance of health plans and providers. A simple averaging of the global rating by plan members leads to a problem: it gives a plan a greater incentive to improve services used by low-cost members as opposed to high-cost members. The paper presents a formal model of consumer formation of global ratings and the incentives these ratings present. The main result is a solution to the question of how a global rating formula should be constructed in order to correct the incentive problem. We implement our proposed solution using data from the Consumer Assessments of Health Care Providers and Systems (AHPS) and the Medicare Current Beneficiary Survey (MCBS). Our correction is low-cost, easily implemented on an on-going basis, and insensitive to assumptions about why health plans care about quality ratings.

2.2 The Design of Optimal Payment Mechanisms and Premium Policy

My other focus, within the field of health economics, during the past four years has been the design of (optimal) payment schemes and reimbursement mechanisms in health care, to achieve both an efficient and fair allocation of resources across patients, and induce an efficient assignment of enrollees across health plans and health insurers. In recent years I have written several papers on this issue.

The first paper, titled "Gold and Silver Health Plans: Accommodating Demand Heterogeneity in Managed Competition," coauthored with Thomas G. McGuire, was published in the Journal of Health Economics, 30(5), 2011. Heterogeneity in demand for health care can be due to health status (the sick demand more than the healthy) or to other, "taste" related factors (the rich demand more than the poor), raising issues of efficiency and fairness in health insurance markets. This paper develops a model of managed competition with demand heterogeneity to consider plan payment and enrollee premium policies in relation to efficiency (net consumer benefit) and fairness (solidarity). The literature contains no premium policy that achieves both efficiency and fairness in the presence of demand heterogeneity. We show that when taste can

be used as a basis for payment, a simple taste-related tax (e.g., income) can achieve both efficiency and fairness. When only health status (and not taste) can be used as a basis for payment, taxes and subsidies based on health status are required and efficiency can only be achieved with a modified version of fairness that we refer to as "weak solidarity."

The second paper, a joint work with Thomas G. McGuire, titled "Making Medicare Advantage a Middle-Class Program," is currently under revision for the Journal of Health Economics. This paper studies the role of Medicare's premium policy in sorting beneficiaries between traditional Medicare (TM) and managed care plans in the Medicare Advantage (MA) program. Beneficiaries vary in their demand for care. TM fully accommodates demand but creates a moral hazard inefficiency. MA rations care but disregards some elements of the demand. We describe an efficient assignment of beneficiaries to these two options, and argue that efficiency requires an MA program oriented to serve the large middle part of the distribution of demand: the "middle class." The current Medicare policy of a "single premium" for MA plans cannot achieve efficient assignment. We characterize the demand-based premium policy that can implement the efficient assignment of enrollees to plans. If only a single premium is feasible, the second-best policy involves too many of the low-demand individuals in MA and a too low level of services relative to the first best. We identify approaches to using a premium policy to revitalize MA and improve the efficiency of Medicare.

2.3 Welfare Health Economics

Another area of research within the field of health economics that I started working on about two years ago and which I find particularly stimulating, has to do with the welfare effects of health and health services. My first paper on this issue, co-authored with Thomas G. McGuire, is titled "A Welfare Measure of 'Offset Effects' in Health Insurance," and was published in the Journal of Public Economics, 96, 2012. Changing health insurance coverage for one service may affect the use of other insured services. When improving coverage for one service reduces the use of another, the savings are referred to as "offset effects." For example, costs of better coverage for prescription drugs may be partly "offset" by reductions in hospital costs. Offset effects have welfare implications but past research has not been clear on how to value them in the design of health insurance. We show that plan-paid – rather than total -- spending is the right welfare measure of the offset effect, and go on to develop a "sufficient statistic" for evaluating the welfare effects of change in coverage in the presence of multiple goods. We derive a simple rule for when a coverage improvement increases welfare due to offset effects.

Another paper in the area of welfare health economics, a joint work with Haiden A. Huskamp and Thomas G. McGuire, titled "A Prescription for Drug Formulary Evaluation," appeared in the B.E. Journals Forum for Health Economics & Policy, 15(2), 2012. Existing economic approaches to the design and evaluation of health insurance do not readily apply to coverage decisions in the multi-tiered drug formularies in private health insurance and Medicare. This paper proposes a new method for evaluating a change in the value of a formulary to covered members based on the economic theory of price indexes. A formulary is cast as a set of demand-side optimal prices, and our measure approximates the compensation (positive or negative)

that would need to be paid to consumers to accept the new set of prices. The measure also incorporates any effect of a change in the formulary on the plan's drug acquisition costs and "offset effects" on non-drug services covered by the plan. Data needed to calculate formulary value are known or can be forecast by a health plan. We illustrate the method with data from a move from a two- to a three-tier formulary.

3. Economic Theory

3.1 The Design of Optimal Persuasion rules

In the field of economic theory I have continued my joint work with Ariel Rubinstein from Tel Aviv University and New York University on the design of optimal persuasion and debate rules. The general theme, common to all our work in this area can be described as follows: A speaker seeks to persuade a listener to take a certain action. The conditions under which the speaker's request is justified, from the listener's point of view, depend on the state of the world, which is known only to the speaker. *A persuasion rule*, designed by the listener, specifies which of the speaker's statements the listener will find persuasive. In our first paper in this field, "Debates and Decisions: On a Rationale of Argumentation Rules," Games and Economic Behavior, 36, 2001, we studied a debate situation in which there were two speakers, each trying to persuade the listener to adopt his position. In our next two papers we studied a persuasion situation in which there was only one speaker. In the first, "On Optimal Rules of Persuasion," Econometrica, 72(6), November 2004, the speaker could use cheap talk to trying to persuade the listener, but the listener had some capability to, at least partially, verify the speaker's claim. In the second, "A Study in the Pragmatics of Persuasion: A Game Theoretical Approach," Theoretical Economics, 1, 2006, there was no cheap talk and the messages the speaker could send were a function of the state of the world.

In all three papers, we present and analyze the persuasion (and debate) rules that minimize the probability that the listener will make the wrong decision, namely the probability that the listener will accede to the speaker's request when he shouldn't and reject the speaker's request when, in fact, he should accept it. We also link our work to the Gricean notion of pragmatics and maxims of conversation. In all our work in this field we assume that the speaker is fully rational.

Recently, Rubinstein and I completed a paper titled "A Model of Persuasion with a Boundedly Rational Agent," in which we assume that the speaker is limited in his (cognitive) ability to lie. More specifically, we assume that both the content and framing of the persuasion rule affect the speaker's ability to manipulate the information he provides. The analysis is conducted in the context of a persuasion situation in which the listener first announces the rules under which he will be persuaded by the speaker. The boundedly rational speaker is limited in his ability to find a persuasive story. He can do so only by using a certain method which depends on his true story and the pre-announced persuasion rules. We fully characterize the circumstances under which the listener's goal can be achieved, i.e., the listener accepts the speaker's request only in those states of the world in which the request should be accepted. We also report on some experimental results that seem to confirm our main hypothesis in the paper about on how boundedly rational speakers behave in such a persuasion situation.