

HEALTH ECONOMETRICS

CONTRIBUTIONS
TO
ECONOMIC ANALYSIS

294

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HEALTH ECONOMETRICS

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Editors' Introduction

Jones (2000) provided an overview of econometric methods applied in the area of health economics. Since then, there has been a dramatic increase in the number of applied econometric work in health economics, boosted by the availability of large-scale datasets as well as the rapid development of new, advanced econometric techniques. The issues of nonlinearity of models, the presence of individual-level unobserved heterogeneity as well as time and cross-sectional dependencies, among others, make health economics applications an interesting area of research for applied econometricians (Basu & Mullahy, 2013).

The selection of chapters presented in this book illustrates a set of established and emerging econometric techniques. These are often presented within the context of an empirical application, and help gain new insights for tackling health economics studies.

This book should be a valuable reference for academics, applied economists, and postgraduate students in health economics and econometrics, guiding them to the use of some of the advanced econometric methods in health economics.

Summary of the Chapters

Galizzi, Harrison, and Miraldo review and assess behavioral insights and experimental methods for measuring risk and time preferences in health economics, illustrating the most important applications to date on the link between structurally estimated risk and time preferences and health behavior. In particular, the chapter describes the recently advanced behavioral econometrics approach that allows jointly eliciting and structurally estimating risk and time preferences for a broad range of models.

Little is known about perceptions of medical expenditure risks despite their relevance to the demand for health insurance. Yilma, O'Donnell, Mebratie, Alemu, and Bedi provide an estimate of subjective probabilities of future medical expenditure, using survey data on a sample of rural Ethiopians. Such estimates show that the majority of rural Ethiopians sampled are able to provide "logically consistent" responses, and indicate that the cross-sectional variance of realized expenditures, which is often used in applied work to proxy risk exposure, greatly overestimates the risk faced by any single household.

Ziebarth reviews the empirical evidence and econometric methods adopted to study how social insurance causally affects the health of beneficiaries. One complication in studying this empirical problem is that changes in health status are correlated with reductions in labor supply and income, leading to an identification problem. The author reviews the empirical methods for identifying causal effects and examines possible limitations to these methods providing suggestions for future research.

Patients and health professionals often make decisions which involve a choice between discrete alternatives. Econometric methods for modeling discrete choices are reviewed in the chapter by Hole. This chapter reviews the most frequently used discrete choice models in the applied health economics literature, and then introduces more recent developments and extensions, such as scale heterogeneity and attribute nonattendance.

Giuntella and Nicodemo review the recent economic literature on health and migration, a much debated topic given the important implications that migration flows have on the health care systems of receiving countries. The authors highlight the empirical challenges that arise when studying the relation between health and migration, and examine the econometric methods available to address them. In particular, Giuntella and Nicodemo analyze immigrant health trajectories, looking at the process of health convergence between migrants and natives, and pointing at the issue of health selectivity and available methods to address it. The effects of immigration on the demand and supply of health care in destination countries are also explored.

Hoch and Chaussé review econometric methods for analyzing cost-effectiveness data. After linking cost-effectiveness analysis to the net benefit regression framework, the authors show how Seemingly Unrelated Regression and Generalized Method of Moments (GMM) can be applied for cost-effectiveness analysis. The review of the methods is supported by an empirical application where various econometric techniques are employed to explore a cost-effectiveness dataset from a published study, highlighting the potential important role of GMM in the analysis of cost-effectiveness data.

Jones, Rice, and Robone explore the utility of the vignette approach as a method for adjusting self-assessed data for systematic differences in reporting behavior, to improve interpersonal and intercountry comparability. This approach relies on two main assumptions, namely response consistency and vignette equivalence, much debated in the literature. The authors contribute to this literature by evaluating the performance of parametric and nonparametric approaches for adjusting for differential reporting behavior. They focus on physical health data represented by mobility, and compare the distribution of mobility based on self-assessment with that based on the corresponding objective measures. The authors find that both parametric and nonparametric approaches do not satisfactorily address the issue of differential reporting, linking this result to

the problematic assumptions of response consistency and vignette equivalence.

Nicoletti, Salvanes, and Tominey contribute to the literature on the response of parental investments to child's health at birth. The authors highlight the econometric challenges that arise when studying this empirical problem, and in particular the issue of endogeneity of child health. While Instrumental-Variables approach is often adopted in this context, the authors propose a new set of instruments for the child health endowment that are often readily available in a large number of datasets and more credible than those used in existing studies.

Barrenho and Miraldo discuss various econometric approaches for the assessment of the determinants of innovation in the pharmaceutical industry, with a special focus on competing risks duration models. The authors review possible methods to model occurrence of events, and look at potential covariates that have been found to correlate with the likelihood of failure of R&D pharmaceutical projects. They propose for a duration model estimation strategy for assessing the destination of R&D projects.

Medical liability plays an important role in explaining deviations from the optimal use of medical treatments. Bertoli and Grembi review methods for studying the relation between different levels of medical liabilities and treatment selection. The authors examine the theoretical mechanisms underlying such relationship, present existing empirical studies and discuss their limitations, offering indications for future research.

Siciliani reviews the range of models and methods adopted to assess the causal effect of three policy interventions: whether hospital competition and higher hospital tariffs can stimulate quality of health care, and whether nonprofit hospitals provide higher or lower quality than for-profit ones. In addition, this chapter reviews the main results obtained by existing empirical studies offering some indications on how these could be used by policy makers, as well as providing directions for future research.

Effective and efficient use of hospital treatments and services are also the subject of the chapter by Martini and Vittadini. The authors discuss how to exploit administrative data to measure hospital efficiency and relative effectiveness, and they can be used to produce rankings of health care organizations, thus reducing the degree of asymmetric information that typically characterize the health care sector.

Baltagi, Moscone, and Santos review spatial econometrics methods and their application in the area of health economics. In both micro- and macro-health economics there are phenomena that are characterized by a strong spatial connotation. The authors review methods and applications showing how incorporating spatial effects may improve our understanding of issues such as hospital quality, efficiency, or the sustainability of health care expenditure of national and regional health care systems.

Weak and strong forms of cross-sectional dependence are often present in large, aggregate panel data, such as the OECD, country-level health

data set considered in the chapter by Okunade, You, and Koleyni. The authors investigate the relationship among health care expenditure, income, aging population, and international cooperation patents. A voluminous literature has been studying the income elasticity of health expenditure, given its important policy implications for the financing and distribution of health care resources. The authors find the presence of a long run relationship among health expenditure and its determinants, and that per capita GDP (less health expenditure) is the only short run driver of health care expenditure.

In spatial econometric models the neighborhood structure is represented by the so-called spatial weights matrix, usually assumed to be known a priori using information on distance between units, such as the geographic, economic, policy, or social distance. However, in many cases the network is not known (or only partly known), so the interest is not only in quantifying the strength/sign of interactions, but also in the detection of interactions. Moscone, Vinciotti, and Tosetti review graphical modeling techniques for estimating large covariance matrices, useful for estimating networks. The chapter provides a selective survey of different models and estimators proposed by the graphical modelling literature and offers some practical examples where these methods could be applied in the area of health economics.

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Volume Editors

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