

Patient payments and health behaviors: stick or carrot?

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Summary

Patient payments and health behaviors: stick or carrot?

Out-of-pocket payments are seen as an efficiency improving tool to discourage moral hazard. Moral hazard refers to the incentive for individuals that are covered by health insurance to change their behavior in ways that increase the risk of loss for the insurer. Two types of moral hazard behavior can be distinguished: first, ex-ante moral hazard that refers to the incentive for insured individuals to behave in a riskier manner creating more health problems; second, ex-post moral hazard that refers to the incentive for insured individuals to overuse health care services offered under the insurance benefit package. In view of this, two tradeoffs can be formulated: first, a tradeoff between out-of-pocket payments and unhealthy behavior, which results from the potential of out-of-pocket payments to discourage ex-ante moral hazard; second, a tradeoff between out-of-pocket payments and the use of preventive services, which results from the potential of out-of-pocket payments to discourage ex-post moral hazard. In other words, out-of-pocket payments have a double effect on prevention. On the one hand, they can reduce the demand for preventive services; while on the other hand, they may encourage individual lifestyle change toward a healthier lifestyle. The latter is the focus of this dissertation.

In the empirical literature, the negative effect of out-of-pocket payments on the use of preventive services is well documented. However, the extent to which out-of-pocket payments might encourage health behavior is not evident yet. In fact, the practical significance of ex-ante moral hazard in health insurance is still debated. Moreover, it is difficult to separate moral hazard from adverse selection that refers to the fact that individuals with a higher (perceived) health risk tend to purchase more health insurance or a more extensive coverage. Without accounting for adverse selection, any estimate of moral hazard effect would be biased. Thus, due to moral hazard, health behavior can be negatively affected by the level of insurance coverage. However, due to adverse selection, the level of insurance coverage can be determined by health behavior.

Health behavior can be broadly defined as any action or inaction which affects individuals' health. In this dissertation, we have restricted ourselves to the three most common forms of unhealthy behavior (i.e. smoking, excessive alcohol use and physical inactivity) that are among the top leading risk factors of mortality and morbidity worldwide.

As outlined in **Chapter 1**, among policymakers worldwide there is a consensus on the urgent need to promote prevention through lifestyle changes.

With increased health care spending (especially because of the prevalence of non-communicable disease), there are those who advocate shifting more of the costs to the demand side by introducing more out-of-pocket payments especially for health care services that would not be used should individuals behave in a healthier manner. By exploring the tradeoff between out-of-pocket payments and prevention, this dissertation provides evidence that can help policymakers to make more informed decisions based on widely accepted principles of solidarity, equity, access, and freedom of choice.

This dissertation aims to study how and to what extent health-related behavior and health care cost coverage are related. Health care cost coverage refers here to both coverage provided by private insurance and social insurance.

This dissertation is based on a series of studies that examine the relationship between the extent (type) of health insurance coverage and health behavior. Chapter 2 is based on a systematic literature review of existing empirical evidence on the impact of health care cost coverage on health behavior. The next three chapters (Chapters 3, 4, 5) provide empirical evidence on the effects of health insurance on health behavior or vice versa. They employ quantitative techniques on data from the Survey of Health, Aging, and Retirement in Europe (SHARE). SHARE is the European longitudinal aging survey, similar to the US Health and Retirement Study (HRS) and the English Longitudinal Study of Aging (ELSA), which provides micro data on health, socioeconomic status and social and family networks of more than 85000 individuals from 19 European countries aged 50 or over. Chapter 6 discusses the main findings outlined in previous chapters.

In **Chapter 2** we systematically review empirical evidence on the effects of out-of-pocket payments on the use of preventive services and health-related lifestyle. All possible combinations of three key words “prevention”, “patient payment” and “health-related behavior” are used for search in PUBMED, ECONLITH, ECONPAPER and EMBASE. There is no limitation to the year of publication and geographical region. However, only English language publications are included. The reference lists of the publications are also reviewed. In total, 47 relevant publications are identified. Most studies, 31 out of 47 publications, originate from the US, and only two studies originate from Europe (one from Germany and one from UK).

Our results confirm the double effect of out-of-pocket payments on prevention. They reduce the demand for preventive services; and at the same time, they have the potential to encourage preventive activities such as a healthier lifestyle. However, we find that the effect of out-of-pocket payments on preventive

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services is a lot more studied than the effect of out-of-pocket payments on lifestyle. There is strong evidence that in case of secondary prevention, out-of-pocket payments present a financial barrier by decreasing adherence to medication and preventive services. However, the few studies that address the theory of ex-ante moral hazard and test the impact of insurance on healthy behavior come to different conclusions. Thus, even though, healthy behavior can be promoted by different incentives, the role of health insurance coverage and out-of-pocket payments are still not empirically established.

The review in Chapter 2 also suggests that most evidence so far on this topic comes from the US. Although ex-ante moral hazard is more probable to exist in a publicly financed system (e.g. many European countries), we find few studies on the topic in Europe. The great diversity of study designs (various indicators of out-of-pocket payments and preventive/health-related behavior) makes it difficult to offer robust policy recommendations. Nevertheless, our findings support calls to reconsider how preventive services should be financed. More research is needed to explore the actual impact of cost-sharing on different aspects of health-related lifestyles, as well as to explain the role of other relevant determinants that could impact this relationship.

As outlined in **Chapter 3**, previous studies have mostly focused on socio-demographic, socioeconomic, and health-related determinants of health-related behaviors. Although comprehensive health insurance coverage could discourage individual lifestyle improvement due to ex-ante moral hazard problem, few studies have examined such effect.

Therefore, Chapter 3 examines the association of a comprehensive set of factors including socio-demographic, socioeconomic, health status, health insurance and perceived change in health insurance coverage with health-related behaviors and their dynamics. The goals are, first to explore factors, including health insurance, associated with the state and dynamics of unhealthy behavior; second to investigate the consistency of their effects across different types of behavior as well as across the state and the dynamics of one behavior. SHARE data for the Netherlands in 2004 and 2007 (before and after the health insurance reform in the country) are used to model health-related behaviors in 2004 (daily smoking, excessive alcohol use and physical inactivity) and their corresponding changes (stopping or starting unhealthy behavior) between 2004 and 2007.

The results of this case study for the Netherlands are not supportive for the existence of ex-ante moral hazard, and even imply the contrary. For instance, should ex-ante moral hazard exist, we expect that a positive change in health

insurance coverage (having a better coverage in 2007) leads to a negative change in health behavior (e.g. start smoking, excessive alcohol use or physical inactivity). However, our results show the opposite, as we find that better perceived health insurance coverage is associated with stopping alcohol use. We also find that those with better perceived health insurance coverage are less likely to continue daily smoking and excessive alcohol use, while those with worse perceived health insurance coverage are more likely to continue excessive alcohol use. Also, we find that having voluntary private insurance is positively associated with daily smoking and excessive alcohol use. At the time the data were collected, the voluntary private insurance in the Netherlands often provided less generous coverage than compulsory social insurance. In view of this, these findings also seem to contradict the notion of ex-ante moral hazard.

In Chapter 3, we also show that health behavior is not a uniform concept, and each behavior deserves separate attention. In particular, our results show that each behavior has its own set of covariates. Even when there are some determinants in common, their effects might be in different direction. For instance, we find that women are less likely to smoke daily and to excessively use alcohol but at the same time are more likely to be physically inactive. The same applies for the dynamics of health behaviors.

Our results provide input to target policies towards elderly individuals in need of lifestyle change. More effort is needed to target men and affluent people to quit smoking and excessive alcohol use, as well as women and the elderly to become physically more active. However, regarding the effect of the type of health insurance on the state of unhealthy behavior, given the specifics of the Dutch health insurance system in 2004, a clear conclusion cannot be drawn about the applicability of the ex-ante moral hazard interpretation.

In **Chapter 4**, exploiting SHARE data for 12 European countries, an instrumental variable strategy is used to identify the causal effect of daily smoking on health care cost coverage. Daily smoking is instrumented by a variable indicating whether or not there is any other daily smoker in the household. Health care cost coverage is measured by a variable on a scale of 4-16 which indicates self-assessed health care cost coverage by individuals (from no coverage to full coverage). This variable can comprehensively encompass all three dimensions of health care cost coverage (namely breadth, scope, and depth). Thus, it is more informative about the extent of health insurance coverage than variables used in the other studies like the probability of purchasing a private insurance or the amount of health insurance coverage.

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We find that daily smoking decreases self-assessed health insurance coverage among women and men who live without a partner. These findings replicate the same counter-intuitive relationship between smoking and health insurance presented in previous studies, but in a language of causality. Consistent with previous studies, these findings can be explained by heterogeneity in risk aversion. In other words, risk aversion is unobservable which drives the negative effect of smoking on health insurance coverage. In this sense, the more risk-averse individuals are, the healthier the lifestyle they have, and at the same time the more extensive health insurance coverage they will choose.

As outlined in Chapter 4, adverse selection occurs when individuals have a choice whether or not to buy health insurance. With choice, a positive relationship between (health) risk and insurance coverage can be expected. Accordingly, we expect to see more effect of smoking on health care cost coverage in countries where there is more choice of health care cost coverage. However, our results show that the negative effect of smoking on health coverage is more evident in countries where there are fewer possibilities of choice. One plausible explanation instead of risk aversion can be more out-of-pocket expenditures among smokers in these countries.

As outlined in **Chapter 5**, in a solidarity based health care system, such as those in European countries, the costs of unhealthy behavior are incurred by all citizens and not only by those who make the costs. This issue has been criticized, as it seems unfair that the costs of a choice for an unhealthy behavior are paid for by those who have chosen for a healthy lifestyle. Thus, there is an ongoing debate about incorporating some elements of individual responsibility in the health care system and providing incentives for better health-related behavior. In doing so, a carrot and stick approach can be used to reward desired behavior and to punish undesired one; carrots like discounts in premiums, and sticks like copayments.

In Chapter 5, we address two questions: whether or not an unhealthy lifestyle is associated with more utilization of health care, and whether the extra cost of more use of health care are paid out of pocket by those who engage in unhealthy behaviors (i.e. daily smoking, excessive alcohol use, obesity, and overweight). Using SHARE data from 12 European countries, we employ a sequential logit model to investigate how the utilization of outpatient and inpatient care and out-of-pocket payments for them is associated with health-related behavior. We also use a two part model to study the association between out-of-pocket payments for prescribed drugs and health-related behavior.

We do not find systematic evidence that unhealthy behavior is associated with more utilization of health care and more out-of-pocket payments. The most consistent pattern among the elderly in the included countries appears in case of smoking. It shows that former smoking is associated with a higher rate of health care use. In contrast, current smoking is associated with a lower rate of health care use.

These findings can have important policy implications regarding a stick and carrot approach for individual responsibility for health. It shows that people at the time of engaging in an unhealthy behavior (i.e. current smoking, heavy drinking) are not using more health care than those who do not engage in respective behavior. Thus, using a stick like copayment might not encourage them to quit. However, when people are in need of health care, resulting in more use of health care, they are most probably not engaging in unhealthy behavior (i.e. ex-smoking). Thus, using a stick like copayment would limit access to health care for those who need it and this contradicts the principles of equity and solidarity. Our findings per country can be of use for further studies on the causes of cross-country differences in out-of-pocket payments.

Chapter 6 discusses the main findings outlined in previous chapters (Chapters 2-5) in the forms of six statements to achieve the aim of dissertation stated in Chapter 1.

As discussed in this chapter, out-of-pocket payments are a double edged sword for prevention. They reduce the demand for preventive services, and at the same time, they have the potential to encourage preventive activities such as a healthier lifestyle. However, despite the evidence on the negative effect of out-of-pocket payments on the use of preventive services, their positive effects on health behavior are not empirically established.

We have also argued that ex-ante moral hazard seems not to be a very strong driving force for individuals not to invest in prevention. Thus, policymakers should not be so worried that insurance coverage for preventive services and facilities which make preventive activities more feasible would lead to less prevention. Therefore, subsidizing primary prevention and providing financial incentives to engage individuals in a healthier lifestyle can be recommended.

As explained in Chapter 6, when using health behavior (e.g. smoking) as a proxy for health risk, there is more consistent evidence against the existence of adverse selection. Thus, adverse selection does not seem to be a strong driving force for those who engage in unhealthy behavior to opt for more extensive coverage, but mostly for risk-averse individuals.

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We also show that in a carrot and stick approach to promote health behavior, the potential of out-of-pocket payments as a stick is doubtful. Charging more out-of-pocket payments for health care use of those who currently engage in unhealthy behavior (e.g. current smokers) might not be justified by lifestyle solidarity as they are not likely to use health care more than others (e.g. never smokers). However, when out-of-pocket payments might be justifiable for policies to diminish lifestyle solidarity for instance in case of ex-smoking, it raises lots of ethical concern because it could deprive individuals from their basic needs. An alternative to out-of-pocket payments is to set a higher insurance premium for those who engage in unhealthy behaviors. This higher premium can spare more funds for the future when the adverse health effects of unhealthy behavior appear, and thus may result in more health care used. In addition, a higher premium can be set for unhealthy behavior irrespective of actual health care use. Thus, they can be seen not only as a stick but as limit to lifestyle solidarity without compromising the provision of basic needs.