Octubre 2019

ART6_A1_2019_1
N° de serie

Artículo Científico

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COLOMBIA CIENTÍFICA
Conocimiento Global para el Desarrollo

ALIANZAEFI
Economía Formal e Inclusiva

Journal of Health Economics 68 (2019) 102223

Contents lists available at ScienceDirect

Journal of Health Economics

journal homepage: www.elsevier.com/locate/econbase

How is the trade-off between adverse selection and discrimination risk affected by genetic testing? Theory and experiment☆

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ARTICLE INFO

Article history:
Received 8 April 2018
Received in revised form 12 July 2019
Accepted 18 July 2019
Available online 1 October 2019

JEL classification:
C91
D82
I18

Keywords:
Consent Law
Disclosure Duty
Personalized Medicine
Test take-up rate
Pooling health insurance contracts

ABSTRACT

We develop a theoretical analysis of two widely used regulations of genetic tests, Disclosure Duty and Consent Law, and we run an experiment in order to shed light on both the take-up rate of genetic testing and on the comparison of policyholders' welfare under the two regulations. Disclosure duty forces individuals to reveal their test results to insurers, exposing them to a discrimination risk. Consent Law allows them to hide any detrimental information, resulting in adverse selection. The experiment results in much lower genetic tests take-up rates with Disclosure Duty than with Consent Law, showing that subjects are very sensitive to the discrimination risk. Under Consent Law, take-up rates increase with the adverse selection intensity. A decrease in the test cost, and in adverse selection intensity, both make it more likely that Consent Law is preferred to Disclosure Duty.

1. Introduction

Health insurance regulation faces the following trade-off. Allow insurers to adjust the contracts offered to policyholders according to their individual health status, and individuals face a discrimination risk (or, in its dynamic version, a reclassification risk). Restrict the ability of insurers to price their contracts according to all relevant individuals' characteristics, and some adverse selection may emerge.

Our objective in this article is to study this trade-off in the context of the emergence of personalized medicine, defined as the use of an individual's genetic profile to guide prevention, diagnosis, or treatment decisions. The advent of ever cheaper and more informative genetic tests will drive the development of personalized medicine. These tests will allow individuals to obtain very detailed information on their genetic predisposition to several diseases, as well as on potential prevention strategies to decrease the probability of the disease occurring, and on the treatment to be followed if the disease occurs.[1] With increasing medical benefits of testing, coupled with lower monetary costs, the prevalence of genetic testing will most probably increase in the foreseeable future.

In such a context, it becomes necessary to better understand how this genetic information should be regulated, and whether

☆ The authors gratefully acknowledge financial support from the Health Chair (a joint initiative by PSL, Université Paris Dauphine, ENSAE and MGEN under the aegis of the Fondation du Risque) and from the grant ANR-11-IDEX-0002-02 – MuSE "Multi-disciplinary Study of Emergence phenomena". The third author thanks support through ANR-Labex IAST. The usual disclaimer applies. A previous version of this work has circulated under the title "Adverse Selection vs. Discrimination Risk with Genetic Testing. An Experimental Approach". We thank Paul Rodriguez, Mariana Blanco, referees and the editor for excellent suggestions.

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[1] See Abrahams and Silver (2010) for a history of personalized medicine and also Anaya et al. (2016) for applications to autoimmune diseases. It is fair to say that, while the cost of sequencing a whole genome has decreased at a very impressive rate (see http://www.genome.gov/sequencingcosts, last accessed on October 26, 2018) and is likely to continue to do so, the amount of actionable health information gleaned from sequencing has not grown at the same pace. For instance, while knowing one's genome can bring more precise information as to the likelihood of developing a disease in the future, it does not always give much useful guidance for prevention. This is recognized by Snyder (2016), among others. The difficulty lies in the fact that genetic diseases are complex and affected by the environment. This being said, Snyder (2016) contains many examples where genetic testing already has medical value and claims that this will be the case even more in the not too distant future.

https://doi.org/10.1016/j.jhealeco.2019.102223
0167-6296/